Level 2

Occupational Standard for National Vocational Qualification

Motor Vehicle Repairs (Cars and Light Trucks)

The National Training Agency
Belmont Rd.
St. George's
GRENADA

Phone: 1 -473 -435-9092/9093
Fax: 1-473-435-9094
E-mail:executive@grenadanta.gd
Website: www.grenadanta.gd

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Members of the (Occupational area/Sector) Lead Body.

Name	Profession/Organisation
Albert Leggard	Royal Grenada Police Force, Police Garage.
Lawrence Peters	Mechanic, Service Solutions Ltd.
Duane Charles	Mechanic, Grenada Ports Authority.
Christopher Baptiste	Auto mechanic, self employed
Michael Lewis	Auto Mechanic, Jonas Brown and Hubbard
Richard Mc Intyre	Manager, Mc Intyre Bros. Ltd.
Nigel Julien	Engineer, Steele's Auto Supplies
Dola Mc Burnie	Manager, Quality Services Ltd.

INTRODUCTION

The Grenada National Training Agency (GNTA) as empowered by the GCTVET Act of 2009 is the agency mandated to co-ordinate, facilitate and enable the development and growth of Technical and Vocational Education and Training in Grenada Carriacou and Petite Martinique.

The Agency through modes of training intervention intends to help in ensuring that there exists a supply of trained and skilled workers to service labour market needs and thereby contribute to higher levels of productivity in the Grenadian economy. The organisation by way of policy seeks to have developed and approved occupational standards derived from industry specifications and to guide the training, assessment and certification within the Grenada TVET System.

The Grenada Council for Technical Vocational Education and Training (GCTVET) created by an ACT of parliament in 2009 is empowered to approve standards for the award certification leading to Caribbean Vocational Qualification (CVQ's and NVQ's).

The GNTA has established industry lead groups responsible for vetting standards as well as specifying and recommending standards to be approved.

ABOUT THIS STANDARD

This is a National Occupational Standard that is approved for training and certification in Grenada.

This standard was adapted and approved by the Grenada Council for Technical Vocational Education and Training (GCTVET) on 30th May 2018.

There are some minor modifications made to accommodate the local context; however, the overall content of the document is unchanged.

QUALIFICATION OVERVIEW

The CVQ Level 2 in Motor Vehicle Repairs (Cars and light trucks) is for individuals whose role in the automotive sector requires well developed behavioural competencies but whose scope for independent decision making and for bringing about change is unlimited.

They are likely to be in roles where they are required:

- To repair air braking systems
- To carry out bench work fitting operations
- To inspect and service air braking systems
- To prepare for wheel alignment operations
- To use and maintain workplace tools and equipment
- To service cooling systems and associated components

Normally persons working at Level 2 should be able to competently carry out simple and complex routine work activities and to collaborate with others. The qualification covers competencies by providing services in Motor Vehicle Repairs on Cars and light trucks as indicated in the competency standard.

Relevant occupation includes:

- Maintenance & Repair Apprentice

The holders of this qualification will demonstrate a range of personal presentations and demonstrations of team work skills and literacy skills. To achieve this qualification all core units must be achieved. The nominal training hours are a guide for planning the delivery of training programmes.

Please note that certification can be gained through formal training or on the job experience by scheduling assessments with the Grenada National Training Agency (GNTA) certified assessors.

Packaging of Competency Standards for National Qualifications

ASR20715 NVQ Level II in Motor Vehicle Repairs (Cars and Light Trucks)

Unit Number	Unit Title	Core/Elective	Hours
CRICOM0011B	Apply language and communication skills	Core	40
CRIMAT0011B	Perform basic mathematical computations	Core	40
ASRCOR0011B	Follow principles of Occupational Health and Safety (OH&S) in work environment	Core	20
ASRCOR0021B	Undertake interactive workplace communication	Core	20
ASRCOR0031B	Plan to undertake a routine task	Core	5
ASRCOR0041B	Perform routine housekeeping duties	Core	5
ASRCOR0051B	Use and maintain workplace tools and equipment	Core	10
ASRCOR0061B	Use and maintain measuring equipment	Core	10
ASRCOR0071B	Draw and interpret sketches and simple drawings	Core	20
ASRCOR0091B	Perform manual handling and lifting	Core	5
ASRCOR0111B	Carry out bench work fitting operations	Core	5
ASREMS0021B	Service engines and associated engine components	Core	20
ASREMS0031B	Service cooling systems and associated components	Core	20
ASREMS0011B	Prepare for general servicing/repairing of motor vehicle	Core	5
ASREGS0011B	Perform routine servicing of petrol fuel systems	Core	10
ASRSTS0011A	Inspect and service steering systems	Core	10
ASRSUS0011A	Inspect and service suspension systems	Core	10
ASRSSS0091B	Prepare for wheel alignment operations	Core	5
ASRTRN0011B	Prepare for manual/automatic transmission service/repair	Core	5
ASRBRK0031B	Service disc/hydraulic braking systems	Core	15
MEMFAB0111B	Perform basic welding using manual metal arc welding process (MMAW)	Core	50
MEMFAB0051B	Perform brazing and/or silver soldering	Core	20
ITICOR0011B	Carry out data entry and retrieval procedures	Core	30
ETERNE0072A	Apply occupational health and safety regulations codes and practices in the workplace	Core	25
ASRCOR0112A	Apply safe working practices in an automotive workplace	Core	10
ASRCOR0032B	Apply basic motor vehicle trouble shooting processes	Core	5
ASRCOR0062B	Participate in a team to achieve designated tasks	Core	5
ASRCOR0072B	Work with colleagues and customers	Core	5
MEMCAC0012B	Perform technical computations (general)	Core	40
MEMCOR0122C	Write technical reports (basic)	Core	20
ASREMS0012B	Repair engines and associated engine components	Core	20
ASREMS0032B	Disassemble engine block and sub-assemblies and evaluate components	Core	20
ASREMS0052B	Disassemble/ Assemble cylinder heads, evaluate components and carry out testing procedures	Core	30
ASREES0022B	Repair electrical systems	Core	20
ASREMS0072B	Repair cooling systems and associated components	Core	20
ASREGS0082A	Repair petrol fuel systems	Core	12
ASREES0082B	Repair ignition systems	Core	15
ASRTRN0012B	Service manual transmission assemblies	Core	10
ASRTRN0052B	Repair manual transmission	Core	30

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ASR20715 NVQ Level II in Motor Vehicle Repairs (Cars and Light Trucks) (Cont'd)

Unit Number	Unit Title	Core/Elective	Hours
ASRTRN0062B	Remove/refit/replace automatic transmission and drive train system components/unit from vehicle	Core	10
ASRTRN0092B	Service automatic transmission	Core	10
ASRBRK0082A	Repair air braking systems	Core	20
ASRBRK0092A	Inspect and service air braking systems	Core	20
ASRBRK0032B	Repair braking systems	Core	15
ASRSSS0032B	Carry out preliminary checks to motor vehicle front end	Core	15
ASRSSS0022B	Repair steering and suspension system components	Core	20
ASREES0032A	Inspect, test and repair electrical wiring/lighting /warning systems	Core	20
ASRACS0011B	Prepare motor vehicle and system components for installing and repairing air conditioning system	Elective	5
ASRSSS0051B	Balance wheel assembly	Elective	10
ASRCOR0101B	Carry out basic mechanical cutting operations	Elective	20
MEMCOR0101B	Prepare basic engineering drawing	Elective	40
ASREMS0082B	Carry out radiator repairs	Elective	20
ASREES0052B	Install, test and repair electrical circuit/lighting systems	Elective	10
ASREES0062B	Install, test and repair electrical security system/components	Elective	10
ASREES0122B	Service and repair electronically controlled anti-lock braking systems	Elective	10
ASREES0132B	Service and repair charging and starting systems/components	Elective	20
ASREGS0052B	Service diesel fuel injection systems	Elective	20
ASREGS0062B	Repair diesel fuel systems	Elective	20
ASRACS0022B	Inspect, test and service air-conditioning system	Elective	10
ASRACS0032B	Service, repair and replace air compressor/components	Elective	30
ASRACS0042B	Repair/retrofit air-conditioning systems	Elective	20
ASRACS0072B	Install air conditioning systems	Elective	20
ASRTRN0102B	Repair automatic transmission	Elective	20
BSBSBM0012C	Craft personal entrepreneurial strategy	Elective	50
ASRTRN0112B	Inspect, service and/or repair clutch assemblies and associated operating system components	Elective	20
ASRTRN0122B	Repair constant velocity joints (CV) assembly and/or associated operating system components	Elective	20
ASRSSS0042B	Carry out wheel alignment operations	Elective	20
ASRBRK0042B	Service and repair air braking systems	Elective	20
ASRCOR0042B	Identify common automotive parts and products	Elective	5
ASRCOR0013B	Purchase parts/components/materials	Elective	10
ASRCOR0133B	Monitor stock levels to maintain enterprise activities	Elective	10
ASRCOR0143B	Inspect vehicle systems/components and determine preferred repair action	Elective	10

