Competency Standards for Caribbean Vocational Qualifications (CVQ)

CCASR10507 Level I in Motor Vehicle Repairs (Cars and light trucks)

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
ASRSSS0011A	Perform basic inspection of steering and suspension system	Mandatory	5
ASRSSS0021A	Remove service and replace steering and suspension system components	Mandatory	10
ASRSSS0091A	Prepare for wheel alignment operations	Mandatory	5
ASRTRN0011A	Prepare for manual/automatic transmission service/repair	Mandatory	5
ASRBRK0011A	Perform routine inspection of brake system component/unit	Mandatory	5
ASRBRK0031A	Service disc/hydraulic braking 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	Elective	20
ASRSSS0051A	Balance wheel assembly	Elective	10
ASRSSS0071A	Dismantle wheels and remove/repair/refit tyres/tubes	Elective	10
ASRTRN0021A	Remove/refit/replace manual transmission and drive train system components/unit from vehicle	Elective	30
ASRTRN0031A	Service clutch, CV joints and final drive assemblies and or associated components	Elective	20
ITICOR0011A	Carry out data entry and retrieval procedures	Elective	40

CCASR10507 Level I in Motor Vehicle Repairs (Cars and light trucks) Cont'd.

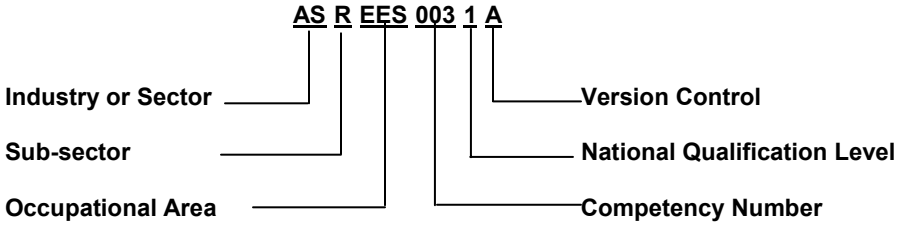
Unit Number	Unit Title	Mandatory/ Elective	Hours
ASRCOR0101A	Carry out basic mechanical cutting operations	Elective	20
ASRBRK0051A	Machine brake drums and brake disc rotors	Elective	20
MEMCOR0101A	Prepare basic engineering drawing	Elective	40
MEMFAB0151A	Prepare for oxyacetylene/metal arc welding processes	Elective	20
MEMFAB0061A	Perform manual heating and thermal cutting	Elective	20
MEMFAB0051A	Perform brazing and/or silver soldering	Elective	20
ASREMS0072A	Repair cooling systems and associated components	Elective	20
ASREGS0012A	Repair and tune petrol fuel systems	Elective	20
ASREES0132A	Service and repair charging and starting systems/components	Elective	20
ASRTRN0012A	Service manual transmission assemblies	Elective	10
ASRTRN0052A	Repair manual transmission	Elective	30
ASRTRN0092A	Service automatic transmission	Elective	10
ASRTRN0062A	Remove/refit/replace automatic transmission and drive train system components/unit from vehicle	Elective	10
ASRBRK0042A	Service and repair air braking systems	Elective	20
ASRSSS0032A	Carry out preliminary checks to motor vehicle front end	Elective	15
BSBSBM0012A	Craft personal entrepreneurial strategy	Elective	50

To achieve this qualification ALL Mandatory competency plus a minimum of Four (4) Level one electives and one (1) Level two elective must be achieved.

Nominal Training Hours (Institutional Delivery) include total hours of Mandatory competencies and Electives
selected.

Legend to Unit Code

Example: ASREES0031A



Key: COR - Mandatory; EMS - Engine Mechanical System; EGS - Engine Management System; EES - Engine Electrical/Electronic Systems; FAB – Fabrication; SSS - Steering and Suspension System; TRN - Transmission; BRK - Brake Systems; 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

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
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

Safety responsibilities apply to:

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

Quality Assurance requirements may include:

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

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

Emergency procedures include:

- fire fighting
- medical and first aid
- evacuation

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 Assur ance 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 requiremen ts

(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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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	PERFORMQNCE 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 famili ar 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 equ ivalent
- 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 procedur es, 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

Levels of Competency		
Level 1.	Level 2.	Level 3.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

House keeping methods may include:

cleaning benches
sinks preparation areas walkways fixtures and other working surfaces

Protection of stacked/stored materials may include:

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

Dust suppression procedures may include:

- spraying with water
- covering
- use of vacuum cleaner

Removal of materials to include proces ses 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 repai r process
- OHSA 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 deter mined 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 t ask. 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

Collect, analyse and organise informat ion	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 A ssessment 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 orien tation.

(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 pr ocedures

(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 requ ired 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 devi ces
- 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 e vidence 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 req uired 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 r equired 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

Dimension reading:

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

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 joi ning in a common intersection
- full scale (1:1) basic isometric drawing

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 t he 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 technica l 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, pro cesses 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 Employabilit y 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, pr ocesses 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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-metalic 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 re gulations 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 m aterial 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 addres sing 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 individu al 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 fo r 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.

		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 appl ications.
		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 regiona l 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 mathe matical 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 me thods 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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/repaired 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
- ASRCOR0041APerform 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 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. 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 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

Specialised equipment:

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

OH&S practices must abide by:

- Industry standards/OH&S legislation

Resources may include:

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

Methods of assessments may include:

- visual
- aural
- smell
- functional

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 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 performanc e 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 di agnosis, 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	Components/parts are cleaned in preparation for evaluation.
		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.

