

## Competency Standards for Caribbean Vocational Qualifications (CVQ)

CCASR20307

Level II in Motor Vehicle Engine Systems

Unit Number	Unit Title	Mandatory/ Elective	Hours
ASRCOR0011A	Follow principles of Occupational Health and safety (OH&S) in work environment	Mandatory	20
ASRCOR0021A	Undertake interactive workplace communication	Mandatory	20
ASRCOR0031A	Plan to undertake a routine task	Mandatory	5
ASRCOR0041A	Perform routine housekeeping duties	Mandatory	5
ASRCOR0051A	Use and maintain workplace tools and equipment	Mandatory	10
ASRCOR0061A	Use and maintain measuring devices	Mandatory	10
ASRCOR0071A	Draw and interpret sketches and simple drawings	Mandatory	20
ASRCOR0081A	Perform related computations - (basic)	Mandatory	20
ASRCOR 0091A	Perform manual handling and lifting	Mandatory	5
ASRCOR0111A	Carry out bench work fitting operations	Mandatory	5
MEMCAC0011A	Perform technical computations (basic)	Mandatory	40
ASREMS0011A	Prepare for general servicing/repairing of motor vehicle	Mandatory	5
ASREMS0021A	Service engines and associated engine components	Mandatory	20
ASREMS0031A	Service cooling systems and associated components	Mandatory	20
ASREMS0071A	Disassemble/assemble cylinder head and check tolerances	Mandatory	40
ASREMS0101A	Disassemble /assemble engine block and sub-assemblies and evaluate components/check tolerances	Mandatory	40
ASREGS0011A	Perform routine servicing of petrol fuel systems	Mandatory	10
ASREES0011A	Perform routine inspection and testing of faulty electrical system component/unit	Mandatory	5
ASREES0031A	Carry out minor repairs to electrical wiring/lighting /warning systems	Mandatory	20
ASRCOR0032A	Apply basic motor vehicle trouble shooting processes	Mandatory	5
ASRCOR0042A	Identify common automotive parts and products	Mandatory	*****
ASRCOR0062A	Participate in a team to achieve designated tasks	Mandatory	5
ASRCOR0072A	Work with colleagues and customers	Mandatory	5
ASRCOR0092A	Perform related computations	Mandatory	20
ASRCOR0102A	Write technical reports (basic)	Mandatory	40
MEMCAC0012A	Perform technical computations - general	Mandatory	40
ASREMS0012A	Repair engines and associated engine components	Mandatory	20
ASREMS0052A	Disassemble cylinder heads and evaluate components	Mandatory	10
ASREMS0062A	Assemble cylinder heads and carry out relevant testing procedures	Mandatory	20
ASREMS0072A	Repair cooling systems and associated components	Mandatory	20
ASREGS0012A	Repair and tune petrol fuel systems	Mandatory	20
ASREES0082A	Repair ignition systems	Mandatory	20
ASREGS0052A	Service and maintain diesel fuel injection systems	Mandatory	20
ASRSSH0051A	Balance wheel assembly	Elective	10
ASRCOR0101A	Carry out basic mechanical cutting operations	Elective	20

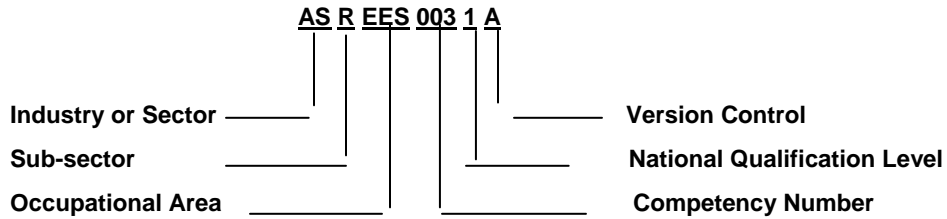
**CCASR20307 Level II in Motor Vehicle Engine Systems**

<b>Unit Number</b>	<b>Unit Title</b>	<b>Mandatory/ Elective</b>	<b>Hours</b>
ASRSSH0011A	Perform basic inspection of steering and suspension system	Elective	5
ASRSSH0021A	Remove service and replace steering and suspension system components	Elective	10
ASRSSH0091A	Prepare for wheel alignment operations	Elective	5
ASRTRN0011A	Prepare for manual/automatic transmission service/repair	Elective	5
ASRTRN0021A	Remove/refit/replace manual transmission and drive train system components/unit from vehicle	Elective	10
ASRTRN0031A	Service clutch, CV joints and final drive assemblies and or associated components	Elective	20
ASRBRK0011A	Perform routine inspection of brake system component/unit	Elective	5
ASRBRK0031A	Service disc/hydraulic braking systems	Elective	10
MEMCOR0101A	Prepare basic engineering drawing	Elective	40
MEMFAB0151A	Prepare for oxyacetylene/metal arc welding processes	Elective	20
ITICOR0011A	Carry out data entry and retrieval procedures	Elective	40
MEMFAB0051A	Perform brazing and/or silver soldering	Elective	20
ASREMS0032A	Disassemble engine block and sub-assemblies and evaluate components	Elective	20
ASREMS0042A	Assemble engine block and sub-assemblies check tolerances and carry out relevant testing procedures	Elective	40
ASREMS0082A	Carry out radiator repairs	Elective	20
ASREES0022A	Repair electrical systems	Elective	20
ASREES0052A	Install, test and repair electrical circuit/lighting systems	Elective	10
ASREES0062A	Install, test and repair electrical security system/components	Elective	10
ASREES0092A	Service and repair electronic engine management systems	Elective	10
ASREES0122A	Service and repair electronically controlled anti-lock braking systems	Elective	10
ASREES0132A	Service and repair charging and starting systems/components	Elective	20
ASREGS0062A	Repair diesel fuel systems/components	Elective	20
ASRACS0022A	Service air-conditioning system	Elective	10
ASRACS0032A	Service and repair air compressors/components	Elective	10
ASRACS0042A	Repair/retrofit air-conditioning systems	Elective	10
BSBSBM0012A	Craft personal entrepreneurial strategy	Elective	50
ASRACS0072A	Install air conditioning systems	Elective	10
ASRCOR0013A	Purchase parts/components/materials	Elective	10
ASRCOR0133A	Monitor stock levels to maintain enterprise activities	Elective	10
ASRCOR0143A	Inspect vehicle systems/components and determine preferred repair action	Elective	10
ASRCOR0173A	Carry out diagnostic procedures	Elective	10

To achieve this qualification ALL Mandatory competency plus a minimum of two (2) Level one elective three (3) Level two electives and one (1) level three elective must be achieved.

**Legend to Unit Code**

Example: ASREES0031A



**Key:** COR - Mandatory; EMS - Engine Mechanical System; EGS - Engine Management System; EES - Engine Electrical/Electronic Systems; BRK - Brake Systems; SSS - Steering and Suspension System; TRN - Transmission; FAB – Fabrication; SBM -Small Business Management; BSB - Business Services (Business); ITI - Information Technology (Information)

## **ASRCOR0011A: Follow principles of Occupational Health and Safety (OH&S) in work environment**

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively perform work activities to conform to Occupational Health and Safety requirements, and applies to all individuals working in the automotive service industry.

Competency Field: Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>	<b>PERFORMANCE CRITERIA</b>
1. Follow safe work practices	1.1 Work is carried out safely and in accordance with company policy and company procedures and industry requirements. 1.2 Housekeeping is undertaken in accordance with company procedures. 1.3 Responsibilities and duties of employees are understood and demonstrated in day-to-day actions. 1.4 Personal protective equipment is worn and stored according to company procedures. 1.5 All equipment and safety devices are used according to industry requirements and company/manufacturer's procedures/instructions. 1.6 Safety signs/symbols are identified and followed as per instruction. 1.7 All manual handling is carried out in accordance with industry requirements, company procedures and National Occupational Health & Safety guidelines. 1.8 Occupational Health & Safety Commission guidelines demonstrated.
2. Report workplace hazards	2.1 Workplace hazards are identified during the course of work and reported to appropriate person according to standard operating procedures/factory act.

3. Follow emergency procedures
- 3.1 Means of contacting the appropriate personnel and emergency services in the event of an accident are demonstrated.
- 3.2 Emergency and evacuation procedure are understood and carried out when required.

## RANGE STATEMENT

This Occupational Health and Safety (OHS) unit applies to safe working practices as applied to all automotive services workplaces. Competencies to be demonstrated must be associated with performance of duties and use of specialist skills. This unit and these standards do not cover the skills of emergency teams such as fire fighting, first aid officer etc .

Unsafe Situations may include but not limited to:

- sharp cutting tools and instruments
- electricity and water
- toxic substances
- damaged packing material or containers
- broken or damaged equipment
- inflammable materials and fire hazards
- lifting practices
- spillages
- waste and debris
- especially on floors
- ladders
- trolleys
- glue guns/burns

Quality Assurance requirements may include:

- working environment/fellow workers
- adverse weather conditions
- protection of work personnel
- protection of public

Emergency procedures include:

- fire fighting
- medical and first aid
- evacuation

Safety responsibilities apply to:

- personal protection
- safe interactive work practices (duty of care)
- Occupational Health and Safety (OHS) regulations
- National Environment and Planning agency (NEPA) regulations/guidelines

Personal protective equipment may include but is not limited to:

- overalls, safety glasses/goggles, hard hat cap
- dust masks/respirator, gum boots
- ear plugs/muffs



## EVIDENCE GUIDE

Competency is to be demonstrated by safely and effectively carrying out safe work practices within the range of variables statement relevant to the work orientation

### (1) Critical Aspects of Evidence

It is essential that competence is observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
- demonstrate application of organizational policies and procedures including Quality Assurance requirements where applicable
- carry out correct procedures prior to and during work activities
- safe and effective operational use of tools, plant and equipment
- carry out appropriate applications in accordance with regulatory and legislative requirements

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- basic level of ability in speaking
- basic level in reading & writing English
- emergency procedures
- workplace and equipment safety requirements
- general knowledge of common automotive terminology
- working knowledge of safe manual/material handling requirements
- relevant guidelines, regulations and codes of practice
- company policy and reporting procedures

#### Skills

The ability to:

- work safely to instructions
- use tools and equipment safely
- select and use material equipment and tools to standards
- perform basic emergency procedures
- communicate effectively

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off -job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities .

**(6) Context of Assessment**

This unit may be assessed on the job, off the job, or a combination of both. Aspects of this unit will need to be assessed in a work situation.

The context in which the OH & S principles are applied should be consistent with the individual's field of work. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.



## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"><li>Carries out established processes</li><li>Makes judgement of quality using given criteria</li></ul>	<ul style="list-style-type: none"><li>Manages process</li><li>Selects the criteria for the evaluation process</li></ul>	<ul style="list-style-type: none"><li>Establishes principles and procedures</li><li>Evaluates and reshapes process</li><li>Establishes criteria for evaluation</li></ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.



## ASRCOR0021A: Undertake interactive workplace communication

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively undertake interactive communication at the workplace, and applies to all individuals working in the automotive service industry

Competency Field:

Automotive Service and Repairs

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

- |    |  |     |   |
|----|--|-----|---|
| 1. | Communicate information about tasks, processes, events or skills   | 1.1 | Information about tasks, processes, events or skills are communicated.  |
|    |  | 1.2 | Multiple operations involving several topics/areas are communicated.  |
|    |  | 1.3 | Listening is undertaken without continuous interruptions of the speaker.  |
|    |  | 1.4 | Questions are used to gain extra information.   |
|    |  | 1.5 | Correct sources of information are identified.  |
|    |  | 1.6 | Information is selected and sequenced appropriately.  |
|    |  | 1.7 | Verbal and written reporting undertaken where required.   |
|    |  | 1.8 | Communication is demonstrated in both familiar and unfamiliar situations and to familiar and unfamiliar individuals and groups. |
| 2. | Take part in group discussion to achieve appropriate work outcomes | 2.1 | Responses sought and provided to others in the group.   |
|    |  | 2.2 | Constructive contributions are made in terms of the production process involved.  |
|    |  | 2.3 | Goals and aims are communicated.  |

## RANGE STATEMENT

This unit covers competencies needed for situations where employees must collectively undertake a task eg: three or four assemblers co-operating to assemble a product, a trade's person who has to attend a service call, or a group of process workers who undertake a similar task in close proximity to each other.

Techniques that could be used as the subject of communication includes but is not limited to:

- sketches
- drawings
- charts and maps
- telephone
- sketches
- production schedules
- written machine or job instructions
- client instructions
- face to face
- signage
- memos
- work schedules/work bulletins
- written report

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective use of methods of communication relating to instructions, information sources and meeting procedures listed within the range statement relative to the work orientation.

### (1) Critical Aspects of Evidence

This unit should be assessed in conjunction with other specialisation or core units and not in isolation. The assessment should be linked with performance of normal workplace activities where the competency covered by this unit is demonstrated concurrently with other core or elective competencies. The communication tasks may be related to any aspect of the job, interacting with team members, receiving instructions, reporting and any other activity that requires communication with individuals or groups.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to undertake interactive workplace communication
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- use accepted motor vehicle repairs techniques, practices, processes and workplace procedures

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- basic level of ability in speaking
- basic level in reading (reading, interpreting and applying routine texts in the workplace)
- basic level in writing English (writing short routine texts using correct spelling, punctuation and grammar)
- basic numeracy( interpreting and conveying work place information)
- work place safety requirements the use of work schedules, charts, work bulletins and memos

Skills

The ability to:

- work safely to instructions - (writing, reading and understanding workplace documents) convey information in simple English to invoke correct actions - (conveying and receiving workplace information)
- Basic numeracy means the ability to perform simple arithmetic using whole numbers applying the four basic rules of addition, subtraction, multiplication and division.
- The unit however does not refer to competence in English but in communication. English language ability should be professionally assessed

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to :

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off -job training related to this unit

**Method of Assessment (Cont'd)**

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section manager, supervisor or equivalent
- examples of communication activities in which applicant has contributed, or worked on
- training courses on interactive communication
- examples of authenticated assessments and/or assignments from formal education courses
- self assessment reports
- simulation

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The communication activities undertaken should be consistent with the individual's field of work and be based on interaction with others related to workplace tasks and procedures, tools, equipment, materials and documentation relevant to that field of work. The competencies covered by this unit should be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0031A: Plan to undertake a routine task**

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively plan to undertake a routine task and applies to all individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repairs

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

1. Identify task requirements	1.1	Instructions as to procedures are obtained, understood and where necessary clarified.
	1.2	Relevant specifications for task outcomes are obtained, understood and where necessary clarified.
	1.3	Task outcomes are identified.
	1.4	Task requirements such as completion time and quality measures are identified.
2. Plan steps required to complete task	2.1	Based on instructions and specifications provided, the individual steps or activities required to undertake the task are understood and where necessary clarified.
	2.2	Sequence of activities required to be completed, is identified in plan.
	2.3	Planned steps and outcome are checked to ensure conformity with instructions and relevant specifications.
3. Review plan	3.1	Outcomes are identified and compared with (planned) objectives, task instructions, specifications and task requirements.
	3.2	If necessary, plan is revised to better meet objectives and task requirements.

## RANGE STATEMENT

This unit applies to the activities related to planning to undertake a routine task. The task and associated planning activity are carried out under supervision. The plan may or may not be documented. The task involves one or more steps or functions carried out routinely on a regular basis. The planning activity does not require the exercise of judgement as to priorities or time limitations; it requires that precise information provided in the instructions be accurately followed, steps in the process be completed in the appropriate sequence and that the time limits specified are met.

Instructions may include but not limited to:

- standard operation sheets
- clear specifications and requirements
- quality and time allowances
- standard operating procedures

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective use of planning activities relating to instructions, information sources and meeting procedures listed within the range statement relative to the work orientation

### (1) Critical Aspects of Evidence

This unit should be assessed in conjunction with other specialisation or core units and not in isolation. The assessment should be linked with performance of normal workplace activities where the competency covered by this unit is demonstrated concurrently with other core or elective competencies. The assessment of this competency may be associated with the assessment of core or elective units that require planning for undertaking a routine task in the individual's field of work.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to plan to undertake a routine task
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- perform all tasks in accordance with standard operating procedures
- perform all tasks to specification
- use accepted engineering techniques, practices, processes and workplace procedures

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- basic level of ability in speaking
- basic level in reading
- basic level in writing English
- basic numeracy
- task requirements
- work place operating procedures
- the use of work schedules, charts, work bulletins and memos

Skills

The ability to:

- work safely to instructions
- convey information in simple English to invoke correct actions
- apply quality procedures
- read and interpret simple drawings, and specifications
- plan a routine task
- undertake a routine task

Basic numeracy means the ability to perform simple arithmetic using whole numbers applying the four basic rules of addition, subtraction, multiplication and division. The unit however does not refer to competence in English but in communication. English language ability should be professionally assessed

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.



**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The communication activities undertaken should be consistent with the individual's field of work and be based on interaction with others related to workplace tasks and procedures, tools, equipment, materials and documentation relevant to that field of work. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

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Level 1.	Level 2.	Level 3.
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Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0041A: Perform routine housekeeping duties

### Competency Descriptor:

This unit deals with the skills and knowledge required to effectively perform routine housekeeping duties in a safe and environment friendly manner. It applies to individuals working in the automotive service industry.

### Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Plan, prepare and organise work area	1.1	OH&S requirements associated with application tasks and workplace environment are recognised and adhered to.
		1.2	Appropriate personal protective equipment are selected, correctly fitted and used.
		1.3	Site policies and procedures for tidying of work area and surrounds are applied.
		1.4	Tools and equipment for handling materials/goods, non -toxic waste, are selected and consistent with job requirements.
		1.5	Tools and equipment for handling materials/goods, non -toxic waste is checked for serviceability and any faults reported to supervisor.
2.	Correctly manual handle, sort and stack material	2.1	Common automotive materials are recognised and selected for sorting and stacking/stockpiling to supervisor's instructions and/or specifications.
		2.2	Handling characteristics of materials are identified and appropriate handling techniques applied.
		2.3	Specific handling requirements for hazardous materials are applied.
		2.4	Materials are stored, stacked/stockpiled and protected, clear of trafficways, so they are easily identified, retrieved and not damaged.
		2.5	Appropriate signage and barricades are erected where applicable to isolate stored materials from workplace traffic or access.
		2.6	Correct manual handling techniques are used.

3.	Prepare for mechanical handling of materials	3.1	Materials are stacked/banded for mechanical handling in accordance with type of material and plant/equipment to be used.
		3.2	Rigger is assisted with loading, unloading, moving, locating and/or installing materials.
		3.3	Materials are safely handled with assistance of pallet trolley, forklift or hoist.
4.	Handle and remove waste safely	4.1	Waste materials are handled correctly and safely according to OH&S and requirements of regulatory authorities.
		4.2	Hazardous material are identified for separate handling.
		4.3	Non-toxic materials removed using correct procedures.
		4.4	Dust suppression procedures are used to minimise health risk to work personnel and others.
5.	Clean up	5.1	Tools and equipment are cleaned, maintained, and stored.
		5.2	Equipment and consumable materials are maintained and stored correctly after use.
		5.3	Spills, waste, or other potential hazards are removed from floors.
		5.4	Waste materials are disposed of safely.
		5.5	Site is cleaned and cleared of debris and unwanted material.

## RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables 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

Sources of information/documents

- site policy procedures for routine housekeeping practices
- company operating procedures
- customer service requirements
- industry/workplace codes of practice



Resources may include:

- types of tools
- equipment
- material

Protection of stacked/stored materials may include:

- covering
- tying or banding
- barricades
- signs
- locked away (hazardous materials)

House keeping methods may include:

cleaning benches  
sinks preparation areas walkways fixtures and other working surfaces

Dust suppression procedures may include:

- spraying with water
- covering
- use of vacuum cleaner

Removal of materials to include processes of recycling and salvage where applicable.

OH&S requirements to be in accordance with (Statutory/National) legislation and regulations.

Work to be undertaken as part of a team or individually under supervision of appropriately certificated persons where applicable.

Reporting of faults may be verbal or written.

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective handling and storing/stacking of appropriate construction materials listed within the range of variables statement, relevant to the work orientation.

### (1) Critical Aspects and Evidence

It is essential that competence is observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations and National legislations applicable to workplace operations
- indicate compliance with organisational policies and procedures including Quality Assurance requirements
- carry out correct procedures prior to and during application of materials handling processes
- demonstrate safe and effective operational use of tools and equipment
- demonstrate safe application in the process of cleaning up
- interactively communicate with others to ensure safe and effective operations

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements including relevant codes and regulation
- hand tools and equipment
- materials
- materials handling
- quality Assurance
- range of communication mediums (verbal and non-verbal)

Skills

The ability to:

- work safely to instructions
- use hand and portable tools
- handle materials
- identify/select material
- measure
- communicate effectively
- dispose of material safely
- use disposal equipment and tools as required

**(4) Resource Implications**

The following resources should be made available:

- general materials and consumables relative to motor vehicle repairs processes
- plant and equipment appropriate to handling processes
- hand tools appropriate to handling processes
- suitable work area appropriate to motor vehicle repair process
- OHS information

**(5) Method of Assessment**

Competency shall be assessed while work is being done under direct supervision with regular checks, but may include some autonomy when working as part of a team.

Competency in this unit may be determined concurrently, based on integrated project work.

Assessment may be by intermittent checking at the various stages of the job application in accordance with the performance criteria, or may be at the completion of each process.

**(6) Context of Assessment**

Competency shall be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.



## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"><li>Carries out established processes</li><li>Makes judgement of quality using given criteria</li></ul>	<ul style="list-style-type: none"><li>Manages process</li><li>Selects the criteria for the evaluation process</li></ul>	<ul style="list-style-type: none"><li>Establishes principles and procedures</li><li>Evaluates and reshapes process</li><li>Establishes criteria for evaluation</li></ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0051A: Use and maintain workplace tools and equipment

Competency Descriptor:

This unit deals with skills and knowledge required to competently use and maintain workplace tools and equipment of the automotive service trade, and applies to all individuals in the industry

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Use hand tools	1.1 Selected appropriate hand tools according to the task requirements. 1.2 Hand tools are used to produce desired outcomes to job specifications which may include finish, tension, size or shape. 1.3 Adhered to all safety requirements before, during and after use of hand tools. 1.4 Unsafe or faulty tools are identified and marked for repair according to designated procedures. 1.5 Undertook routine maintenance of tools, including hand sharpening according to standard operational procedures, principles and techniques. 1.6 Hand tools are stored safely in appropriate location according to standard operational procedures and manufacturer's recommendations.
2. Use power tools	2.1 Appropriate power tools are selected according to the task requirements. 2.2 Power tools used followed a determined sequence of operations which may include clamping, alignment and adjustment to produce desired outcomes to job specifications which may include finish, size or shape. 2.3 All safety requirements are adhered to before, during and after use. 2.4 Unsafe or faulty tools are identified and marked for repair according to designated procedures before, during and after use.

- 2.5 Operational maintenance of tools is undertaken according to standard workplace procedures, principles and techniques.
- 2.6 Power tools are stored safely in appropriate location according to standard workshop procedure and manufacturer's recommendations.
- 3. Use equipment
  - 3.1 Appropriate equipment is selected according to the task requirements.
  - 3.2 Equipment used followed a determined sequence of operations.
  - 3.3 All safety requirements are adhered to before, during and after use.
  - 3.4 Unsafe or faulty equipment are identified and marked for repair according to designated procedures before, during and after use.
  - 3.5 Equipment is regularly checked against manufacturer's recommendations to ensure safe operating condition.
  - 3.6 Equipment is stored safely in appropriate location according to standard workshop procedure and manufacturer's recommendations.

## RANGE STATEMENT

Work undertaken under supervision or in a team environment using predetermined standards of quality, safety and workshop procedures involving the use of various hand tools for applications, maintenance tasks and the finishing of items or components metallic and non-metallic material to size and shape using engineering principles, tools, equipment and procedures.

Hand tools may include but not limited to:

- hacksaws
- hammers
- punches
- screwdrivers
- sockets
- wrenches
- scrapers
- chisels
- gouges
- wood planes
- files of all cross-sectional shapes and types

Equipment may include but not limited to:

- special equipment for removal/adjustment
- plastic repair equipment
- sealing equipment
- heating equipment
- vehicle cleaning equipment
- fuel injector cleaners
- brake and drum lathes
- ignition module test instruments



Power tools may include but not limited to electric or pneumatic:

- drills
- grinders
- jigsaws
- nibblers
- cutting saws
- threading machine
- sanders
- planers
- routers
- pedestal drills
- pedestal grinders

Applications may include power tools used for:

- adjusting
- dismantling
- assembling
- finishing
- cutting
- scraping
- threading
- cleaning
- lubricating
- tightening
- simple tool repairs
- hand sharpening
- adjustments

Applications may include hand tools used for:

- adjusting
- dismantling
- assembling
- finishing
- cutting
- scraping
- cleaning
- lubricating
- tightening
- simple tool repairs
- hand sharpening
- adjustments

Applications may include equipment used for:

- adjusting
- dismantling
- assembling
- finishing
- cutting
- scraping
- cleaning
- lubricating
- tightening
- simple tool repairs
- hand sharpening
- adjustments

## EVIDENCE GUIDE

Competency is to be demonstrated by the safe and effective use and maintain workplace tools and equipment listed within the range of variables statement relevant to the work orientation.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the use of hand tools or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to use hand tools
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all tasks to specification
- use accepted motor vehicle techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- workplace and equipment safety requirements and OH&S guidelines
- work shop procedures
- technical applications
- hand tools related to auto service and repairs
- power tools related to auto service and repairs
- equipment related to auto service and repairs
- materials/consumables/motor vehicle handling whilst operating tools and equipment

#### Skills

The ability to:

- work safely to instructions
- apply appropriate hand-eye co-ordination in the use of tools and equipment
- handle/hold materials/consumables/motor vehicle during operation of tools and equipment
- select appropriate tools and equipment for usage
- communicate effectively
- use tools/equipment correctly

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job, or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASRCOR0061A: Use and maintain measuring devices

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively measure and maintain measuring devices, and applies to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repairs

### ELEMENT OF COMPETENCY

### PERFORMANCE CRITERIA

1. Use a range of devices to measure/determine dimensions or variables	1.1	Selected appropriate device or equipment to achieve required outcome.
	1.2	Used correct and appropriate measuring technique.
	1.3	Measured accurately to the finest graduation of instrument, as appropriate to field or area.
2. Maintain measuring devices	2.1	Undertook routine care and storage of devices to manufacturer's specification or standard operating procedure.
	2.2	Check and makes routine adjustments to devices eg "zeroing".

### RANGE STATEMENT

This unit applies to work undertaken in the field, workstation or workshops. Work can be undertaken under supervision or part of team environment. This unit covers measurement skills requiring straightforward application of the measuring device and may utilise the full range of graduations of measuring device.

Measuring devices may include but not limited to:

- verniers
- feeler gauges
- pressure gauges
- squares
- levels
- micrometers
- dial indicators
- thermometers
- measuring tapes
- protractors

Measurements undertaken may include but not limited to:

- length /width/depth
- roundness
- squareness
- flatness angle
- angles
- clearances
- measurements that can be read off analog, digital or other graduated device
- plumbness

Electrical/electronic devices used are those not requiring the connection or disconnection of circuitry. Measurements may include metric and imperial measurement. All measurements undertaken to standard operating procedures. Adjustment of measuring devices is through external means and includes zero and linear adjustment.