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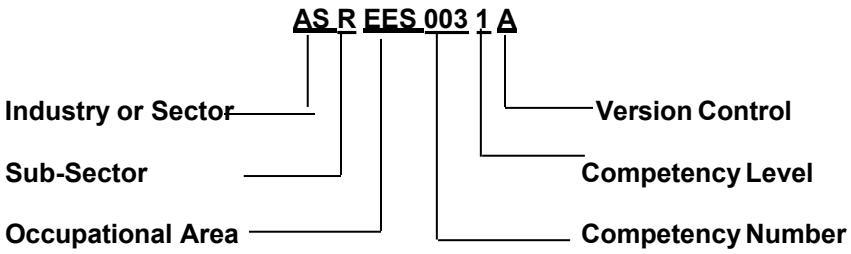
Unit Number	Unit Title	Core/Elective	Hours
ASRCOR0183A	Apply knowledge of engine science	Elective	40
ASRCOR0173B	Carry out diagnostic procedures	Elective	10
ASREGS0013A	Service and repair electronic spark ignition engine management systems	Elective	20
ASREMS0023A	Repair and replace emission control systems	Elective	15
ASRLPG0013A	Service LPG fuel systems	Elective	20
ASRLPG0023A	Repair LPG fuel systems	Elective	20

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

Legend to Unit Code

Example: ASREES0031A



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

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ASRACS0011B: Prepare motor vehicle and system components for installing and repairing air conditioning system

Competency Descriptor: This unit identifies the skills and knowledge required to prepare motor vehicle and system components for installing and repairing air conditioning system for light/heavy vehicle.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Plan for installation/repair operations	1.1 Quality Assurance requirements of motor vehicle repairs operations recognised and adhered to.
	1.2 Preparation and planning requirements identified from service manuals/work location and/or supervisor's instructions are followed.
	1.3 OH&S requirements are identified and adhered to in accordance with application tasks and workplace environment.
	1.4 Safety hazards identified and correct procedures adopted to minimise risk to self and others.
	1.5 Materials selected according to supervisor's instructions safely handled and stored/located ready for application.
	1.6 Appropriate personal protective equipment selected, correctly fitted and used.
	1.7 Tools and equipment selected consistent with the job requirements, checked for serviceability and any faults reported to supervisor.
	1.8 Materials/components selected consistent with the job requirements where applicable and checked for damage.
2. Prepare lifting and supporting equipment for installation /repair process	2.1 Activities for equipment preparation identified from specifications or supervisor's instructions.
	2.2 Equipment preparation carried out to satisfy requirements of installation/repair process.

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3.	Prepare material/spare parts/ consumables selected for installation/repair process	3.1	Activities for material preparation identified from specifications or supervisor's instructions.
		3.2	Material/spare parts/consumables preparation carried out to satisfy requirements of service/repair process.
4.	Prepare work area suitable for installation/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 prepared for service/repair process according to supervisor's instructions.
5.	Set up tools and equipment appropriate for installation/repair process	5.1	Regular tools/measuring devices suitable for application process identified to job requirements.
		5.2	Regular tools/measuring devices set up safely and effectively to carry out processes where applicable.
6.	Clean up	6.1	Materials stacked/stored for re-use or disposed of.
		6.2	Work area cleared.
		6.3	Tools and equipment cleaned, maintained and stored.

RANGE STATEMENT

This unit applies to the processes carried out in preparing motor vehicle and system components for installing and repairing air conditioning as per instructions.

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- workplace practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- Industry standards/OH&S guidelines

OH&S and environmental practices must abide by:

- OH&S and environmental legislation

Vehicle systems may include:

- air-conditioning
- heating systems

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Tools and equipment:

- appropriate hand tools
- special equipment to include for charging and vacuuming

Air-conditioning components:

- compressors
- condensers
- evaporators
- receiver drier (dehydrator)
- fans
- expansion valves
- thermostic switches
- lines and tubings
- suction throttling valves
- evaporator valves high pressure charging valves blower assembly

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- demonstrate safe working practices at all times
- demonstrate the ability to prepare motor vehicle and system components for installing and repairing of air conditioning 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 motor vehicle service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S guidelines
- safe handling of refrigerants
- industry/Workplace codes of practice
- industry standards where applicable
- principles of operation (basic refrigeration cycle)
- equipment/material safety requirements
- equipment maintenance procedures
- personal safety requirements
- basic numeracy techniques
- basic language and literacy techniques
- basic reading and writing techniques

Skills
The ability to:

- access, interpret and apply technical information
- use tools and equipment
- maintain customer and enterprise records
- perform service operations according to best practice and statutory guidelines
- conduct performance test on air conditioning systems
- read and interpret company forms e.g. checklists, job sheets
- read and interpret manufacturer specifications
- read and interpret decimals

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- 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

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

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(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRACS0022B: Inspect, test and service air-conditioning system

Competency Descriptor:

This unit covers the competence required to service automotive air conditioning systems. Work involved includes automotive air conditioners fitted to light vehicles, heavy vehicles, mobile plant and equipment and marine craft. The unit includes identification and confirmation of work requirement, preparation for work, servicing of air conditioning systems and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to service air conditioning system	1.1	Nature and scope of work requirements are identified and confirmed.
		1.2	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
		1.4	Method options are analysed and those most appropriate to the circumstances are selected and prepared.
		1.5	Technical and/or calibration requirements for servicing are sourced and support equipment is identified and prepared.
		1.6	Dangers associated when working with refrigerants are observed.
2.	Service air conditioning system	2.1	Correct information is accessed and interpreted from manufacturer/component supplier specifications.
		2.2	System is performance tested and air conditioning service procedures are determined.
		2.3	Service of the system and components are carried out in accordance with manufacturer/component supplier specifications.
		2.4	Air conditioning system service is completed without causing damage to any component or system.

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		2.5	Servicing is carried out according to industry regulations/ guidelines, OH&S legislation, legislation and enterprise procedures/policies.
3.	Prepare vehicle/ equipment for customer use	3.1	System is tested and results are documented in accordance with enterprise policies and procedures.
		3.2	Service schedule documentation is completed.
		3.3	Final inspection is made to ensure protective guards and safety features are in place.
		3.4	Final inspection is made to ensure work is to workplace expectations.
		3.5	Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Service methods include:

- adjustment
- refrigerant leak detecting
- performance testing

Servicing to include

- fluids
- filters
- adjustments and operational testing
- visual inspections and documents

Other variables may include:

- climate control systems

Resources may include:

- hand tools
- refrigerant leak detecting equipment
- thermometers, evacuation equipment
- refrigerant recovery and/or recycling equipment
- refrigerant re-gassing equipment
- refrigerant
- refrigerant oils

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Statutory/regulatory authorities may include

- international and local authorities administering acts
- regulations and codes of practice

Tools and equipment may include

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

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Materials may include

- spare parts
- consumables
- lubricants and cleaning materials

Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to repairing engines and associated components
- regulatory/legislative requirements pertaining to automotive industry
- National Environment Protection Regulations
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements, in particular, the dangers associated with handling refrigerants
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- performance testing air conditioning systems
- accurately interpreting performance test results
- conducting service operations according to industry codes of practice, legislation and manufacturer/ component supplier requirements
- completing servicing of air conditioning systems and associated components within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing air conditioning systems, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

Skills
The ability to:

- OH&S regulations/requirements, licence requirements, equipment, material and personal safety requirements
- dangers associated when working with refrigerants
- identification of application, purpose and operating principles
- refrigerant types and application
- system electrical circuits
- refrigerant/oils and capacities
- types and layout of service/repair manuals (hard copy and electronic)
- servicing procedures
- work practices in relation to preventing damage to sensitive electronic components
- system performance testing procedures
- enterprise quality procedures
- work organisation and planning processes