Cylinder head routine checks may include:

- wear
- distortion
- tensions
- misalignment

Other variables may include:

- ancillary systems/components (e.g. cooling systems, fuel systems, exhaust systems
- fatigue
- lubrication
- slackness
- 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:

- 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, pro cesses 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
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	Components and 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 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. Th ese 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

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

Specialised equipment:

- exhaust gas analyser
- vacuum gauge
- tachometer
- multimeter

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ASRSSS0011A: 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

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of steering and suspens ion 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

OH&S practices must abide by:

- Industry standards/OH&S legislation

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

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 ta sk. 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

Collect, analyse and organise info rmation	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 sus pension 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.

		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, loosing, 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 assembles, 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 associa ted 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, pro cesses and workplace procedures

(2) Pre-requisite Relationship of Units

- ASRCOR0011A Follow principles of occupational Health and safety in work environ ment
- 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 ma terials

(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 knowl edge.

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 fo r 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/ consumables selected for wheel 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 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 appropriate for wheel alignment 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
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.

(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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

ASRBRK0031A: Service disc/hydraulic braking systems

Competency Descriptor: This unit identifies the skills and knowledge required to carry out the servicing of disc/hydraulic braking systems components for light motor vehicle

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of disc/hydraulic braking system and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of disc/hydraulic braking system and associated components.
		1.2	The main parts of designated disc/hydraulic braking system and associated components are correctly identified.
		1.3	Braking system and associated components checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Braking system and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Service braking system and associated components	2.1	Braking systems and/or associated 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	Braking system components are serviced using approved methods, equipment and materials, in accordance with manufacturer specifications.
		2.4	Appropriate workplace documentation is completed and dealt with relevant to service outcomes.
		2.5	All braking systems and/or component service activities are carried out in according to industry regulations/guidelines.
3	Final checks	3.1	Braking systems and/or associated components are adjusted to suit specifications.
		3.2	Braking systems and/or associated components are checked after adjustment is done.
		3.3	Assembly is prepared for commissioning for 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:

- light vehicle and/or heavy vehicle and/or motor cycle and/or trailers and/or outdoor power equipment

This unit does not apply to ABS electrical/electronic components.

Sources of information/documents may include:

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

Other variables may include:

- disc pads
- master cylinders
- brake shoes
- brake callipers
- brake hoses
- brake actuators
- mechanical devices
- valves and warning lights

Specific requirements:

- fluid, mechanical, pneumatic and vacuum operated, power assisted
- dual braking systems
- anti-dive systems

Resources may include:

- hand tools, power tools, dust extraction equipment
- lifting and supporting equipment, roller brake dynamometer, skid pan, inertia testing devices, test light

Methods include:

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

Methods should be applied under normal operating conditions.

Work activities may include:

- removing, cleaning, inspecting and reassembling brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, cams, bushings, air canisters air compressors & lines air dryer and other related brake hardware and backing support plate
- removing and reinstalling wheel cylinders
- adjusting brake shoes and reinstalling brake drums or drum/hub assemblies
- remove Planetories/Wheels
- assembling air Brakes
- reassembling, lubricating and reinstalling calliper, pads and related hardware
- refinishing rotor according to manufacturer's recommendations
- adjusting calliper with integrated parking brake system
- removing and installing anti-lock brake system electrical/ electronic/hydraulic components
- adjusting brake system
- bleeding brake systems
- inspecting drive line parking brake drums, rotors, bands, shoes, mounting hardware and adjusters; adjusting, repairing or replacing as needed
- inspecting drive line parking brake application system pedal, cables, linkages, levers, pivots and spring; adjusting, repairing or replacing as needed
- checking operation of parking (spring) brake chamber; determining needed repairs
- inspecting and testing parking (spring) brake check valves, diaphragm, lines, hoses and fittings; replacing as needed
- inspecting and testing parking (spring) brake application and release valve and replacing as needed
- manually releasing and resetting parking (spring) brake in accordance with manufacturers' recommendations

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
- brake systems and/or components service procedures followed
- safe working practices
- vehicle protection methods

(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 braking system and 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 braking system and associate components
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment

Critical Aspects of Evidence (Cont'd)

- 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
- ASRCOR0091A Perform manual handling and lifting

(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

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.

(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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manage process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
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 wirin g/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 d enote 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 ap propriate 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 unus ual 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 requ irements 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 r elate to the seven areas of generic competency that underpin effective workplace practices.

Levels of Competency		
Level 1.	Level 2.	Level 3.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 Employabili ty 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:

Activities may include:	Specific requirements:
• identify unusual tire wear patterns and determining needed repairs • identify wheel/tire vibrations, shimmy, hop, (tramp) problems and determining needed repairs • inspecting wheels, rims, spacer, clamps studs and nuts, replacing as needed • inspecting tyres, checking and adjusting air pressure • measuring wheel, tyre radial and lateral runout • measuring tyre diameter and matching tyres on tandem axle(s) • balancing wheel and tyre assembly (static) • balancing wheel and tyre assembly (dynamic) • rotating tyres according to manufacturers' recommendations • dismounting, inspecting, repairing and remounting tyre and wheel • reinstalling wheel and lug nuts	• heavy tyre fitting to use static wheel balance only Resources may include: • hand tools, • wheel balances OH&S practices must abide by: • Industry standards/OH&S legislation

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 associ ated 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 qualit y 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, pr actices, 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 specifi cations.
- 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 le vel 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ASRSSS0071A: Dismantle wheels and remove/repair/refit tyres/tubes

Competency Descriptor: This unit identifies the skills and knowledge required to required to dismantle wheels to remove/repair/refit tyres/tubes 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 checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Wheel assembly and associated components identified as requiring further diagnosis, repair or adjustment reported and documented by appropriate means .
2.	Remove and refit/replace tyres and tubes	2.1	Removal and replacement of tyres and tubes is achieved without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Appropriate workplace documentation is completed.
		2.4	All activities are carried out according to industry regulations/guidelines.
		2.5	Company liability in relation to tyre repair is known.
3.	Inspect tyres and tubes to assess reparability	3.1	Inspection of tubes and tyres is achieved without causing damage to any workplace property or vehicle.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		3.3	Appropriate workplace documentation is completed.
		3.4	All inspection activities are carried out according to industry regulations/guidelines.
		3.5	Tyres are correctly assessed as major, minor or unrepairable in relation to tyre repair specifications.