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective use and maintenance of measuring devices in accordance with the range listed in the range of variables statement, relevant to the work orientation.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling recording and reporting associated with the use of graduated measuring devices or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to use and maintain measuring devices
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- perform all tasks to specification
- use accepted motor vehicle repairing techniques, practices, processes and workplace procedures

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- comparison devices
- comparison measurements
- comparative measurements
- electrical/electronic devices
- basic measuring devices
- reading
- writing English
- basic numeracy

Skills

The ability to:

- follow safely to instructions
- use power tools and hand tools
- use measuring devices
- adjust measurements
- handle materials
- select material
- apply quality assurance

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

**(6) Context of Assessment**

Competency shall be assessed on the job, off the job or a combination of both in accordance with workplace procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills



## ASRCOR0071A: Draw and interpret sketches and simple drawings

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively draw and interpret sketches and simple drawings, and applies to all individuals working in the automotive service industry .

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare freehand sketch	1.1	Sketch is correctly and appropriately drawn.
		1.2	Sketch depicted object or part.
		1.3	Dimensions are obtained correctly.
		1.4	Dimensions are shown clearly.
		1.5	Instructions are shown clearly.
		1.6	Base line or datum points are indicated.
2.	Interpret details from freehand sketch	2.1	Components, assemblies or objects are recognised as required.
		2.2	Dimensions identified are appropriate to field of employment.
		2.3	Instructions are identified and followed as required .
		2.4	Material requirements are identified as required .
		2.5	Symbols are recognised as appropriate in sketch.
3.	Select correct technical drawing	3.1	Drawings are checked and validated against job requirements or equipment.
		3.2	Drawing version are checked and validated.
4.	Identify drawing requirements	4.1	Requirements and purpose of drawing are determined from customer and/or work specification and associated documents.
		4.2	Identified and collected all data necessary to produce the drawing.
		4.3	Drawing requirements are confirmed with relevant personnel and timeframes for completion established.

- |                                       |   |
|---------------------------------------|---|
| 5. Prepare or make changes to drawing | 5.1 Selected drafting equipment appropriate to the drawing method chosen.   |
|                                       | 5.2 Applied drafting principles to produce a drawing that is consistent with standard operating procedures within the enterprise. |
|                                       | 5.3 Undertook all work safely and to prescribed procedure.  |
|                                       | 5.4 Completed drawing is approved in accordance with standard operating procedures.   |

## RANGE STATEMENT

Technical drawing interpretation is applied to any of the full range of automotive maintenance disciplines.

Technical drawings may utilise any of the following techniques :

- perspective
- exploded views
- hidden view

Drawings are to be provided to industry Standards and/or their equivalents from the full range of engineering disciplines.

Standard industry symbols or equivalent and are to be recognised in the field of employment.

Alphabet of line:

- object line
- hidden line
- centre line
- section line
- dimension
- extension line
- cutting line
- short break line
- phantom line

Drawing instruments and supplies:

- drafting kit/instruments
- blue prints
- drawings/modules/photographs

Multi-view (orthographic 2-D) drawings:

- full scale (1:1) orthographic 3-view drawing using third angle projection with top, front and right side view – show all hidden features and centrelines

Measurement systems:

- inch/foot system
- metric(SI) system

Geometric construction to include:

- circles
- regular polygons with four, seven and eight sides
- pentagon inscribed within measured circle
- ellipse
- triangles with specified angles
- arcs thru three points; tangent to two circles

Pictorial (3-D) drawing to include:

- isometric corner with left and right side lines each 30 degrees up from horizontal and third line at a vertical, with all three lines joining in a common intersection
- full scale (1:1) basic isometric drawing

Dimension reading:

- dimensioning styles and methods: co-ordinate, linear/datum
- dimensioning 2-D drawing
- dimensioning complex shapes: spheres, cylinders, tapers, pyramids

## EVIDENCE GUIDE

Competency is to be demonstrated by developing and effectively reading and interpreting simple drawings and sketches to locate or identify specified features or specifications in accordance with the performance criteria and the range listed within the range statement.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the drawing and interpretation of exercise of the sketches or other units requiring the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate the ability to identify, understand, read and interpret various types of technical drawings
- demonstrate the ability to identify alphabet of lines, scales, lettering, dimensions, symbols, abbreviations and key features
- demonstrate the ability to identify title panel and reference date of drawings
- take responsibility for the quality of their own work;
- perform all tasks in accordance with standard drafting procedures;
- use accepted engineering techniques, practices, processes and workplace procedures

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- types and use of drawing instruments and supplies
- identification of alphabet of lines, line type variation, order of usage and application on drawings
- types of scale and proportion and how they are used for measurement
- symbols, dimensions and terminology
- types of drawings and their applications

Skills

The ability to:

- estimate measurements
- read and interpret simple drawings
- draw sketches and simple drawings
- measure accurately
- communicate effectively

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off -job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

**(6) Context of Assessment**

Competency should be assessed in a classroom environment in accordance with work practices and industry procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0081A: Perform related computations – (basic)**

## Competency Descriptor:

This unit deals with the skills and knowledge required to perform basic computations and effectively carry out measurements of work to required tolerance, and applies to all individuals working in the automotive service industry.

## Competency Field:

Automotive service and repairs

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

1.	Applies four basic rules of calculation	1.1	Performed simple calculations using the four basic rules, addition, subtraction, multiplication and division.
		1.2	Performed simple calculations involving length, perimeter, angles, area and volume.
2.	Performs basic calculations involving fractions and decimals	2.1	Performed simple calculations involving fractions and mixed numbers using four basic rules.
		2.2	Performed simple calculations involving decimal fractions and mixed numbers using four basic rules.

**RANGE STATEMENT**

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables 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

Computations performed in an appropriate application for the industry in which the person is working. Skills may be demonstrated in relation to:

- measurement
- statistical application
- ratio and proportion
- estimation
- calculations with fractions and decimals
- interpretation of drawings
- interpretation of diagrams
- interpretation of mathematical statements and formulae
- interpretation of numbers and arithmetic operations

Basic numeracy skills below those described in this unit are not covered in these standards and are assumed to be held on entry to the industry. Basic numeracy means the ability to:

- perform simple arithmetic using whole numbers
- apply the four basic rules of:
  - addition
  - subtraction
  - multiplication
  - division

Calculations may be performed using:

- pen
- paper
- calculator
- protractor

This unit applies to simple projects applicable to:

- Service
- installation
- maintenance and repairs

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective calculation of measurements and calculation of materials in accordance with range of variables statement relevant to the work orientation.

### (1) Critical Aspects of Evidence

During assessment the individual will:

- take responsibility for the quality of their own work
- perform computations in accordance with standard principles
- apply the four basic rules of calculations
- performs basic calculations involving fractions and decimals
- perform computations accurately
- use accepted motor vehicle repair techniques, practices, processes and workplace procedures

All must be associated with the calculations and computations being performed or other units requiring the exercise of the skills and knowledge covered by this unit.

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- drawings and specifications
- basic operations in simple geometry,
- measurement and calculations
- costing relative to the automotive trade processes
- numbers and arithmetic operations
- calculations with fractions and decimals
- estimation and measurement
- percentages (some applications)
- ratio and proportion (some applications)
- basic statistics (data, tables, graphs and sales)
- mathematical statements and formulae

Skills

The ability to:

- read and interpret drawings
- measure and calculate manually
- record measurements
- operate electronic calculating devices
- communicate effectively

**(4) Resource Implications**

The following are required:

- a workplace or simulated workplace
- relevant documentation, such as enterprise or sample records, invoices, statements, stock records, job cards, repair quotations, personnel records, time sheets, supply quotations
- equipment for calculations, such as calculators, adding machines or computers
- a qualified workplace assessor

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- present evidence of credit for any off-job training related to this unit

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0091A: Perform manual handling and lifting

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively manually handle materials as applies to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repairs

### ELEMENT OF COMPETENCY

### PERFORMANCE CRITERIA

1. Lift materials manually	1.1	Material weight is determined correctly utilising most appropriate technique.
	1.2	Lifting techniques are undertaken to safe work standards and standard operating procedures.
2. Move/shift materials manually	2.1	Appropriate equipment is selected where required.
	2.2	Material is placed safely and securely on moving equipment.
	2.3	Material is relocated ensuring safety of personnel and security of material.
	2.4	Material is unloaded from moving equipment and placed in a safe and secure manner.

### RANGE STATEMENT

Work undertaken under supervision or in a team environment. Material weight is determined utilising scales or interpreting signage. Maximum manual lifting weight limited to safe work standards. All work and work practices undertaken to regulatory and standard requirements and standard operating procedures where applicable.

Moving/shifting equipment may include but not limited to:

- hand trolleys
- wheelbarrows
- motorised/hand pallet trucks (not sit on),
- hand carts
- dedicated production or process lifting equipment
- baskets
- spreader bars
- cradles or the like attached to lifting equipment
- rope

## EVIDENCE GUIDE

Competency is to be demonstrated by safely and effectively manually handling materials in accordance with the range listed within the range of variables statement.

### (1) Critical Aspects of Evidence

It is essential that competence be observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
- show compliance with organizational policies and procedures including Quality Assurance requirements
- adopt and carry out correct procedures prior to handling materials
- demonstrate safe and effective operational use of lifting equipment, tools, and attachments
- demonstrate correct procedures in manual handling
- give particular attention to safety and elimination of hazards
- demonstrate safe handling of material
- interactively communicate with others to ensure safe operations
- demonstrate effective handling technique to produce designed outcome

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling recording and reporting associated with manual handling or other units requiring the exercise of the skills and knowledge covered by this unit.

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements including relevant OH&S guidelines and regulations
- basic reading
- basic numeracy
- material classification
- manual handling technique(s)/methods
- handling processes
- material identification, transportation and storage
- handling tools and equipment
- materials preparation
- manual handling
- weight determination
- drawings, sketches, signage and instructions

Skills

The ability to:

- work safely to instructions
- communicate effectively
- interpret related drawings signage and instructions
- use handling tools and equipment
- identify/select material
- identify/select handling method
- handle material, tools and equipment
- determine weights
- identify/select materials relative to transportation and storage methods
- manual handle material/equipment efficiently

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0111A: Carry out bench work fitting operations

### Competency Descriptor:

This unit deals with the skills and knowledge required to effectively carry out bench work fitting operations as applies to individuals working in the automotive services industry.

### Competency Field:

Automotive Services and Repairs

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

1. Select and set up forming/shaping equipment for a specific operation	1.1 Most appropriate tools and equipment are selected.
	1.2 Equipment is correctly set up and adjusted for operation.
	1.3 Allowances for shrinkage, thickness are correctly made.
2. Operate forming/shaping equipment	2.1 Machine is safely started up and shut down.
	2.2 Material and safety guards are correctly positioned.
	2.3 Equipment is correctly operated and adjusted.
3. Form and shape material	3.1 Material is levelled, straightened, rolled, pressed or bent to specifications/drawings.
	3.2 Correct hot or cold forming procedures are followed.
	3.3 Final form/shape is checked for compliance to specification and adjusted as necessary to standard operating procedure.

### RANGE STATEMENT

Work may be undertaken under supervision or as part of a team. P redetermined standards of quality and safety are observed and work is carried out following standard operating procedures.

A wide range of shapes and products are formed which may include but not limited to:

- pipe-work chamfers
- cylinders
- cones
- angles
- "square to round" "transitions"
- "all forms of tubular shapes
- reticulation pipe-work, mufflers et

Forming, shaping and bending operations may be conducted on:

- plate
- section or sheet
- tube
- pipes
- components

A variety of tools and equipment may be used including

- presses
- shapers
- vices
- benders
- drop hammers

Materials may include:

- ferrous and non ferrous
- non-metallic substances

## EVIDENCE GUIDE

Competency is to be demonstrated by safely and effectively undertaking fabrication, forming, bending and shaping operations in accordance with the range listed within the range of variables statement.

### (1) Critical Aspects of Evidence

It is essential that competence be observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
- show compliance with organizational policies and procedures including Quality Assurance requirements
- adopt and carry out correct procedures prior to undertaking fabrication, forming, bending and shaping processes
- demonstrate correct procedures in setting up
- demonstrate safe and effective operational use of tools, plant and equipment
- forming, bending and shaping equipment
- give particular attention to safety and elimination of hazards
- demonstrate safe handling of material and tools
- interactively communicate with others to ensure safe operations
- demonstrate effective fabrication, forming, bending and shaping technique to produce designed outcome

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the forming and shaping of fabricated components or other units requiring the exercise of the skills and knowledge covered by this unit.

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational health and safety (OH&S) in work environment
- ASRCOR0071A Draw and interpret sketches and simple drawing
- ASRCOR0051A Use and maintain workplace tools and equipment

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements including relevant OH&S guidelines and regulations
- fabrication, forming, bending and shaping technique
- fabrication, forming, bending and shaping equipment
- hand tools and equipment
- materials /consumables relative to fabrication, forming, bending and shaping procedures
- materials preparation
- manual handling
- measurement
- technical drawings, sketches and instructions

Skills

The ability to:

- work safely to instructions
- interpret related drawings and instructions
- use power tools and hand tools
- select material and equipment
- measure relative to fabrication, forming, bending and shaping processes
- communicate effectively
- fabricate, form, bend and shape efficiently

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working under supervision or as part of a team. The assessment environment should not disadvantage the candidate .

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**MEMCAC0011A: Perform technical computations (Basic)**

## Competency Descriptor:

This unit deals with the skills, knowledge and attributes required to explore mathematical principles and techniques which are applicable to engineering and maintenance activities. The candidate is required to use numerical techniques to solve problems in related trade situations.

Competency Field: Calculations and Computations

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Use the rules of addition, subtraction, multiplication and division of decimal fractions to solve related trade problems	1.1 Number system is used to solve problems in related trade situations. 1.2 Simple calculations are performed using four basic rules, addition, subtraction, multiplication and division. 1.3 Concepts are understood and simple calculations are performed involving rounding off. 1.4 Concepts are understood and simple calculations are performed involving changing to common fractions and vice versa. 1.5 Concepts are understood and simple calculations are performed involving use of decimal equivalent table. 1.6 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
2. Solve problems using whole numbers, fractions and decimal numbers	2.1 Simple calculations are performed using four basic rules, addition, subtraction, multiplication and division. 2.1 Concepts are understood and simple calculations are performed involving whole numbers . 2.3 Concepts are understood and simple calculations are performed involving fractions . 2.4 Concepts are understood and simple calculations are performed involving decimal numbers . 2.5 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.

- 
- |    |   |     |   |
|----|---|-----|---|
| 3. | Use percentage and ratio to solve related skill problems  | 3.1 | Concepts are understood and simple calculations using percentages are performed involving decimal numbers .   |
|    |   | 3.2 | Concepts are understood and simple calculations using percentages are performed involving fractions .   |
|    |   | 3.3 | Concepts are understood and simple calculations using percentages are performed involving whole numbers .   |
|    |   | 3.4 | Concepts are understood and simple calculations using ratio are performed involving decimal numbers .   |
|    |   | 3.5 | Concepts are understood and simple calculations using ratio are performed involving fractions .   |
|    |   | 3.6 | Concepts are understood and simple calculations using ratio are performed involving whole numbers .   |
|    |   | 3.7 | Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.  |
| 4. | Change percent to decimal or fractions and vice versa, and subsequently perform these operations on related trade problems. | 4.1 | Concepts of conversion are understood and simple calculations using percent to decimal or fractions and vice versa are performed involving cost.                            |
|    |   | 4.2 | Concepts of conversion are understood and simple calculations using percent to decimal or fractions and vice versa are performed involving wages .                          |
|    |   | 4.3 | Concepts of conversion are understood and simple calculations using percent to decimal or fractions and vice versa are performed involving related applications .           |
|    |   | 4.4 | Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.  |
| 5. | Calculate perimeters and areas of applications in related trade   | 5.1 | Concepts of calculating perimeters and areas are understood and simple calculations using squares and rectangles are performed involving related applications .             |
|    |   | 5.2 | Concepts of calculating perimeters and areas are understood and simple calculations using circles (circumferences and areas) are performed involving related applications . |
|    |   | 5.3 | Concepts of calculating perimeters and areas are understood and simple calculations using trapezoids are performed involving related applications .                         |

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- 5.4 Concepts of calculating perimeters and areas are understood and simple calculations using cones are performed involving related applications .
  - 5.5 Concepts of calculating perimeters and areas are understood and simple calculations using cylinders are performed involving related applications .
  - 5.6 Concepts of calculating perimeters and areas are understood and simple calculations using triangles (hypotenuse) are performed involving related applications .
  - 5.7 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
- 6. Calculate volume of applications in related trade
    - 6.1 Concepts of calculating volume are understood and simple calculations using squares and rectangles cross section are performed involving related applications .
    - 6.2 Concepts of calculating volumes are understood and simple calculations using conical cross section are performed involving related applications.
    - 6.3 Concepts of calculating volumes are understood and simple calculations using cylindrical cross section are performed involving related applications .
    - 6.4 Concepts of calculating volumes are understood and simple calculations using triangular cross section are performed involving related applications .
    - 6.5 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
- 7. Apply angular measurement between 0 and 360 degrees with the use of a protractor
    - 7.1 Protractor is used to solve problems in related trade situations.
    - 7.2 Concepts of calculating angles are understood and simple calculations using four basic rules, addition, subtraction, multiplication and division are performed involving related applications .
    - 7.3 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.

## RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables 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

Computations performed in an appropriate application for the industry in which the person is working. Skills may be demonstrated in relation to:

- measurement
- fundamentals of general mathematics
- statistical application
- ratio and proportion
- estimation
- calculations with fractions and decimals
- interpretation of drawings
- interpretation of diagrams
- interpretation of mathematical statements and formulae
- interpretation of numbers and arithmetic operations

Basic numeracy skills below those described in this unit are not covered in these standards and are assumed to be held on entry to the industry. Basic numeracy means the ability to:

- perform simple arithmetic using whole numbers
- apply the four basic rules of:
  - addition
  - subtraction
  - multiplication
  - division

This unit applies to simple projects applicable to:

- metal fabrication
- mechanical maintenance
- electrical/electronic maintenance
- manufacturing

Calculations may be performed using:

- pen
- paper
- calculator
- protractor

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective calculation of measurements and calculation of materials in accordance with range of variables statement relevant to the work orientation.

### (1) Critical Aspects of Evidence

During assessment the individual will:

- take responsibility for the quality of their own work
- perform computations in accordance with standard principles
- apply the four basic rules of calculations
- performs basic calculations involving fractions and decimals
- perform computations accurately
- use accepted motor vehicle repair techniques, practices, processes and workplace procedures

**Critical Aspects of Evidence (Cont'd)**

All must be associated with the calculations and computations being performed or other units requiring the exercise of the skills and knowledge covered by this unit.

**(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- drawings and specifications
- basic operations in simple geometry,
- measurement and calculations
- costing relative to the trade application
- numbers and arithmetic operations
- calculations with fractions and decimals
- estimation and measurement
- percentages (some applications)
- ratio and proportion (some applications)
- basic statistics (data, tables, graphs and sales)
- mathematical statements and formulae

Skills

The ability to:

- read and interpret drawings
- apply the fundamentals of general mathematics
- measure and calculate manually
- record measurements
- operate electronic calculating devices
- perform basic technical computation
- communicate effectively

**(4) Resource Implications**

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off-job training related to this unit

Evidence of competence may be obtained through a variety of methods including:

- observation
- written questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of installation activities to which applicant has contributed, or worked on
- training courses on basic math
- examples of authenticated assessments and/or assignments from formal education courses
- self assessment reports

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team the assessment environment should not disadvantage the candidate.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.



## ASREMS0011A: Prepare for general servicing/repairing of motor vehicle

### Competency Descriptor:

This unit deals with the skills and knowledge required to effectively prepare for general servicing/repairing of motor vehicle as applies to individuals working in the automotive services industry.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Plan and prepare for general servicing, repairing of motor vehicle	1.1	Servicing is planned and prepared to ensure OH&S policies and procedures are followed.
		1.2	The work is appropriately sequenced in accordance with requirements.
		1.3	Appropriate personnel are consulted to ensure the work is co-ordinated effectively with others involved on the work site.
		1.4	Tools and consumables are checked against job requirements.
		1.5	Motor vehicle to be serviced/repared is determined from job requirements.
		1.6	Materials necessary to complete the work are obtained in accordance with established procedures.
		1.7	Tools, equipment and testing devices needed to carry out the servicing/repair work are obtained in accordance with established procedures.
		1.8	Tools, equipment and testing devices are checked for correct operation and safety.
2.	Prepare motor vehicle selected for servicing/repair work	2.1	Activities for equipment preparation are identified from specifications or supervisor's instructions.
		2.2	Motor vehicle preparation is carried out to satisfy requirements of servicing/repairing process.
3.	Prepare material/consumables selected for servicing/repair work	3.1	Activities for material/consumables usage are identified from specifications or supervisor's instructions.
		3.2	Material preparation is carried out to satisfy requirements of servicing/repairing process.

- |    |  |     |   |
|----|--|-----|---|
| 4. | Prepare work area for general repairs/servicing                            | 4.1 | Activities to be carried out in work area are identified from type of repairs/servicing and access to area. |
|    |  | 4.2 | Work area is prepared for servicing/repairing process according to supervisor's instructions.               |
| 5. | Set up tools, plant and equipment appropriate for servicing/repair process | 5.1 | Regular tools/measuring devices suitable for application process are identified to job requirements.        |
|    |  | 5.2 | Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualized under supervision to the qualification to which it is being applied:

Light motor vehicles, plant, motorcycles and marine on 2 and 4 strokes spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- relevant national OHS requirements

Resources may include:

- hand tools, power tools
- precision measuring equipment, lifting and supporting equipment
- lubricant dispensing equipment

Methods may include:

- removal
- refitting
- testing and adjusting
- servicing/repairing

Consumables may include:

- appropriate type and grade engine oil, coolant and other liquids

Methods should be applied under normal operating conditions

OH&S practices must abide by:

- Industry standards/OH&S guidelines

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of preparing for general servicing/repairing of motor vehicle.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the servicing motor vehicle engines and/or engine components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to prepare for servicing/repairing of motor vehicle
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- service procedures
- equipment/component safety requirements
- work activities related to servicing/repairing of motor vehicle
- identify types of engines and components
- personal safety requirements
- OHS requirements

#### Skills

The ability to:

- access interpret and apply technical information
- use relevant tools and equipment safely
- service engines and/ or associated components
- apply personal safety requirements
- apply OHS requirements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant operating and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASREMS0021A: Service engines and associated engine components

Competency Descriptor:

This unit identifies the skills and knowledge required to carry out the servicing of engines and associated engine components for light motor vehicle

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of engines and associated engine components	1.1	Routine checks undertaken demonstrate knowledge of the principles of engine system and associated components.
		1.2	The main parts of designated engine system and associated components are correctly identified.
		1.3	Engine and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Engine and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
2.	Service engines and/or engine components	2.1	Service to engines and/or engine components is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacture specifications.
		2.3	Appropriate workplace documentation is completed and dealt with relevant to service outcomes.
		2.4	Service operations of an engine are completed within manufacturer's guidelines.
		2.5	Service activities are carried out according to industry regulations/guidelines.
3.	Perform final checks	3.1	Engines and/or engine components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2	Engines and/or engine components are checked after adjustment is done.

- |    |     |   |
|----|-----|---|
|    | 3.3 | Assembly is prepared for commissioning and conformance to specifications. |
|    | 3.4 | Service report is completed by appropriate means.                         |
| 4. | 4.1 | Clean up area<br>All waste material is removed and disposed of.           |
|    | 4.2 | Area related to work activities is cleaned.                               |
|    | 4.3 | Tools and equipment are cleaned, maintained and stored.                   |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied:

Light motor vehicles, motorcycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, power tools
- precision measuring equipment, lifting and supporting equipment
- lubricant dispensing equipment
- safety and protective devices

Work Activities may include:

- removing, inspecting and replacing drive belt(s)
- removing and fitting new radiator and pressure cap
- draining, flushing and refilling system with recommended coolant/lubricant
- performing battery load test and emergency jump start on motor vehicle
- removing and replacing ignition system components

Methods may include:

- removal
- refitting
- testing and adjusting

Methods should be applied under normal operating conditions

Associated components may include:

- lubrication systems
- ignition system
- cooling system

OH&S practices must abide by:

- Industry standards/OH&S guidelines

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of servicing engines and/or engine components.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the servicing of engines and/or engine components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service engines and/or engine components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties



**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- service procedures for engines and associated components
- techniques for servicing engines and associated components
- equipment/component safety requirements
- principles of engine/components operations
- identify types of engines and components
- personal safety requirements
- basic language and literacy
- basic numeracy
- basic reading and writing

Skills

The ability to:

- access interpret and apply technical information
- use relevant tools and equipment safely
- service engines and/ or associated components
- apply personal safety requirements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant operating and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASREMS0031A: Service cooling systems and associated components

Competency Descriptor:

This unit identifies the skills and knowledge required to carry out the servicing of cooling systems and associated components for light motor vehicle

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of cooling systems and associated components	1.1 Routine checks undertaken demonstrate knowledge of the principles of cooling systems and associated components.  1.2 The main parts of designated cooling systems and associated components are correctly identified.  1.3 Cooling system and components are checked for related malfunctions Using appropriate maintenance principles, techniques, procedures tools and equipment .  1.4 Cooling systems and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means .
2. Service cooling systems and/or associated components	2.1 Service to cooling systems and/or associated components is completed without causing damage to any component or system.  2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.  2.3 Cooling systems and associated components are serviced in accordance with manufacturer specifications.  2.4 Appropriate workplace documentation is completed and dealt.  2.5 All cooling systems and/or component removal/replacement activities are carried out according to industry regulations/guidelines, OH&S guidelines, standard requirements and company procedures/policies.
3. Final checks	3.1 Cooling systems and/or components are adjusted to suit specifications and operational requirements.  3.2 Cooling systems and/or components are checked after adjustment is done.

- 3.3 Assembly is prepared for commissioning in conformance to specifications.
- 3.4 Service report is completed by appropriate means.
- 4. Clean up area
  - 4.1 All waste material is removed and disposed of same.
  - 4.2 Area related to work activities is cleaned up.
  - 4.3 Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This unit of competency applies to the following and should be contextualised under supervision to the qualification to which it is being applied:

Light motor vehicles, motor cycles, marine and outdoor power with fluid cooled systems, air cooled systems and combination systems.

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, power tools
- pressure testers, lifting and supporting equipment
- lubricant dispensing equipment
- safety and protective devices

Specialised equipment:

- thermometer
- heat source
- Ph tester
- anti freeze/rust inhibitor tester
- reverse flushing equipment
- pressure tester
- multimeter

Methods of assessments may include:

- visual
- aural
- smell
- functional

Methods should be applied under normal operating conditions.

OH&S practices must abide by:

- Industry standards/OH&S legislation

Other resources may include:

- thermostats
- water pumps
- plumbing
- ducting
- fans
- belts
- sealed and non sealed systems
- interior heater
- coolant heater manifold
- heat exchangers
- electric and viscous fans
- ferrous and non ferrous metals
- cooling system additives

Work activities may include:

- removing and replacing engine heating and cooling hoses
- removing and replacing thermostat and housing
- removing and replacing water pump
- removing and replacing radiator fans
- removing and replacing drive mechanism

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of following cooling system and/or associated components service procedures.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the servicing of cooling system and/or associated components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service cooling system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- operating principles of cooling systems
- types of coolants and their application
- cooling systems measuring instruments
- rust inhibitor
- anti freeze/anti boil
- servicing procedures
- coolant testing procedures
- equipment safety requirements
- vehicle safety requirements
- motor vehicle technical information
- checklist or job sheets
- basic language and literacy
- basic numeracy
- basic reading and writing

Skills

The ability to:

- access, interpret and apply technical information
- service cooling systems and/or components
- use relevant tools and equipment
- test cooling systems and/or components for technical requirements
- apply coolant testing procedures
- listen to customer information and verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklists
- read and interpret manufacturer requirements e.g. component manuals
- read temperature/pressure gauges

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREMS0071A: Disassemble/Assemble cylinder head and check tolerances

Competency Descriptor:

This unit identifies the competence required to disassemble and assemble cylinder heads parts and sub-assemblies as a part of a reconditioning procedure.