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to servicing air conditioning systems
- equipment, hand and power tooling appropriate to servicing air conditioning systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.
Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

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Levels of Competency		
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• 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 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRACS0032B: Service, repair and replace air compressor/ components

Competency Descriptor: This unit covers the competence required to carry out the service, repair and replacement of air compressor and associated components.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to test air compressors/components	1.1	Nature and scope of work requirements are identified and confirmed
		1.2	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced
		1.4	Method options are analysed and those most appropriate to the circumstances are selected and prepared
		1.5	Technical and/or operating pressures for testing air compressors/components are sourced and support equipment is identified and prepared
		1.6	Warnings in relation to working with compressed air are observed
2.	Test compressor systems and analyse results	2.1	Methods for the system test are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
		2.2	Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance
		2.3	Results are documented with evidence and supporting information and recommendation(s) made
		2.4	Report is forwarded to persons for action in accordance with workplace procedures
3.	Prepare to service, repair and replace compressors and components	3.1	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work

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		3.2	Procedures and information required are identified and sourced
		3.3	Technical and tool requirements for service, repair or replacement are identified and support equipment is identified and prepared
4.	Carry out service, repair and replacement	4.1	Methods for the service, repair and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
		4.2	Adjustments made during the service, repair or replacement are in accordance with manufacturer/ component supplier specifications
5.	Prepare vehicle for use or storage	5.1	Service, repair or replacement schedule documentation is completed
		5.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place
		5.3	Final inspection is made to ensure work is to workplace expectations
		5.4	Vehicle is cleaned for use or storage to workplace expectations
		5.5	Job card is processed in accordance with workplace procedures

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Servicing is to include:

- fluids
- filters
- adjustments and operational testing
- visual inspections and documents

Repair methods and sequence are to include

- isolation of fault(s)
- dismantling
- inspection and evaluation
- replacement of components parts
- assembly and completion of operational tests and documents

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Faults to include:

- low air delivery

Variables include:

- piston
- vane
- screw
- diaphragm
- two stage compressors

Tooling and equipment may include:

- hand tooling
- meters
- gauges
- pressure testing devices

OS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- personal protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to repairing radiators
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

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Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Materials may include:

- spare parts
- cleaning materials

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- interpret test results
- identify application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- apply full repair sequence as per the Range Statement to an air compressor relative to the qualification being sought
- complete service, repair or replacement of air compressor and associated components within workplace timeframes
- present vehicle to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with compressor equipment
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- air compressor system testing procedures
- service, repair and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing, repair and replacement of air compressor systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of air compressor systems
- equipment, hand and power tooling appropriate to the service and repair of air compressor systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- direct observations
- project
- practical demonstration
- third party report

(6) Context of Assessment

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

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRACS0042B: Repair/ retrofit air –conditioning systems

Competency Descriptor:

This unit identifies the competence required to repair and retrofit automotive air conditioning systems as applied to the automotive service industry.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	De-gas and re-gas air conditioning systems	1.1	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		1.2	System is de-gassed using approved recovery unit.
		1.3	System is evacuated in accordance with manufacturer specifications and workplace codes of practice.
		1.4	System is re-gassed/performance tested using approved methods and equipment.
		1.5	De-gas and re-gas air conditioning system is completed without causing damage to any component or system.
		1.6	De-gassing and re-gassing are carried out according to industry regulations/guidelines, OH&S and guidelines and workplace procedures/policies.
2.	Repair/retrofit air conditioning systems.	2.1	Repair/retrofit air conditioning system is completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Appropriate air conditioning repair/retrofit procedures are determined after performance testing.
		2.4	Repair/retrofit and or replacement of the system and components are carried out in accordance with vehicle/manufacturer specifications OH&S guidelines and workplace procedures/policies.
		2.5	System is tested prior to placing into service and results are recorded according to workplace policies and procedures.

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RANGE STATEMENT

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

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory guidelines
- material safety data sheets

OH&S practices must abide by:

- OH&S guidelines
- Award provisions
- guidelines

Tool and materials may include:

- hand tools
- refrigerant leak detecting equipment
- evacuation equipment
- refrigerant recovery and/or recycling equipment
- thermometers,
- refrigerant re-gassing equipment
- refrigerant
- refrigerant oils
- air conditioning spare parts as required
- ram air fan

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- mechanical removal and replacement of components
- system/component testing
- performance testing

Performing repair/retrofit procedures may include:

- inspecting A/C system pressure protection devices (including engine fan controls); determining needed repairs
- inspecting and adjusting A/C compressor drive belts and pulleys; determining needed repairs
- inspecting and testing A/C compressor clutch components or assembly
- inspecting and adjusting oil level in A/C compressor
- inspecting and testing compressor
- inspecting A/C compressor mountings
- inspecting A/C system mufflers, hoses, lines, filters, fittings and seals
- inspecting A/C condenser for air flow restrictions; cleaning and straightening fins
- inspecting and testing A/C system condenser and mountings
- inspecting receiver/drier
- inspecting accumulator/drier in orifice tube A/C systems
- identifying an inspecting A/C system service valves (gauge connections)
- inspecting A/C system high pressure relief device
- repairing or replacing A/C compressors and clutches
- replacing evaporator, condenser and related components
- repairing or replacing heating system components
- repairing or replacing A/C electrical electronic circuit components and wiring
- repairing or replacing vacuum/mechanical/air system
- receiving, recycling and handling refrigerant
- inspecting and testing orifice tube (including filter)
- inspecting, testing and cleaning evaporator
- inspecting and cleaning evaporator housing and water drain
- inspecting and testing expansion valve

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EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- apply safe working practices at all times
- repair and retrofit air conditioning systems
- communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment
- take responsibility for the quality of their own work
- carry out servicing/maintenance procedures
- carryout repair procedures
- carryout retrofit procedures
- carryout safety inspection and report finding
- plan tasks in all situations and review task requirements as appropriate
- perform all tasks in accordance with standard operating procedures
- perform all related tasks to specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S guidelines
- refrigerant types and application
- industry/workplace codes of practice
- industry standards where applicable
- construction and operation of systems relevant to application
- system electrical circuits
- equipment/material safety requirements
- equipment maintenance procedures
- appropriate refrigerant/oils and capacities
- repair/retrofitting procedures

Skills
Ability to:

- detect refrigerant leak
- perform refrigerant re-gassing and de-gassing
- evacuate refrigerant system
- conduct mechanical removal and replacement of components
- conduct test of system/component

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(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

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

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- observation
- oral/written questioning
- examination of assessee's portfolio/CV
- third party report
- practical demonstration

(6) Context of Assessment

- The underpinning knowledge and skills may be assessed on or off-the-job or a combination of both.
- Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.
- The competency should be assessed within the context of the qualification being sought.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

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

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ASRACS0072B: Install air conditioning systems

Competency Descriptor: This unit identifies the competence required to install air conditioning systems as required by individuals working in the automotive service industry.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to install air conditioning systems	1.1	Nature and scope of work requirements are identified and confirmed.
		1.2	OHS requirements, including regulatory/licensing requirements and personal protection needs are observed throughout the work.
		1.3	Procedures and information such as schematic diagrams, manufacturer/component supplier instructions, workshop manuals and specifications, and tooling required, are sourced.
		1.4	Method options are analysed and those most appropriate to the circumstances are selected and prepared.
		1.5	Technical and/or calibration requirements for air conditioning components are sourced and support equipment is identified and prepared.
		1.6	Warnings in relation to working with air conditioning and refrigerants are observed.
2.	Install air conditioning systems	2.1	Correct information is accessed and interpreted from manufacturer/component supplier specifications.
		2.2	Fittings/materials are selected.
		2.3	Air conditioning systems are installed using tooling and techniques.
		2.4	Installation is tested prior to placing in service and results are documented in accordance with workplace policies and procedures.
		2.5	Air conditioning system installation is completed without causing damage to any component or system.