4.	Carry out minor tube and tyre repair	4.1	Tyre and tube repairs are completed without causing damage to any component or system.
		4.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		4.3	Tyres and tubes are repaired or replaced using approved methods and equipment, according to industry and manufacturer specifications.
		4.4	Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.
		4.5	All repair activities are 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

Methods include:

- visual inspection
- use of specific hand tools and machinery

Methods should be applied under normal operating conditions.

Resources may include:

- hand tools, power tools specialised equipment such as buffs, spreaders, tyre removal equipment, immersion tanks

OH&S practices must abide by:

- Industry standards/OH&S legislation

Machine and equipment:

- tyre removal/replacement equipment
- emery wheels machine
- vulcanising equipment, scissors
- fitting, sealing, inflating tyres

Specific requirements:

- Types of tubes and tyres
- Various repair material

Minor tyre repairs are made to the crown of the tread of tubeless tyres and include:

- up to 10mm diameter hole
- injury angle greater than 20 o from the vertical use separate plug and patch
- unlimited number of minor repairs, provided they do not overlap
- mini-combination repair
- plug and patch
- tube repair may include stick-on type patches
- valve replacement is with the stick-on type replaceable valve

Work activities may include:

- removal of tubes
- removal of tyres
- scraping
- applying contact cement
- shaping patches
- applying patches, to tubes and tyres
- applying heat to repaired patch
- plug holes in tyres

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 procedural information
- removing and refitting procedures
- inspection procedures
- repair procedures for tubes and tyres
- 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 dismantling of wheels to remove/repair/refit tyres/tubes 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 dismantle wheels and remove/repair/refit tyres/tubes
- 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
- ASRCOR0091A Perform manual handling and lifting

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- types of tubes and tyres and their construction
- inspection procedures to determine repairability (major, minor or unrepairable)
- company liability in relation to tyre repair
- roadworthy regulations relating to tyres and rims
- removal and replacement procedures
- tyre and tube repair procedures
- relevant technical information
- equipment safety requirements
- relevant manufacturer/company policies
- statutory legislation where applicable
- manual handling procedures
- personal safety requirements

Skills
The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment safely
- apply manual handling procedures
- apply personal safety requirements
- remove and replace tyre and/or tube
- assess tube and tyre repairability
- repair tyre and/or tube
- measure and interpret pressures

(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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
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. 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:

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

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

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Determine job requirements	1.1	Job specification requirements are determined from job sheets and/or instructions.
		1.2	Appropriate method/machine is selected to meet specifications.
		1.3	Machine is loaded and adjusted appropriately for operation consistent with standard operating procedures.
2.	Select/set up machine tooling	2.1	Most appropriate tooling is selected.
		2.2	Tooling is correctly installed using standard operating procedures.
		2.3	Machine is set up and adjusted using standard operating.
3.	Operate mechanical cutting machine	3.1	Appropriate stops and guards are set and adjusted as required.
		3.2	Material is secured and correctly positioned using measuring equipment as necessary.
		3.3	Machine is started and stopped safely to standard operating procedures.
		3.4	Machine is operated to cut/hole material to specifications using standard operating procedures.
		3.5	Lubricant is used as required.
		3.6	Appropriate safety precautions are taken.
4.	Check material for conformance to specification	4.1	Machine and/or tooling are adjusted as required and in process adjustments carried out as necessary.
		4.2	Material is cut and/or holed to within workplace tolerances.
		4.3	Material is used in most economical way.
		4.4	Codes and standards are observed.

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 mecha nical 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 sa ws, 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 docume ntation 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 compet ency 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 wi ll 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

ASRBRK0051A: Machine brake drums and brake disc rotors

Competency Descriptor: This unit identifies the skills and knowledge required to machine brake drums and brake disc rotors for light motor vehicle

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of brake drums and brake disc rotors	1.1	Routine checks undertaken demonstrate the principles of brake drums and brake disc rotors in accordance with industry regulations/guidelines.
		1.2	The main parts of designated brake drums and brake disc rotors are correctly identified.
		1.3	Brake drums and brake disc rotors and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Braking system and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Machine brake drums and brake disc rotors	2.1	Brake drums and brake disc rotors are machined without causing damage to any component or system.
		2.2	Accurate information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Brake drums and/or brake disc rotors are measured prior to machining to determine the suitability for machining to manufacturer safety specifications.
		2.4	Appropriate workplace documentation is completed.
		2.5	Machining activities are carried out according to industry regulations/guidelines.
3.	Final checks	3.1	Brake drums and brake disc rotors and/or associated components are machined to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2	Brake drums and brake disc rotors are checked after machining done.
		3.3	Assembly is prepared for installation in conformance to specifications.

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:

Brake drums and brake disc rotors fitted to vehicle braking systems such as: four wheel brake drums , brake drums/disc combination, four wheel disc brakes, fluid operated, mechanically operated, power assisted, combination systems, anti-lock braking systems, electrically/electronically operated braking 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
- measuring equipment
- on-car and/or off-car machining equipment
- appropriate personal protection

OH&S practices must abide by:

- Industry standards/OH&S guidelines

Methods include:

- on-car brake disc rotor machining
- off-car brake drum and brake disc rotor machining

Methods should be applied under normal operating conditions.