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of cylinder head and associated engine components	1.1	Routine checks undertaken demonstrate knowledge of the principles of cylinder head and associated engine components.
		1.2	The main parts of designated cylinder head and associated engine components are correctly identified.
		1.3	Cylinder head and sub assemblies and associated components are checked, using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Findings on cylinder head sub -assemblies and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Dismantle cylinder head and sub assemblies	2.1	Engine block and sub-assemblies are dismantled without causing damage to any component or system.
		2.2	Engine block and sub-assemblies are dismantled using approved methods and appropriate tools/equipment.
		2.3	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.4	Evaluate components/parts before cleaning.
		2.5	All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
3.	Assemble cylinder heads.	3.1	Cylinder head is assembled without causing damage to any component or system.
		3.2	Cylinder head assemble is performed using industry approved procedures and equipment.



- 3.3 Assemble is carried out to comply with manufacturer specifications and established industry guidelines and Industry Standards.
- 3.4 All assemble activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
- 4. Clean up area
  - 4.1 All waste material is removed and disposed of.
  - 4.2 Area related to work activities is cleaned up.
  - 4.3 Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied as related to the disassembling /assembling of cylinder heads and the checking of tolerances this includes the replacement and repair of components as well as routine maintenance.

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- lifting equipment
- cleaning equipment
- parts washers
- chemical cleaning equipment

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Methods include:

- dismantling
- cleaning
- measuring against specifications
- visual inspection
- comparing against new
- comparing against specifications

Specific requirements:

- cylinder heads of various configurations
- cylinder head components
- inserts
- valves
- valve guides
- rocker gear

Methods should be applied under normal operating conditions.

Other variables may include:

- ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems)
- fatigue
- lubrication
- slackness
- other related malfunctions

Cylinder head routine checks may include:

- wear
- distortion
- tensions
- misalignment

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cylinder head and sub-assembly dismantling and preliminary assessment of condition
- determining appropriate repair action

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to disassemble cylinder head and sub -assemblies
- demonstrate the ability to assemble cylinder head and check tolerances
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0061A Use and maintain measuring equipment

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- dismantling methods and procedures
- relevant technical information for comparison
- equipment safety requirements
- relevant company policies
- personal safety requirements
- manual handling techniques
- cleaning methods and materials
- principles of engine operation
- construction and operation of cylinder head and sub-assemblies relevant to application

#### Skills

The ability to:

- access and interpret technical information
- apply dismantling procedures
- apply testing techniques
- use relevant tools and equipment
- maintain customer/company records
- use measuring equipment
- apply manual handling procedures
- check and compare various components to actual specifications
- decide on possible repair action necessary

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREMS0101A: Disassemble/assemble engine block and sub-assemblies and evaluate components/check tolerances**

### Competency Descriptor:

This unit identifies the skills and knowledge required to disassemble/assemble an engine block and sub assemblies and evaluate components/check tolerances as a part of a reconditioning procedure.

### Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Dismantle engine block and sub assemblies	1.1	Engine block and sub-assemblies are dismantled without causing damage to any component or system .
		1.2	Engine block and sub-assemblies are dismantled using approved methods and appropriate tools/equipment.
		1.3	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.4	Evaluate components/parts before cleaning.
		1.5	All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Inspect/measure/test engine block and sub-assembly components and determine repair procedures	2.1	Inspection/measurement/testing is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Engine block and sub-assembly components are measured against manufacturer specifications and tolerances.
		2.4	Engine block and sub-assembly components are evaluated against the measurements, tests and inspections made.
		2.5	Repair requirements are identified and reported according to enterprise policy and procedures.
		2.6	Appropriate workplace documentation is completed and dealt.
		2.7	All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

- |    |  |     |  |
|----|--|-----|--|
| 3. | Use appropriate methods to check tolerances. | 3.1 | Tolerances are checked without causing damage to any component or system.  |
|    |  | 3.2 | Tolerances are checked using industry approved procedures and equipment.   |
|    |  | 3.3 | Correct tolerances are obtained using relevant vehicle/component manufacturer specifications.  |
|    |  | 3.4 | Tasks are carried out to comply within established industry guidelines.  |
|    |  | 3.5 | All checking activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.               |
| 4. | Assemble engine block and sub-assemblies.    | 4.1 | Engine block is assembled without causing damage to any component or system.   |
|    |  | 4.2 | This competency element is performed using industry approved procedures and equipment.   |
|    |  | 4.3 | Assembly is carried out to comply with manufacturer specifications and established industry guidelines and Jamaica Auto Repairs Association J.A.R.A. |
|    |  | 4.4 | All assembly activities are carried out according to industry regulations/guidelines, OH&S guidelines and enterprise procedures/policies.            |
| 5. | Clean up area                                | 5.1 | All waste material is removed and disposed of.   |
|    |  | 5.2 | Area related to work activities is cleaned up.   |
|    |  | 5.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied as related to the disassembling /assembling of engine sub-assemblies this includes the replacement and repair of components as well as routine maintenance .

Specific requirements:

- engine components (including crankshafts, camshafts, cylinder blocks, idler shafts, pistons, connecting rods, bearings, rings, gears, chains, belts, pulleys, oil pumps , cylinder head assemblies, etc.)
- short motors, long motors (cylinder head fitting)

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- relevant testing procedures
- relevant tolerance checking methods
- personal; protective equipment
- measuring equipment
- lubricating equipment
- gasket sealing materials

Other variables may include:

- ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems)

Methods include:

- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cylinder head dismantling/assembling and preliminary assessment of condition
- determining possible repair action

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to assemble cylinder head
- demonstrate the ability to disassemble engine block and sub-assemblies and evaluate components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- use accepted motor vehicle service repair techniques, practices and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0061A Use and maintain measuring equipment

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- dismantling methods and procedures
- assembling methods and procedures
- measuring and testing procedures
- repair methods
- relevant technical information for comparison
- equipment safety requirements
- relevant company policies
- personal safety requirements
- manual handling techniques
- cleaning methods and materials
- principles of engine operation
- construction and operation of engine block and sub-assemblies relevant to application

Skills

The ability to:

- access and interpret technical information
- apply dismantling procedures
- apply assembling procedures
- apply visual inspection techniques
- use relevant tools and equipment
- maintain customer/company records
- use measuring equipment
- apply manual handling procedures
- check and compare various components to actual specifications
- decide on possible repair action necessary

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.



**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASREGS0011A: Perform routine servicing of petrol fuel systems**

Competency Descriptor:

This unit identifies the skills and knowledge required to required to perform routine servicing of petrol fuel systems for light motor vehicles

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of petrol systems and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of petrol systems and associated components.
		1.2	The main parts of designated petrol systems and associated components are correctly identified.
		1.3	Petrol fuel systems are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Petrol fuel systems and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Service petrol fuel system components	2.1	Service to petrol fuel system components is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Service of fuel system/components is carried out in accordance with manufacturer specifications.
		2.4	Appropriate workplace documentation is completed.
		2.5	All fuel system component service activities are carried out according to industry regulations/guidelines.
3.	Final checks	3.1	Fuel systems and/or components are adjusted to suit specifications and operational requirements.
		3.2	Engines and/or engine components are checked after adjustment is done.
		3.3	Assembly is prepared for commissioning on conformance to specifications.
		3.4	Service report is completed by appropriate means.

- |    |               |     |   |
|----|---------------|-----|---|
| 4. | Clean up area | 4.1 | All waste material is removed and disposed of.          |
|    |               | 4.2 | Area related to work activities is cleaned.             |
|    |               | 4.3 | Tools and equipment are cleaned, maintained and stored. |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Servicing procedures for light vehicle and/or heavy vehicles and/or motor cycle, and/or marine engines and/or small engines and/or outdoor power equipment.

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, power tools
- pressure gauge, lifting and supporting equipment
- lubricant dispensing equipment

Methods of assessments may include:

- visual
- aural
- functional

Specialised equipment:

- exhaust gas analyser
- vacuum gauge
- tachometer
- multimeter

Methods should be applied under normal operating conditions and includes damage, corrosion, fluid levels, leaks wear and safety aspects.

Specific requirements may include:

- stroke and/or 4 stroke, spark ignition fuel systems

OH&S practices must abide by:

- Industry standards/OH&S legislation

Other variables may include:

- carburettors (all position, electronic, fixed venturi, variable venturi)
- fuel pumps, mechanical and electrical

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- fuel system/components service procedures followed

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the servicing of petrol fuel system or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service petrol fuel system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- service procedures relevant to application
- equipment/vehicle safety requirements
- manufacturer/enterprise policies
- operating principles of mechanical and electronically controlled fuel systems
- manual handling techniques
- personal safety procedures
- basic language, literacy and numeracy skills
- basic reading and writing skills

Skills

The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment
- maintain customer records
- service fuel systems components
- check system for normal operation
- apply manual handling techniques
- apply personal safety procedures

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications.
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## **ASREES0011A: Perform routine inspection and testing of faulty electrical system component/unit**

Competency Descriptor:

This unit identifies the skills and knowledge required to required to perform routine inspection and testing of faulty electrical system component/unit for light motor vehicles

Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Undertake routine checks of electrical system component/unit	1.1	Routine checks undertaken demonstrate knowledge of the principles of electrical system component/unit.
		1.2	The main parts of designated electrical system component/unit are correctly identified.
		1.3	Electrical systems are checked using appropriate maintenance principles, techniques, tools and equipment .
		1.4	Electrical components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means .
2.	Inspect and test electrical system	2.1	Electrical system inspection and testing is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications .
		2.3	Inspections of electrical systems are carried out in accordance with manufacturer specifications.
		2.4	Testing of electrical systems is carried out in accordance with manufacturer specifications.
		2.5	System/component condition is determined by comparing actual component condition to manufacturer specifications.
		2.6	Appropriate workplace documentation is completed.

		2.6	All electrical system inspection and condition identification activities are carried out according to industry regulations/guidelines.
3	Clean up area	3.1	All waste material is removed and disposed of.
		3.2	Area related to work activities is cleaned.
		3.3	Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

### Resources may include:

- hand tools
- power tools
- air tools
- special tools for removal
- testing equipment including multimeters and test crimps

### Work activities may include:

- testing and aiming headlights
- testing headlight, timer switches and relays, wires, terminals, connectors and sockets; determining needed repairs
- inspecting and testing switches, bulbs, sockets, connectors, terminals and wires of parking clearance and tail-light circuits
- inspecting and testing dash light circuit switches and relays, bulbs, sockets, connectors, terminals, wires and printed circuits/control modules
- inspecting and testing interior cab light and circuit components
- inspecting and testing tractor and trailer wire connectors
- inspecting, testing and adjusting stoplight and circuit components
- inspecting and testing turn signal and hazard circuit flasher and other circuit components
- inspecting and testing reverse light and circuit components

### Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

### Wiring/Lighting Systems may include:

- lighting systems
- electric brake systems
- trailer wiring connections

### OH&S practices must abide by:

- Industry standards/OH&S legislation



## EVIDENCE GUIDE

It is essential that competence in this unit signifies the ability to transfer the competency to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- communicating effectively with others in associated areas
- identifying and assessing hazardous situations and rectifying, where appropriate, or reporting to the relevant personnel
- applying relevant occupational health and safety policies and procedures
- reading and interpreting low voltage wiring diagrams
- installing low voltage wiring/lighting
- repairing low voltage wiring/lighting
- testing low voltage wiring/lighting
- completing essential post activity housekeeping

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the inspection and testing of electrical system components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to inspect and test electrical system components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- low voltage theory for automotive application including types of materials, components and wiring systems
- common automotive terminology and vehicle safety requirements
- relevant occupational health and safety regulations/requirements, equipment, material and personal safety requirements
- the operation of low voltage electrical systems and components relevant to the application
- inspection procedures
- testing procedures
- company reporting procedures
- basic English
- technical literacy and communication skills

Skills

The ability to:

- communicate in relation to dealing with others involved in the work
- interpret and apply common industry terminology
- interpret technical information and specifications related to low voltage wiring/lighting systems
- actively listen, for example when obtaining information of safe working practices and low voltage wiring/lighting systems
- perform routine inspection and testing of faulty electrical system components

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREES0031A: Carry out minor repairs to electrical wiring/lighting/warning systems

Competency Descriptor:

This unit identifies the skills and knowledge required to correctly test electrical circuits/systems and carry out minor repairs. Minor repairs include replacement of fuses, bulbs and terminals, wiring repairs i.e. open circuits/short circuits/earthing.

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Test systems/components and identify faults	1.1 Systems/components are tested without causing damage to any component or system. 1.2 Correct information is accessed and interpreted from appropriate manufacturer specification. 1.3 Tests are carried out to determine faults using appropriate tools and techniques. 1.4 Faults are identified and preferred repair action determined. 1.5 Tests are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2. Complete minor repairs to circuit wiring	2.1 Minor repairs to circuit wiring are completed without causing damage to any component or system. 2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 2.3 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials. 2.4 Repairs are carried out according to industry regulations/guidelines OH&S guidelines and company procedures/policies.
3. Final checks	3.1 Electrical wiring/lighting/warning systems and/or associated components are adjusted to suit specifications and operational requirements. 3.2 Electrical wiring/lighting/warning systems and/or associated components are checked after adjustment is done.

4. Clean up area
- 4.1 All waste material is removed and disposed of.
- 4.2 Area related to work activities is cleaned.
- 4.3 Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

OH&S practices must abide by:

Industry standards/OH&S legislation  
Wiring/Lighting Systems may include:

- lighting systems
- electric brake systems
- trailer wiring connections

Work activities may include:

- replacing and aiming headlights
- repairing/replacing headlight timer switches and relays, wires, terminals, connectors and sockets; determining needed repairs
- repairing/replacing testing switches, bulbs, sockets, connectors, terminals and wires of parking clearance and tail-light circuits
- repairing/replacing and testing dash light circuit switches and relays, bulbs, sockets, connectors, terminals, wires and printed circuits/control modules
- repairing/replacing and testing interior cab light and circuit components
- repairing/replacing and testing tractor and trailer wire connectors
- repairing/replacing, testing and adjusting stoplight and circuit components
- repairing/replacing and testing turn signal and hazard circuit flasher and other circuit components
- repairing/replacing and testing reverse light and circuit components

Resources may include:

- hand tools, test lamp, multimeter
- power/air tools, special tools for removal/replacement
- special testing equipment
- soldering equipment

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading and interpreting circuit diagrams
- testing
- soldering

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- performing minor repairs to circuit wiring
- testing and identifying faults

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to inspect and test electrical system components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASREES0011A Perform routine inspection and testing of faulty electrical system component/unit.

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- OH&S guidelines
- electrical principles
- repair procedures
- electrical measuring and testing procedures
- vehicle safety requirements
- procedures to avoid damage to ECUs
- basic English
- technical literacy and communication skills

#### Skills

The ability to:

- access interpret and apply technical information
- safely and correctly use tools and equipment
- test and identify faults
- perform electrical connections crimping and soldering
- isolate power supply to components
- perform minor electrical repairs
- communicate in relation to dealing with others involved in the work

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.



**ASRCOR0032A: Apply basic motor vehicle trouble shooting processes**

Competency Descriptor:

This unit covers the trouble shooting functions required to identify common automotive faults or problems based on evidence provided by customers.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

1. Identify the nature of the fault or problem	1.1	The customer is made to feel welcome and valued.
	1.2	Questioning techniques are applied to determine the nature of the customer enquiry.
	1.3	All available information relating to the fault or problem is gathered, recorded and confirmed with the customer.
2. Apply basic trouble shooting processes	2.1	The automotive system/component relating to the fault or problem is identified.
	2.2	Basic trouble shooting techniques are applied to identify the likely cause of the fault or problem.
	2.3	Advice is sought from the appropriate company product/system specialist as required.
	2.4	The customer is advised of the likely cause and possible solutions to the fault or problem.
	2.5	The customer is advised to seek specialist advice if the fault or problem cannot be determined from the available information or is beyond the capacity of the enterprise to rectify.

**RANGE STATEMENT**

Indicative Faults or Problems:

The types of common faults or problems on which advice is required may include basic trouble shooting related to:

- failure to achieve ignition/power
- failure to achieve fuel flow
- failure of lighting systems/components
- excessive exhaust smoke or noise
- unusual engine noises or vibrations
- excessive play or vibration through steering
- loss of coolant
- slow response or excessive pedal travel when braking

## Automotive Systems/Components

### These may include:

- engine systems
- transmission/drive train
- steering and suspension systems
- fuel systems
- cooling systems
- electrical systems
- braking systems
- exhaust systems

### Customers:

- customers may be regular or new and may have routine or special requests. They may include people from a range of social, cultural or ethnic backgrounds and physical and intellectual abilities. Regardless, all customers are to be made feel welcome, valued and, at the end of the process, satisfied. Customer contact may be face to face, by telephone, by electronic means or in writing

### Sources of Information

- these may include company policies and procedures, equipment and product manufacturer's specifications, company operating procedures, industry/workplace codes of practice and customer enquiries/requests

### Advice Limitations:

- advice offered to the customer is to conform with all industry and organisationally imposed limitations and liability requirements

### Company:

- company may vary in size, type and location and in the range of merchandise, products and services provided

### Industry requirements

- this includes guidelines related to OH&S and consumer law
- this may also include industry codes of practice

## EVIDENCE GUIDE

It is essential that competence in this unit signifies the ability to transfer the competency to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- using questioning, listening and observation skills to accurately determine the nature of customer enquiries
- accurately identifying automotive systems and components
- consistently applying basic trouble shooting techniques to determine possible causes of faults or problems

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to apply basic trouble shouting processes
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- general knowledge of the range of enterprise merchandise and services
- general operational knowledge of industry/workplace codes of practice in relation to customer service
- general operational knowledge of the function of major components of common automotive:
  - engine systems
  - transmissions and drive trains
  - steering and suspension systems
  - fuel systems
  - cooling systems
  - electrical systems
  - braking systems
  - exhaust systems
- general operational knowledge of basic trouble shooting techniques/processes

Skills

The ability to:

- plain English literacy and communication skills in relation to dealing with customers
- technical literacy and interpretative skills to interpret and discern the facts related to the customer enquiry
- questioning and active listening skills, for example when obtaining factual information from customers
- analytical skills to determine the possible causes of the fault or problem

**(4) Resource Implications**

The following are required:

- a workplace or simulated workplace
- company or equivalent policy and procedures relating to customer service
- a range of customers with realistic enquiries (real or simulated)
- a qualified workplace assessor

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

### Method of Assessment (Cont'd)

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

### (6) Context of Assessment

The elements of competency contain both knowledge and practical components. The knowledge components may be assessed off the job. The practical components should be assessed on the job or in a realistically simulated work environment covering a range of customer types.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0042A: Identify common automotive parts and products**

## Competency Descriptor:

This unit covers the skills and knowledge required to identify common automotive parts and products based on evidence from customers and/or other sources which may include catalogue numbers or samples of the parts/products or their purpose.

## Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

1. Identify the part/product and its end use	1.1	The customer is made to feel welcome and valued.
	1.2	All available information on the required part/product is gathered, recorded and confirmed with the customer.
	1.3	The end use or host for the part/product, i.e. the vehicle/unit assembly or vehicle/unit assembly options, is established from an analysis of available information.
2. Identify the details of the part/product	2.1	The appropriate parts/product cataloguing system is identified and accessed.
	2.2	The part/product is matched accurately with cataloguing information by accessing and using the catalogue system.
	2.3	Details of the identity of the part/product are recorded and processed.

**RANGE STATEMENT**

## Automotive Part/Product

- This may include common automotive parts, components and accessories which are specific to the vehicle type or are for general use by the industry, and refinishing and treatment products.

## Industry Requirements

- This includes guidelines related to OH&S and Automotive Industry guidelines

## Customers

- This includes both external and internal customers who may be technically qualified to describe parts/products or technical novices requiring detailed support. Regardless, all customers are to be made feel welcome, valued and, at the end of the process, satisfied.

### Communications

- Communications with the customer/user may be face to face, by telephone or by other electronic means.

### Part/Product Information

- This may include manufacturer's specifications and technical documentation, enterprise procedures and documentation, enterprise or industry comparative specifications, diagrams, sketches, verbal descriptions and physical and visual evidence.

### Information Gathering Techniques

- The customer may require active assistance and questioning to fully describe the requirement in terms of common vehicle /unit model, date of manufacture, purpose and appearance of product and other relevant tracking information.

### Recording of Information

- Information provided by the customer may need to be used when the customer is no longer present and therefore an accurate record of all relevant information needs to be completed, retained and recovered when needed.

### Parts/Products Cataloguing Systems

- These systems may be hard-copy (book-fast, loose-leaf), stand alone computer or networked/on line computer supported services.

### Provider/Supplier Information

- Provider/supplier information is not always required but should be sought or accessed where the incorrect identification of the part/product may result in legal liability, customer dissatisfaction and/or alienation.

## EVIDENCE GUIDE

It is preferable that assessment reflects a process rather than an event and that it occurs over a period of time to cover the varying circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements.

### (1) Critical Aspects of Evidence

It is essential that competence in this unit signifies the ability to transfer the competency to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- eliciting sufficient information from the customer and/or other sources to enable a confirmed identification of the vehicle or unit for which the part/product is intended
- accessing the parts/products catalogue systems associated with the required vehicle/unit
- using parts/products catalogues and equivalent documentation to trace and identify common specific brand parts/products

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- general knowledge of common automotive terminology
- general knowledge of the main automotive systems and assemblies and their functions
- general knowledge of the Parts/Product Catalogue systems, both brand specific and general options, used by the enterprise
- general knowledge of the legal issues associated with the supply and use of non-conforming parts/components/accessories
- broad knowledge of OH&S requirements in relation to customer safety and ergonomics of computer work stations

Skills

The ability to:

- questioning and active listening skills, for example when eliciting information on product and end use issues
- plain English literacy and communication skills in relation to dealing with customers and providers/suppliers
- technical literacy and interpretative skills sufficient to access keywords and phrases and to interpret schematics and technical drawings
- computing skills in relation to the accessing and interpretation of computer based Parts Catalogue systems

**(4) Resource Implications**

The following are required:

- a workplace or simulated workplace
- customers and requests for parts information
- parts/products cataloguing systems

**(5) Method of Assessment**

An integrated competency assessment approach is required to ensure that appropriate holistic assessment occurs for inter-related units of competency. This unit should be assessed in conjunction with other units within the context of the candidate's job role or function .



**(6) Context of Assessment**

Assessment is to cover both manual and computer aided/based Parts Catalogue Systems.

Assessment of this unit must be completed on -the-job or in a realistically simulated work environment which reflects a range of common parts/product identification requirements.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0062A: Participate in a team to achieve designated tasks**

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively participate in a team to achieve designated tasks to achieve required objectives and applies to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Determine work roles of team members	1.1	Team role and scope are determined and understood using standard operating procedure.
		1.2	Role of self and team members are understood and where appropriate clarified by all team participants.
2.	Participate in team planning	2.1	Appropriate methods are used to plan team activity or a number of related team activities.
		2.2	Planning activity is undertaken on an individual or shared basis, incorporating individual's technical skills, knowledge and competence.
		2.3	Effective and appropriate contributions are made to the total planning process.
3.	Operate as team member	3.1	Effective and appropriate forms of communication are used to liaise with team members.
		3.2	Contributed to the determination of time lines, quality standards and production requirements for the team.
		3.3	Real or perceived issues are resolved by effective and appropriate contributions from team member.
		3.4	Effective and appropriate contributions are made by team member to achieve team objectives, based on member's own technical skills, knowledge and competence.
4.	Monitor and review team performance	4.1	Participated effectively in the planning and development of team review process.
		4.2	Appropriate data is collected on an individual and team basis using standard operating procedure.
		4.3	Data collected, is analysed and used by team and individual team members to evaluate team performance and determine future strategies.

5	Implement team performance improvements	5.1	Performance improvement processes appropriate to team activities are implemented on a collective and individual basis using standard operating procedure.
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## RANGE STATEMENT

This unit applies the skills necessary for effective participation by an individual in an autonomous team environment. Team parameters, constraints and objectives are determined by sources external to the team. Where as a result of team discussions or planning, team parameters require adjustment, then appropriate authorisation and approvals are established using standard operating procedures. Individual team participants would be already competent with technical aspects of team activities.

## EVIDENCE GUIDE

Competency is to be demonstrated by

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with working in an autonomous team environment or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- take responsibility for the quality of their own work
- operate in an autonomous team environment to achieve required objectives
- demonstrate safe working practices at all times
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all tasks to specification
- use accepted engineering techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- operation work procedures
- group dynamics and the impact of working effectively with others on individual and group performance
- enterprise work systems, equipment, management and facility operating systems
- enterprise policies and procedures and standard requirements in regard to workplace ethics
- basic analytical, problem solving, negotiation and conflict management techniques in relation to working with others
- plain English and communication techniques

Skills

The ability to:

- communicate in relation to reading and understanding workplace documents
- do basic analytical, problem solving, negotiation and conflict management tasks in relation to working with others

**(4) Resource Implications**

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

### Method of Assessment (Cont'd)

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

### (6) Context of Assessment

This unit should be assessed on the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. The individual would already be competent with the technical aspects of team activities.

### CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0072A: Work with colleagues and customers

### Competency Descriptor:

This unit deals with the interpersonal, communication and customer service skills required by all people working in the automotive service and repair industry.

### Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Communicate in the workplace	1.1	Communications with customers and colleagues are conducted in an open, professional and friendly manner.
		1.2	Appropriate language and tone is used.
		1.3	Effect of personal body language is considered. Effect of personal body language is considered.
		1.4	Sensitivity to cultural and social differences is shown.
		1.5	Active listening and questioning are used to ensure effective two-way communication.
		1.6	Potential and existing conflicts are identified and solutions sought with assistance from colleagues where required.
2.	Provide assistance to internal and external customers	2.1	Customer needs and expectations, including those with specific needs, are correctly identified and appropriate products and services are provided.
		2.2	All communications with customers are friendly and courteous.
		2.3	All reasonable needs and requests of customers are met within acceptable enterprise time frames.
		2.4	Opportunities to enhance the quality of service are identified and taken whenever possible.
		2.5	Customer dissatisfaction is promptly recognised and action taken to resolve the situation according to individual level of responsibility and enterprise procedures.
		2.6	Customer complaints are handled positively, sensitively and politely.
		2.7	Complaints are referred to the appropriate person for follow up in accordance with individual level of responsibility.

- |    |  |     |   |
|----|--|-----|---|
| 3. | Maintain personal presentation standards | 3.1 | High standards of personal presentation are practised   |
| 4. | Work in a team                           | 4.1 | Trust, support and respect are shown to team members in day to day work activities.                                     |
|    |  | 4.2 | Cultural differences within the team are accommodated.  |
|    |  | 4.3 | Work team goals are jointly identified.   |
|    |  | 4.4 | Individual tasks are identified, prioritised and completed within designated time frames.                               |
|    |  | 4.5 | Assistance is sought from other team members when required. Assistance is sought from other team members when required. |
|    |  | 4.6 | Assistance is offered to colleagues to ensure designated work goals are met.  |
|    |  | 4.7 | Feedback and information from other team members is acknowledged.   |
|    |  | 4.8 | Changes to individual responsibilities are re-negotiated to meet reviewed work goals.                                   |

## RANGE STATEMENT

This unit applies to all tourism and hospitality sectors.

Depending upon the organisation and the specific situation customers may include but are not limited to:

- members of other tourism and hospitality industry sectors
- internal individuals or groups
- local residents
- visitors
- media
- workmates/colleagues

Customers with specific needs may include:

- those covered by special the disability needs
- special cultural needs
- unaccompanied children
- parents with young children
- single women

Presentation standards should consider:

- work location
- health and safety issues
- impact on different types of customers
- specific presentation requirements for particular work functions

## EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

### (1) Critical Aspects of Evidence

The focus of this unit will vary depending upon the cultural context of the workplace. Assessment should take account of the cultural variances and special requirements that apply in particular situations.