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		2.6	Installation is carried out according to environmental regulations/ guidelines, OHS legislation and workplace procedures/policies.
3.	Charge air conditioning system	3.1	Correct information is accessed and interpreted from manufacturer/component supplier specifications, industry codes of practice and legislation.
		3.2	Charging of the air conditioning system is completed without causing damage to any component or system.
		3.3	System is performance tested using approved methods and equipment.
		3.4	Charging of the system is carried out according to manufacturer/component supplier specifications, industry regulations/guidelines, OHS guidelines, environmental legislation and workplace policies/procedures.
4.	Vehicle/equipment is prepared for deliver to customer	4.1	Installation schedule documentation is completed.
		4.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.1	Final inspection is made to ensure the system is functional, without leaks and work is to workplace expectations.
		4.4	Vehicle/equipment is cleaned to workplace expectations.
		4.5	Job card is processed in accordance with workplace procedures.

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RANGE STATEMENT

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

Work involved includes:

- installation of air conditioning systems fitted to light vehicles, plant and equipment
- refrigerant leak detecting
- refrigerant gassing
- component and system testing
- performance testing
- post-installation adjustments and checks

OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety procedures
- handling of material
- use of fire fighting equipment
- workplace first aid
- hazard control
- hazardous materials and substances

Tools and equipment may include:

- hand tools
- refrigerant leak detecting equipment
- refrigerant recovery and/or recycling equipment
- thermometers
- ram-air fan
- refrigerant re-gassing equipment
- air conditioning system kits

Materials may include:

- spare parts
- refrigerant
- refrigerant oils
- cleaning materials

Communications include, but not limited to

- verbal and visual instructions and fault documenting including:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions,
- signage
- work schedules/plans/specifications,
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to installing air conditioning systems
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised workplace or external persons

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Environmental requirements include but not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements include, but not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Safe operating procedures include but not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit include but not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Personal protective equipment includes:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting installation in accordance with the workplace and manufacturer/component supplier requirements
- completing leak test and performing tests on the system
- accurately interpreting test results
- completing installation within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

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(2) Pre-requisite Relationship of Units

- ASRACS0022B Service air-conditioning system

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS legislation and environmental regulations/ requirements, equipment, material and personal safety requirements
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- industry codes of practice
- air conditioning installation procedures
- nature and characteristics of refrigerant
- leakage test and performance procedures
- system electrical circuits
- damage that may occur to electronic control units by poor work practices

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the installation of air conditioning systems, including the use of specialist tooling, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the installation of air conditioning systems
- equipment, hand and power tooling appropriate to the installation of air conditioning systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

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

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ASRBRK0031B: 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. Prepare to undertake repairs	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 Operating principles of braking systems, including effects of inertia explained and understood.
	1.3 OH&S requirements and personal protection needs are observed throughout the work.
	1.4 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.6 Technical and/or calibration requirements for braking system repairs are sourced and support equipment is identified and prepared.
	1.7 Warnings in relation to working with braking systems are observed, including friction material fibres and stored energy devices.
2. Conduct brake testing and analyse results	2.1 Methods for tests are implemented in accordance with road safety legislation, workplace procedures and manufacturer/component supplier specifications.
	2.2 Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4. Report is processed in accordance with workplace procedures.

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3.	Repair brake systems and/or associated components	3.1	Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2	Adjustments made during the repair are in accordance with manufacturer/component supplier specifications.
4.	Prepare vehicle for use or storage	4.1	Repair schedule documentation is completed.
		4.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3	Final inspection is made to ensure work is to workplace expectations.
		4.4	Vehicle is cleaned for use or storage to workplace expectations.
		4.5	Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Methods include:

- road/site testing, pressure testing, electrical testing
- visual, aural and functional assessments (including damage, corrosion, fluid leaks, wear)
- fluid types for specific applications

Other system components may include

- disc pads, master cylinders
- brake shoes
- brake callipers
- brake hoses
- brake actuators and mechanical devices

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OHS requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- workplace first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

Emergency procedures related to this unit include, but not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

Environmental requirements include but not limited to

- waste management
- noise
- dust
- clean-up management

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- hazardous substances
- machinery movement and operation
- manual lifting and shifting
- working in proximity to others and site visitors

Tooling and equipment may include:

- hand tooling
- meters
- gauges
- bleeding and brake testing devices
- dust extraction equipment

Materials may include

- lubricants
- fluids
- minor spare parts and cleaning materials

Communications to include, but not limited to

- verbal
- visual instructions
- fault reporting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones and pagers

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Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the inspection and servicing of braking systems
- regulatory/legislative requirements pertaining to the automotive industry,
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Quality requirements are to include, but are not limited to:

- internal workplace quality policy and standards operations and procedures

EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- interpreting test results
- completing repair of braking systems and associated components within workplace timeframes
- presentation of vehicle to customer in compliance with workplace requirements
- interpreting and communicating operational information
- brake systems and/or components service procedures followed
- safe working practices
- vehicle protection methods

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(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:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with testing equipment
- operating principles of hydraulic braking systems and components and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- testing procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repair of hydraulic braking systems and associated components, including the use of specialist tooling and equipment, electronics, measuring equipment, computerised technology and communication devices and the documenting/recording of results)

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of hydraulic braking systems
- equipment, hand and power tooling appropriate to the repair of hydraulic braking systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRBRK0032B: Repair braking systems

Competency Descriptor: This unit identifies the competence required to carry out repairs, removal and replacement to hydraulic, mechanical, pneumatic, vacuum and power assisted braking systems and/or associated components

Competency Field: Automotive Service and Repair

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 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.	Repair, removal and replacement of braking systems and/or associated components.	2.1	Repair, removal and replacement of braking systems and/or associated components are completed without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		2.3	Braking system and components are repaired, removed and replaced using approved methods, equipment and materials, in accordance with manufacturer specifications.
		2.4	Appropriate workplace documentation is completed and dealt with relevant to repair, removal and replacement outcomes.
		2.5	All braking systems and/or component repair, removal and replacement activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

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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

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Sources of information/documents may include:

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

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, lifting and supporting equipment, brake dust extraction equipment
- measuring instruments
- roller brake dynamometers, hand held testing equipment, skid pan, inertia testing device

OH&S practices must abide by:

- industry OH&S guidelines
- manufacturers specification
- guidelines

Methods include:

- road testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid leaks, wear)
- methods should be applied under normal operating conditions

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Specific requirements:

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

Other variables may include:

- disc pads, master cylinders, brake shoes, brake-callipers, brake hoses, brake actuators mechanical devices

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- interpret and communicating operational information
- identify brake systems and/or components repair procedures
- use safe working practices at all times
- repair 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 and specification
- use accepted automotive service repair techniques, practices, processes and workplace procedures

(2) Pre-requisite Relationship of Units

- **Nil**

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- construction and operation of braking systems (relevant to application)
- removal, replacement and repair procedures
- testing procedures
- hazards associated with brake dust
- equipment safety requirements
- vehicle safety requirements
- relevant manufacturer/company policies

Skills
The ability to:

- access, interpret and apply technical information
- identify brake system faults
- remove and replace braking system components
- repair brake systems and associated components
- use relevant tools and equipment
- test and adjust braking systems and associated components to comply with technical and legal requirements
- check system for normal operations
- listening to customer information and job instructions
- following verbal instructions
- exchanging technical information
- reading and completing company forms e.g. job sheets, checklists
- reading and recording safety information
- reading and interpreting vehicle manufacturer requirements e.g. manuals/computer read outs on brake specifications, components
- entering information on computer system

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- 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

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(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRBRK0042B: Service and repair air braking systems

Competency Descriptor: This unit covers the competence required to carry out the repair of air braking systems and associated components.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to repair air braking system and associated components	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or calibration requirements for repair of air braking systems are sourced and support equipment is identified and prepared.
	1.6 Warnings in relation to working with air braking systems are observed.
2. Test air braking systems and analyse results	2.1 Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
	2.2 Air braking test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is forwarded to persons for action in accordance with workplace procedures.