Specific requirements:

- Solid
- vented
- integrated metal construction

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
- safe working practices
- machining/reconditioning brake drums and brake disc rotors

(1) Critical Aspects of Evidence

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to machine motor vehicle brake drums and brake disc rotors
- 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:

- measuring and testing procedures
- brake drum and disc rotor machining procedures
- equipment/Material safety requirements
- personal safety requirements
- manual handling procedures
- personal safety requirements
- basic numeracy techniques
- basic language and literacy techniques

Skills
The ability to:

- access, and apply safety and technical information
- apply personal safety requirements
- use relevant tools and equipment
- apply measuring and testing procedures
- carry out brake drum and disc rotor machining operations
- maintain customer records
- apply manual handling procedures
- 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

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

Consultations may include reference to appropriate personnel including

- technical supervisory
- manufacturers
- suppliers
- contractors
- customers

Drawing records may include

- cataloguing
- issuing security classifications
- filing
- preparing
- distribution lists
- drawings

Specifications may be obtained from

- design information
- customer deals/concepts/expectations/requirements
- sketches
- preliminary layouts

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

Drawing instruments and supplies:

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

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

Alphabet of line:

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

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

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 pein 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

MEMFAB0061A: Perform manual heating and thermal cutting

Competency Descriptor: This unit deals with the skills and knowledge required to effectively perform manual heating and thermal cutting and applies to individuals working in the metal engineering and maintenance industry.

Competency Field: Metal, Engineering and Maintenance

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Assemble/disassemble plant, equipment for manual heating and thermal cutting	1.1 Appropriate cutting process and/or procedure for material are selected.
	1.2 Accessories and equipment are correctly selected and assembled.
2. Operate heating and thermal cutting equipment	2.1 All safety procedures are observed.
	2.2 Equipment start up procedures is followed correctly and to standard operating procedures.
	2.3 Equipment adjustments are made correctly using standard operating procedures.
	2.4 Appropriate cutting allowances are made.
	2.5 Materials are used in the most economical way.
	2.6 Defects are recognised and corrective action taken to standard operating procedures.
	2.7 Materials are heated and cut to specification shape/size/length and to accepted workplace standards.

RANGE STATEMENT

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

- Manual, straight line cutting standards observed.
- Manual or automatic processes used to cut and heat to specifications

Cutting may include flame gouging by hand. All work carried out to standard and regulatory requirements.

Cutting may be applied to material of various thicknesses and types including ferrous, non-ferrous and non-metallic materials by a variety of methods, which may include fuel gas oxy fuel gas and air fuel gas.

Cutting may include use of hand held and self-propelled straight-line cutters.

Heating may be applied to material of various thicknesses and types including ferrous, non-ferrous and non-metallic materials by a variety of methods, which may include fuel gas, oxy fuel gas and air fuel gas.

Materials welded may include:

- low carbon steel
- cast iron

Setting up may include the correct connection of:

- hoses
- blowpipes
- regulators
- settings of gas mixtures

Preparation of materials would be minimal and may include but not limited to:

- preheating
- setting up jigs
- setting up fixtures
- setting up clamps

EVIDENCE GUIDE

Competency is to be demonstrated by safely and effectively performing routine manual heating and thermal cutting 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 equipment and during the heating and cutting process
- demonstrate safe and effective operational use of tools, plant and equipment
- demonstrate correct procedures in setting up and shutting down 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 heating and thermal cutting techniques 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 heating and thermal cutting 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
- MEMCOR0161A Plan and undertake a routine task
- MEMCOR0081A Mark off/out (general engineering)
- MEMCOR0191A Use hand tools

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- workplace and equipment safety requirements including relevant OH&S guidelines and regulations
- heating medium/technique
- heating/cutting processes
- oxy-fuel equipment identification, transportation and storage
- hand tools and heating/cutting equipment
- materials/consumables relative to oxy-fuel heating and thermal cutting procedures
- materials preparation
- manual handling
- measurement
- drawings, sketches and instructions

Skills
The ability to:

- work safely to instructions
- communicate effectively
- interpret relative drawings and instructions
- use power tools and hand tools
- set up heating cutting equipment
- use heating cutting equipment
- identify/select material
- identify/select heating/cutting processes
- measure relative to heating and thermal cutting processes
- heat/cut 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

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

Heating medium and appropriate consumables can include:

- oxyacetylene
- fuel gas
- fluxes (resin or powder)
- all types of silver solder and brazing rods

Materials:

- low carbon steel (mild steel) up to 10 gauge
- low carbon steel plate up to 5mm
- steel and galvanised pipes up to 50mm

Location/condition:

- workshop
- plant
- fieldwork at ground level
- elevated positions
- dry
- humid and wet conditions
- construction environment
- agricultural environment
- food processing environment

Work activities:

- measuring,
- marking,
- grinding
- lifting,
- welding
- 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

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 disp osed 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 superv ised 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activi ties	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

Work activities:	Other variables may include:
• adjusting carburettor-tuning mechanism • analyzing exhaust gas mixture • replacing sensors, controls and actuator components and circuits of computerized control petrol injection fuel system • servicing and replacing power and ground circuits and connections • replacing fuel lines, fitting and hoses • replacing fuel filters • replacing fuel pressure regulation system and components • adjusting or replacing cold enrichment system and components • removing, cleaning, reinstalling throttle body and adjusting related linkages • checking and adjusting idle speed and fuel mixture • repairing or replacing vacuum and electrical components and connection of fuel system	• carburettors (all position, electronic, fixed venturi, variable venturi) • fuel pumps, mechanical and electrical • engine shut down system Specific requirements may include: • stroke and/or 4 stroke, spark ignition fuel systems

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

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

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
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

Sources of information/documents may include:

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

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

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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.