Evidence of competency should relate to different communication and customer service contexts and may need to be collected over a period of time.

- ability to communicate effectively with customers and colleagues (including those with special needs) within the range of situations required for the relevant job role
- ability to work in a team
- ability to respond effectively to a range of different customer service situations
- understanding of communication and customer service and its importance in a tourism/hospitality context

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- needs and expectations of different customers as appropriate to industry sector
- grammar and mechanics
- communication styles (technical or non-technical/ verbal or non verbal)

#### Skills

The ability to:

- understanding of teamwork principles
- effective communication in relation to listening , questioning and non verbal communication

### (4) Resource Implications

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials



**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job, or a combination both.

The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0092A: Perform related computations**

## Competency Descriptor:

This unit deals with the skills and knowledge required to perform related computations and effectively carry out measurements of work to required tolerance, and applies to individuals working in the automotive service industry.

## Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Estimates approximate answers	1.1	Answers are checked by using estimating techniques.
		1.2	Simple rounding off operations is performed when estimating.
2.	Performs basic calculations involving percentages	2.1	Simple calculations are performed to obtain percentages from information expressed in either fractional or decimal format.
3.	Applies the four basic rules to algebraic expression	3.1	Simple calculations on algebraic expressions are performed using the four basic rules - addition, subtraction, multiplication, and division.
4.	Performs basic calculations involving proportions	4.1	Simple calculations involving ratios and proportion are performed using whole numbers, fractions and decimal fractions.
		4.2	Information extracted from charts and graphs are used as a basis for decision-making.
5.	Interpret charts and graphs	5.1	Interpret information extracted from charts and graphs are interpreted correctly.
		5.2	Information extracted from charts and graphs are used as a basis for decision-making.
6.	Produces charts and graphs from given information	6.1	Information is used to produce simple charts and graphs as required.
7.	Perform basic calculation involving geometry	7.1	Calculations are performed to determine angles and linear dimensions.

## RANGE STATEMENT

Calculations may be performed using pen and paper or on a calculator. All problems should have appropriate applications depending on the workplace. Interpretation of charts and graphs would usually extend to simple histograms, control charts, pie charts, etc. Data may be generated from readings taken or computer generated. Applications can include computation of pressure, volume, temperature, heat, speed, density, mass, force, efficiency etc.

## EVIDENCE GUIDE

Competency is to be demonstrated by individual performing computations in accordance with the performance criteria and as related to the work environment.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the computations being performed or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- take responsibility for the quality of their own work
- perform computations in accordance with standard principles
- perform computations accurately
- use accepted techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0081A Perform computations basic

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- numbers and basic arithmetic operations
- drawings and specifications
- basic operations in simple geometry,
- algebra
- ratio and proportion
- basic statistics (charts, tables scales and graphs)
- interpretation of measurement and calculations
- data relative to the metal engineering and maintenance trade processes
- applications relevant to engineering skills trades e.g. pressure, volume, temperature, mass efficiency circuit computations, perimeters and areas etc.

Skills

The ability to:

- read and interpret drawings
- measure and calculate manually
- interpret measurements and calculations
- relate to and or perform calculations on related applications
- communicate effectively

**(4) Resource Implications**

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off-job training related to this unit

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. An individual working alone should demonstrate the competencies covered by this unit or as part of a team. The assessment environment should not disadvantage the candidate.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0102A: Write technical reports (Basic)**

Competency Descriptor:

This unit applies to the skills and knowledge necessary to write reports effectively in a wide range of different contexts in the automotive service industry.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

1. Communicate concepts in writing	1.1	Reports are written using appropriate terminology where required.
	1.2	Reports discussed alternatives, difficulties and suggestions when required.
	1.3	Reports are coherent and based on any analysis or research undertaken.
	1.4	Conclusions are based on the facts in the report and recommendations are made if required .
	1.5	Reports are completed within specified time .
	1.6	References are acknowledged as required.

**RANGE STATEMENT**

Report is used to denote any required written communication that goes beyond a simple recording of facts (such as completion of a pro forma shift production schedule) to include level of analysis and/or research.

Reports may be of a technical or non-technical nature. If the report is technical, it should be based on the writer having technical knowledge.

Conclusions and/or recommendations where required are based on research or analysis of data.

Reports include:

- graphs,
- charts,
- tables, etc. as required.

The analysis and conclusions should be consistent with the level of skill and knowledge of an employee working at that level. Simple analysis and work would be required.

## EVIDENCE GUIDE

Competency is to be demonstrated by the effective use of report writing skills in accordance with the range listed in the range of variables statement, relevant to the work or orientation.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units applicable to the individual's work.

During assessment the individual will:

- demonstrate the ability to write technical reports
- demonstrate effective writing style
- demonstrate the ability to identify main points
- demonstrate the ability to expand main points
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- use accepted engineering communication techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0021A Undertake interactive work place communication

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- grammar and mechanics
- spelling
- writing styles (technical or non-technical)
- reports including graphs, charts, tables

#### Skills

The ability to:

- communicate concepts in writing
- identify main points
- expand main points
- write technical and non-technical reports

### (4) Resource Implications

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials



**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off-job training related to this unit

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job, or a combination both.

The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective work place practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**MEMCAC0012A: Perform technical computations - general**

Competency Descriptor:

This unit deals with the skills and knowledge required to perform related computations and effectively carry out measurements of work to required tolerance, and applies to individuals working in the metal engineering and maintenance industry.

Competency Field:

Calculations and Computations

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Apply the fundamentals of general mathematics	1.1	Concepts of whole numbers are understood and calculations are performed involving practical applications .
		1.2	Concepts of common fractions are understood and calculations are performed involving practical applications .
		1.3	Concepts of decimal fractions are understood and calculations are performed involving practical applications .
		1.4	Concepts of percentages are understood and calculations are performed involving practical applications .
		1.5	Concepts of graphs: bar and line are understood and calculations are performed involving practical applications .
2.	Apply the fundamentals of measurements	2.1	Concepts of precision, accuracy and tolerance are understood and calculations are performed involving practical applications .
		2.2	Concepts of measurement units are understood and calculations are performed involving practical applications .
		2.3	Application of steel rules and vernier callipers are understood and calculations are performed involving practical applications .
		2.4	Applications of micrometers are understood and calculations are performed involving practical applications .
		2.5	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.

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- |    |  |     |   |
|----|--|-----|---|
| 3. | Apply the fundamentals of algebra                        | 3.1 | Concepts of algebra operations are understood and calculations are performed involving practical applications .   |
|    |  | 3.2 | Concepts of simple equations are understood and calculations are performed involving practical applications .   |
|    |  | 3.3 | Concepts of ratio and proportion are understood and calculations are performed involving practical applications .   |
|    |  | 3.4 | Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.  |
| 4. | Apply the fundamentals of plane geometry                 | 4.1 | Concepts of plane geometry are understood and calculations are performed involving practical applications .   |
|    |  | 4.2 | Concepts of angular measure are understood and calculations are performed involving practical applications .  |
|    |  | 4.3 | Concepts and applications of triangles are understood and calculations are performed involving practical applications .   |
|    |  | 4.4 | Concepts and applications of polygons are understood and calculations are performed involving practical applications .  |
|    |  | 4.5 | Concepts and applications of circles are understood and calculations are performed involving practical applications .   |
|    |  | 4.6 | Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.  |
| 5. | Apply the fundamentals of trigonometry                   | 5.1 | Concepts of trigonometric functions are understood and calculations are performed involving practical applications .  |
|    |  | 5.2 | Concepts of trigonometric functions with right angles are understood and calculations are performed involving practical applications .  |
|    |  | 5.3 | Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.  |
| 6. | Use the principles of computed measure to solve problems | 6.1 | Concepts of computed measure are understood and computations are performed involving the calculation of areas of common polygons using practical applications .                         |
|    |  | 6.2 | Concepts of computed measure are understood and computations are performed involving the calculation of areas of circles, sectors, segments and ellipses using practical applications . |

- 6.3 Concepts of computed measure are understood and computations are performed involving the calculation of prisms and cylinders volumes, surface areas and weights using practical applications.
- 6.4 Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application .

## RANGE STATEMENT

Calculations may be performed using pen and paper or on a calculator. All problems should have appropriate applications depending on the workplace. Interpretation of charts and graphs would usually extend to simple histograms, control charts, pie charts, line graphs etc. Data may be generated from readings taken or computer generated. Applications can include computation of pressure, volume, temperature, heat, speed, density, mass, force, efficiency etc.

Fundamentals of general mathematics may include:

- combined operations with whole numbers in practical applications
- word problem solving with practical applications
- use of common fractions in practical applications
- combined operations of common fractions in practical applications
- computing with calculator
- finding percent in practical applications
- reading combined data line graphs
- drawing line graphs (broken, straight and curved)
- combined operations of decimal fractions in practical operations

Steel rules, vernier callipers and micrometer applications may include:

- measurements that do not fall on rule graduations
- reading decimal-inch measurements on steel rule
- reading metric measurements on steel rule
- reading measurements on an English vernier calliper
- reading measurements on an metric vernier calliper
- reading measurements on an English micrometers
- reading measurements on an metric micrometers

Fundamentals of trigonometry may include:

- introduction to trigonometric functions
- ratio of right triangle sides
- determining angles of given functions and functions of given angles
- trigonometric functions with right triangles
- variation of functions
- functions of complementary angles
- determining unknown for angles
- trigonometric functions – ratio method

Areas for discussion may include but not limited to:

- fraction, decimals and percentages
- costing and pricing
- ratio and proportion
- measurement
- performing algebraic operation
- statistics
- geometry
- trigonometry

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Fundamentals of plane geometry may include but not limited to:

- axioms and postulates
- points and lines
- angular geometry principles
- triangles
- isosceles and equilateral triangles practical applications
- Pythagorean theorem practical applications
- polygons and quadrilaterals
- polygon interior and exterior angles practical application
- trapezoid median practical application

Fundamentals of algebra may include:

- evaluation of algebraic expression
- signed numbers
- combined operations of signed numbers
- basic algebraic operations
- solution of equation by principle of equality
- writing equations from word situations

Computed measure may include:

- area of common polygons ( rectangles, parallelograms, trapezoids and triangles)
- areas of circles, sectors, segments and ellipses
- prisms and cylinders (volumes, surface areas and weights)
- computing altitudes and bases of prisms and cylinders
- surface areas of right prisms and cylinders

## EVIDENCE GUIDE

Competency is to be demonstrated by individual performing computations in accordance with the performance criteria and as related to the work environment.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the computations being performed or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- take responsibility for the quality of their own work
- perform computations in accordance with standard principles
- perform computations accurately
- apply the fundamentals of general mathematics
- apply the fundamentals of measurements
- apply the fundamentals of algebra
- apply the fundamentals of plane geometry
- apply the fundamentals of trigonometry
- use the principles of computed measure to solve problems
- use accepted engineering techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- MEMCAC0011A Perform technical computations - basic

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- numbers and basic arithmetic operations
- drawings and specifications
- basic operations in simple geometry,
- algebra
- costing and pricing
- ratio and proportion
- basic statistics (charts, tables scales and graphs)
- interpretation of measurement and calculations
- trigonometry
- computed measure
- plane geometry
- statistics
- mathematical applications to the metal engineering and maintenance trade processes
- applications relevant to engineering skills trades e.g. pressure, volume, temperature, mass efficiency circuit computations, perimeters and areas etc.

Skills

The ability to:

- read and interpret mathematical ideas
- measure and calculate manually
- interpret measurements and calculations
- relate to and or perform calculations on related applications
- apply the fundamentals of general mathematics
- apply the fundamentals of measurements
- apply the fundamentals of algebra
- apply the fundamentals of plane geometry
- apply the fundamentals of trigonometry
- use the principles of computed measure to solve problems
- use accepted engineering techniques, practices, processes and workplace procedures communicate effectively

**(4) Resource Implications**

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off -job training related to this unit

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

Evidence of competence may be obtained through a variety of methods including:

- observation
- written questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of installation activities to which applicant has contributed, or worked on
- training courses in general math
- examples of authentic ated assessments and/or assignments from formal education courses  
self assessment reports

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. An individual working alone should demonstrate the competencies covered by this unit or as part of a team. The assessment environment should not disadvantage the candidate.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.



## ASREMS0012A: Repair engines and associated engine components

Competency Descriptor: This unit identifies the competence required to carry out repair of an engine, and/or engine components for light/heavy vehicles

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of engines and associated engine components	1.1 Routine checks undertaken demonstrate knowledge of the principles of engine system and associated components. 1.2 The main parts of designated braking system and associated components are correctly identified. 1.3 Engine and associated components are checked using appropriate maintenance principles, techniques, tools and equipment. 1.4 Engine and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
2. Remove and replace engines and/or engine components	2.1 Repair, remove and replace engines and/or engine components are completed without causing damage to any components or system. 2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 2.3 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. 2.4 Service operations of an engine are completed within established industry guidelines. 2.5 Removal, replacement and repair activities are carried out according to industry regulations/guidelines.
3. Repair engines and/or engine components	3.1 Repair to engine components are completed without causing damage to any components or system. 3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 3.3 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.

- 3.4 Service operations of an engine are completed within established industry guidelines.
  - 3.5 Repair activities are carried out according to industry regulations/guidelines.
- 4. Replace engines and/or engine components
  - 4.1 Replaced engines and/or engine components are completed without causing damage to any components or system.
  - 4.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
  - 4.3 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.
  - 4.4 Service operations of an engine are completed within established industry guidelines.
  - 4.5 Replacement activities are carried out according to industry regulations/guidelines.
- 5. Perform final checks
  - 5.1 Engines and/or engine components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
  - 5.2 Engines and/or engine components are checked after adjustment is done.
  - 5.3 Assembly is prepared for commissioning and conformance to specifications.
  - 5.4 Service report is completed by appropriate means.
- 6. Clean up area
  - 6.1 All waste material is removed and disposed of.
  - 6.2 Area related to work activities is cleaned.
  - 6.3 Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This competency standard applies to the following and should be conceptualised to the qualification to which it is being applied:

Light/heavy vehicles, plant, motor cycles and marine on 2 and 4 strokes spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry codes of practice
- National regulations for vehicle road worthiness

Resources may include:

- hand tools
- power tools
- lifting and jacking equipment
- specialist tools
- lubricant dispensing equipment

Methods include:

- removal, dismantling, re-assembly, refitting, adjusting, testing and tuning
- Methods should be applied under normal operating conditions.

OH&S practices must abide by:

- Industry guidelines
- OH&S guidelines

Work Activities may include:

- repairing and maintaining engine mechanical systems
- removing faulty cooling system components from vehicle
- removing faulty vehicle from engine
- dismantling engine to remove suspected defective units/parts
- inspecting and testing suspected faulty engine components/units
- repairing and assembling faulty engine components/units
- removing defective diesel engine from vehicle
- dismantling engine to remove suspected defective units/parts
- dismantling diesel engine to remove suspected defective units/parts
- inspecting and testing suspected faulty engine components/units
- repairing and assembling defective diesel engine components/units
- fitting wet cylinder liners
- fitting replacement or repaired engine and components to vehicle
- repairing fuel and ignition systems
- adjusting engine valve clearances
- adjusting engine timing mechanism
- repairing and overhauling carburettor type fuel system
- tuning carburettor fitted engines
- repairing and maintaining petrol injection fuel system
- repairing and maintaining fuel supply system
- removing, repairing and replacing turbo charger
- dismantling diesel fuel system to remove suspected faulty components/units
- repairing faulty diesel fuel system components/units from vehicle
- fitting replacement or repaired diesel fuel system components/unit and reassemble vehicle system

Specific requirements may include:

- Identification of component wear/damage, fluid leakage

**EVIDENCE GUIDE****(1) Critical Aspects of Evidence**

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- Repairing engines and/or engine components

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair engines and associated engine components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREMS0021A Service engines and associated engine components

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- engine/component repair procedures
- engine removal and replacement procedures
- measuring and testing procedures
- engine mechanical systems
- engine fuel systems
- engine ignition systems
- engine mechanical system components
- engine fuel system components
- engine ignition system components
- equipment/component safety requirements
- construction and operation relevant to application
- manual handling techniques
- personal safety requirements

Skills

The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment safely
- test and adjust engines for both technical and legal requirements
- remove and replace engines
- repair engines/components
- apply manual handling techniques
- apply personal safety requirements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

**Method of Assessment (Cont'd)**

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREMS0052A: Disassemble cylinder heads and evaluate components

### Competency Descriptor:

This unit identifies the competence required to disassemble, inspect, evaluate and determine preferred repair action for cylinder heads as a part of a reconditioning procedure.

### Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Dismantle cylinder heads	1.1	Cylinder head is dismantled without causing damage to any component or system.
		1.2	Cylinder head is dismantled using approved methods and appropriate tools/equipment.
		1.3	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.4	Component parts are cleaned in preparation for evaluation.
		1.5	All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Inspect/measure/test cylinder head and components and determine repair procedures	2.1	Inspection/measurement/testing is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Cylinder head components are measured against manufacturer specifications and tolerances.
		2.4	Cylinder head components are evaluated against the measurements, tests and inspections made.
		2.5	Repair requirements are identified and reported according to enterprise policy and procedures.
		2.6	Appropriate workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes.
		2.7	All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.



## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied as related to the disassembling of cylinder heads and the evaluation of components this includes the replacement and repair of components as well as routine maintenance.

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- lifting equipment
- testing equipment
- cleaning equipment
- parts washers
- chemical cleaning equipment
- crack testing equipment
- pressure testing equipment

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- industry codes of practice
- customer requirements

Other variables may include:

- ancillary systems/components
- cooling systems
- fuel systems
- exhaust systems
- camshafts

Methods may include:

- dismantling
- cleaning
- measuring against specifications
- various testing (e.g. crack and pressure tests)
- visual inspection
- comparing against new
- comparing against specifications

Methods should be applied under normal operating conditions.

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- NEPA guidelines

Specific requirements:

- cylinder heads of various configurations
- cylinder head components (including inserts)
- valves
- valve guides
- rocker gear

## EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cylinder head dismantling and accurate assessment of components condition

### Critical Aspects of Evidence (Cont'd)

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to dismantle cylinder head and evaluate components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- dismantling methods and procedures
- measuring and testing procedures
- repair methods
- relevant technical information for comparison
- equipment safety requirements
- relevant company policies
- personal safety requirements
- manual handling techniques
- cleaning methods and materials
- principles of engine operation
- construction and operation of cylinder heads relevant to application

#### Skills

The ability to:

- access and interpret technical information
- apply dismantling procedures
- apply testing techniques
- use relevant tools and equipment
- maintain customer/company records
- use measuring equipment
- apply manual handling procedures
- check and compare various components to actual specifications
- decide on most appropriate repair action necessary

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREMS0062A: Assemble cylinder heads and carry out relevant testing procedures**

### Competency Descriptor:

This unit identifies the competence required to assemble cylinder heads, check tolerances and carry out relevant testing and adjustment procedures as part of a re-conditioning procedure.

### Competency Field:

Automotive Service and Repair

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Use appropriate methods to check tolerances	1.1	Tolerances are checked without causing damage to any component or system.
		1.2	This competency element is performed using industry approved procedures and equipment.
		1.3	Correct tolerances are obtained using relevant vehicle/component manufacturer specifications.
		1.4	Tasks carried out to comply within established industry guidelines.
		1.5	All checking activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Assemble cylinder heads	2.1	Cylinder heads are assembled without causing damage to any component or system.
		2.2	This competency element is performed using industry approved procedures and equipment.
		2.3	Assembly is carried out to comply with manufacturer specifications and established industry guidelines and Australian Standards.
		2.4	All assembly activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
3.	Carry out relevant testing and adjustment procedures	3.1	Tests and adjustments are completed without causing damage to any component or system.
		3.2	Relevant tests and adjustments are performed using industry approved procedures and equipment.

- 3.3 Testing and adjustment is carried out to comply with manufacturer specifications established industry guidelines.
- 3.4 All testing and adjustment activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied as related to the assembling of cylinder heads and the carrying out of relevant testing procedures this includes the replacement and repair of components as well as routine maintenance.

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice including Australian Standards (AS4182 1994)

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- NEPA guidelines

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- relevant testing procedures
- relevant tolerance checking methods
- personal
- protective equipment
- measuring equipment
- lubricating equipment
- gasket sealing materials

Methods include:

- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

Methods should be applied under normal operating conditions.

Other variables may include:

- ancillary systems/components
- cooling system
- fuel systems
- exhaust systems
- lubricating systems
- camshafts

Specific requirements:

- cylinder heads of various configurations
- cylinder head components (including inserts)
- valves
- valve guides
- rocker gear

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- measuring and checking against manufacturer specifications
- cylinder head repair procedures
- assembly and testing procedures

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to assemble cylinder head and carry out relevant testing procedures
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- personal safety requirements
- construction and operation of cylinder heads relevant to application
- assembly/repair procedures
- measuring, adjusting and testing procedures
- relevant technical information
- equipment safety requirements
- relevant company policies
- manual handling technique
- engine operating principles

#### Skills

The ability to:

- access and interpret technical information
- check/adjust tolerances
- use relevant tools and equipment
- use measuring equipment
- apply manual handling procedures
- maintain customer/company records
- assemble/repair cylinder heads/components

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both. The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.



## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASREMS0072A: Repair cooling systems and associated components

### Competency Descriptor:

This unit identifies the competence required to carry out repairs to cooling systems and/or associated components for light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment.

### Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Repair cooling systems and associated components	1.1	Cooling system repairs are completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Cooling systems and associated components are replaced, repaired in accordance with manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system.
		1.4	Appropriate workplace documentation is completed.
		1.5	All cooling systems and/or component removal/replacement activities are carried out according to industry regulations/guidelines.
2.	Final checks	2.1	Cooling systems and/or components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		2.2	Engines and/or engine components are checked after adjustment done.
		2.3	Assembly is prepared for commissioning on conformance to specifications.
		2.4	Repair report is completed by appropriate means.
3.	Clean up area	3.1	All waste material is removed and disposed of.
		3.2	Area related to work activities is cleaned.
		3.3	Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied:

Light motor vehicles, plant, motor cycles, marine and outdoor power with fluid cooled systems, air cooled systems and combination systems.

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, power tools
- pressure testers, lifting and supporting equipment
- lubricant dispensing equipment

Methods of assessments may include:

- functional testing
- pressure testing
- electrical testing
- visual,
- aural and functional assessments (including: damage, corrosion, fluid levels/leaks, wear)

Specialised equipment:

- thermometer
- heat source
- Ph tester
- Anti freeze/rust inhibitor tester
- Reverse flushing equipment

Methods should be applied under normal operating conditions.

Other resources may include:

- Thermostats
- Water pumps
- Plumbing
- Ducting
- Fans
- Belts
- Sealed and non sealed systems
- Interior heater
- Coolant heater manifold
- Heat exchangers
- Electric and viscous fans
- Ferrous and non ferrous metals
- Cooling system additives

Work activities to include:

- setting up equipment
- perform cooling system tests -pressure, combustion leakage and temperature
- inspect drive belts and pulleys
- inspect engine cooling and heater system hoses
- inspect and test thermostat and housing
- inspect and test water pump
- inspect and test fan(s) -electrical or mechanical and fan clutch
- inspect and test electrical fan control system and circuits

OH&S practices must abide by:

- Industry standards/OH&S legislation

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of following cooling system and/or associated components service procedures.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the servicing of cooling system and/or associated components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair cooling system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREMS0031A Service cooling systems & associated components

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- repair, removal and replacement procedures
- cooling system construction and operation (relevant to application)
- system component testing procedures
- equipment safety requirements
- vehicle safety requirements
- basic language and literacy
- basic numeracy
- basic reading and writing

Skills

The ability to:

- access, interpret and apply technical information
- identify cooling system faults
- repair cooling systems and/or components
- use relevant tools and equipment
- test cooling systems and components
- perform personal protection methods

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASREGS0012A: Repair and tune petrol fuel systems

### Competency Descriptor:

This unit identifies the competence required to carry out repairs to mechanical and/or electric/electronic petrol fuel systems/components. The competency does not include electronic fuel injection or electronic engine management systems

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Repair petrol fuel system/components	1.1 Petrol fuel system component repairs are completed without causing damage to any component or system. 1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 1.3 Repairs and adjustments of fuel system/components are carried out in accordance with manufacturer specifications. 1.4 Appropriate workplace documentation is completed. 1.5 All fuel system/component repair, adjustment and removal/replacement activities are carried out according to industry regulations/guidelines.
2. Tune petrol fuel system	2.1 Petrol fuel system tune up is completed without causing damage to any component or system. 2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 2.3 Tuning adjustment and adjustments of fuel system/components are carried out in accordance with manufacturer specifications. 2.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. 2.5 All fuel system/component tuning, adjustment and removal/replacement activities are carried out according to industry regulations/guidelines.

- |    |               |     |  |
|----|---------------|-----|--|
| 3. | Final checks  | 3.1 | Fuel systems and/or components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures. |
|    |               | 3.2 | Engines and/or engine components are checked after adjustment is done.   |
|    |               | 3.3 | Assembly prepared for commissioning on conformance to specifications.  |
|    |               | 3.4 | Service report completed by appropriate means.   |
| 4. | Clean up area | 4.1 | All waste material is removed and disposed of.   |
|    |               | 4.2 | Area related to work activities is cleaned.  |
|    |               | 4.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Repairing and tuning procedures appropriate to light vehicle and/or heavy vehicles and/or motorcycle, and/or marine engines and/or small engines and/or outdoor power equipment.

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools
- power tools
- special tools for removal/replacement

Methods of assessments may include:

- visual
- aural
- functional

Methods should be applied under normal operating conditions and include damage, corrosion, fluid levels, leaks wear and safety aspects.

Resources may include:

- hand tools, power tools
- pressure gauge, lifting and supporting equipment
- lubricant dispensing equipment

OH&S practices must abide by:

- Industry standards/OH&S legislation

Adjustment and testing equipment including:

- hand held meters
- engine analysers
- fuel pump testers
- emissions tester
- pressure testers



<p>Work activities:</p> <ul style="list-style-type: none"> <li>• adjusting carburettor-tuning mechanism</li> <li>• analyzing exhaust gas mixture</li> <li>• replacing sensors, controls and actuator components and circuits of computerized control petrol injection fuel system</li> <li>• servicing and replacing power and ground circuits and connections</li> <li>• replacing fuel lines, fitting and hoses</li> <li>• replacing fuel filters</li> <li>• replacing fuel pressure regulation system and components</li> <li>• adjusting or replacing cold enrichment system and components</li> <li>• removing, cleaning, reinstalling throttle body and adjusting related linkages</li> <li>• checking and adjusting idle speed and fuel mixture</li> <li>• repairing or replacing vacuum and electrical components and connection of fuel system</li> </ul>	<p>Other variables may include:</p> <ul style="list-style-type: none"> <li>• carburettors (all position, electronic, fixed venturi, variable venturi)</li> <li>• fuel pumps, mechanical and electrical</li> <li>• engine shut down system</li> </ul> <p>Specific requirements may include:</p> <ul style="list-style-type: none"> <li>• stroke and/or 4 stroke, spark ignition fuel systems</li> </ul>
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## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- carburettor fuel system/components repair procedures followed

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair and tune petrol fuel system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREGS0011A Perform routine servicing of petrol fuel systems

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- construction and operation of carburettor fuel systems (relevant to application)
- repair methods
- removal, replacement and adjustment procedures
- measuring, testing and adjustment procedures
- relevant industry rules
- safety requirements
- manufacturer/enterprise policies
- manual handling techniques
- personal safety procedures

Skills

The ability to:

- access, interpret and apply technical information
- identify carburettor fuel system faults
- use relevant tools and equipment
- test systems/components for both technical and legal requirements
- maintain customer records
- repair/tune carburettor fuel systems/components
- remove and replace relevant components
- check system for normal operation
- apply manual handling techniques
- apply personal safety procedures

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

- The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREES0082A: Repair ignition systems

### Competency Descriptor:

This unit identifies the competence required to repair electronic ignition system (not including systems associated with electronic engine management) and/or magnetos and/or associated components for light vehicles, plant, motor cycles, marine and outdoor power equipment.