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3.	Repair air braking system	3.1 Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2 Adjustments made during the repair are in accordance with manufacturer/component supplier specifications.
4.	Prepare vehicle for use or storage	4.1 Repair schedule documentation is completed.
		4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3 Final inspection is made to ensure work is to workplace expectations.
		4.4 Vehicle is cleaned for use or storage to workplace expectations.
		4.5 Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Components may include:

- compressors
- actuators
- pressure lines
- receivers and valves

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
  enterprise first aid, hazard control and hazardous materials and substances

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Safe operating procedures are to include, but are not limited to

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but not limited to:

- internal quality policy and standards and operations and procedures

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices conditions

Methods include:

- road testing
- visual, aural and functional assessments (including: damage, corrosion, wear)
- measurements, lubrication, adjustment
- methods should be applied under normal operating conditions

Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to wheel alignment operations
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing air braking system for faults including internal and external air leaks
- interpreting test results
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of air braking systems and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment
- ASRCOR0061B Use and maintain measuring equipment

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air braking systems
- operating principles of air braking systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- test procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply personal safety requirements
- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of air braking systems
- equipment, hand and power tooling appropriate to the repair of air braking systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.
Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRBRK0082A: Repair air braking systems

Competency Descriptor: This unit covers the competence required to carry out the repair of air braking systems and associated components.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1	Prepare to repair air braking system and associated components	1.1	Nature and scope of work requirements are identified and confirmed.
		1.2	OH&S requirements and personal protection needs are observed throughout the work.
		1.3	Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
		1.4	Method options are analysed and those most appropriate to the circumstances are selected and prepared.
		1.5	Technical and/or calibration requirements for repair of air braking systems are sourced and support equipment is identified and prepared.
		1.6	Warnings in relation to working with air braking systems are observed.
2.	Test air braking systems and analyse results	2.1	Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		2.2	Air braking test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
		2.3	Results are documented with evidence and supporting information and recommendation(s) made.
		2.4	Report is forwarded to persons for action in accordance with workplace procedures.

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3. Repair air braking system	3.1 Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
	3.2 Adjustments made during the repair are in accordance with manufacturer/component supplier specifications.
5. Prepare vehicle for use or storage	4.1 Repair schedule documentation is completed.
	4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.
	4.3 Final inspection is made to ensure work is to workplace expectations.
	4.4 Vehicle is cleaned for use or storage to workplace expectations.
	4.5 Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Components may include:

- compressors
- actuators
- pressure lines
- receivers and valves

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with:
  - vehicular movement
  - electrical safety
  - manual lifting and shifting
  - working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- operating safely in the event of fires
- enterprise first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to regulations, including:

- internal company quality policy and standards
- enterprise operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to inspection and servicing of engines
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- Instructions issued by authorised enterprise or external person

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing air braking system for faults including internal and external air leaks
- interpreting test results
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- completing repair of air braking systems and associated components within workplace timeframes
- vehicle presentation to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air braking systems
- operating principles of air braking systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- test procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, analysis and repairs of air braking systems
- equipment, hand and power tooling appropriate to the inspection, analysis and repairs of air braking systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRBRK0092A: Inspect and service air braking systems

Competency Descriptor: This unit covers the competence required to carry out the repair of air braking systems and associated components.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake inspection of air braking systems	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or calibration requirements for inspection of air braking systems are sourced and support equipment is identified and prepared.
	1.6 Warnings in relation to working with air braking systems are observed.
2. Conduct inspection and analyse results	2.1 Methods for the inspection are implemented in accordance with road safety legislation, workplace procedures and manufacturer/component supplier specifications.
	2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is processed in accordance with workplace procedures.

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3.	Prepare to service air braking systems	3.1	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		3.2	Procedures and information required are identified and sourced.
		3.3	Technical and tool requirements for servicing are identified and support equipment is identified and prepared.
4.	Carry out servicing	4.1	Methods for the servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		4.2	Adjustments are made during the service.
5.	Prepare equipment for use or storage	5.1	Service schedule documentation is completed.
		5.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		5.3	Final inspection is made to ensure work is to workplace expectations.
		5.4	Equipment is cleaned for use or storage to workplace expectations.
		5.5	Job card is processed in accordance with workplace procedures.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Components to be serviced include:

- compressors
- receivers
- drive belts
- actuator mechanisms

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with:
  - vehicular movement
  - electrical safety
  - manual lifting and shifting
  - working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- operating safely in the event of fires
- enterprise first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to regulations, including:

- internal company quality policy and standards
- enterprise operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

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Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to inspection and servicing of engines
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- Instructions issued by authorised enterprise or external persons

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting the service in accordance with workplace and manufacturer/component supplier requirements
- completing service of air braking systems and associated components within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

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(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with air brakes
- operating principles of air braking systems and components and their relationship to each other
- inspection procedures
- types and layout of service/repair manuals (hard copy and electronic)
- servicing procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to servicing tools and equipment, inspection, analysis and servicing of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection, analysis and servicing of air braking systems
- equipment, hand and power tooling appropriate to the inspection, analysis and servicing of air braking systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
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- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

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Plan and organise activities	Level 1	
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Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

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ASRCOR0011B: 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 in conformance with Occupational Health and Safety requirements, and applies to all individuals working in the automotive service and allied industry.

Competency Field: Safety Management

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Follow workplace procedures for hazard identification and risk control	1.2 Workplace procedures for OH&S and related work instructions for controlling risks in a workplace are accurately followed.
	1.3 Hazards in the workplace are identified and appropriate action is taken to report them and to minimise or eliminate risk to personnel, workplace and the environment.
	1.4 Safety regulations and established workplace safety and hazard control practices and procedures are obtained, interpreted and applied to day-to-day work activities.
	1.5 Where relevant, procedures and precautions necessary for entry into confined spaces in the workplace are correctly followed.
	1.6 Personal protection clothing and equipment is correctly used in accordance with established safety practices and procedures.
	1.7 Established emergency and contingency plans are followed in the event of an emergency.

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2.	Contribute to arrangements for the management of occupational health and safety	2.1	OH&S issues and identified safety hazards are raised with designated personnel in accordance with workplace procedures and relevant OH&S legislation.
		2.2	Contributions to OH&S management in the workplace are made in accordance with workplace procedures and provisions of relevant legislation.
		2.3	OH&S issues are raised with designated personnel in accordance with workplace procedures and relevant OH&S legislation.
		2.4	Participative arrangements for OH&S management in the workplace are contributed to within workplace procedures and scope of responsibilities and competencies.
3.	Complete occupational health and safety records	3.1	OH&S records for self are completed in accordance with workplace requirements.
		3.2	OH&S records and legal requirements for the maintenance of records of occupational injury and diseases are followed.

RANGE STATEMENTS

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

Work must be carried out in compliance with the relevant OH&S regulations and procedures.
Work is performed under some supervision generally within a team environment. It involves the application of the established OH&S and hazard minimisation principles and procedures to the conduct of workplace activities.

Workplaces may comprise:

- large
- medium
- small worksites

Work may be conducted in:

- restricted spaces
- exposed conditions
- controlled or open environments

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Workplace hazards may include:

- chemicals and other harmful substances
- movements of equipment, goods, vehicles
- toxic substances
- damaged packing material and containers
- broken and damaged equipment
- inflammable materials and fire hazards
- lifting practices
- waste management and disposal
- extremes in weather conditions
- lighting levels
- floor surfaces
- water hazards
- traffic flows, vehicle and equipment operation
- a range of storage areas

Personnel in the work area may include:

- workplace personnel
- site visitors
- OH&S specialists
- union representatives
- contractors
- official representatives

Participative arrangements may include:

- formal and informal meetings which deal with OH&S issues
- workplace OH&S committees
- other committees, for example, consultative, planning and purchasing
- OH&S representatives
- suggestions, requests, reports and concerns put forward by staff

Communication in the work area may include:

- phone
- electronic data interchange (EDI)
- fax
- email
- internet
- radio

Designated personnel may include:

- workplace personnel
- supervisors
- team leaders
- management
- occupational health and safety personnel
- other persons authorised or nominated by the organisation

Personal protective equipment may include:

- gloves
- safety headwear and footwear
- two-way radios
- high visibility clothing
- overalls
- safety glasses/goggles
- hard hat cap
- dust masks/respirator
- gum boots
- ear plugs/muffs

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Workplace procedures may include:

- company procedures
- enterprise procedures
- organisational procedures
- established procedures

Information/documents may include:

- OH&S regulations
- workplace OH&S procedures and policies
- codes of practice including the National Standards for Manual Handling and the Industry Safety Code
- Code and material safety data sheets (where relevant)
- policies and procedures for entry and work in confined spaces
- manufacturers instructions concerning the use and servicing of equipment
- supplier and/or client instructions
- emergency procedures
- regulations and policies concerning noise, smoking, work station ergonomics and other critical OH&S issues
- goods identification numbers and codes
- manifests, bar codes, goods and container identification
- relevant legislation, regulations and related documentation
- award, enterprise bargaining agreement, other industrial arrangements
- standards and certification requirements
- quality assurance procedures