ASRTRN0012A: Service manual transmission assemblies

Competency Descriptor: This unit identifies the skills and knowledge required to required to carry out the service of manual transmissions and/or associated components for light/heavy vehicle, plant and outdoor power equipment

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake maintenance checks of transmission components	1.1 Routine checks undertaken demonstrate knowledge of the principles of manual transmission components.
	1.2 The main parts of designated manual transmission components are correctly identified.
	1.3 Transmission components are checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 Assembly identified as requiring further diagnosis, repair or adjustment documented by appropriate means.
2. Service transmission assemblies	2.1 Service requirements determined by appropriate means.
	2.2 Service method suitable for the type of transmission assembly being serviced, determined from manufacturer's instruction sheets, standard workshop manuals/procedures or other appropriate means.
	2.3 Service tools and equipment selected according to the type of assembly being serviced.
	2.4 Transmission components aligned or adjusted to standard workshop practices using appropriate maintenance principles, techniques tools and equipment.
	2.5 Service carried out or replacement of parts done.
	2.6 Transmission assembly checked after service for correct operation or identified for further diagnosis or repair.
	2.7 Manual transmission is serviced without causing damage to any component or system.
	2.8 Service report completed accurately.
	2.9 Further diagnosis or repair requirements actioned by appropriate means.

3.	Final checks	3.1 Transmission components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2 Transmission assembly is checked after adjustment done.
		3.3 Assembly is prepared for commissioning and conformance to specifications.
		3.4 Service report completed by appropriate means.
4.	Clean up area	4.1 All waste material removed and disposed of.
		4.2 Area related to work activities cleaned.
		4.3 Tools and equipment 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 and/or heavy vehicle transmissions (manual) and/or outdoor power equipment and/or plant

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

Methods of evaluation may include:

- road testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion including for damage, wear, corrosion, run out, vibration, play, pressure)

Methods should be applied under normal operating conditions.

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.

On vehicle test/inspection/measuring to include:

- inspecting clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots and springs
- inspecting hydraulic clutch slave and master cylinders, lines and hoses
- inspecting clutch pressure plate assembly and clutch disc
- inspecting flywheel and ring gear
- inspecting clutch (bell) housing and transmission case mating surfaces
- measuring flywheel-to-block run out and crankshaft end-play and face squareness
- inspecting transmission shift linkages, brackets, bushings, cables, pivots and levers
- inspecting transmission forks, grommets, levers, shafts, sleeves, detente mechanisms, interlocks and springs, input (clutch) shaft and bearings
- inspecting main shaft gears, thrust washers, bearings and retainers
- Inspecting synchronizer hub sleeve, keys (inserts) springs and blocking rings
- inspecting drive pinion gear, spacers, sleeves and bearings
- measuring and adjusting drive pinion depth and drive pinion bearing preload
- measuring and adjusting side bearing preload and ring and pinion gear backlash
- checking ring and pinion tooth contact pattern
- measuring rear axle flange run out and end play
- inspecting transfer case shifting controls (mechanical, electrical and vacuum) of four wheel drive
- inspecting axle shaft seals, bearing and retainers
-
- inspecting counter cluster and reverse idler gear, shaft thrust washers and retainers and check end play
- Inspecting speedometer drive gear, driven gear, vehicle speed sensor and retainers
- inspecting transaxle shift linkages, brackets, bushing, cables, pivots, levers, power train mounts
- measuring end play or preload on transaxle shafts
- inspecting synchronizer hub, sleeve, keys (inserts), springs and blocking rings
- inspecting and measuring differential pinion gears spiders), shaft, side gears, side bearings, thrust washers and case assembly
- inspecting front wheel drive (FWD) and rear wheel (RWD) shafts, yokes and boots
- inspecting shaft centre support bearings
- inspecting ring gear and measure run out of ring and pinion gears

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 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 overhauling of transmissions or other units requiring the exercise of the skills and knowledge covered by this unit.

Critical Aspects of Evidence (Cont'd)

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to service manual 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 automotive service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- construction and operation of manual transmissions (relevant to application)
- construction of the planetary gear unit
- operation of each element of the planetary gear unit
- operating conditions of planetary gears (drive engine braking, overdrive and reverse)
- service procedures
- transmission lubricants/fluids and their application
- operating principles of manual and belt drive transmissions
- measuring and testing procedures
- relevant technical information
- equipment safety requirements
- vehicle/equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- personal safety procedures

Skills
The ability to:

- work safely to instructions
- use tools and measuring devices
- use elevated work platforms
- service manual transmission without causing damage to any component or system
- access and interpret correct information from appropriate manufacturer specifications
- ensuring vehicle/equipment is safe to operate
- carry out servicing to transmission components in accordance with vehicle/equipment/ system manufacturer
- make adjustments
- return vehicle/equipment to service
- complete and deal with appropriate workplace documentation relevant to service outcomes
- carry out all transmission system service activities according to industry regulations/guidelines, OH&S standards company procedures/policies

(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 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 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 1	
Use technology	Level 1	

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

ASRTRN0052A: Repair manual transmission

Competency Descriptor: This unit identifies the skills and knowledge required to carry out the repair, removal and replacement of manual transmissions and/or associated components for light/heavy vehicle, plant and outdoor power equipment

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1.. Undertake maintenance checks of transmission components	1.1 Principles of manual transmission components are understood.
	1.2 The function of the main parts of the designated transmission assembly is understood.
	1.3 Transmission components are checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 Assembly identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2. Adjust transmission assemblies	2.1 Adjustment requirements are determined by appropriate means.
	2.2 Adjustment method suitable for the type of transmission assembly being serviced is determined from manufacturer's instruction sheets, standard workshop manuals/procedures or other appropriate means.
	2.3 Adjustment tools and equipment are selected according to the type of assembly being serviced.
	2.4 Transmission components are aligned or adjusted to standard workshop practices using appropriate maintenance principles, techniques tools and equipment.
	2.5 Transmission assembly is checked after adjustment for correct operation or identified for further diagnosis or repair.
	2.6 Service report is completed.
	2.7 Further diagnosis or repair requirements actioned by appropriate means.