### Competency Field:

Automotive Service and Repair

### ELEMENT OF COMPETENCY

### PERFORMANCE CRITERIA

1.	Repair ignition systems/ components.	1.1	Ignition system is repaired without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Necessary repair, adjustment or component replacement is carried out using appropriate tools, techniques and materials.
		1.4	Ignition systems are tested and results are recorded in accordance with company policies and procedures.
		1.5	Repairs are carried out according to industry regulations/guidelines, OH&S guidelines, National guidelines for vehicle roadworthiness) and company procedures/policies.

### RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- petrol engines utilising electronic ignition systems and/or magnet o systems (not including systems associated with electronic engine management)

Sources of information/documents may include:

OH&S practices must abide by:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- National guidelines for vehicle road worthiness
- Industry guidelines
- OH&S guidelines

Resources may include:

- hand tools, test equipment including multimeters, ohmmeters, voltmeters, tachometer, timing light, spark plug cleaner/tester.
- power tools, air tools, tunescopes, engine analysers, dynamometers, distributor test bench
- coil, condenser, transistor, insulation testers. soldering equipment

Methods may include:

- disassembly, assembly, component replacement
- function test
- measurements
- visual and functional assessments including damage, wear

Methods should be applied under normal operating conditions.

Other variables may include:

- single and dual points, transistor assisted, single and multiple distributors, ballast and n on ballast primary circuits, suppressed and non suppressed high tension leads
- advance mechanisms: mechanical, vacuum, electronic
- CDI, magnetic pulse, optic, hall effect

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing ignition systems/components
- repairing ignition systems/components

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair ignition system
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREES0031A Carry out minor repairs to electrical circuits/systems

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- ignition system construction and operation appropriate to application
- measuring and testing procedures
- vehicle, equipment and personal safety requirements
- ignition scope patterns

Skills

The ability to:

- access, interpret and apply technical information including statutory regulations
- safely and correctly use tools and equipment
- test and identify faults in ignition systems/components
- repair ignition systems

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**Critical Employability Skills**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills



## ASREGS0052A: Service and maintain diesel fuel injection systems

Competency Descriptor:

This unit identifies the competence required to service Diesel fuel injection systems and components for light/heavy vehicles, vessels, outdoor power equipment.

Competency Field: Automotive Service and Repair

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Service and maintain diesel fuel injection systems and components.	1.1 Diesel fuel injection system and component service is completed without causing damage to any component or system.
	1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3 Diesel fuel injection pumps/components are serviced according to and within manufacturer specifications.
	1.4 Diesel fuel injection pumps/components are tested to comply with operational requirements.
	1.5 All service/repair/testing activities are carried out according to industry regulations/guidelines, OH&S standards and company procedures/policies.

### RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- vehicle/plant/manufacturer specifications
- industry/workplace codes of practice
- enterprise operating procedures

OH&S practices must abide by:

- Industry guidelines
- OH&S guidelines

Resources may include:

- hand tools
- cleaning equipment
- timing gauges
- injector cleaning equipment
- injector testing equipment
- manometer
- pressure and vacuum gauges

Methods may include:

- cleaning, measuring, visual inspection, assessing, lubricating and testing components
- removing and replacing injectors

Methods should be applied under normal operating conditions.

Other variables may include:

- lift pumps
- pre-cleaners
- air cleaners
- spark arrestors

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- component testing and servicing procedures
- servicing/maintaining diesel fuel injector system

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service and maintain diesel fuel injector system
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREGS0011A Perform routine servicing of petrol fuel systems

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- servicing procedures (including bleeding)
- principles of operation of diesel fuel injection systems and components
- equipment/material safety requirements
- manufacturer specification charts
- testing procedures
- personal safety requirements

Skills

The ability to:

- access, interpret & apply technical information
- use relevant tools and equipment
- check system for normal operations
- maintain customer records
- apply testing procedures
- service diesel fuel injection systems

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRSSS0051A: Balance wheel assembly**

Competency Descriptor:

This unit identifies the skills and knowledge required to required to balance wheel assembly for light motor vehicles

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of wheel assembly and associated components	1.1 Routine checks undertaken demonstrate knowledge of the principles of wheel assembly and associated components. 1.2 The main parts of designated wheel assembly and associated components are correctly identified. 1.3 Wheel assembly components are checked for wear using appropriate maintenance principles, techniques, tools and equipment. 1.4 Wheel assembly and associated components identified as requiring further diagnosis, repair or adjustment reported are documented by appropriate means .
2. Remove wheels from vehicle	2.1 Job information/instructions are accurately interpreted and the work is organized accordingly. 2.2 Tools and workshop equipment used are appropriate for the type and size vehicle. 2.3 The vehicle is safely secured in position before work begins. 2.4 Lug nuts are loosened and the vehicle is lifted to an appropriate height and secured in position before wheels are removed. 2.4 Wheels are safely transported to work area for balancing removal and/or repair or replacement of tyres.
3. Balance tyre and rim combination	3.1 Tyres and rims are balanced without causing damage to any component or system. 3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 3.3 Balancing is completed within established industry guidelines.

	3.4	All balancing activities are carried out according to industry regulations/guidelines.
	3.5	Static and dynamic wheel balance terms are identified.
4.	Replace wheel assembly to vehicle	4.1 Lug-tool used allows wheel nuts to be appropriately tightened without damage to nuts or studs
	4.2	All wheel nuts are replaced and securely tightened.
	4.3	Lifting equipment and jack stand are removed from under vehicle.
5.	Clean up area	5.1 All waste material is removed and disposed of.
	5.2	Area related to work activities is cleaned.
	5.3	Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

<p>Activities may include:</p> <ul style="list-style-type: none"> <li>• identify unusual tire wear patterns and determining needed repairs</li> <li>• identify wheel/tire vibrations, shimmy, hop, (tramp) problems and determining needed repairs</li> <li>• inspecting wheels, rims, spacer, clamps studs and nuts, replacing as needed</li> <li>• inspecting tyres, checking and adjusting air pressure</li> <li>• measuring wheel, tyre radial and lateral runout</li> <li>• measuring tyre diameter and matching tyres on tandem axle(s)</li> <li>• balancing wheel and tyre assembly (static)</li> <li>• balancing wheel and tyre assembly (dynamic)</li> <li>• rotating tyres according to manufacturers' recommendations</li> <li>• dismounting, inspecting, repairing and remounting tyre and wheel</li> <li>• reinstalling wheel and lug nuts</li> </ul>	<p>Specific requirements:</p> <ul style="list-style-type: none"> <li>• heavy tyre fitting to use static wheel balance only</li> </ul> <p>Resources may include:</p> <ul style="list-style-type: none"> <li>• hand tools,</li> <li>• wheel balances</li> </ul> <p>OH&amp;S practices must abide by:</p> <ul style="list-style-type: none"> <li>• Industry standards/OH&amp;S legislation</li> </ul>
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## Methods include:

- visual inspection
- static wheel balance
- combination of static/dynamic or dynamic balance

Methods should be applied under normal operating conditions.

## Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- use of balancing equipment
- safe working practices
- wheel balances

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the balancing of wheel assembly or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to balance wheel assembly
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Principles of static and dynamic balances
- Static wheel balance procedures
- Static/dynamic combination balance procedures
- basic language, literacy and numeracy skills related to balancing wheel assembly

Skills

The ability to:

- access, interpret and apply technical information
- use relevant tools & equipment
- carry out a wheel balance
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required.
- any relevant workplace procedures.
- any relevant product and manufacturing specifications.
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication :

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate.
- present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote the level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

**ASRCOR0101A: Carry out basic mechanical cutting operations**

## Competency Descriptor:

This unit deals with the skills and knowledge required to effectively carry out basic mechanical cutting operations as applies to individuals working in the automotive service and repairs industry.

## Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>	<b>PERFORMANCE CRITERIA</b>
1. Determine job requirements	<ul style="list-style-type: none"><li>1.1 Job specification requirements are determined from job sheets and/or instructions.</li><li>1.2 Appropriate method/machine is selected to meet specifications.</li><li>1.3 Machine is loaded and adjusted appropriately for operation consistent with standard operating procedures.</li></ul>
2. Select/set up machine tooling	<ul style="list-style-type: none"><li>2.1 Most appropriate tooling is selected.</li><li>2.2 Tooling is correctly installed using standard operating procedures.</li><li>2.3 Machine is set up and adjusted using standard operating.</li></ul>
3. Operate mechanical cutting machine	<ul style="list-style-type: none"><li>3.1 Appropriate stops and guards are set and adjusted as required.</li><li>3.2 Material is secured and correctly positioned using measuring equipment as necessary.</li><li>3.3 Machine is started and stopped safely to standard operating procedures.</li><li>3.4 Machine is operated to cut/hole material to specifications using standard operating procedures.</li><li>3.5 Lubricant is used as required.</li><li>3.6 Appropriate safety precautions are taken.</li></ul>
4. Check material for conformance to specification	<ul style="list-style-type: none"><li>4.1 Machine and/or tooling are adjusted as required and in process adjustments carried out as necessary.</li><li>4.2 Material is cut and/or holed to within workplace tolerances.</li><li>4.3 Material is used in most economical way.</li><li>4.4 Codes and standards are observed.</li></ul>



## RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables 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

This unit may cover the operation of a number of the following activities:

- sawing
- shearing
- cropping
- holing /boring

Materials may include :

- ferrous metals
- non-ferrous metals
- non-metallic products

Examples of machines that could be covered include:

- guillotines
- croppers
- cold saws
- band saws
- drills
- power hacksaws
- cut off saw
- automatic saws

Work is undertaken under supervision or as part of a team environment to predetermined:

- standards of quality
- safety
- workshop procedure

This unit includes the set up and operation of a range of:

- mechanical cutting equipment
- holing /holing equipment

Typical applications of this unit may include cutting for:

- manufacture
- production
- cutting of materials selected from stores in a maintenance environment
- fabrication

## EVIDENCE GUIDE

Competency is to be demonstrated safely and effectively when cutting material in accordance with the range listed within the range of variables statement.

### (1) Critical Aspects of Evidence

It is essential that competence be observed in the following aspects:

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the mechanical cutting of materials or other units requiring the exercise of the skills and knowledge covered by this unit.

**(2) Pre-requisite Relationship of Units**

This unit does not cover hand or hand held power tools used for cutting purposes eg: circular saws, nibblers and side grinder. These skills are covered by other units, see Unit MEMCOR0191A (Use hand tools) and Unit MEMCOR0111A (Use power tools).

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements including relevant OH&S legislation and regulations
- cutting equipment
- cutting processes operations or activities
- hand tools and equipment
- materials relative to cutting processes
- materials preparation
- manual handling
- measurement
- drawings, sketches and instructions

Skills

The ability to:

- work safely to instructions
- interpret relative drawings and instructions
- use power tools and hand tools
- select material
- measure relative to cutting processes
- communicate effectively

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"><li>Carries out established processes</li><li>Makes judgement of quality using given criteria</li></ul>	<ul style="list-style-type: none"><li>Manages process</li><li>Selects the criteria for the evaluation process</li></ul>	<ul style="list-style-type: none"><li>Establishes principles and procedures</li><li>Evaluates and reshapes process</li><li>Establishes criteria for evaluation</li></ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRSS0011A: Perform basic inspection of steering and suspension system**

Competency Descriptor:

This unit identifies the skills and knowledge required to perform basic inspection of steering and suspension system for light motor vehicles and small trucks

Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Undertake routine checks of steering and suspension systems	1.1	Routine checks undertaken demonstrate knowledge of the principles of steering and suspension systems.
		1.2	The main parts of designated steering and suspension systems are correctly identified.
		1.3	Steering and suspension systems are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Steering and suspension components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means .
2.	Inspect suspension system	2.1	Suspension system inspection is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications .
		2.3	Inspections of suspension systems are carried out in accordance with manufacturer specifications.
		2.4	System/component condition is determined by comparing actual component condition to manufacturer specifications for limits/tolerances.
		2.5	Appropriate workplace documentation is completed and dealt with as related to inspection outcomes.
		2.6	All suspension system inspection and condition identification activities are carried out according to industry regulations/guidelines.

- |    |                         |     |  |
|----|-------------------------|-----|--|
| 3. | Inspect steering system | 3.1 | Suspension system inspection is completed without causing damage to any component or system.                                       |
|    |                         | 3.2 | Correct information is accessed and interpreted from appropriate manufacturer specifications .                                     |
|    |                         | 3.3 | Inspections of suspension systems are carried out in accordance with manufacturer specifications for methods, tools and equipment. |
|    |                         | 3.4 | System/component condition is determined by comparing actual component condition to manufacturer specifications.                   |
|    |                         | 3.5 | Appropriate workplace documentation is completed.  |
|    |                         | 3.6 | All suspension system inspection and condition are carried out according to industry regulations/guidelines.                       |
| 4. | Clean up area           | 4.1 | All waste material is removed and disposed of.   |
|    |                         | 4.2 | Area related to work activities is cleaned.  |
|    |                         | 4.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Methods of assessments may include:

- visual
- aural
- functional

Methods should be applied under normal operating conditions and include damage, corrosion, fluid levels, leaks wear and safety aspects.

OH&S practices must abide by:

- Industry standards/OH&S legislation

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Other variables may include:

- lateral and longitudinal arms
- ball joints, struts, idler arms, steering boxes and columns
- self levelling devices, ride control, height control
- electronic controlled systems, 2 & 4 wheel steer
- independent suspension (hydraulic, spring, air)
- front and rear shock absorbers
- rack and pinion steering gears

Steering and suspension checks to include:

- corrosion
- fluid leaks
- wear and other related malfunctions
- harshness
- noise
- binding
- excessive free play
- excessive backlash and "high point"

Work activities may include:

- inspecting steering shaft universal-joint(s), flexible coupling(s) collapsible column, lock cylinder mechanism and steering wheel
- inspecting rack and pinion steering gear
- inspecting manual or power rack and pinion steering gear inner tie rod ends ad bellows boots
- inspecting power steering pump, pump mount, pump seals and gaskets
- inspecting power steering pump pulley and check alignment
- inspecting power steering hoses and fittings
- inspecting pitman arm, relay (centreline/intermediate) rod, idler arm and mounting and steering linkage dampen
- inspecting tie rod ends and sleeves
- inspecting electronically-controlled steering systems components
- inspecting upper and lower control arm bushing, shafts and ball joints
- inspecting strut (compression/tension) cords and bushings
- inspecting steering knuckle assemblies
- inspecting suspension system torsion bars and mounts
- inspecting coil springs and insulators
- inspecting stabilizer bar bushings, brackets and links
- inspecting MacPherson strut cartridge or assembly, strut coil spring and insulator
- inspecting traverse links, control arms, bushing and mounts of rear suspension
- inspecting lead springs insulators, shackles, brackets, bushings and mounts of rear suspension

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- suspension systems inspection procedures and condition assessment
- steering systems inspection procedures and condition assessment
- safe working practices



**(1) Critical Aspects of Evidence**

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the inspection of steering and suspension system or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to inspect steering and suspension system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- personal safety requirements
- vehicles/equipment safety requirements
- principles of operation of mechanical and power-assisted steering systems
- principles and operation of suspension systems
- construction and operation of suspension systems relevant to inspection requirements
- construction and operation of steering systems relevant to inspection requirements
- steering and suspension system inspection and testing procedures (relevant to application)

Skills

The ability to:

- access, interpret and apply technical information
- apply steering system inspection and testing procedures
- apply suspension system inspection and testing procedures
- apply steering system/components condition assessment procedures
- apply suspension system/components assessment procedures
- use relevant tools and equipment
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**Underpinning Knowledge and Skills (Cont'd)**Knowledge

Knowledge of:

- steering and suspension system /components condition assessment procedures
- relevant technical information
- relevant manufacturer/company policies
- basic language, literacy and numeracy skills
- basic reading and writing skills

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASRSSS0021A: Remove service and replace steering and suspension system components

### Competency Descriptor:

This unit identifies the skills and knowledge required to remove service and replace steering and suspension system and associated components for light motor vehicle

### Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of steering and suspension systems and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of steering and suspension systems and associated components.
		1.2	The main parts of designated steering and suspension systems and associated components are correctly identified.
		1.3	Steering and suspension system and components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Steering and suspension systems and associated components identified as requiring further diagnosis, repair or adjustment are reported and findings documented by appropriate means.
2.	Remove faulty steering and suspension system components from motor vehicle	2.1	The vehicle is safely positioned and appropriately raised and secured before components are removed.
		2.2	The components are removed with minimal force without causing damage to any component or system.
		2.3	All fixing devices are removed and hoses, linkages and other attachments where necessary are disconnected.
		2.4	Tools and equipment used are safe and appropriate for the job, and are operated following approved procedures.
3.	Service steering systems and or associated components	3.1	Steering and suspension system components are dismantled to remove parts.
		3.2	Steering system service is completed without causing damage to any component or system.
		3.3	Correct information is accessed and interpreted from appropriate manufacturer specifications.

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- |    |  |  |   |
|----|--|--|---|
|    | 3.4  | Service to steering systems is carried out in accordance with manufacturer specifications for methods, equipment.                  |   |
|    | 3.5  | Appropriate workplace documentation is completed and dealt with relevant to service outcomes.                                      |   |
|    | 3.6  | All steering systems service activities are carried out according to industry regulations/ guidelines.                             |   |
| 4. | Service suspension systems and or associated components                                | 4.1  | Steering and suspension system components are dismantled to remove parts.                                       |
|    | 4.2  | Suspension system service is completed without causing damage to any component or system.  |   |
|    | 4.3  | Correct information is accessed and interpreted from appropriate manufacturer specifications.                                      |   |
|    | 4.4  | Service to suspension systems is carried out in accordance with manufacturer specifications.                                       |   |
|    | 4.5  | Appropriate workplace documentation is completed.  |   |
|    | 4.6  | All suspension systems service activities are carried out according to industry regulations/ guidelines.                           |   |
| 5. | Fit replacement or repaired steering and suspension system components to motor vehicle | 5.1  | Reassembly is carried out in accordance with instructions given in respect to the fitting of components/units . |
|    | 5.2  | Components replaced are adjusted to ensure correct system operation after fitting.   |   |
|    | 5.3  | Fastening devices e.g. nuts, bolts are tightened to specified torque and are not damaged from improper fitted tools or tool usage. |   |
|    | 5.4  | Where necessary reservoirs are filled to appropriate height with correct type fluid.   |   |
| 6. | Clean up area  | 6.1  | All waste material are removed and disposed of.   |
|    | 6.2  | Area related to work activities s cleaned.   |   |
|    | 6.3  | Tools and equipment are cleaned, maintained and stored.  |   |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- Industry standards/OH&S legislation

Work activities may include

- selecting hand tools, loosening, hammering, driving-out; removing bolts and pins
- inspecting manual or power rack and pinion worn steering gear
- inspecting power steering pump pulley
- inspecting power steering pump, pump mounts, seals and gaskets, tie rod ends
- inspecting upper and lower control arms, bushings, shafts and rebound bumpers
- inspecting strut (compression/tension) rods and bushings
- inspecting upper and lower ball joints on short and long arm suspension coil springs and spring
- insulators
- inspecting torsion bars
- inspecting stabilizer bar bushings, brackets and links
- inspecting ball joints on MacPherson strut suspension system
- inspecting MacPherson strut cartridge or assemblies, strut coil spring and insulators
- inspecting coil springs and insulators of rear suspensions
- inspecting transverse links, control arms, bushing and mounts of rear suspensions
- inspecting leaf springs, insulators (silencers), shackles, brakes, bushings and mounts of rear suspension

Other variables may include:

- lateral and longitudinal arms
- ball joints, struts, idler arms, steering boxes and columns
- self levelling devices, ride control, height control
- electronic controlled systems, 2 & 4 wheel steer
- independent suspension (hydraulic, spring, air)
- front and rear shock absorbers
- rack and pinion steering gears

Methods of assessments may include:

- visual
- aural
- functional

Methods should be applied under normal operating conditions and include damage, corrosion, fluid levels, leaks wear and safety aspects.

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- suspension systems inspection procedures and condition assessment
- steering systems inspection procedures and condition assessment
- safe working practices

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the inspection of steering and suspension system or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to remove and replace steering and suspension system and/or associated components
- demonstrate the ability to service steering and suspension system and/or associated components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- personal safety requirements
- vehicles/equipment safety requirements
- principles of operation of mechanical and power-assisted steering systems
- principles and operation of suspension systems
- construction and operation of suspension systems relevant to inspection requirements
- construction and operation of steering systems relevant to inspection requirements
- steering and suspension system inspection and testing procedures (relevant to application)
- steering and suspension system /components condition assessment procedures
- relevant technical information
- relevant manufacturer/company policies
- basic language, literacy and numeracy skills
- basic reading and writing skills

Skills

The ability to:

- access, interpret and apply technical information
- remove steering and suspension system
- replace steering and suspension system s
- service steering system/components
- service suspension system/components
- use relevant tools and equipment
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials



**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

**ASRSSS0091A: Prepare for wheel alignment operations**

Competency Descriptor:

This unit identifies the skills and knowledge required to prepare motor vehicle for wheel alignment operations and applies to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Plan for wheel alignment operations	1.1 Quality Assurance requirements of motor vehicle repairs operations are recognised and adhered to. 1.2 Preparation and planning requirements are identified from service manuals/work location and/or supervisor's instructions. 1.3 OH&S requirements are identified and adhered to in accordance with application tasks and workplace environment. 1.4 Safety hazards are identified and correct procedures adopted to minimise risk to self and others. 1.5 Materials are selected according to supervisor's instructions. 1.6 Materials are safely handled and stored/located ready for application. 1.7 Appropriate personal protective equipment are selected, correctly fitted and used. 1.8 Tools and equipment selected are consistent with the job requirements, checked for serviceability and any faults reported to supervisor. 1.9 Materials/components selected are consistent with the job requirements where applicable and checked for damage.
2. Prepare lifting and supporting equipment for wheel alignment operations	2.1 Activities for equipment preparation are identified from specifications or supervisor's instructions. 2.2 Equipment preparation is carried out to satisfy requirements of installation/repair process.

- |    |   |     |  |
|----|---|-----|--|
| 3. | Prepare material/spare parts/<br>consumables selected for wheel<br>alignment operations | 3.1 | Activities for material preparation are identified from specifications or supervisor's instructions.             |
|    |   | 3.2 | Material/spare parts/consumables preparation is carried out to satisfy requirements of service/repair process.   |
| 4. | Prepare work area suitable for<br>wheel alignment operations                            | 4.1 | Activities to be carried out in work area identified from technique/method of service/repair and access to area. |
|    |   | 4.2 | Work area is prepared for service/repair process according to supervisor's instructions.                         |
| 5. | Set up tools and equipment<br>appropriate for wheel alignment<br>operations             | 5.1 | Regular tools/measuring devices suitable for application processes are identified to job requirements.           |
|    |   | 5.2 | Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.       |
| 6. | Clean up  | 6.1 | Materials are stacked/stored for re-use or disposed of.  |
|    |   | 6.2 | Work area is cleared.  |
|    |   | 6.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Light vehicle and/or heavy vehicle and/or motor cycles

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Specific requirements: one or more of the following systems:

- Rear wheel drive, front wheel drive.
- 2 & 4 wheel steer, tandem steer
- 1 wheel steer

OH&S practices must abide by:

- Industry standards/OH&S guidelines

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and understanding wheel alignment information
- preparing for wheel alignment operations
- safe working practices

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to prepare motor vehicle and system components for wheel alignment operations
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S regulations
- wheel alignment system types and their construction
- wheel alignment components
- the operating principles of wheel alignment systems, sub-assemblies and components
- the use of appropriate measuring tools and test equipment
- the use of appropriate hand tools and specialised equipment
- personal safety requirements
- basic numeracy techniques
- basic language and literacy techniques
- basic reading and writing techniques

Skills

The ability to:

- complete all tasks to OH&S regulations
- access and interpret technical information
- correctly use tools and equipment
- correctly set up alignment equipment
- prepare for wheel alignment operations
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. checklists, job sheets
- read and interpret manufacturer specifications
- read and interpret decimals

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRTRN0011A: Prepare for manual/automatic transmission service/repair

Competency Descriptor:

This unit identifies the skills and knowledge required to prepare for manual/automatic transmissions service/repair light/heavy vehicle, plant and outdoor power equipment

Competency Field:

Automotive Service and Repair

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

1. Plan for service/repair operations	1.1	Quality Assurance requirements of motor vehicle repairs operations are recognised and adhered to.
	1.2	Preparation and planning requirements are identified from service manuals/work location and/or supervisor's instructions.
	1.3	OH&S requirements are identified and adhered to in accordance with application tasks and workplace environment.
	1.4	Safety hazards are identified and correct procedures adopted to minimise risk to self and others.
	1.5	Materials are selected according to supervisor's instructions.
	1.6	Materials are safely handled and stored/located ready for application.
	1.7	Appropriate personal protective equipment selected, correctly fitted and used.
	1.8	Tools and equipment selected are consistent with the job requirements, checked for serviceability and any faults reported to supervisor.
	1.9	Materials/components selected are consistent with the job requirements.
2. Prepare lifting and supporting equipment for service/repair process	2.1	Activities for equipment preparation are identified from specifications or supervisor's instructions.
	2.2	Equipment preparation is carried out to satisfy requirements of service/repair process.



3.	Prepare material/spare parts/ consumables selected for service/repair process	3.1	Activities for material preparation are identified from specifications or supervisor's instructions.
		3.2	Material/spare parts/consumables preparation is carried out to satisfy requirements of service/repair process.
4.	Prepare work area suitable for service/repair process	4.1	Activities to be carried out in work area identified from technique/method of service/repair and access to area.
		4.2	Work area is prepared for service/repair process according to supervisor's instructions.
5.	Set up tools and equipment appropriate for service/repair process	5.1	Regular tools/measuring devices suitable for application processes are identified to job requirements.
		5.2	Regular tools/measuring devices is set up safely and effectively to carry out processes where applicable.
6.	Clean up	6.1	Materials are stacked/stored for re-use or disposed of.
		6.2	Work area is cleared.
		6.3	Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

This unit applies to the processes carried out in preparing for manual/automatic transmission service/repair as per instructions.

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- transmission/components service/repair procedures

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the preparation of transmissions for servicing/repair or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to prepare for the servicing/repairing of manual/automatic transmission assemblies
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- relevant technical information
- equipment safety requirements
- vehicle/equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- personal safety procedures
- service procedures
- transmission lubricants/fluids and their application

#### Skills

The ability to:

- work safely to instructions
- use tools and measuring devices
- use elevated work platforms
- prepare for service/repairs of manual/automatic transmission without causing damage to any component or system

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASRTRN0021A: Remove/refit/replace manual transmission and drive train system components/unit from vehicle**

### Competency Descriptor:

This unit identifies the competence required to carry out the removal/refitting/replacement of manual transmission and drive train system and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment

### Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Undertake routine checks of transmission systems and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of transmission systems and associated components.
		1.2	The main parts of designated transmission systems and associated components are correctly identified.
		1.3	Manual transmission and drive train system and components checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Manual transmission and drive train system and associated components identified as requiring further diagnosis, repair or adjustment is reported or documented by appropriate means.
2.	Remove manual transmission and drive train system from motor vehicle	2.1	The vehicle is safely positioned and appropriately raised and secured before components are removed.
		2.2	The components are removed with minimal force without causing damage to any component or system.
		2.3	All fixing devices are removed, hoses, linkages and other attachments where necessary are disconnected.
		2.4	Tools and equipment used are safe and appropriate for the job, and are operated following approved procedures.
3.	Fit replacement or repaired manual transmission and drive train system components/units to motor vehicle	3.1	Reassembly is carried out in accordance with instructions given in respect to the fitting of components/units.
		3.2	Components replaced are adjusted to ensure correct system operation after fitting.