Applicable regulations and legislation may include:

- relevant OH&S legislation and safety codes, including manual handling, noise, confined spaces, smoking, workplace ergonomics, etc
- general duty of care under OH&S legislation
- workplace relations regulations
- workers compensation regulations
- dangerous goods regulations

Unsafe situations may include but not limited to:

- exposed 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

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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- relevant OH&S procedures and guidelines
- risks when using manually-operated equipment to shift loads and related precautions to control the risk
- reporting procedures in regard to unsafe situations, fire hazards, broken or damaged equipment or fittings, sickness and accidents
- location and use of safety alarms, manifests, emergency shut-off systems, emergency communication systems
- signs and signals used for OH&S warnings
- terms used in material safety data sheets
- symbols and implications for safe work and storage
- storage and use of hazardous substances
- handling of broken or damaged equipment
- manual and mechanically assisted lifting and load shifting procedures
- transport requirements for goods within workplace
- emergency and evacuation procedures
- housekeeping standards and procedures required in the workplace
- site layout and obstacles

Skill
The ability to:

- communicate effectively with others when following OH&S procedures
- read and interpret relevant safety-related information including safety labels, instructions for safe work, relevant material safety data sheets, workplace procedures and codes of practice
- identify containers and goods coding, markings and, where applicable, emergency information panels
- interpret and follow operational instructions and prioritise work
- complete documentation related to OH&S in the workplace
- operate electronic communication equipment to required protocol
- estimate the size, shape and special requirements of loads
- work collaboratively with others when following OH&S procedures
- promptly report and/or rectify any identified problems, faults or malfunctions that may arise when following OH&S procedures in accordance with regulatory requirements and workplace procedures
- apply fatigue management knowledge and techniques
- operate and adapt to differences in equipment in accordance with standard operating procedures
- select and use required personal protective equipment conforming to industry and OH&S standards

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(4) Resource Implications

Resources for assessment include:

- a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment
- access to an appropriate range of relevant operational situations in the workplace

In both real and simulated environments, access is required to:

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

(5) Method of Assessment

Assessment of knowledge must be conducted through appropriate assessments using written/practical/oral assessments.

Candidate can also:

- identify appropriate persons 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

Practical assessment must occur:

- through activities in an appropriately simulated environment
- in an appropriate range of situations in the workplace

(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRCOR0013B: Purchase parts/components/materials

Competency Descriptor: This unit identifies the competence required to determine requirements and purchase parts, components and materials.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Determine purchasing requirements.	1.1	Customer demand/requirements are accessed and analysed.
		1.2	Market trends are examined.
		1.3	Existing company stock levels are compared with turnover and estimated demand requirements.
		1.4	Product line requirements are determined.
2.	Prepare purchase order/list	2.1	Purchase order/list is developed taking perceived customer needs and existing stock levels into account according to enterprise policies and procedures.
3.	Purchase parts/components/ materials	3.1	Supplier/vendor is informed of requirements and specifications.
		3.2	Appropriate paper work/contracts are completed and exchanged in accordance with enterprise policies and procedures.
		3.3	Material is procured in accordance with enterprise policies and procedures.
		3.4	Records/files are maintained accurately using recognised industry/company guidelines.

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RANGE STATEMENT

The Range Statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

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

Sources of information/documents may include:

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

Methods include:

- determining stock requirements and purchasing parts, components and materials
- analysing enterprise sales records, market trends and customer demand
- audio, written, visual

OH&S practices must abide by:

Industry /OH&S guidelines
Manufacturers specifications

Methods should be applied under normal operating conditions.

Resources may include:

- company sales records
- computers, files, rolodex, relevant stationery, fax, telephone

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. The Evidence Guide provides advice on assessment and is an integral part of the assessment of competency and should be read in conjunction with the range statement and the performance criteria and the required skills and knowledge.

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

(1) Critical Aspects of Evidence

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

- determining and satisfying enterprise stock requirements
- interpreting and communicating relevant information
- operating relevant equipment
- safe working practices
- company policies and procedures

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- company purchase/sales records system
- company ordering procedures
- personal safety requirements
- equipment safety requirements
- relevant manufacturer/enterprise policies
- techniques to determine required stock levels

Skills
The ability to:

- determine enterprise stock requirements
- order/purchase parts, components and materials
- access, interpret and apply relevant information
- use relevant equipment
- maintain relevant records
- apply relevant manufacturer/enterprise policies

(4) Resource Implications

The following resources should be made available:

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

(5) Method of Assessment

In order to ensure consistency in performance it may be necessary to collect evidence across a range of clients and in a variety of methods. some of which may include:-

Evidence may be collected in a variety of ways including:

- practical demonstration
- direct observation of processes and procedures
- alternative assessment procedure
- realistic simulations,
- projects

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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

Competency in this unit is demonstrated by performance of all stated performance criteria, with particular attention to the critical aspects of evidence and the knowledge and skills elaborated in the Evidence Guide, and within the scope of the Range Statement.

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.

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CRITICAL EMPLOYABILITY SKILLS

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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 3	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

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ASRCOR0021B: 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 and allied 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 familiar and unfamiliar situations and to familiar and unfamiliar individuals and groups.
2. Take part in group discussion to achieve appropriate work outcomes	2.1 Responses sought and provided to others in the group.
	2.2 Constructive contributions are made in terms of the production process involved.
	2.3 Goals and aims are communicated.

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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

Sources of information include but not limited:

- company procedural manual
  manufacturers' instructions

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.

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

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:

- work place safety requirements
- the use of work schedules, charts, work bulletins and memos

Skills
The ability to:

- demonstrate basic level of speaking
- demonstrate basic level in reading (reading, interpreting and applying routine texts in the workplace)
- demonstrate basic level in writing English (writing short routine texts using correct spelling, punctuation and grammar)
- work safely to instructions - (writing, reading and understanding workplace documents) convey information in simple English to invoke correct actions - (conveying and receiving workplace information

(4) Resource Implications

The following resources should be made available:

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

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(5) Method of Assessment

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

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

(6) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. The communication activities undertaken should be consistent with the individual's field of work and be based on interaction with others related to workplace tasks and procedures, tools, equipment, materials and documentation relevant to that field of work.

The competencies covered by this unit should be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRCOR0031B: 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 and allied industries.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Identify task requirements	1.1	Instructions related to procedures are obtained, understood and where necessary clarified.
		1.2	Task outcomes are identified.
		1.3	Relevant specifications for task outcomes are obtained, understood and where necessary clarified.
		1.4	Task requirements such as completion time and quality measures are determined.
2.	Plan steps required to complete task	2.1	The sequence of activities required to undertake the task are understood, based on instructions and specifications provided.
		2.2	Steps and outcome are checked for conformity with instructions and relevant specifications.
3.	Review plan	3.1	Outcomes are compared with (planned) objectives, task instructions, specifications and task requirements.
		3.2	If necessary, plan is modified to better meet objectives and task requirements.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Information provided to assist planning may include:

- instructions
- standard operation sheets
- specifications
- quality requirements
- time allowances
- outcome requirements
- performance requirements

Plans:

- may or may not be documented
- may include tasks involving one or more steps or functions

Planning may involve:

- activities performed in accordance with established procedures
- and may require:
- modification of procedures to deal with unforeseen developments
- and will be:
- related to work tasks and environments which are familiar to individual undertaking planning activity

Activity may require:

- prioritising and sequencing of individual components

Legislation, regulatory, licensing and certification requirements may include:

- OHS and environmental requirements (local and international

Documentation, procedures and reports may include:

- SOP
- quality procedures
- environmental sustainability requirements/practices
- enterprise policies and procedures
- safe work documentation e.g. plant clearance, job safety analysis, permit systems

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Actions may include:

- plan adjustments/modification
- reporting to authorised person
- rectifying problem within level of responsibility

Communications may include

- interaction with:
- internal/external customers and suppliers
- team members
- production/service co-ordinators
- maintenance services
- operational support personnel
- operational management
- statutory authorities

Forms of communication may include:

- written e.g. log books, emails, incident and other reports, run sheets, data entry
- reading and interpreting documentation e.g. SOP, manuals, checklists, drawings
- verbal e.g. radio skills, telephone, face to face, handover
- non-verbal e.g. hand signals, alarms, observations
- signage e.g. safety, access