3.	Remove repair and replace manual transmission assemblies	3.1	Service reports are read and visual inspection of the transmission assembly is undertaken.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		3.3	Transmission assembly is correctly tested using sound maintenance principles and procedures, manufacturers specification and where applicable diagnostic instrument.
		3.4	Identified faults are repaired or replacement done.
		3.5	Manual transmission is repaired without causing damage to any component or system.
		3.6	Repairs and adjustments to transmission components are carried out in accordance with vehicle/plant/ system manufacturer current specifications for methods, equipment used and tolerance relative to the plant/vehicle/ system.
		3.7	Appropriate workplace documentation is completed and dealt with relevant to repair, remove and replace outcomes.
		3.8	All transmission system repair and removal/replacement activities are carried out according to industry standards/guidelines.
4.	Final adjustment	4.1	Using appropriate maintenance principles and procedures drive/transmission components are tensioned, balanced, aligned or adjusted to suit specifications and operational requirements.
		4.2	Transmission assembly is checked after adjustment is done.
		4.3	Assembly is prepared for commissioning on conformance to specifications.
		4.4	Service report is completed by appropriate means.
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:

Light and/or heavy vehicle transmissions (manual) and/or outdoor power equipment and/or plant

Methods include:

- road testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion including for damage, wear, corrosion, runout, vibration, play, pressure)
- 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

Other variables may include:

- power take off assemblies
- multiple forward and reverse gears
- synchronised and non-synchronised gear selection metal and non-metal gears,
- electrical/pneumatic controls
- transverse/longitudinal mounting
- helical
- double helical and spur gears
- transaxle
- overdrive
- transfer case and belt drive speed control

Reduction may include:

- 1st gear (D or 2)
- 2nd gear (D)
- 3rd gear (D)
- 2nd gear (2 or L)
- 1st gear (L)
- overdrive
- reverse
- P or N range
- engine braking
- 1st or 2nd gear

Resources may include:

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

Specific requirements:

- manual transmissions, front and/or rear wheel drive configurations
- belt drive transmission

OH&S practices must abide by:

- Industry standards/OH&S legislation

On vehicle test/inspection/measuring to include:

- Inspecting clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots and springs
- Inspecting hydraulic clutch slave and master cylinders, lines and hoses
- Inspecting clutch pressure plate assembly and clutch disc
- Inspecting flywheel and ring gear
- Inspecting clutch (bell) housing and transmission case mating surfaces
- Measuring flywheel-to-block runout and crankshaft end-play and face squareness
- Inspecting transmission shift linkages, brackets, bushings, cables, pivots and levers
- Inspecting transmission forks, grommets, levers, shafts, Sleeves, detente mechanisms, interlocks and springs, input (clutch) shaft and bearings
- Inspecting main shaft gears, thrust washers, bearings and retainers
- Inspecting synchronizer hub sleeve, keys (inserts) springs and blocking rings
- Inspecting counter cluster and reverse idler gear, shaft thrust washers and retainers and check end play
- Inspecting speedometer drive gear, driven gear, vehicle speed sensor and retainers
- Inspecting transaxle shift linkages, brackets, bushing, cables, pivots, levers, power train mounts
- Measuring end play or preload on transaxle shafts
- Inspecting synchronizer hub, sleeve, keys (inserts), springs and blocking rings
- Inspecting and measuring differential pinion gears(spiders), shaft, side gears, side bearings, thrust washers and case assembly
- Inspecting front wheel drive (FWD) and rear wheel (RWD) shafts, yokes and boots
- Inspecting shaft centre support bearings
- Inspecting ring gear and measure runout of ring and pinion gears
- Inspecting drive pinion gear, spacers, sleeves and bearings
- Measuring and adjusting drive pinion depth and drive pinion bearing preload
- Measuring and adjusting side bearing preload and ring and pinion gear backlash
- Checking ring and pinion tooth contact pattern
- Measuring rear axle flange runout and end play
- Inspecting transfer case shifting controls (mechanical, electrical and vacuum) of four wheel drive
- Inspecting axle shaft seals, bearing and retainers

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 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 overhauling of transmissions or other units requiring the exercise of the skills and knowledge covered by this unit.

Critical Aspects of Evidence (Cont'd)

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair manual 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 automotive service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- ASRTRN0022A Service manual transmission

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- construction and operation of manual transmissions (relevant to application)
- construction of the planetary gear unit
- operation of each element of the planetary gear unit
- transmission lubricants/fluids and their application
- operating principles of manual and belt drive transmissions
- operating conditions of planetary gears (drive engine braking, overdrive and reverse)
- reduction ratios of planetary gears (drive engine braking, overdrive and reverse)
- removal, replacement and repair procedures
- measuring and testing procedures
- relevant technical information

Skills
The ability to:

- work safely to instructions
- use tools and measuring devices
- use elevated work platforms
- repair manual transmission without causing damage to any component or system
- access and interpret correct information from appropriate manufacturer specifications
- ensuring vehicle/equipment is safe to operate
- replace or repair all worn and deteriorated parts that have been identified
- carry repairs and adjustments to transmission components in accordance with vehicle/equipment/ system manufacturer

Underpinning Knowledge and Skills (Cont'd)

Knowledge
Knowledge of:

- equipment safety requirements
- vehicle/equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- personal safety procedures

Skills
The ability to:

- make adjustments
- return vehicle/equipment to service
- complete and deal with appropriate workplace documentation relevant to repair, remove and replace outcomes
- carry out all transmission system repair and removal/replacement activities according to industry regulations/guidelines, OH&S standards company procedures/policies

(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 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.