- |    |     |  |
|----|-----|--|
|    | 3.3 | Fastening devices e.g. nuts, bolts are tightened to specified torque and are not damaged from improper fitted tools or tool usage. |
|    | 3.4 | Where necessary reservoirs are filled to appropriate height with correct type fluid.   |
| 4. | 4.1 | Clean up area<br>All waste material is removed and disposed of.  |
|    | 4.2 | Area related to work activities is cleaned.  |
|    | 4.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Work activities:

- removing clutch assemblies from vehicle
- removing clutch master and slave cylinder
- removing manual transmission from vehicle
- removing drive and half shaft
- universal and constant-velocity (CV) joint from vehicle
- removing ring and pinion gears and differential case
- removing limited slip differential
- removing axle shaft
- removing four-wheel drive components

Other variables may include:

- U-joint
- CV joints
- CV boots
- centre bearings
- half shafts
- axles
- bearings
- tracks
- track rollers and idlers, track tensioners, sprockets, drive shafts, power take off drives

OH&S practices must abide by:

- Industry standards/OH&S legislation

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- manual transmission and drive train system removal/replacement procedures and condition assessment
- safe working practices

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to remove and replace manual transmission and drive train system
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- personal safety requirements
- vehicles/equipment safety requirements
- principles of operation of manual transmission and drive train systems
- construction and operation of manual transmission and drive train system
- manual transmission and drive train system removal and testing procedures (relevant to application)
- relevant technical information
- relevant manufacturer/company policies
- basic language, literacy and numeracy skills
- basic reading and writing skills

Skills

The ability to:

- access, interpret and apply technical information
- remove manual transmission and drive train system
- replace manual transmission and drive train system
- use relevant tools and equipment
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASRTRN0031A: Service clutch, CV joints and final drive assemblies and or associated components

### Competency Descriptor:

This unit identifies the competence required to carry out servicing to clutch assemblies CV joints and final drive assemblies and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment

### Competency Field:

Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of clutch, CV joints and final drive assemblies and associated components	1.1 Routine checks undertaken demonstrate knowledge of the principles of clutch, CV joints and final drive assemblies and associated components. 1.2 The main parts of designated clutch, CV joints and final drive assemblies and associated components are correctly identified. 1.3 Clutch, CV joints and final drive assemblies and associated components are checked, using appropriate maintenance principles, techniques, tools and equipment. 1.4 Clutch, CV joints and final drive assemblies and associated components identified as requiring further diagnosis, repair or adjustment is reported and findings documented by appropriate means.
2. Service clutch assemblies and/or associated operating system components	2.1 Clutch assemblies and/or associated operating system components are serviced without causing damage to any component or system. 2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 2.3 All servicing procedures are carried out in accordance with manufacturer specifications and tolerances. 2.4 Testing is carried out according to industry regulations/guidelines.
3. Service CV joints assemblies and/or associated operating system components	3.1 CV joints assemblies and/or associated operating system components are serviced without causing damage to any component or system. 3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.

- |    |     |  |
|----|-----|--|
|    | 3.3 | All servicing procedures carried out in accordance with manufacturer specifications and tolerances.                                  |
|    | 3.4 | Testing is carried out according to industry regulations/guidelines.   |
| 4. |     | Service final drive assemblies and/or associated operating system components   |
|    | 4.1 | Final drive assemblies and/or associated operating system components are serviced without causing damage to any component or system. |
|    | 4.2 | Correct information is accessed and interpreted from appropriate manufacturer specifications.  |
|    | 4.3 | All servicing procedures are carried out in accordance with manufacturer specifications and tolerances.                              |
|    | 4.4 | Testing is carried out according to industry regulations/guidelines.   |
| 5. |     | Clean up area  |
|    | 5.1 | All waste material is removed and disposed of.   |
|    | 5.2 | Area related to work activities is cleaned.  |
|    | 5.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

Industry standards/OH&S legislation

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Other variables may include:

U-joint, CV joints, CV boots, centre bearings, half shafts, axles, bearings, tracks, track rollers and idlers, track tensioners, sprockets, drive shafts, power take off drives

**Work activities:**

- removing clutch assemblies from vehicle
- removing clutch master and slave cylinder
- removing manual transmission from vehicle
- removing drive and half shaft
- removing universal and constant-velocity (CV) joint from vehicle
- removing ring and pinion gears and differential case
- removing limited slip differential
- removing axle shaft
- removing four-wheel drive components

**Checks may include:**

- wear
- distortion
- tensions
- misalignment
- leaks
- other related malfunctions

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- clutch, CV joints and final drive assemblies servicing procedures and condition assessment
- safe working practices

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service clutch, CV joints and final drive assemblies
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- personal safety requirements
- vehicles/equipment safety requirements
- principles of drive train systems
- construction and operation of clutch, CV joints and final drive assemblies
- Clutch, CV joints and final drive assemblies servicing and testing procedures (relevant to application)
- relevant technical information
- relevant manufacturer/company policies
- basic language, literacy and numeracy skills
- basic reading and writing skills

Skills

The ability to:

- access, interpret and apply technical information
- service clutch, CV joints and final drive assemblies
- use relevant tools and equipment
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit
- demonstrate work activities

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## **ASRBRK0011A: Perform routine inspection of brake system component/unit**

Competency Descriptor:

This unit identifies the skills and knowledge required to required to perform routine inspection of brake system component/unit for light motor vehicles

Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1	Undertake routine checks of brake system	1.1	Routine checks undertaken demonstrate knowledge of the principles of brake system.
		1.2	The main parts of designated brake system are correctly identified.
		1.3	Braking systems are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Braking components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2	Inspect brake system	2.1	Brake system inspection is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Inspections of brake systems are carried out in accordance with manufacturer specifications.
		2.4	System/component condition is determined by comparing actual component condition to manufacturer specifications.
		2.5	Appropriate workplace documentation is completed.
		2.6	All brake system inspection and condition identification activities are carried out according to industry regulations/guidelines.
3.	Clean up area	3.1	All waste material is removed and disposed of.
		3.2	Area related to work activities is cleaned.
		3.3	Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENT

Methods of inspection may include:

- visual
- aural
- functional

methods should be applied under normal operating conditions and include damage, corrosion, fluid levels, leaks wear and safety aspects

Performing routine inspection may include

- inspecting brake lines and fittings for leaks, dents, kinks, rusts, cracks or wear
- inspecting flexible brake hoses for leaks, kinks, cracks, bulging and wear
- inspecting metering (hold-off), proportioning (balance), pressure differential and combination valves
- inspecting sensing (load) proportioning valves
- inspecting brake warning light system
- inspecting and measuring brake drum
- inspecting calliper housing for leak and damage
- inspecting and measuring motor with dial indicator and micrometer Inspecting and checking valve of power assist unit for proper operations
- inspecting anti-lock brake system hydraulic, electrical and mechanical components

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, power tools
- special tools for removal
- safety stands
- measuring and testing equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Other variables may include:

- disc pads
- master cylinders
- brake shoes
- brake callipers
- brake hoses
- brake actuators
- mechanical devices
- valves and warning lights

OH&S practices must abide by:

- Industry standards/OH&S legislation



## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the inspection of brake system components or other units requiring the exercise of the skills and knowledge covered by this unit.

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to inspect brake system and/or associated components
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- Take responsibility for the quality of their own work
- Plan tasks in all situations and review task requirements as appropriate
- Perform all tasks in accordance with standard operating procedures
- Perform all related tasks to specification
- Use accepted automotive service repair techniques, practices, processes and workplace procedures.

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- braking system operating principles
- service procedures including visual inspection, bleeding and adjustment
- types of brake fluids and their application
- relevant technical information
- hazards associated with brake dust
- equipment safety requirements
- vehicle safety requirements
- relevant manufacturer/company policies
- environmental requirements for disposal of substances
- types of brake material and their potential dangers
- basic language, literacy and numeracy skills

**Underpinning Knowledge and Skills (Cont'd)**Skills

The ability to:

- access, interpret and apply technical information
- inspect brake systems and associated components
- use relevant tools and equipment
- check system for normal operation
- listen to and follow verbal instructions
- exchange technical information
- read and interpret company forms e.g. job sheets, checklist
- use and interpret measurements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication,

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.















**MEMCOR0101A: Prepare basic engineering drawing**

## Competency Descriptor:

This unit deals with the skills and knowledge required to effectively prepare basic engineering drawing, and applies to individuals working in the metal engineering and maintenance industry.

## Competency Field:

Metal, Engineering and Maintenance

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Identify drawing requirements	1.1	Requirements and purpose of drawing are determined from customer and/or work specification and associated documents.
		1.2	Identified and collected all data necessary to produce the drawing.
		1.3	Drawing requirements are confirmed with relevant personnel and timeframes for completion established.
2.	Prepare or make changes to engineering drawing	2.1	Drafting equipment selected are appropriate to the drawing method chosen.
		2.2	Drafting principles is applied to produce a drawing that is consistent with standard operating procedures within the enterprise.
		2.3	All work safely is undertaken to prescribed procedure
		2.4	Completed drawing is approved in accordance with standard operating procedures.
3.	Prepare engineering parts list	3.1	Components and parts are identified and organised by component type and/or in accordance with organisation/customer requirements.
4.	Issue drawing	4.1	Completed drawings and or parts lists are in accordance with standard operating procedures.
		4.2	Copied/issued approved drawings and or parts lists to relevant personnel in accordance with standard operating procedures.
		4.3	Approved drawings and or parts lists are stored and catalogued in accordance with standard operating procedures.

## RANGE STATEMENT

This unit applies to any of the full range of engineering disciplines;

- mechanical
- electrical/electronic
- fabrication

Drawing records may include

- cataloguing
- issuing security classifications
- filing
- preparing
- distribution lists
- drawings

Copies may be issued as:

- hard copy
- photographic
- slide or transparency form
- presentation
- a single drawing and/or
- with other drawings
- support documentation as a package

Geometric construction to include:

- circles
- regular polygons with four, seven and eight sides
- pentagon inscribed within measured circle
- ellipse
- triangles with specified angles
- arcs thru three points; tangent to two circles

Multi-view (orthographic 2-D) drawings:

- full scale (1:1) orthographic 3-view drawing using third angle projection with top, front and right side view – show all hidden features and center lines

Consultations may include reference to appropriate personnel including

- technical supervisory
- manufacturers
- suppliers
- contractors
- customers

Specifications may be obtained from

- design information
- customer deals/concepts/expectations/requirements
- sketches
- preliminary layouts

Drawing instruments and supplies:

- drafting kit/instruments
- blue prints
- drawings/modules/photographs

Alphabet of line:

- object line
- hidden line
- centre line
- section line
- dimension
- extension line
- cutting line
- short break line
- phantom line

Pictorial (3-D) drawing to include:

- isometric corner with left and right side lines each 30 degrees up from horizontal and third line at a vertical, with all three lines joining in a common intersection
- full scale (1:1) basic isometric drawing

Dimension reading:

- dimensioning styles and methods: co-ordinate, linear/datum
- dimensioning 2-D drawing
- dimensioning complex shapes: spheres, cylinders, tapers, pyramids

## EVIDENCE GUIDE

Competency is to be demonstrated by developing and effectively preparing basic engineering drawings in accordance with the performance criteria and the range listed within the range statement.

### (1) Critical Aspects of Evidence

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the preparation of basic engineering drawings or other units requiring the exercise of the skills and knowledge covered by this unit.

It is essential that competence is observed in the following aspects:

- prepare and understand various types of drawings
- prepare alphabet of lines, scales, lettering, dimensions, symbols, abbreviations and key features
- prepare title panel and reference date of drawings
- prepare basic engineering drawings

### (2) Pre-requisite Relationship of Units

- MEMCOR0091A Draw and interpret sketches and simple drawings

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- types and use of drawing instruments and supplies
- identification of alphabet of lines, line type variation, order of usage and application on drawings
- types of scale and proportion and how they are used for measurement
- symbols, dimensions and terminology
- types of engineering drawings and their applications
- constructing plane geometry, loci and ellipse

#### Skills

The ability to:

- estimate measurements
- read and interpret working drawings
- prepare basic engineering drawing
- measure accurately
- communicate effectively

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities

**(6) Context of Assessment**

Competency should be assessed in a classroom environment in accordance with work practices and safety procedures

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyze and organize information	Level 1	
Communicate ideas and information	Level 1	
Plan and organize activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

**MEMFAB0151A: Prepare for oxyacetylene/metal arc welding processes**

## Competency Descriptor:

This unit deals with the skills and knowledge required to effectively prepare the process for carrying out oxyacetylene/metal arc welding processes and applies to individuals working in metal engineering and maintenance industry.

## Competency Field:

Metal Engineering and Maintenance

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

- |   |  |
|---|--|
| 1. Plan for installation process                  | 1.1 Quality Assurance requirements of engineering /maintenance operations are recognized and adhered to.               |
|   | 1.2 Preparation and planning requirements are identified from drawings/work location and/or supervisor's instructions. |
|   | 1.3 OH&S requirements are identified and adhered to in accordance with application tasks and workplace environment.    |
|   | 1.4 Safety hazards are identified and correct procedures adopted to minimise risk to self and others.                  |
|   | 1.5 Materials are selected, safely handled and stored/located ready for application.                                   |
|   | 1.6 Appropriate personal protective equipment are selected, correctly fitted and used.                                 |
|   | 1.7 Tools and equipment selected are consistent with the job requirements,   |
|   | 1.8 Tools and equipment selected are checked for serviceability and any faults reported to supervisor.                 |
|   | 1.9 Materials/components selected consistent with the job requirements where applicable and checked for damage.        |
| 2. Prepare equipment selected for welding process | 2.1 Activities for equipment preparation are identified from specifications or supervisor's instructions.              |
|   | 2.2 Equipment preparations are carried out to satisfy requirements of welding process.                                 |

- |    |   |     |  |
|----|---|-----|--|
| 3. | Prepare material selected for welding process                     | 3.1 | Activities for material preparation are identified from specifications or supervisor's instructions.                   |
|    |   | 3.2 | Material preparation is carried out to satisfy requirements of welding process.  |
| 4. | Prepare work area suitable for welding process                    | 4.1 | Activities to be carried out in work area are identified from welding technique, method of welding and access to area. |
|    |   | 4.2 | Work area is prepared for welding process according to supervisor's instructions.                                      |
| 5. | Set up tools, plant and equipment appropriate for welding process | 5.1 | Regular tools/measuring devices suitable for application processes are identified to job requirements.                 |
|    |   | 5.2 | Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.             |
| 6. | Select materials, cut and prepare sections                        | 6.1 | Materials are obtained as per instruction.   |
|    |   | 6.2 | Correct manual handling techniques is used to move and place materials.  |
|    |   | 6.3 | Materials are safely moved to work area.   |
|    |   | 6.4 | Appropriate techniques used to accurately cut/bend/prepare/secure components to same length or given instruction.      |
| 7. | Distribute components   | 7.1 | Components are distributed and stacked to suit job location and sequence.  |
| 8. | Clean up  | 8.1 | Materials are stacked/stored for re-use or disposed of.  |
|    |   | 8.2 | Work area is cleared.  |
|    |   | 8.3 | Tools and equipment are cleaned, maintained and stored.  |

## RANGE STATEMENT

This unit applies to the preparation processes carried out in preparing for welding processes using oxyacetylene and or metal arc welding techniques as per instructions.

### Source of information:

- Specific work instructions/equipment manual
- health and safety requirements

### Safety:

- personal safety
- hand tool safety
- welding safety
- manual lifting and handling

### Types of hazards:

- faulty equipment
- premises,
- tools - obstructions
- hazardous substances
- faulty storage
- electrical wiring

### Material to include:

- sheet metal
- steel plates
- pipes
- tubing

### Work areas:

- fabrication layout
- maintenance
- welding
- finishing

### Tools/equipment to include:

- power tools
- oxyacetylene welding and cutting equipment
- Angle grinders, pedestal grinders, surface grinders, rotary wire brushes
- hand and drill press
- cold chisel & files
- ball peen hammer
- arc welding equipment
- safety equipment
- work benches
- hack saw
- screwdrivers
- spirit level
- vices
- marking out tools
- chipping hammer

### Protective clothing:

- coverall
- goggles
- gloves
- Safety boots
- safety helmet

### Type of site and working conditions to include:

- workshop and on site
- at height as per industry standards
- in confined space
- indoors and out doors



Work is to be undertaken either as part of a team or individually, under supervision with instruction being as part of the supervisor's directions either verbal or written.

Reporting of faults may be verbal or written.

OH&S requirements to be in accordance with the Statutory regulations.

## EVIDENCE GUIDE

Competency is to be demonstrated by carrying out the safe and effective preparation for oxyacetylene/metal arc welding processes accordance with performance criteria using any of the range of materials and processes listed within the range of variables statement.

### (1) Critical Aspects of Evidence

It is essential that competence be observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
- indicate compliance with organisational policies and procedures including Quality Assurance requirements
- carry out correct procedures prior to and during application of oxyacetylene/metal arc welding processes
- demonstrate safe working practices at all times
- demonstrate the ability to prepare for oxyacetylene/metal arc welding processes
- demonstrate the ability to apply appropriate principles/techniques to welding environment
- demonstrate the ability to carry out specific measurement and preparation procedures
- take responsibility for the quality of their own work
- perform all tasks in accordance with standard operating procedures
- use accepted engineering techniques, practices, processes and workplace procedures.
- demonstrate safe and effective operational use of tools, measuring devices and equipment
- interactively communicate with others to ensure safe and effective workplace operations

### (2) Pre-requisite Relationship of Units

- MEMCOR0141A Apply principles of Occupational Health and safety (OH&S) in work environment
- MEMCOR0191A Use hand tools

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements
- drawings and specifications
- measuring devices
- hand tools and equipment
- materials relative to welding process
- materials handling
- measurement relative to welding process
- welding techniques consistent with oxyacetylene/metal arc welding processes
- workplace communications

Skills

The ability to:

- work safely to instructions
- use hand tools
- use measuring devices
- handle material
- select material
- communicate effectively
- measure relative to process
- prepare for oxyacetylene/metal arc welding processes

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ITICOR0011A: Carry out data entry and retrieval procedures**

Competency Descriptor:

This unit deals with the skills and knowledge required to operate computer, to enter, manipulate and retrieve data and to access information and communicate via the Internet.

Competency Field:

Information Technology and Communications - Operations

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Initiate computer system	1.1 Equipment and work environment are correctly checked for readiness to perform scheduled tasks. 1.2 The hardware components of the computer and their functions are correctly identified. 1.3 Equipment is powered up correctly. 1.4 Access codes are correctly applied. 1.5 Appropriate software is selected or loaded from the menu.
2. Enter data	2.1 Types of data for entry correctly identified and collected. 2.2 Input devices selected and used are appropriate for the intended operations. 2.3 Manipulative procedures of Input device conform to established practices. 2.4 Keyboard/mouse is operated within the designated speed and accuracy requirements. 2.5 Computer files are correctly located or new files are created, named and saved. 2.6 Data is accurately entered in the appropriate files using specified procedure and format. 2.7 Data entered is validated in accordance with specified procedures.

- 2.8 Anomalous results are corrected or reported in accordance with specified procedures.
- 2.9 Back-up made in accordance with operating procedures.
- 3. Retrieve data
  - 3.1 The identity and source of information are established.
  - 3.2 Authority to access data is obtained where required.
  - 3.3 Files and data are correctly located and accessed.
  - 3.4 Integrity and confidentiality of data are maintained.
  - 3.5 The relevant reports or information is retrieved, using approved procedure.
  - 3.6 Formats to retrieved report or information conform to requirements.
  - 3.7 Copy of the data is printed where required.
- 4. Amend data
  - 4.1 Source of data/information for amendment is established.
  - 4.2 Data to be amended is correctly located within the file.
  - 4.3 The correct data/Information is entered, changed or deleted using appropriate input device and approved procedures.
  - 4.4 The Integrity of data is maintained.
- 5. Use document layout and data format facilities
  - 5.1 Requirements for document are verified where necessary.
  - 5.2 The given format and layout are appropriately applied.
  - 5.3 Facilities to achieve the desired format and layout are correctly identified, accessed and used.
  - 5.4 Data manipulating facilities are used correctly.
  - 5.5 Format reflects accuracy and completeness.

- |    |  |     |   |
|----|--|-----|---|
| 6. | Monitor the operation of equipment               | 6.1 | The system is monitored to ensure correct operation of tasks.   |
|    |  | 6.2 | Routine system messages are promptly and correctly dealt with.  |
|    |  | 6.3 | Non-routine messages are promptly referred in accordance with operating requirements.   |
|    |  | 6.4 | Error conditions within level of authority are dealt with promptly, and uncorrected errors are promptly reported.                         |
|    |  | 6.5 | Output devices and materials are monitored for quality.   |
| 7. | Access and transmit information via the Internet | 7.1 | Access to the Internet is gained in accordance with the provider's operating procedures.  |
|    |  | 7.2 | Evidence of the ability to negotiate web sites to locate and access specified information and other services is efficiently demonstrated. |
|    |  | 7.3 | E-Mail is sent and retrieved competently.   |
| 8. | Close down computer system                       | 8.1 | The correct shut down sequence is followed.   |
|    |  | 8.2 | Problem with shutting down computer is reported promptly.   |
|    |  | 8.3 | All safety and protective procedures are observed.  |
|    |  | 8.4 | The system integrity and security are preserved.  |
| 9. | Maintain computer equipment                      | 9.1 | Cleaning materials and/or solutions used meet specified recommendation.   |
|    |  | 9.2 | The equipment is cleaned as directed.   |
|    |  | 9.3 | Wear and faults identified are promptly reported to the appropriate personnel.  |

## RANGE STATEMENT

This unit applies to activities associated with essential operations linked to using and maintaining basic computer equipment.

### Equipment:

- install supplied computer
- install supplied peripherals

### Work environment:

- equipment
- furniture
- cabling
- power supply

### Input devices:

- keyboard
- mouse
- scanner
- microphone
- camera

### Data:

- textual
- numerical
- graphical

### Software systems to include for:

- word processing
- spread sheet
- internet access

### File operations:

Naming, updating, archiving, traversing field and records in database, use of search, sort, print

### Files save on:

- network
- magnetic media
- personal PC

### Maintenance:

- cleaning: enclosures, screen, input devices, output devices
- checking cables, etc

## EVIDENCE GUIDE

Competency is to be demonstrated by the ability to accurately carry out basic data entry and retrieval operations on a computer system in accordance with the performance criteria and the range listed within the range of variables statement.

### (1) Critical Aspects and Evidence

It is essential that competence be observed in the following aspects:

- Initiate the use on the equipment.
- Use document layout and data format facilities.
- Locate and access data.
- Use file operations.
- Manipulate input devices.
- Key-in and format reports.
- Access to the internet.

### (2) Pre-requisite Relationship of Units

- Nil



**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- safety for working with and around computers
- computer hardware and software systems
- procedure for initiating and closing down computer
- the operation of the data entry
  - management system
- methods of locating files
- organisation's standards applicable to
  - accessing files
- files operations and their applications
- file operation in database setting
- creating, locating and saving files
- using input devices
- using data checking devices
- formatting functions of software
- layout function of software
- graphic productions and manipulation
- regard for accuracy and security of
  - information
- functions on the internet

Skills

The ability to:

- identify computer hardware
- manipulate data input devices
- access data
- use file operations
- key-in and format reports and letters
- retrieve data
- amend data
- print data
- save data
- search and receive data from the internet
- send and receive E-Mail

**(4) Resource Implications**

Files saved on network, magnetic media, and personal Computer

Input devices: Keyboard, mouse, other selection devices

**(5) Method of Assessment**

Competency shall be assessed while work is undertaken under direct supervision with regular checks, but may include some autonomy when working as part of a team.

Competencies in this unit may be determined concurrently. Assessment must be in accordance with the performance criteria.

**(6) Context of Assessment**

This unit may be assessed on or off the job. Assessment should include practical demonstration either in the workplace or through a simulation. A range of methods to assess underpinning knowledge should support this

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level -	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level -	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**MEMFAB0051A: Perform brazing and/or silver soldering**

Competency Descriptor:

This unit deals with the skills and knowledge required to effectively perform brazing and /or silver soldering as applies to individuals working in the metal engineering and maintenance industry.

Competency Field:

Metal, Engineering and Maintenance

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare materials and equipment	1.1	Job requirements are determined from specifications and/ or instructions.
		1.2	Materials are correctly prepared using appropriate tools and techniques.
		1.3	Materials are correctly assembled/aligned to meet specifications as required.
		1.4	Distortion prevention measures are identified and appropriate action taken as required.
		1.5	Heating equipment is assembled and set up safely and correctly in accordance with standard operating procedures.
		1.6	Correct and appropriate consumables are selected and prepared.
		1.7	Test run undertaken and verified as required.
2.	Braze and/or silver solder	2.1	Correct and appropriate processes are selected to meet specifications.
		2.2	Materials are preheated as required.
		2.3	Consumables are applied using correct and appropriate techniques.
		2.4	Jointing material is applied correctly and in appropriate quantities to meet job/specifications.
		2.5	Used correct temperature and appropriate techniques.

- |   |                |     |  |
|---|----------------|-----|--|
| 3 | Inspect joints | 3.1 | Excess jointing materials are removed using correct and appropriate techniques.                    |
|   |                | 3.2 | Inspection of joints is undertaken using standard operating procedures and meeting specifications. |
|   |                | 3.3 | Inspection results are reported/recorded using standard operating procedures as required.          |

## RANGE STATEMENT

Work undertaken in a production, engineering or maintenance environment using predetermined standards of quality, safety and work procedures. Work may be undertaken under supervision or within a team environment. All work undertaken to standard requirements

Appropriate assembly of heating equipment may include:

- cylinders
- connections
- hoses
- tips
- nozzles

Materials:

- low carbon steel (mild steel) up to 10 gauge
- low carbon steel plate up to 5mm
- steel and galvanised pipes up to 50mm

Work activities:

- measuring,
- marking,
- grinding
- lifting,
- welding

Heating medium and appropriate consumables can include:

- oxyacetylene
- fuel gas
- fluxes (resin or powder)
- all types of silver solder and brazing rods

Location/condition:

- workshop
- plant
- fieldwork at ground level
- elevated positions
- dry
- humid and wet conditions
- construction environment
- agricultural environment
- food processing environment

- cutting
- aligning,
- shaping,
- filing,
- general machining

## Specification:

- welding procedure
- weld profile regular in width
- even/regular ripple formation
- uniform in appearance,
- free from excessive undulations
- smooth stop/starts, tack incorporated,
- adequate penetration
- no excess undercut
- no craters

## Types of welding joints:

- fillet weld
- lap weld
- butt weld,
- single and multi-run

## Welding position:

- flat,
- vertical
- horizontal
- overhead

**EVIDENCE GUIDE**

Competency is to be demonstrated by safely and effectively performing routine oxyacetylene welding (fuel gas welding) in accordance with the range listed within the range of variables statement.

**(1) Critical Aspects of Evidence**

It is essential that competence be observed in the following aspects:

- demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
- show compliance with organizational policies and procedures including Quality Assurance requirements
- adopt and carry out correct procedures prior to setting up oxy acetylene equipment and during the brazing and or silver soldering process
- demonstrate safe and effective operational use of tools, plant and equipment
- demonstrate correct procedures in setting up and shutting down oxy acetylene equipment
- give particular attention to safety and elimination of hazards
- demonstrate safe handling of material
- interactively communicate with others to ensure safe operations
- demonstrate effective brazing and or silver soldering technique to produce designed outcome

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling recording and reporting associated with brazing and/or silver soldering or other units requiring the exercise of the skills and knowledge covered by this unit.