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

Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of:

- the required knowledge and skills tailored to the needs of the specific workplace
- applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements
- applicable aspects of the range statement
- practical workplace demonstration of skills in planning and undertaking a routine task
- 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 minimize risks and provide 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

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- procedures, regulations and legislative requirements relevant to planning and undertaking a routine task including:
  - OHS, environmental including relevant sustainability requirements/practices
  - SOP
  - isolation procedures
  - safe working requirements
  - risks and hazard identification
  - housekeeping
- relevant forms of communication
- basic problem-solving techniques consistent with level of responsibility
- planning the completion of a task
- technical, quality and time requirements to complete a task

Skills
The ability to:

- work safely to instructions
- convey information in simple English to invoke correct actions
- apply quality procedures for a given task
- read and interpret simple drawings, and specifications
- complete a task based on specification
- use required forms of communication in plan and undertake a routine task
- read and interpret required documentation, procedures and reports
- access, navigate and enter computer-based information
- identify and action problems within level of responsibility
- develop plans for a task from information provided, incorporating technical, quality and time requirements, which is capable of achieving appropriate results
- modify plans as a result of outcomes achieved

(4) Resource Implications

Access to the full range of equipment involved in planning and undertaking routine tasks is required.

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

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(5) Method of Assessment

A combination of assessment methods should be used. The following examples are appropriate for this unit:

- observation of applied skills and knowledge on the job
- workplace demonstrations via a mock-up or simulation that replicate part/s of the job
- answers to written or verbal questions about specific skills and knowledge
- third-party reports from relevant and skilled personnel
- written evidence e.g. log sheet entries, checklist entries, test results

Assessment processes and techniques must be culturally appropriate and in keeping with the language and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job).

A holistic assessment with other units relevant to the role is recommended.

(6) Context of Assessment

A workplace assessment must be used to assess:

- the application of required knowledge on the job
- the application of skills on the job, over time and under a range of typical conditions that may be experienced in planning and undertaking a routine task

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRCOR0032B: Apply basic motor vehicle trouble shooting processes

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

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Identify the nature of the fault or problem	1.1	The customer is made to feel welcome and valued.
		1.2	Questioning techniques are applied to determine the nature of the customer enquiry.
		1.3	All available information relating to the fault or problem is gathered, recorded and confirmed with the customer.
2.	Apply basic trouble shooting processes	2.1	Basic trouble shooting techniques are applied to identify the likely cause of the fault or problem.
		2.2	The automotive system/component relating to the fault or problem is identified.
		2.3	Technical information is sought from the appropriate workplace product/system specialist as required.
		2.4	The customer is advised of the likely cause and possible solutions to the fault or problem.
		2.5	Analysis of report of findings is documented and repair strategy is recommended.

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RANGE STATEMENT

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

The types of common faults or problems on which advice is required may include:

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

Company may vary in:

- size
- type and location
- the range of merchandise, products and services provided

All customers are:

- Made to feel welcome
- valued
- satisfied

Sources of Information may include:

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

Automotive systems/components may include:

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

Customers may be:

- regular or new
- may have routine or special requests
- people from a range of social, cultural, religious or ethnic backgrounds and physical and intellectual abilities

Customer contact may be:

- face to face
- by telephone
- by electronic means
- in writing

Advice offered to the customer is to conform with all industry and workplace imposed limitations and liability requirements.

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EVIDENCE GUIDE

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

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

(1) Critical Aspects of Evidence

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(2) Pre-requisite Relationship of Units

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

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

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(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 1	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

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

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ASRCOR0041B: 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.

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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 materials 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

Removal of materials to include:

- processes of recycling and salvage where applicable

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Resources may include:

- types of tools
- equipment
- material

Protection of stacked/stored materials may include:

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

Reporting of faults may be:

- verbal
- written

House keeping methods may include:

cleaning benches, sinks, preparation areas, walkways, fixtures and other working surfaces

Dust suppression procedures may include:

- spraying with water
- covering
- use of vacuum cleaner

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

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

The following resources should be made available:

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

(5) Method of Assessment

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

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

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

(6) Context of Assessment

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

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CRITICAL EMPLOYABILITY SKILLS

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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	

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ASRCOR0042B: Identify common automotive parts and products

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

Competency Field: Automotive Service and Repair

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

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Automotive part/product may include:

- common automotive parts
- components and accessories
- refinishing and treatment products

Customers includes:

external internal
internal customers

(Regardless, all customers are to be made feel welcome, valued and, at the end of the process, satisfied.)

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Communications with the customer/user may be:

- face to face
- telephone
- by other electronic means

Part/Product Information may include:

- manufacturer's specifications
- technical documentation
- workplace procedures and documentation enterprise or industry comparative specifications
- diagrams
- sketches
- verbal descriptions
- physical and visual evidence

The customer may require active assistance and questioning to fully describe the requirement in terms of:

- common vehicle/unit model
- date of manufacture
- purpose and appearance of product
- other relevant tracking information

Information provided by the customer may need to be used:

- when the customer is no longer present and therefore an accurate record of all relevant information needs to be completed, retained and recovered when needed

Parts/Products Cataloguing Systems may be:

- hard-copy (book-fast, loose-leaf)
- stand alone computer
- networked/on line computer supported services

Provider/supplier information is not always required but should be sought or accessed where:

- the incorrect identification of the part/product may result in:
  - legal liability
  - customer dissatisfaction
  - alienation

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

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

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 1	
Use technology	Level 1	

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ASRCOR0051B: 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. Select correct tooling and equipment for workplace application	1.1 Tools and equipment are selected to meet job requirements.
	1.2 Suitable tooling and equipment are selected for use within the workplace environment.
	1.3 Tools and equipment are selected according to enterprise procedures/policies.
2. Use of tooling and equipment	2.1 Tools and equipment are used in a safe manner to prevent injury to self and others.
	2.2 Tools and equipment are used in a manner that does not cause damage to other workplace equipment.
	2.3 Observations are noted during the use of tooling/ equipment.
3. Service and maintain workplace tooling and equipment	3.1 Tools and equipment are regularly checked against manufacturer/component supplier recommendations to ensure safe operating condition.
	3.2 Damaged/worn tooling and equipment are tagged and removed from the workplace for repair or replacement and reported in accordance with enterprise requirements.
	3.3 Tools/equipment are serviced, adjusted and/or maintained as per manufacturer/component supplier schedule to ensure safe and correct operation, within the scope of responsibility.
	3.4 Servicing and maintenance operations are carried out according to industry regulations/guidelines, OHS legislation, legislation and enterprise procedures/policies.

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4. Store and secure tooling and equipment	4.1 Tools and equipment are cleaned, checked and stored.
	4.2 Tools and equipment are securely stored.
	4.3 Documents are completed according to workplace policies and procedures.

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.

Tools and equipment may include:

- computer hardware/ software
- calculators
- general office equipment
- hand and power tooling
- specialist tools for removal/adjustment
- storage racks
- protective covers
- measuring devices
- plastics repair equipment
- sealing equipment
- adhesive equipment
- heating equipment
- templates
- welding equipment including oxy, arc, MIG and TIG
- vehicle cleaning equipment
- service workshop manuals
- product manuals
- hydraulic breaker tooling
- line oilers
- filters and gauges
- alternator and starting motor bench testers
- paint mixers
- key cutters
- multimeters
- load testers
- brake and drum lathes
- fuel injector cleaners
- ignition module test instruments

Maintenance methods may include:

- routine maintenance to tools and equipment as per schedules
- labelling faulty tooling and equipment
- minor repairs to tooling and equipment
- chocking, jacking and supporting of machines on level and incline planes

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Specific requirements may include:

- hydraulic jacks
- air bags and overhead cranes for lifting heavy machines

Warehouse equipment includes:

- auto picker
- bag palletiser
- barcode printer and scanner
- belt conveyors
- bolt cutter
- cages
- carton sealer
- computers
- forklifts
- battery chargers
- pallets
- picking trolleys
- sprinkler system
- strapping machine
- fire extinguishers
- first aid box
- safety signs
- security alarm
- safety harness
- carton crushers
- disposal bins
- seals and ties
- shrink wrap

OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment, extinguishing fires
- enterprise first aid requirements
- site evacuation

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Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to:

- regulations
- internal company quality policy and standards enterprise operations and procedures

Communications are to include, but are not limited to:

- verbal and visual instructions
- and may include site specific instructions
- written instructions,
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the use and maintenance of workplace tooling and equipment
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

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EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

During assessment the individual will:

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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirements, equipment, material and personal safety requirements
- tool and equipment selection procedures
- basic maintenance procedures for tooling and equipment
- tool and equipment safety and operating procedures
- types, characteristics, uses and limitations of hand tools
- types, characteristics, uses and limitations of power tooling
- types, characteristics, uses and limitations of workplace equipment
- work organisation and planning processes
- enterprise quality processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the use and maintenance of workplace tooling and equipment, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the use and maintenance of workplace tooling and equipment
- equipment, hand and power tooling appropriate to the use and maintenance of workplace tooling and equipment
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

Assessment may be applied under project related conditions and require evidence of process.