(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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 1	
Use technology	Level 1	

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

ASRTRN0092A: Service automatic transmission

Competency Descriptor: This unit identifies the skills and knowledge required to carry out the service of automatic transmissions and/or associated components for light/heavy vehicle, plant and outdoor power equipment

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake maintenance checks of transmission components	1.1 Principles of automatic transmission components are understood.
	1.2 The function of the main parts of the designated transmission assembly is understood.
	1.3 Transmission components are checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 Assembly identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2. Service transmission assemblies	2.1 Service requirements are determined by appropriate means.
	2.2 Service method suitable for the type of transmission assembly being serviced is determined from manufacturer's instruction sheets, standard workshop manuals/procedures or other appropriate means.
	2.3 Service tools and equipment are selected according to the type of assembly being serviced.
	2.4 Transmission components are tensioned aligned balanced or adjusted to standard workshop practices.
	2.5 Service is carried out or replacement of parts is done.
	2.6 Transmission assembly checked after service for correct operation or identified for further diagnosis or repair.
	2.7 Automatic transmission is serviced without causing damage to any component or system.
	2.8 Service report is completed.
	2.9 Further diagnosis or repair requirements are actioned by appropriate means.

3.	Perform final checks	3.1	Transmission components are adjusted to suit specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2	Transmission assembly is checked after service 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:

Light and/or heavy vehicle transmissions (automatic) and/or outdoor power equipment and/or plant

On vehicle test/inspection/measuring to include:

- seals valves
- weights
- springs
- retainer
- piston
- rumbling
- clanking
- vibration
- filters
- vacuum modulator
- lines and hoses
- governor cover
- valve body assembly
- servo bore
- accumulator bore
- power train mount
- excessive noise
- pump housing

Checks may include:

- wear
- distortion
- tensions
- misalignment
- fatigue
- lubrication
- slackness
- play
- corrosion
- rumbling
- excessive noise
- clanking
- vibration and other related malfunctions

Sources of information/documents may include:

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

Methods include:

- road testing, test under operating conditions, dynamometer testing,
- electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion)

Methods should be applied under normal operating conditions.

Resources may include:

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

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
- transmission/components 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 servicing of transmissions 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 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 automotive service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- construction and operation of automatic transmissions (relevant to application)
- construction of the torque converter
- operation of the lock-up clutch
- operating conditions of hydraulic control system - drive engine braking, overdrive and reverse (general)
- service procedures
- transmission lubricants/fluids and their application
- measuring and testing procedures
- relevant technical information
- equipment safety requirements
- vehicle/equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- personal safety procedures

Skills
The ability to:

- work safely to instructions
- use tools and measuring devices
- use elevated work platforms
- service automatic transmission without causing damage to any component or system
- access and interpret correct information from appropriate manufacturer specifications
- ensuring vehicle/equipment is safe to operate
- carry out servicing to transmission components in accordance with vehicle/equipment/ system manufacturer
- make adjustments
- return vehicle/equipment to service
- complete and deal with appropriate workplace documentation relevant to service outcomes
- carry out all transmission system service activities according to industry regulations/guidelines, OH&S standards company procedures/policies

(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

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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 1	
Use technology	Level 1	

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

ASRTRN0062A: Remove/refit/replace automatic 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 automatic 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

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
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 Automatic transmission and drive train system and components are checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 Automatic transmission and drive train system and associated components identified as requiring further diagnosis, repair or adjustment is reported and findings documented by appropriate means.
2. Remove automatic 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 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 automatic 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. 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

OH&S practices must abide by:

- Industry standards/OH&S legislation

Work activities:

On vehicle repair: removal to include:

- vacuum modulator
- governor cover
- seals
- sleeve
- valve
- weights
- springs
- retainers and gears
- extension housing bushing and seals
- valve body assembly
- servo bore
- piston
- seals
- pin
- spring and retainer
- electrical/electronic components
- power train mount

Off vehicle repair: removal to include:

- transmission and torque converter
- transaxle and torque converter

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

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
- automatic 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 automatic 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 automatic transmission and drive train systems
- construction and operation of automatic transmission and drive train system
- automatic 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 automatic transmission and drive train system
- replace automatic 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 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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

ASRBRK0042A: Service and repair air braking systems

Competency Descriptor: This unit identifies the competence required to carry out repairs to air braking systems and associated components.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Undertake routine checks of braking system and associated components	1.1	Routine checks undertaken demonstrate knowledge of the principles of braking system and associated components.
		1.2	The main parts of designated braking system and associated components are correctly identified.
		1.3	Braking system and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
		1.4	Braking system and associated components identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2.	Service braking system and associated components	2.1	Braking systems and/or associated 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	Braking system components are serviced using approved methods, equipment and materials, in accordance with manufacturer specifications.
		2.4	Appropriate workplace documentation is completed and dealt with relevant to service outcomes.
		2.5	All braking systems and/or component service activities are carried out in according to industry regulations/guidelines.
3.	Repair air braking systems and associated components.	3.1	Repairs to braking systems and associated component are completed without causing damage to any component or system.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.

		3.3 Repair operations are completed within established industry guidelines.
		3.4 Appropriate workplace documentation is completed.
		3.5 Repair activities to air braking systems and/or component are carried out according to industry regulations/guidelines and company procedures/policies.
4.	Final checks	4.1 Braking systems and/or associated components are adjusted to suit specifications.
		4.2 Braking systems and/or associated components are checked after adjustment is done.
		4.3 Assembly is prepared for commissioning and conformance to specifications.
		4.4 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:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- product manufacturer specifications (including fluids and materials used)
- material safety data sheets

OH&S practices must abide by:

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

Methods include:

- road testing,
- visual, aural and functional assessments (including: damage, corrosion, wear)
- measurements, lubrication, adjustment

Methods should be applied under normal operating conditions.