**(2) Pre-requisite Relationship of Units**

- MEMCOR0141A Follow principles of occupational health and safety (OH&S) in work environment
- MEMCOR01611A Plan and undertake a routine task
- MEMCOR0191A Use hand tools

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- workplace and equipment safety requirements including relevant OH&S guidelines and regulations
- metal properties and classification
- heating medium/technique
- brazing/soldering processes
- oxy-fuel equipment identification, transportation and storage
- hand tools and equipment
- materials /consumables relative to brazing and silver soldering procedures
- materials preparation
- manual handling
- measurement
- drawings, sketches and instructions

Skills

The ability to:

- work safely to instructions
- communicate effectively
- interpret related drawings and instructions
- use brazing and soldering equipment
- identify/select material
- identify/select brazing soldering processes
- handle material, tools and equipment
- measure relative to brazing and or silver soldering processes
- identify/select materials relative to the brazing and or soldering process
- prepare materials relative to the brazing and or soldering process
- braze and or silver solder efficiently

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required.
- any relevant workplace procedures.
- any relevant product and manufacturing specifications.
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor.
- identify colleagues who can be approached for the collection of competency evidence where appropriate.
- present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities

#### (6) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

### CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREMS0032A: Disassemble engine block and sub-assemblies and evaluate components**

Competency Descriptor:

This unit identifies the competence required to disassemble, inspect, evaluate and determine preferred repair action for engine block and sub-assemblies as a part of a reconditioning procedure.

Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Dismantle engine block and sub assemblies	1.1	Engine block and sub-assemblies are dismantled without causing damage to any component or system.
		1.2	Engine block and sub-assemblies are dismantled using approved methods and appropriate tools/equipment.
		1.3	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.4	Evaluate components/parts before cleaning.
		1.5	All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Inspect/measure/test engine block and sub-assembly components and determine repair procedures	2.1	Inspection/measurement/testing is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Engine block and sub-assembly components are measured against manufacturer specifications and tolerances.
		2.4	Engine block and sub-assembly components are evaluated against the measurements, tests and inspections made.
		2.5	Repair requirements are identified and reported according to enterprise policy and procedures.
		2.6	Appropriate workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes.
		2.7	All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.



**RANGE STATEMENT**

This competency standard applies to the following and should be contextualised under supervision to the qualification to which it is being applied as related to the disassembling of engine block and sub - assemblies and the evaluation of components this includes the replacement and repair of components as well as routine maintenance.

## Specific requirements:

- short engines
- various engine components (including crankshafts
- camshafts
- cylinder blocks
- idler shafts
- pistons
- con rods
- bearings
- rings
- gears
- chains
- belts
- pulleys
- engine oil pump )

## Methods include:

- dismantling
- cleaning
- measuring against specifications
- various testing (e.g. crack and pressure tests)
- visual inspection
- comparing against new
- comparing against specifications

Methods should be applied under normal operating conditions.

## Other variables may include:

Ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems)

## Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- lifting equipment
- testing equipment
- cleaning equipment
- parts washers
- chemical cleaning equipment
- crack testing equipment
- pressure testing equipment

## Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- engine block and sub-assembly dismantling and accurate assessment of condition
- determining appropriate repair action

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to disassemble engine block and sub-assemblies and evaluate components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- dismantling methods and procedures
- measuring and testing procedures
- repair methods
- relevant technical information for comparison
- equipment safety requirements
- relevant company policies
- personal safety requirements
- manual handling techniques
- cleaning methods and materials
- principles of engine operation
- construction and operation of engine block and sub-assemblies relevant to application

#### Skills

The ability to:

- access and interpret technical information
- apply dismantling procedures
- apply testing techniques
- use relevant tools and equipment
- maintain customer/company records
- use measuring equipment
- apply manual handling procedures
- check and compare various components to actual specifications
- decide on most appropriate repair action necessary

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREMS0042A: Assemble engine block and sub-assemblies check tolerances and carry out relevant testing procedures**

### Competency Descriptor:

This unit identifies the competence required to assemble engine block and sub-assemblies, check tolerances, fit cylinder head(s) and carry out relevant testing and adjustment procedures as part of a re-conditioning procedure.

### Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Use appropriate methods to check tolerances.	1.1	Tolerances are checked without causing damage to any component or system.
		1.2	This competency element is performed using industry approved procedures and equipment.
		1.3	Correct tolerances are obtained using relevant vehicle/component manufacturer specifications.
		1.4	Tasks carried out to comply within established industry guidelines.
		1.5	All checking activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Assemble engine block and sub-assemblies/fit cylinder head(s).	2.1	Engine block and sub-assemblies are assembled and cylinder head(s) fitted without causing damage to any component or system.
		2.2	This competency element is performed using industry approved procedures and equipment.
		2.3	Assembly and fitting is carried out to comply with manufacturer specifications and established industry guidelines and Jamaica Auto Repairs Association J.A.R.A Standards.
		2.4	All assembly and fitting activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
3.	Carry out relevant testing and adjustment procedures.	3.1	Tests and adjustments are completed without causing damage to any component or system.
		3.2	Relevant tests and adjustments are performed using industry approved procedures and equipment.

- 3.3 Testing and adjustment is carried out to comply with manufacturer specifications, established industry guidelines and Jamaica Auto Repairs Association J.A.R.A Standards.
- 3.4 All testing and adjustment activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

## RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- relevant testing procedures
- relevant tolerance checking methods
- personal protective equipment
- measuring equipment
- lubricating equipment
- gasket sealing materials

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Specific requirements:

- short engines
- various engine components (including crankshafts)
- camshafts
- cylinder blocks
- idler shafts
- pistons
- con rods

Methods include:

- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

Methods should be applied under normal operating conditions.

Other variables may include:

- ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems)

- bearings
- rings
- gears
- chains
- belts
- pulleys
- engine oil pump)

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- engine block and sub-assembly dismantling and accurate assessment of condition
- determining appropriate repair action

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to assemble engine block and sub-assemblies check tolerances and carry out relevant testing procedures
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0061A Use and maintain measuring equipment

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- personal safety requirements
- construction and operation of engine block and sub-assemblies relevant to application
- assembly/repair procedures
- measuring, adjusting and testing procedures
- relevant technical information
- equipment safety requirements
- tensioning procedures
- relevant company policies
- manual handling technique
- engine operating principle

#### Skills

The ability to:

- access and interpret technical information
- check/adjust tolerances
- use relevant tools and equipment
- use measuring equipment
- apply manual handling procedures
- maintain customer/company records
- test and adjust engines for both technical and legal requirements
- tension various components
- assemble/repair engines/components

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to orally, or by other methods of communication:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.



## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASREMS0082A: Carry out radiator repairs**

## Competency Descriptor:

This unit identifies the competence required to perform radiator repairs and applies to individuals in the automotive services and repair industry.

## Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

1. Repair radiators and/or components.	1.1 Radiators are repaired without causing damage to any component or system.
	1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3 Radiators and associated components are repaired using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle manufacturer.
	1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.
	1.5 Repair activities are carried out according to industry regulations/guidelines.

**RANGE STATEMENT**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- vehicle manufacturer specifications
- company operating procedures
- industry codes of practice
- product manufacturer specifications
- customer report/job cards/requirements

OH&amp;S practices must abide by:

- Industry guidelines
- OH&S guidelines

Resources may include:

- hand tools, power tools, special tools, welders, soldering equipment, testing equipment including pressure testers, compressed air, testing tanks, jigs and vices

Methods include:

- pressure testing, tank testing, visual and functional assessments (including corrosion, fluid leaks and wear) welding, soldering, cutting and shaping

Specific requirements:

- radiators (metal, plastic, copper, aluminium, cast)

Methods should be applied under normal operating conditions.

## **EVIDENCE GUIDE**

The underpinning knowledge and skills may be assessed on or off-the-job.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

### **(1) Critical Aspects of Evidence**

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of :

- interpreting and communicating operational information
- safe working practices
- vehicle protection methods
- repairing of radiator faults

### **(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- Industry Code of Practice
- statutory legislation where applicable
- relevant technical information
- equipment safety requirements
- radiator principles of operation
- radiator types, construction and materials
- personal safety requirements
- relevant manufacturer/company policies
- radiator repair and test procedures
- soldering process
- listening to and following verbal instructions
- exchanging technical information

Skills

The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment safely
- test radiators
- dismantle radiators for repair purposes
- repair radiators/components as necessary
- solder components
- assemble repaired radiator/components
- reading and interpreting company instructions e.g. SOPs job sheets or check sheets
- reading and interpreting manufacturer specifications for radiators
- reading and interpreting safety signs and codes
- completing company forms e.g. job sheets and check sheets
- accessing information from computer
- entering information on computer

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

### CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework . They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employ ability Skills

## ASREES0022A: Repair electrical systems

Competency Descriptor:

This unit identifies the competence required to carry out repairs to vehicle electrical systems as applies to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repair

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

1. Repair electrical systems	1.1	Repairs to electrical systems are completed without causing damage to any component or system.
	1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3	Tests on electrical systems are carried out to determine faults using appropriate tools and techniques.
	1.4	Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.
	1.5	Repairs are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

### RANGE NATIONALMENT

Range of contexts:

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading/interpreting wiring diagrams
- soldering
- crimping
- repairing components and wiring
- remove/replace components

Other variables may include:

- lighting
- accessories
- electric winches
- cruise control
- central locking

Methods should be applied under normal operating conditions.

Resources may include:

- hand tools, testing equipment including multimeters power tools, air tools,
- special tools for removal/adjustment, manufacturer diagnostic tools

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- NEPA guidelines

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice

This competency standard applies to:

- electrical systems fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair of ancillary electrical systems
- testing and identifying faults

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair electrical systems
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREES0031A Carry out minor repairs to electrical circuits/systems



**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines
- operation of electrical system/components relevant to application
- procedures for the repair of electrical system/components
- testing procedures of electrical system/components

Skills

The ability to:

- access, interpret and apply technical information including statutory regulations
- safely and correctly use tools and equipment
- test and identify faults in electrical systems
- repair electrical systems

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## **ASREES0052A: Install, test and repair electrical circuit/lighting systems**

Competency Descriptor:

This unit identifies the skills and knowledge required to correctly carry out wiring installations, testing and repairs to low voltage electrical circuits/lighting systems.

Competency Field:

Automotive Service and Repair

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Install wiring/lighting systems	1.1	Information required for the work is accessed from appropriate manufacturer's specifications and correctly interpreted.
		1.2	Relevant occupational health and safety policies and procedures are observed throughout the work processes.
		1.3	Components, tools and equipment required for the installation are identified, selected, and prepared in accordance with manufacturer's instructions and site procedures.
		1.4	Wiring/lighting system plans and designs are followed and installation procedures completed in accordance with site procedures and manufacturer's specifications.
		1.5	Relevant guidelines, industry guidelines and enterprise policies/procedures are followed.
		1.6	Undue damage to equipment or machinery is avoided.
2.	Repair electrical systems	2.1	Information required for repairing electrical systems is accessed from appropriate manufacturer's specifications and correctly interpreted.
		2.2	Components, tools and equipment required for repairs are identified, selected, and prepared in accordance with site manufacturer's instructions and site procedures.
		2.3	Repair work is completed in accordance with site procedures.
		2.4	Workplace records are completed in accordance with site requirements.

- |    |              |     |   |
|----|--------------|-----|---|
| 3. | Final checks | 3.1 | Electrical wiring/lighting/warning systems and/or associated components are adjusted to suit specifications and operational requirements. |
|    |              | 3.2 | Electrical wiring/lighting/warning systems and/or associated components are checked after adjustment is done.                             |

## RANGE NATIONALMENT

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading and interpreting circuit diagrams
- testing
- soldering

Methods should be applied under normal operating conditions.

Work activities may include:

- installing, replacing and aiming headlights
- installing, repairing/replacing headlight timer switches and relays, wires, terminals, connectors and sockets; determining needed repairs
- installing, repairing/replacing testing switches, bulbs, sockets, connectors, terminals and wires of parking clearance and tail-light circuits
- installing, repairing/replacing and testing dash light circuit switches and relays, bulbs, sockets, connectors, terminals, wires and printed circuits/control modules
- installing, repairing/replacing and testing interior cab light and circuit components
- installing, repairing/replacing and testing tractor and trailer wire connectors
- installing, repairing/replacing, testing and adjusting stoplight and circuit components
- installing, repairing/replacing and testing turn signal and hazard circuit flasher and other circuit components
- installing, repairing/replacing and testing reverse light and circuit components

Installation and testing may include:

- testing and electrical measurements
- fault finding
- reading and interpreting wiring diagrams
- soldering
- crimping
- installing/repairing low voltage components and wiring

Wiring/Lighting Systems may include:

- lighting systems
- electric brake systems
- trailer wiring connections

OH&S practices must abide by:

- Industry standards/OH&S guidelines

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Resources may include:

- hand tools, test lamp, multimeter
- power/air tools, special tools for removal/replacement
- special testing equipment
- soldering equipment

## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- performing minor repairs to circuit wiring
- Installing electrical circuit/lighting systems
- testing and identifying faults

### (1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to inspect and test electrical system components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted motor vehicle service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASREES0011A Perform routine inspection and testing of faulty electrical system component/unit
- ASREES0031A Carry out minor repairs to electrical wiring/lighting/warning systems

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines
- electrical principles
- low voltage theory for automotive application including types of materials, components and wiring systems.
- common automotive terminology
- repair procedures
- installation procedures
- electrical measuring and testing procedures
- vehicle safety requirements
- procedures to avoid damage to ECUs
- basic English
- technical literacy and communication skills

Skills

The ability to:

- access interpret and apply technical information
- safely and correctly use tools and equipment
- test and identify faults
- perform electrical connections crimping and soldering
- isolate power supply to components
- perform minor electrical repairs
- communicate in relation to dealing with others involved in the work

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activity.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREES0062A: Install, test and repair electrical security system/components**

### Competency Descriptor:

This unit identifies the competence required to carry out installation, testing and repair of automotive electrical security systems and components. This standard can also be applied to the installation of security systems in marine applications.

### Competency Field:

Automotive Service and Repair

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Install electrical security system/components.	1.1	Installation is completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Appropriate fittings/materials are selected.
		1.4	Electrical security systems/components are installed and wired using appropriate tools and techniques.
		1.5	Installation is carried out according to industry regulations/guidelines, OH&S guidelines, statutory guidelines and enterprise procedures/policies.
2.	Test electrical security systems/components.	2.1	Tests are completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Tests are carried out to determine faults using appropriate tools and techniques.
		2.4	Faults are identified and preferred repair action determined.
		2.5	Testing is carried out according to industry regulations/guidelines, OH&S guidelines, statutory guidelines and enterprise procedures/policies.
3.	Repair electrical security systems/ components.	3.1	Electrical security systems/ components are repaired without causing damage to any component or system.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.



- 3.3 Necessary repairs, component replacement and adjustment are carried out using appropriate tools, techniques and materials.
- 3.4 Repairs are carried out according to industry regulations/guidelines, OH&S guidelines, statutory guidelines and enterprise procedures/policies.

## **RANGE STATEMENT**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- electrical security systems fitted to automotive or marine applications

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- Statutory guidelines

OH&S practices must abide by:

- National/industry OH&S guidelines
- Award provisions

Methods include:

- testing and electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading interpreting wiring diagrams
- soldering
- crimping
- installing/repairing components and wiring

Resources may include:

- hand tools
- test equipment including multimeters
- test lamps
- power tools
- air tools
- special tools for removal adjustment

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

The underpinning knowledge and skills may be assessed on or off the job.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation, testing and repair of automotive security systems and components

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- OH&S guidelines
- interpretation of statutory guidelines, technical materials, graphic symbols and diagrams
- installation procedures
- operation of electrical security systems and components
- electrical principles and their application to security systems/components
- repair procedures for security systems/components
- testing and fault finding procedures
- personal safety requirements

#### Skills

The ability to:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in security systems/components
- Install security systems
- Perform electrical connections; crimping and soldering
- Repair security systems/components
- Select and use appropriate materials for installation/repair of electrical security systems/components

### (4) Resource Implications

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials



**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria , including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions are acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREES0092A: Service and repair electronic engine management systems

Competency Descriptor:

This unit identifies the competence required to service/repair electronic fuel injection and electronic engine management systems and/or associated components. Engine management systems are systems where the ECU incorporates control over the fuel injection and ignition systems.

Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Service and repair electronic engine management systems and/or associated components.	1.1	Service and repairs are completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Tests on electronic fuel injection and engine management systems are carried out to determine faults using appropriate tools and techniques.
		1.4	Repairs are carried out according to industry regulations/guidelines, OH&S guidelines, National guidelines for vehicle roadworthiness) and company procedures/policies.

### RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Electronic fuel injection and electronic engine management systems fitted light vehicles and/or motorcycles and/or vessels and/or outdoor power equipment. (Engine management systems are systems where the ECU incorporates control over the fuel injection and ignition systems.)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Industry guidelines

OH&S practices must abide by:

- Industry guidelines
- OH&S guidelines

Methods may include:

- service and repair and/or replacement of system components
- removal, dismantling, re-assembly and refitting
- testing system operation
- retrieval and assessment of electronic systems data including fault codes

Methods should be applied under normal operating conditions.

Specific requirements:

- Electronic engine management systems. The electronic/electrical system/components of controlling the engine's fuel and ignition requirements

Resources may include:

- hand tools, testing equipment including multimeters, exhaust gas analyser, vacuum gauge, pressure gauge, tachometer, multimeter
- vehicle lifting equipment, power tools, air tools, special tools for removal/adjustment, specialised system testers

Other variables may include:

- testing fuel pressure
- cleaning injectors

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing electronic engine management systems and identifying faults
- servicing/repairing electronic engine management systems

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service/repair electronic engine management systems
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREES0031A Carry out minor repairs to electrical circuits/systems

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines
- service/repair, removal, replacement and adjustment procedures of engine management systems
- operating principles of electronic fuel injection and engine management systems/components
- construction and operation of electronic fuel injection engine management system/components relevant to application
- personal safety requirements
- equipment/vehicle safety requirements

Skills

The ability to:

- access, interpret and apply technical information
- safely and correctly use tools and equipment
- service/repair, adjust and/or replace system components as necessary
- test, inspect and evaluate fuel injection/engine management system/components

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREES0122A: Service and repair electronically controlled anti-lock braking systems

Competency Descriptor:

This unit identifies the competence required to carry out service/repairs to electric/electronic anti-lock brake systems/components in accordance with manufacturer specifications.

Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of Servicing/repairing anti-lock braking systems	1.1	Routine checks undertaken demonstrate knowledge of the principles of ABS system and associated components.
		1.2	The main parts of designated braking system and associated components are correctly identified.
		1.3	Engine and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Braking and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
2.	Service/repair anti-lock braking systems	2.1	Service/repair is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Tests on anti-lock braking systems are carried out to determine faults using appropriate tools and techniques.
		2.4	Appropriate service/repair procedures are determined.
		2.5	Service and repairs are carried out according to industry regulations/guidelines OH&S standards and company/procedures policies.
3.	Perform final checks	3.1	Braking and/or associated components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2	Braking and/or associated components are checked after adjustment is done.

4. Clean up area
- 4.1 All waste material is removed and disposed of.
- 4.2 Area related to work activities is cleaned.
- 4.3 Tools and equipment are cleaned, maintained and stored.

## RANGE STATEMENTS

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- Automotive service streams applicable to electronic/electrical anti-locking braking systems/ components fitted to light vehicles and/or heavy vehicles and/or motorcycles.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- National regulations for vehicle road worthiness

OH&S practices must abide by:

- Industry guidelines
- OH&S guidelines

Methods include:

- road testing, electrical testing
- visual, aural and functional assessments (including damage, corrosion, wear, electrical defects)
- fault codes analysis and electronic systems tests

Resources may include:

- hand tools
- multimeter
- vehicle lifting devices
- power tools
- special tools for removal/replacement
- brake dynamometer
- electronic testing equipment

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- identifying faults in electrical/electronic components of ABS systems
- servicing/repairing electrical/electronic components of ABS components
- ensuring ABS system meets manufacturer specification before returning to customer

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service/repair electrical/electronic controlled anti braking system
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

## (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREES0031A Carry out minor repairs to electrical circuits/systems

## (3) Underpinning Knowledge and Skills

### Knowledge

Knowledge of:

- OH&S guidelines
- testing procedures
- equipment/material safety requirements
- the operating principles of ABS braking system
- construction and operation of ABS systems/components relevant to application
- servicing/repairing, cleaning and adjustment procedures
- the use of appropriate measuring tools, and equipment
- personal safety procedures

### Skills

The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment
- testing and evaluation of faults in ABS braking systems
- service/repair/replace anti-lock brake systems components

## (4) Resource Implications

The following resources should be made available:

- all tools, equipment, materials and documentation required.
- any relevant workplace procedures.
- any relevant product and manufacturing specifications.
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement.
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASREES0132A: Service and repair charging and starting systems/components**

Competency Descriptor:

This unit identifies the competence required to test and repair charging and starting systems/direct current motors appropriate to vehicles, plant and equipment, motor cycles and/or outdoor power equipment and/or marine vessels.

Competency Field:

Automotive Service and Repairs

<b>ELEMENT OF COMPETENCY</b>		<b>PERFORMANCE CRITERIA</b>	
1.	Use appropriate methods to check charging and starting systems/components.	1.1	Tests are completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Tests are carried out to determine faults using appropriate tools and techniques.
		1.4	Faults are identified and preferred repair action determined.
		1.5	Testing is carried out according to industry regulations/guidelines.
2.	Repair charging and starting systems/direct current motors and/or associated components	2.1	Charging and starting systems/direct current motors are repaired without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.
		2.4	Repairs are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or outdoor power equipment and/or marine vessels

Resources may include:

- hand tools
- testing equipment including multimeters
- voltmeters
- ammeters
- power tools
- air tools
- electrical loading equipment
- test benches
- soldering equipment
- multimeters
- growler
- induction ammeter
- test light (12V and 240V)
- lathe
- single and ganged panels, CRO

Ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems).

Other variables may include:

- starting systems electrical including dynastart, inertia, pre-engaged, axial, coaxial, fixed and remote solenoid, direct drive, gear reduction, protection lockout, inhibitor switch, series-parallel switching, battery isolation switch, single/multiple battery system
- starting systems mechanical including pull rope, crank handle, inertia
- solar systems including single and ganged panels, internal and external regulation, battery sensed and non-battery sensed, 6V, 12V and 24V operation, solid state controlled
- charging systems including alternator, generator, internal/external regulation, battery sensed and non-battery sensed regulation, 6V, 12V and 24V operation, dynastart, solid state and mechanical regulation, belt and/or direct drive, single/multiple belt drive, adjustable tensioning devices
- direct current motors

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

Methods include:

- testing, dismantling, assembly, removal and replacement
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short/broken circuits, electrical measurements
- reading/interpreting wiring diagrams

Methods should be applied under normal operating conditions.



## EVIDENCE GUIDE

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing of charging and starting systems
- repair of charging and starting systems/direct current motors

### (1) Critical Aspects of Evidence

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to service and repair charging and starting systems/components
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- Take responsibility for the quality of their own work
- Plan tasks in all situations and review task requirements as appropriate
- Perform all tasks in accordance with standard operating procedures
- Perform all related tasks to specification
- Use accepted motor vehicle service repair techniques, practices, processes and workplace procedures.

### (2) Pre-requisite Relationship of Units

- ASREES0031A Carry out minor repairs to electrical wiring/lighting/warning systems

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- OH&S guidelines
- interpretation of technical materials, graphic symbols and diagrams
- testing procedures
- construction and operation of charging and starting systems/direct current motors relevant to application
- principles of operation and their application to charging and starting systems/direct current motors
- repair procedures

#### Skills

The ability to:

- access, interpret and apply technical information including statutory regulations
- safely and correctly use tools and equipment
- test and identify faults in charging and starting systems
- repair charging and starting systems/direct current motors

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

Competency should be assessed in the workplace or simulated workplace environment in accordance with work practices and safety procedures.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASREGS0062A: Repair diesel fuel systems/components

### Competency Descriptor:

This unit identifies the competence required to carry out repair including removal and replacement of diesel fuel system/components for light/heavy vehicles, vessels, and outdoor power equipment.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Repair, remove and replace diesel fuel injection system components	1.1	Diesel fuel injection system component repair, remove and replace is completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	Diesel fuel injection components are repaired, tested and or replaced according to manufacturer specifications.
		1.4	Diesel fuel injection components are tested to comply with operational requirements.
		1.5	All repair and testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

### RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, vessels, and outdoor power equipment

Sources of information/documents may include:

- vehicle/plant/manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- National regulations for vehicle road worthiness

OH&S practices must abide by:

- industry guidelines
- OH&S guidelines

Resources may include:

- hand tools
- cleaning equipment
- pump tester
- injector tester
- electrical/electronic test equipment
- boost control setting testing equipment
- auto advance equipment
- comparator
- fuel flow meter

Other variables may include:

- mechanically, hydraulically and electronically controlled systems including speed control
- GM., Cummins Caterpillar and Jerk pump type fuel systems

Methods include:

- removal and replacement of components
- dismantling, cleaning, measuring, visual inspection, assessing, lubricating, assembling, testing, adjusting of components

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- system/component testing servicing, repair and replacement procedures
- cleanliness of work environment

During assessment the individual will:

- demonstrate safe-working practices at all times
- demonstrate the ability to repair diesel fuel systems
- demonstrate the ability to repair diesel fuel systems components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties
- ASREGS0052A Service and maintain diesel fuel injectors

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- repair procedures
- equipment/material safety requirements
- manufacturer specification charts
- testing procedures
- personal safety requirements
- manual handling techniques
- construction and operation of systems and components relevant to application

Skills

The ability to:

- access, interpret & apply technical information
- use relevant tools and equipment
- maintain customer records
- apply testing procedures for both technical and legal requirements
- identify fuel system faults
- repair fuel system components
- remove and replace relevant components/sensors
- apply manual handling techniques

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRACS0022A: Service air-conditioning system**

Competency Descriptor:

This unit identifies the competence required to service automotive air conditioning systems and record operating condition as applied to individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Service air conditioning systems	1.1 Air conditioning system service is completed without causing damage to any component or system.
	1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3 System is performance tested and the appropriate air conditioning service procedures are determined.
	1.4 Service of the system and components are carried out in accordance with vehicle/system manufacturer specifications.
	1.5 Servicing is carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
	1.6 System is tested and results are recorded in accordance with enterprise policies and procedures.

**RANGE STATEMENT**

Range of contexts:

This competency standard applies to:

- automotive air conditioners fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- material safety data sheets



Resources may include:

- hand tools, refrigerant leak detecting equipment, thermometers, evacuation equipment, refrigerant recovery and/or recycling equipment, refrigerant re-gassing equipment, refrigerant, refrigerant oils

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- NEPA guidelines

Methods include:

- adjustment
- refrigerant leak detecting
- performance testing

Other variables may include:

- climate control systems

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing automotive air conditioners and recording operating procedures

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to service air conditioning systems
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- Take responsibility for the quality of their own work
- Plan tasks in all situations and review task requirements as appropriate
- Perform all tasks in accordance with standard operating procedures
- Perform all related tasks to specification
- Use accepted automotive service repair techniques, practices, processes and workplace procedures.

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines/regulations
- company procedures/policies for the handling of refrigerants
- industry/Workplace codes of practice
- statutory legislation where applicable
- principles of operation (basic refrigeration cycle)
- equipment/material safety requirements
- equipment maintenance procedures

Skills

The ability to:

- access, interpret and apply technical information
- safely and correctly use tools and equipment
- maintain customer and enterprise records
- perform service operations according to industry codes of practice and statutory legislation
- performance test air conditioning systems

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent

**Method of Assessment (Cont'd.)**

- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

## ASRACS0032A: Service and repair air compressors/components

Competency Descriptor:

This unit identifies the competence required to carry out the service and repair of air compressors and associated components as related to the automotive services industry.

Competency Field:

Automotive Service and Repair

### ELEMENT OF COMPETENCY PERFORMANCE CRITERIA

1	Undertake routine checks of A/C system and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of A/C system and associated components.
		1.2	The main parts of designated A/C system and associated components are correctly identified.
		1.3	Air compressors and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Air compressors and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Service and repair air compressor and associated components	2.1	Air compressor is serviced and repaired without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Service/repairs are carried out using approved methods and equipment, according to specifications relative to the plant/system.
		2.4	Service/repair operations are completed within established industry guidelines.
		2.5	Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes.
		2.6	All servicing/repair activities are carried out according to industry regulations/guidelines, OH&S guidelines, and company procedures/policies.

- |   |              |     |  |
|---|--------------|-----|--|
| 3 | Final checks | 3.1 | Air compressors and/or associated components are adjusted to suit specifications.  |
|   |              | 3.2 | Air compressors and/or associated components are checked after adjustment is done. |
|   |              | 3.3 | Assembly is prepared for commissioning and conformance to specifications.          |
|   |              | 3.4 | Service report is completed by appropriate means.                                  |

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied.

Sources of information/documents may include:

- plant manufacturer specifications
- company operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- industry regulations
- material safety data sheets

Methods include:

- carrying out maintenance services as per requirements
- identification and addition of various lubricants/fluids
- conducting plant safety inspection as recommended by plant manufacturer/enterprise practices and specifications

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, testing equipment, greasing equipment, air operated equipment, measuring equipment
- engine oils, gear oils, moving parts lubricants
- appropriate personal protection

OH&S practices must abide by:

- Industry OH&S guidelines
- Award provisions

Methods should be applied under normal operating conditions.

Service and repair air compressor and associated components may include:

- inspecting A/C system pressure protection devices (including engine fan controls); determining needed repairs
- inspecting and adjusting A/C compressor drive belts and pulleys; determining needed repairs
- inspecting and testing A/C compressor clutch components or assembly
- inspecting and adjusting oil level in A/C compressor
- inspecting and testing compressor
- inspecting A/C compressor mountings
- inspecting A/C system mufflers, hoses, lines, filters, fittings and seals
- inspecting A/C condenser for air flow restrictions; cleaning and straightening fins
- inspecting and testing A/C system condenser and mountings
- inspecting receiver/drier
- inspecting accumulator/drier in orifice tube A/C systems
- inspecting and testing expansion valve
- inspecting and testing orifice tube (including filter)
- inspecting, testing and cleaning evaporator
- inspecting and cleaning evaporator housing and water drain
- identifying an inspecting A/C system service valves (gauge connections)
- inspecting A/C system high pressure relief device
- repairing or replacing A/C compressors and clutches
- replacing evaporator, condenser and related components
- repairing or replacing heating system components
- repairing or replacing A/C electrical electronic circuit components and wiring
- repairing or replacing vacuum/mechanical/air system
- receiving, recycling and handling refrigerant

Components to include:

- compressor
- evaporator
- condenser
- receiver – dehydrator
- fan blower
- relays
- valves
- switches
- fuses
- wiring

Materials to include:

- hose
- line
- refrigerant
- connection devices
- charging and purging equipment

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of servicing and repairing air compressors/components.

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to service air compressors and associated components
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- Take responsibility for the quality of their own work
- carrying out servicing/maintenance procedures
- carrying out repair procedures
- carrying out safety inspection and report finding
- Plan tasks in all situations and review task requirements as appropriate
- Perform all tasks in accordance with standard operating procedures
- Perform all related tasks to specification
- Use accepted automotive service repair techniques, practices, processes and workplace procedures.

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- principles of operation of air compressors
- construction and operation of air compressors relevant to application
- correct lubricants and/or fluids
- equipment safety requirements
- plant safety requirements
- testing procedures
- repair procedures
- service procedures
- maintenance/inspection checklists
- manual handling techniques
- personal safety requirements

**Skills**

The ability to:

- access, interpret and apply technical information.
- use relevant tools and equipment
- maintain customer records
- apply service/maintenance procedures
- apply testing procedures
- apply repair procedures
- use maintenance/inspection checklists
- apply manual handling techniques
- apply personal safety requirements

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.



**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

**ASRACS0042A: Repair/retrofit air – conditioning systems**

Competency Descriptor:

This unit identifies the competence required to repair and retrofit automotive air conditioning systems as applied to the automotive service industry.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

1.	De-gas and re-gas air conditioning systems	1.1	De-gas and re-gas air conditioning system is completed without causing damage to any component or system.
		1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.3	System is de-gassed using approved recovery unit.
		1.4	System is evacuated in accordance with manufacturer specifications and industry codes of practice.
		1.5	System is re-gassed/performance tested using approved methods and equipment.
		1.6	De-gassing and re-gassing are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2.	Repair/retrofit air conditioning systems.	2.1	Repair/retrofit air conditioning system is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Appropriate air conditioning repair/retrofit procedures are determined after performance testing.
		2.4	Repair/retrofit and or replacement of the system and components are carried out in accordance with vehicle/manufacturer specifications.
		2.5	Repair/retrofit is carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
		2.6	System is tested prior to placing into service and results are recorded according to enterprise policies and procedures.

## RANGE STATEMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory guidelines
- material safety data sheets

OH&S practices must abide by:

- National/industry OH&S guidelines
- Award provisions

Performing repair/retrofit procedures may include:

- inspecting A/C system pressure protection devices (including engine fan controls); determining needed repairs
- inspecting and adjusting A/C compressor drive belts and pulleys; determining needed repairs
- inspecting and testing A/C compressor clutch components or assembly
- inspecting and adjusting oil level in A/C compressor
- inspecting and testing compressor
- inspecting A/C compressor mountings
- inspecting A/C system mufflers, hoses, lines, filters, fittings and seals
- inspecting A/C condenser for air flow restrictions; cleaning and straightening fins
- inspecting and testing A/C system condenser and mountings
- inspecting receiver/drier
- inspecting accumulator/drier in orifice tube A/C systems
- inspecting and testing expansion valve
- inspecting and testing orifice tube (including filter)
- inspecting, testing and cleaning evaporator
- inspecting and cleaning evaporator housing and water drain

Performing repair/retrofit procedures may include: (Cont'd)

- identifying an inspecting A/C system service valves (gauge connections)
- inspecting A/C system high pressure relief device
- repairing or replacing A/C compressors and clutches
- replacing evaporator, condenser and related components
- repairing or replacing heating system components
- repairing or replacing A/C electrical electronic circuit components and wiring
- repairing or replacing vacuum/mechanical/air system
- receiving, recycling and handling refrigerant

Other variables may include:

- climate control systems

Resources may include:

- hand tools, refrigerant leak detecting equipment, evacuation equipment, refrigerant recovery and/or recycling equipment, thermometers, refrigerant re-gassing equipment, refrigerant, refrigerant oils.
- air conditioning spare parts as required
- ram air fan

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- mechanical removal and replacement of components
- system/component testing
- performance testing

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of repairing and retrofitting air conditioning systems

- demonstrate safe working practices at all times
- demonstrate the ability to repair and retrofit air conditioning systems
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- carrying out servicing/maintenance procedures
- carrying out repair procedures
- carrying out retrofit procedures
- carrying out safety inspection and report finding
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

### (2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines
- refrigerant types and application
- industry/workplace codes of practice
- industry standards where applicable
- construction and operation of systems relevant to application
- system electrical circuits
- equipment/material safety requirements
- equipment maintenance procedures
- appropriate refrigerant/oils and capacities
- repair/retrofitting procedures

Skills

The ability to:

- access, interpret and apply technical information
- safely and correctly use tools and equipment
- maintain customer and enterprise records
- perform de-gas, re-gas, evacuation, retrofit and repair operations according to industry codes of practice and statutory guidelines

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

**Method of Assessment (Cont'd)**

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## Critical Employability Skills

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills

**BSBSBM0012A: Craft personal entrepreneurial strategy**

## Competency Descriptor:

This unit deals with the skills and knowledge required to craft an entrepreneurial strategy that fits with the attitudes, behaviours, management competencies and experience necessary for entrepreneurs to meet the requirements and demands of a specific opportunity.

## Competency Field:

Small Business Operations

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

1. Demonstrate knowledge of the nature of entrepreneurship	1.1	Concepts associated with entrepreneurship are clearly defined.
	1.2	Factors, which influence entrepreneurship in and outside of Jamaica, are correctly identified and explained.
	1.3	The importance of entrepreneurship to economic development and employment is explained clearly.
	1.4	The findings of research conducted on entrepreneurial ventures and successes in the Caribbean region are clearly presented in an appropriate format.
	1.5	Differences between wage employment and entrepreneurial ventures are correctly stated.
2. Identify and assess entrepreneurial characteristics	2.1	Relevant research is carried out and required entrepreneurial characteristics identified.
	2.2	Entrepreneurial characteristics identified are assessed and ranked.
	2.3	An understanding of the process and discipline that enable an individual to evaluate and shape choices and to initiate effective action is correctly demonstrated.
	2.4	Factors that will help an entrepreneur to manage the risk and uncertainties of the future, while maintaining a future orientated frame of mind, are identified.
3. Develop self-assessment profile	3.1	Self-assessment tools/methods to identify personal entrepreneurial potential are identified and properly used.
	3.2	The ability to apply creativity, problem-solving techniques and principles to solve business related problems are demonstrated.



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- 3.3 Feedback from others for the purpose of becoming aware of blind spots and for reinforcing or changing existing perceptions of strengths/ weaknesses is appropriately obtained.
4. Craft an entrepreneurial strategy
- 4.1 A profile of the past that includes accomplishments and preferences in terms of life and work styles, coupled with a look into the future and an identification of what one would like to do is developed.
- 4.2 Commitment, determination and perseverance; orientation towards goals; taking initiative and accepting personal responsibility; recognizing management competencies and identifying areas for development are determined.
- 4.3 Written guidelines to obtain feedback that is solicited, honest, straightforward, and helpful but not all positive or negative are developed to facilitate reviews.
- 4.4 Framework and process for setting goals which demand time, self-discipline, commitment, dedication and practice are developed.
- 4.5 Goals established are specific and concrete, measurable, relate to time, realistic and attainable.
- 4.6 Priorities, including identifying conflicts and trade-offs and how these may be resolved are established.
- 4.7 Potential problems, obstacles and risks in meeting goals are identified.
- 4.8 Specified action steps that are to be performed in order to accomplish goals are identified.
- 4.9 The method by which results will be measured is indicated.
- 4.10 Milestones for reviewing progress and tying these to specific dates on a calendar are established.
- 4.11 Sources of help to obtain resources are identified.
- 4.12 Evidence of the ability to review process and periodically revise goals is demonstrated.

## RANGE STATEMENT

At this stage of the entrepreneurial process the entrepreneur must be able to conduct a self-assessment profile, examine the frame work for self assessment, develop a personal entrepreneurial strategy, identify data to be collected in the self-assessment process and learn about receiving feedback and setting goals.

Concepts associated to include:

- risk
- entrepreneurship
- macro-screening
- micro-screening
- competition
- wage employment

The entrepreneur must be able to:

- understand the extreme complexity in predicting or aligning him/herself to specific careers in an environment of constant change
- determine the kind of entrepreneur he or she wants to become based on attitudes, behaviours, competencies, experience and how these fit with the requirements and demands for a specific opportunity
- evaluate thoroughly his or her attraction to entrepreneurship
- effectively develop personal plan
- utilize available information that will enhance his or her ability to achieve success

Influencing factors to include:

- market conditions
- markets – demand/supply
- global trends
- level of economic activities
- funding
- economic stability
- social stability
- resources availability

The entrepreneur may encounter setbacks if the planning process is not effectively pursued.

Pitfalls may include:

- proceeding without effective planning which may result in commitment to uncertainty
- personal plans fail for the same reasons as business plans including frustration if the plan appears not to be working immediately and the challenges of changing behaviour from an activity-oriented routine to one that is goal oriented
- developing plans that fail to anticipate obstacles, and those that lack progress commitment to a premature path with the desirability of flexibility can lead to disaster
- milestones and reviews

## EVIDENCE GUIDE

Competency is to be demonstrated when the entrepreneur is able to undertake a personal entrepreneurial assessment exercise to determine if he or she possesses the necessary credentials to be a successful entrepreneur. This stage of the entrepreneurial process is critical since experience has shown that the founder is one of the deciding forces if the venture is to succeed and prosper.

### (1) Critical Aspects of Evidence

The entrepreneur will be assessed by his/her action in developing an orchestrated plan in order to effectively pursue the business concept.

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- personal entrepreneurial profile systems
- effective management systems: marketing, operations/productions, finance, administration, law
- how to measure feedback
- the method of developing a personal plan
  - and a business plan
- understanding the difference between entrepreneurial culture and management culture

#### Skills

The ability to:

- determine barriers to entrepreneurship
- minimize exposure to risk
- exploit any available resource pool
- tailor reward systems to meet a particular situation
- effectively plan and execute activities
- use computer technology to undertake assessments

### (4) Resource Implications

The following resources should be made available:

Personal computer with access to the Internet and appropriate software that will enable one to conduct the necessary analysis using the Internet.

**(5) Method of Assessment**

A useful method of assessment is to determine if the venture can stand up to the test of critical evaluation.

**(6) Context of Assessment**

This stage of the entrepreneurial process is assessed when comparisons are made between actual outcomes and plans/projections.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1	Level 2	Level 3
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRACS0072A: Install air conditioning systems**

Competency Descriptor:

This unit identifies the competence required to install air conditioning systems as required by individuals working in the automotive service industry.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY PERFORMANCE CRITERIA**

1. Install air conditioning systems	1.1	Air conditioning system installation is completed without causing damage to any component or system.
	1.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3	Appropriate fittings/materials are selected.
	1.4	Air conditioning systems are installed using appropriate tools and techniques.
	1.5	Installation is tested prior to placing in service and results are recorded in accordance with policies and procedures.
	1.6	Installation is carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2. De-gas and re-gas air conditioning systems	2.1	De-gas and re-gas air conditioning system is completed without causing damage to any component or system.
	2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications, industry codes of practice and relevant guidelines.
	2.3	System is de-gassed using approved recovery unit.
	2.4	System is evacuated in accordance with manufacturer specifications and industry codes of practice.
	2.5	System is re-gassed/performance tested using approved methods and equipment.
	2.6	De-gassing and re-gassing are carried out according to manufacturer specifications, industry regulations/guidelines, OH&S guidelines and company policies/procedures.

## RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice
- Industry guidelines
- National guidelines for vehicle road worthiness
- material safety data sheets

OH&S practices must abide by:

- Industry OH&S guidelines
- Award provisions
- NEPA

Resources may include:

- hand tools
- refrigerant
- leak detecting equipment
- evacuation equipment
- refrigerant recovery and/or recycling equipment
- thermometers
- refrigerant re-gassing equipment
- refrigerant
- refrigerant oils
- air-conditioning system kits

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- installation of air conditioning systems
- system testing
- performance testing

Methods should be applied under normal operating conditions.

## EVIDENCE GUIDE

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of the installation of air conditioning systems

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to service air compressors and associated components
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- Take responsibility for the quality of their own work
- carrying out installation of air conditioning systems
- carrying out safety inspection and report finding
- Plan tasks in all situations and review task requirements as appropriate
- Perform all tasks in accordance with standard operating procedures
- Perform all related tasks to specification
- Use accepted automotive service repair techniques, practices, processes and workplace procedures.

**(2) Pre-requisite Relationship of Units**

- ASRCOR0011A Follow principles of occupational Health and safety in work environment
- ASRCOR0031A Plan a routine task
- ASRCOR0041A Perform routine housekeeping duties

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S guidelines
- Industry codes of practice
- Industry guidelines where applicable
- Air conditioning installation procedures
- Construction and operation relevant to application
- Leakage test procedures
- System electrical circuits
- Equipment/material safety requirements
- Equipment maintenance procedures
- Appropriate refrigerant/oils and capacities

Skills

The ability to:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain customer and enterprise records
- Install air conditioning systems
- Perform de-gas, re-gas, evacuation, operations according to industry codes of practice and statutory guidelines
- Test installed system for leaks
- Performance test air conditioning systems

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge

**Method of Assessment (Cont'd)**

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.



## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0013A: Purchase parts/components/materials**

Competency Descriptor:

This unit identifies the competence required to determine requirements and purchase parts, components and materials .

Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Determine purchasing requirements.	1.1	Customer demand/requirements are accessed and analysed.
		1.2	Market trends are examined.
		1.3	Existing company stock levels are compared with turnover and estimated demand requirements.
		1.4	Product line requirements are determined.
2.	Prepare purchase order/list	2.1	Purchase order/list is developed taking perceived customer needs and existing stock levels into account according to enterprise policies and procedures.
3.	Purchase parts/components/materials	3.1	Supplier/vendor is informed of requirements and specifications.
		3.2	Appropriate paper work/contracts are completed and exchanged in accordance with enterprise policies and procedures.
		3.3	Material is procured in accordance with enterprise policies and procedures.
		3.4	Records/files are maintained accurately using recognised industry/company guidelines.

**RANGE STATEMENT**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&amp;S practices must abide by:

Industry /OH&S guidelines  
Manufacturers specifications

Methods should be applied under normal operating conditions.

Methods include:

- determining stock requirements and purchasing parts, components and materials
- analysing enterprise sales records, market trends and customer demand
- audio, written, visual

Resources may include:

- company sales records
- computers, files, rolodex, relevant stationery, fax, telephone

## EVIDENCE GUIDE

The underpinning knowledge and skills may be assessed on or off-the-job.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment, in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- determining and satisfying enterprise stock requirements
- interpreting and communicating relevant information
- operating relevant equipment
- safe working practices
- company policies and procedures

### (2) Pre-requisite Relationship of Units

- Nil

### (3) Underpinning Knowledge and Skills

#### Knowledge

Knowledge of:

- company purchase/sales records system
- company ordering procedures
- personal safety requirements
- equipment safety requirements
- relevant manufacturer/enterprise policies
- techniques to determine required stock levels

#### Skills

The ability to:

- determine enterprise stock requirements
- order/purchase parts, components and materials
- access, interpret and apply relevant information
- use relevant equipment
- maintain relevant records
- apply relevant manufacturer/enterprise policies

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

## CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 3	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## ASRCOR0133A: Monitor stock levels to maintain enterprise activities

Competency Descriptor:

This Unit covers the skills and knowledge required to effectively monitor stock levels to maintain enterprise activities .

Competency Field:

Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Monitor and maintain stock levels	1.1	Determined optimum stock levels are maintained to ensure constant productivity.
		1.2	Purchase, receipt, storage and issue of stock are undertaken when required.
		1.3	Stock is valued using the nominated valuation method, if required.
		1.4	Stock levels are reconciled with paperwork and any discrepancies rectified or reported to nominated person/section within designated timelines.
2.	Maintain stock control records	2.1	Records are checked against original orders .
		2.2	Records are updated and maintained in an accurate manner to ensure confidentiality and security of information.
		2.3	Records are kept for the necessary period.

### RANGE NATIONALMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables 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

Recording mechanisms/systems may include:

- paper-based
- electronic
- enterprise accounting system

Enterprise procedures and policies may include:

- security procedures
- company guidelines

**Industry Accounting and Auditing Standards**

Business source documents may include but are not exclusive to:

- purchase requisitions
- purchase orders
- delivery dockets
- invoices
- credit notes
- inventory cards

Stock variables may include:

- stationery
- equipment
- resources

## **EVIDENCE GUIDE**

Evidence of satisfactory performance in this Unit is best obtained by observation of performance, questioning and discussion.

More specifically, to indicate understanding and knowledge of monitoring stock levels to maintain enterprise activities in accordance with enterprise procedures and policies.

Check that:

- administrative stock levels are maintained to ensure smooth running of office
- discrepancies are dealt with promptly
- records are maintained
- stock is accounted for
- appropriate legislative procedures are followed

### **(1) Critical Aspects of Evidence**

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- determining and satisfying enterprise stock requirements
- interpreting and communicating relevant information
- operating relevant equipment
- safe working practices
- company policies and procedures

### **(2) Pre-requisite Relationship of Units**

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- company purchase/sales records system
- company ordering procedures
- personal safety requirements
- equipment safety requirements
- relevant manufacturer/enterprise policies
- techniques to determine required stock levels

Skills

The ability to:

- determine enterprise stock requirements
- order/purchase parts, components and materials
- access, interpret and apply relevant information
- use relevant equipment
- maintain relevant records
- apply relevant manufacturer/enterprise policies

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities .



**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>Carries out established processes</li> <li>Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>Manages process</li> <li>Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>Establishes principles and procedures</li> <li>Evaluates and reshapes process</li> <li>Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

## **ASRCOR0143A: Inspect vehicle systems/components and determine preferred repair action**

### Competency Descriptor:

This unit identifies the competence required to carry out an inspection of vehicle systems/components and decide on the most appropriate repair/replacement methods.

### Competency Field:

Automotive Service and Repair

<b>ELEMENT OF COMPETENCY</b>	<b>PERFORMANCE CRITERIA</b>
1. Undertake routine checks of vehicle systems and associated components	1.1 Routine checks undertaken demonstrate knowledge of the principles of automotive service and repairs.
	1.2 The main parts of designated vehicle and associated components are correctly identified.
	1.3 Vehicle components are checked using appropriate maintenance principles, techniques, tools and equipment .
	1.4 Vehicle components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means .
2. Inspect vehicle systems/ components to determine faults and decide preferred repair action	2.1 Information is accessed from appropriate sources to gain knowledge of the fault.
	2.2 Vehicle components are isolated/dismantled to permit an accurate inspection for faults .
	2.3 Faults are identified.
	2.4 Repair action is determined from extent and type of fault.
	2.5 Report of findings is completed in the enterprise-approved format.
	2.6 All inspections are carried out according to industry regulations/guidelines and enterprise procedures/policies.
3. Perform final checks	3.1 Vehicle components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
	3.2 Vehicle components are checked after adjustment is done

- |    |               |     |   |
|----|---------------|-----|---|
| 4. | Clean up area | 4.1 | All waste material is removed and disposed of.          |
|    |               | 4.2 | Area related to work activities is cleaned.             |
|    |               | 4.3 | Tools and equipment are cleaned, maintained and stored. |

## RANGE NATIONALMENT

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Methods of inspection may include:

- inspection and testing
- fault finding using aural, visual and operational assessments for defects

Methods should be applied under normal operating conditions.

OH&S practices must abide by:

- Industry and OH&S guidelines
- Manufacturers specifications

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry regulations and codes of practice

## EVIDENCE GUIDE

The underpinning knowledge and skills may be assessed on or off the job.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.  
The competency should be assessed within the context of the qualification being sought

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- locating the fault without damage or injury to tools, equipment or personnel recommending the appropriate repair action

**(2) Pre-requisite Relationship of Units**

The achievement of Automotive Mechanical service and repair standards appropriate to the vehicle/equipment unit/system being inspected. (Applies to all qualifications excluding Electrical)

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- OH&S regulations
- testing procedures
- technical information
- equipment safety requirements
- vehicle safety requirements
- manufacturer and enterprise procedures

Skills

The ability to:

- complete all tasks to OH&S regulations
- access, interpret and apply technical information
- correctly use tools and equipment
- decide on repair method to be used
- listening to and responding to verbal information
- exchanging technical information
- accessing information through discussion and questioning
- exchanging information with customer and recommending repairs

**(4) Resource Implications**

The candidate will be provided with:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials

**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- present evidence of credit for any off-job training related to this unit

Assessor must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

**Method of Assessment (Cont'd.)**

Evidence of competence may be obtained through a variety of methods including:

- observation
- oral questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of related activities to which applicant has contributed, or worked on
- training courses on material related to range of variables and or knowledge requirement
- examples of authenticated assessments and/or assignments from formal education courses
- simulation

All tasks involved must be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

This unit should be assessed on the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. The individual would already be competent with the technical aspects of team activities.

**CRITICAL EMPLOYABILITY SKILLS**

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the NCTVET Qualification Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
<ul style="list-style-type: none"> <li>• Carries out established processes</li> <li>• Makes judgement of quality using given criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Manages process</li> <li>• Selects the criteria for the evaluation process</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes principles and procedures</li> <li>• Evaluates and reshapes process</li> <li>• Establishes criteria for evaluation</li> </ul>

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.

**ASRCOR0173A: Carry out diagnostic procedures**

Competency Descriptor:

This unit identifies the competence required to diagnose vehicle/components/equipment faults from “symptoms” and decide repair action necessary.

Competency Field:

Automotive Service and Repair

**ELEMENT OF COMPETENCY****PERFORMANCE CRITERIA**

1. Diagnose faults from "symptoms" and decide action necessary.	1.1	Information is accessed from appropriate sources to inform action required to assist in distinguishing between “symptoms” and “causes”.
	1.2	Authority is obtained to partly dismantle components, to permit an accurate inspection of diagnosed fault/s, if required.
	1.3	Faults are diagnosed without causing damage to any workplace property, vehicle or equipment.
	1.4	A diagnosis strategy is developed that can be used to determine a fault within the vehicle/component/equipment.
	1.5	Identification of faults is made from test results and a “plan of action” is decided upon to rectify faults.
	1.6	Report of findings is completed in the approved format.
	1.7	All inspections are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

**RANGE NATIONALMENT**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

Sources of information/documents may include:

- manufacturer specifications/manuals
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&amp;S practices must abide by:

- Industry and OH&S guidelines
- Manufacture specification

Methods include:

- diagnosis, isolation, removal and replacement, dismantling, adjusting
- visual identification and testing
- component/vehicle performance comparison
- on-, in- and off-shore diagnosis
- on and off site, indoor and out door diagnosis

Methods should be applied under normal operating conditions.

Other variables may include:

- production equipment

Resources may include:

- computer software, computer hardware, general office equipment, stationery
- specific tools and equipment used for dismantling, testing and diagnosis

## EVIDENCE GUIDE

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place after only a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

### (1) Critical Aspects of Evidence

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- access and interpret information
- test to verify symptoms
- safe work procedures
- diagnose of faults
- protection methods

### (2) Pre-requisite Relationship of Units

- Nil

**(3) Underpinning Knowledge and Skills**Knowledge

Knowledge of:

- diagnostic procedures/problem solving techniques
- documenting/reporting procedures
- symptom and cause differentiation
- safety requirements

Skills

The ability to:

- Access and interpret information provided
- Carry out diagnostic procedures
- Document/report diagnostic outcomes
- Recommended repair action
- Follow fault finding flow charts/processes
- listening to verbal instructions
- following verbal instructions
- exchanging technical information
- exchanging information with customer/providing diagnosis/asking permission to dismantle a part for diagnosis
- reading and interpreting numerical information from test results
- using diagnostic tools and charts (i.e. multimeters, measuring tools, diagrams)
- applying mathematical ideas to inspection process of vehicle systems and components

**(4) Resource Implications**

The following resources should be made available:

- all tools, equipment, materials and documentation required
- any relevant workplace procedures
- any relevant product and manufacturing specifications
- any relevant codes, standards, manuals and reference materials



**(5) Method of Assessment**

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/colleagues who can be approached for the collection of competency evidence where appropriate
- present evidence of credit for any off-job training related to this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge .

Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

**(6) Context of Assessment**

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.

The prescribed outcome must be able to be achieved without direct supervision.

The competency should be assessed within the context of the qualification being sought.

The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.

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## CRITICAL EMPLOYABILITY SKILLS

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Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 1	
Use technology	Level 1	

Please refer to the Assessment Guidelines for advice on how to use the Critical Employability Skills.