Resources may include:

- hand tools, power tools, special tools, hand held testing equipment, pressure testing equipment

Other variables may include:

- brake shoes, accumulators, adjusting mechanism, air tanks, air drier, air lines, air valves, compressors

Specific requirements:

- Air/hydraulic system, air system

Work activities may include:

- removing, cleaning, inspecting and reassembling brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware and backing support plate
- removing and reinstalling wheel cylinders
- adjusting brake shoes and reinstalling brake drums or drum/hub assemblies
- reassembling, lubricating and reinstalling calliper, pads and related hardware
- refinishing rotor according to manufacturer's recommendations
- adjusting calliper with integrated parking brake system
- removing and installing anti-lock brake system electrical/ electronic/hydraulic components
- adjusting brake system
- filling master cylinder with recommended fluid
- bleeding brake systems
- inspecting drive line parking brake drums, rotors, bands, shoes, mounting hardware and adjusters; adjusting, repairing or replacing as needed
- inspecting drive line parking brake application system pedal, cables, linkages, levers, pivots and spring; adjusting, repairing or replacing as needed
- checking operation of parking (spring) brake chamber; determining needed repairs
- inspecting and testing parking (spring) brake check valves, lines, hoses and fittings; replacing as needed
- inspecting and testing parking (spring) brake application and release valve; replacing as needed
- manually releasing and resetting parking (spring) brake in accordance with manufacturers' recommendations

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
- brake systems and/or components service procedures followed
- safe working practices
- vehicle protection methods

(1) Critical Aspects of Evidence

During assessment the individual will:

- Demonstrate safe working practices at all times
- Demonstrate the ability to service and repair air brake system 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
- 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:

- construction and operation of air braking system relevant to application
- testing procedures
- relevant technical information
- equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- repair procedures
- personal safety requirements
- types of brake material and their potential dangers
- basic language, literacy and numeracy skills

Skills
The ability to:

- access, interpret and apply technical information
- repair air braking systems and associated components
- use relevant tools and equipment
- test and adjust air braking systems and associated components for technical and legal requirements
- 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 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

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 2	
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.

ASRSSS0032A: Carry out preliminary checks to motor vehicle front end

Competency Descriptor: This unit identifies the skills and knowledge required to carry out preliminary checks to identify causes or condition of defects in wheel alignment for light motor vehicles

Competency Field: Automotive Service and repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake checks of motor vehicle front end system	1.1 Routine checks undertaken demonstrate knowledge of the principles of motor vehicle front -end system.
	1.2 The main parts of designated motor vehicle front -end system are correctly identified.
	1.3 Motor vehicle front end system is checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 Motor vehicle front -end component identified as requiring further diagnosis, repair or adjustment are documented by appropriate means.
2. Check front end system	2.1 The pressure in all tyres is checked, inflated or deflated to manufacturer's specification.
	2.2 Tire threads are examined for consistency in wear and foreign matter is removed from wheels and tyres .
	2.3 Wheel lugs are checked for looseness and/or improper installation and appropriate corrective actions are implemented.
	2.4 The operating condition of shock absorbers are accurately checked and determined.
	2.5 The steering is checked for return from directions, inconsistent handling effort and defective indicators.
	2.6 Wheels are checked for run-out using the correct instrument and proper procedures.
	2.7 Front-end parts are visually checked and examined for looseness and wear to identify defective part (s).
	2.8 Springs are checked for sagging or breakage and brake caliper attaching bolts checked for looseness.

2.9 The condition of wheel bearings is accurately determined and the correct adjustment and/or recommendations made, where necessary.

2.10 Steering gear, pivot points and arms are tested and in spected for looseness, wear and bend.

RANGE STATEMENT

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

Method of testing shock absorbers:

- bouncing car from centre of bumpers
- visual
- aural
- functional

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

Work activities:

- diagnosing vehicle wandering, pulling, hard steering and poor steering problems and determining needed repairs
- measuring vehicle riding height and determining needed repairs
- checking and adjusting front and rear wheel camber (where applicable) and determining needed repairs
- checking and adjusting caster (where applicable) and adjusting front wheel toe
- checking tow-out-on-turns (turning radius) and determining needed repairs
- checking SAI (Steering Axis Inclination) KPI (King Pin Inclination) and included angle and determining needed repairs
- checking for front wheel setback and determining needed repairs
- checking front grade (sub-frame alignment and determining needed repairs

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
- alignment stand
- lubricant dispensing equipment

Front end parts to check to include:

- control arm pivot shafts or bolts
- suspension ball joints
- struts
- stabilizer
- mounting bolts
- steering pivot points
- pitman arm
- relay rod
- tie rod ends
- idle arm

Sources of information/documents may include:

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

Steering checks to include:

- harshness
- noise
- binding
- excessive free play
- excessive backlash and "high point

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
- front-end 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 motor vehicle front -end system or other units requiring the exercise of t he skills and knowledge covered by this unit.

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to undertake checks of motor vehicle front end system 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
- ASRSSS0011A Perform basic inspection of steering and suspension system

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- personal safety requirements
- vehicles/equipment safety requirements
- principles of operation of motor vehicle front-end systems
- construction and operation of front-end systems relevant to inspection requirements
- front-end systems checking and testing procedures (relevant to application)
- front-end systems /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
- apply front-end systems and testing procedures
- apply front-end systems condition 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

(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 qualificatio n being sought.

CRITCAL 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.
• Carries out established processes • Makes judgement of quality using given criteria	• Manages process • Selects the criteria for the evaluation process	• Establishes principles and procedures • Evaluates and reshapes process • Establishes criteria for evaluation

Collect, analyse and organise information	Level 1	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in te am	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

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.

	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

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