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

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

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Assessment is to comply with regulatory requirements.

Application of competence is to be assessed in the workplace or simulated worksite.
Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

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CRITICAL EMPLOYABILITY SKILLS

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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

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ASRCOR0061B: Use and maintain measuring equipment

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".

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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

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.

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- comparison devices
- comparison measurements
- comparative measurements
- electrical/electronic devices
- basic measuring devices

Skills
The ability to:

- follow safety 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
- relevant workplace procedures
- relevant product and manufacturing specifications
- 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.

(6) Context of Assessment

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

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CRITICAL EMPLOYABILITY SKILLS

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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	

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ASRCOR0062B: Participate in a team to achieve designated tasks

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

Competency Field: Automotive Service and Repairs

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

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4.3 Data collected, is analysed and used by team and individual team members to evaluate team performance and determine future strategies.

4.4 Performance improvement processes appropriate to team activities are implemented on a collective and individual basis using standard operating procedure.

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

A range of learning opportunities maybe used, for example:

- mentoring
- action learning
- coaching
- shadowing
- exchange/rotation
- structured training programs

Teams may be one or a mixture of :

- ongoing
- work based
- project based
- cross-functional

Teams may include :

- full time employees
- contractors
- part time employees
- leader
- facilitator
- participant
- mentor

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 working in an autonomous team environment or other units requiring the exercise of the skills and knowledge covered by this unit.

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

During assessment the individual will:

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

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

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(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- 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

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

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

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CRITICAL EMPLOYABILITY SKILLS

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

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ASRCOR0071B: 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.

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

Technical drawings may utilise any of the following techniques:

- perspective
- exploded views
- hidden view

Drawings are to be provided to:

- industry standards
- equivalents from the full range of engineering disciplines

Alphabet of line include:

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

Drawing instruments and supplies include:

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

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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

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

Measurement systems:

- inch/foot system
- metric(SI) system

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

EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

During assessment the individual will:

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

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

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
- relevant workplace procedures
- relevant product and manufacturing specifications
- 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.

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(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 GCTVET 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.

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ASRCOR0072B: Work with colleagues and customers

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

Competency Field: Automotive Service and Repair

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

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		2.7 Complaints are referred to the appropriate person for follow up in accordance with individual level of responsibility.
		2.8 High standards of personal presentation are practised.
3.	Work in a team	3.1 Trust, support and respect are shown to team members in day to day work activities.
		3.2 Cultural differences within the team are accommodated.
		3.3 Work team goals are jointly identified.
		3.4 Individual tasks are identified, prioritised and completed within designated time frames.
		3.5 Assistance is sought from other team members when required. Assistance is sought from other team members when required.
		3.6 Assistance is offered to colleagues to ensure designated work goals are met.
		3.7 Feedback and information from other team members is acknowledged.
		3.8 Changes to individual responsibilities are re-negotiated to meet reviewed work goals.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Customers may include but not limited to:

- industry sectors
- internal individuals or groups
- visitors
- media
- workmates/colleagues

Customers with specific needs may include:

- those covered by special the disability needs
- special cultural needs

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Presentation standards should consider:

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

EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

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

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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

The candidate will be provided with:

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

(5) Method of Assessment

The candidate will be required to:

- answer questions put by the assessor
- identify supervisors/customers 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 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

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(6) Context of Assessment

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

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

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 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.

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ASRCOR0091B: Perform manual handling and lifting

Competency Descriptor: This unit involves the skills and knowledge required to shift loads using manual handling methods, including assessing the risks associated with relocating the load, planning the relocation process and carrying out the relocation in accordance with the plan.

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

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

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.

The shifting operations may be conducted:

- in a range of work environments
- by day or night

Customers may be:

- internal or external

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Work may be conducted in:

- restricted spaces
- exposed conditions
- controlled or open environments

Materials to be shifted may include:

- goods
- large luggage items
- baggage items
- equipment and tools
- cleaning materials
- components and parts of vehicles and equipment such as tyres, batteries, lifting gear, etc
- materials used in the course of work such as drums of fuel, raw materials, packaging, etc

Loads to be shifted may be:

- irregularly shaped
- packaged or unpackaged
- labelled or unlabelled

Hazards in the work area may include exposure to:

- heat/colds
- noise
- chemicals
- dangerous or hazardous substances
- movements of equipment, goods and materials
- weight of items being handled

Personnel in the work area may include:

- workplace personnel
- site visitors
- contractors
- official representatives

Communication in the work area may include:

- phone
- electronic data interchange
- fax
- email
- internet/intranet
- radio
- oral, aural or signed communications

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

Personal protective equipment may include:

- gloves
- safety headwear and footwear
- safety glasses
- two-way radios
- high visibility clothing

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Information/documents may include:

- goods identification numbers and codes
- manifests, bar codes, goods and container identification
- manufacturers specifications for equipment/tools
- workplace procedures and policies
- supplier and/or client instructions
- material safety data sheets
- codes of practice including the Standards for Manual Handling and the Industry Safety Code
- relevant legislation, regulations and related documentation
- award, enterprise bargaining agreement, other industrial arrangements
- standards and certification requirements
- quality assurance procedures
- emergency procedures

Applicable regulations and legislation may include:

- relevant Occupational Safety and Health (OS&H) legislation
- relevant environmental protection legislation
- workplace relations regulations
- workers compensation regulations
- licence, patent or copyright arrangements
- dangerous goods and air freight regulations
- export/import/quarantine/bond requirements
- marine orders

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.

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(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

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(5) Method of Assessment (Cont'd)

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 GCTVET 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.

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ASRCOR0101B: 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.

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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.

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

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

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

(2) Pre-requisite Relationship of Units

- Nil

(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

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(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRCOR0111B: 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.

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RANGE STATEMENT

Work may be 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.

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

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

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EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

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

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

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational health and safety (OH&S) in work environment
- ASRCOR0071B Draw and interpret sketches and simple drawing
- ASRCOR0051B Use and maintain workplace tools and equipment

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(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
- relevant workplace procedures
- relevant product and manufacturing specifications
- 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.

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(6) Context of Assessment

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

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASRCOR0112A: Apply safe working practices in an automotive workplace

Competency Descriptor: The unit involves the safety factors related to the use of automotive workplace hand tools and hand-held power tools, fixed equipment, chemicals, as well as vehicles and their use.

Competency Field: Health and safety

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Apply basic safety procedures	1.1 Worksite policies and procedures for safety are followed and maintained while performing work tasks.
	1.2 Unsafe situations and hazards in the workplace are recognised and reported according to occupational health and safety (OHS) requirements and regulations.
	1.3 Procedure and reporting guidelines for machinery and equipment breakdowns are identified.
	1.4 Fire and safety hazards are identified and precautions are taken or reported according to workplace policy and procedures.
	1.5 Storage and handling practices for dangerous goods and substances are identified and applied according to workplace policy, procedures and occupational health and safety (OHS) requirements.
	1.6 Workplace policy regarding manual handling practice is identified and followed.
	1.7 Participation in (OHS) consultative arrangements established by company is exercised.
2. Apply emergency procedures	2.1 Worksite policies and emergency procedures regarding illness or accidents are identified and applied.
	2.2 Safety alarms are identified.
	2.3 Fire fighting appliances and equipment are located and identified for emergency use.

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2.4 Qualified persons are identified for contacting in the event of accident or sickness of customers or staff.

2.5 Accident and incident documentation practices are followed according to worksite accident and injury procedures

2.6 Worksite evacuation procedures are identified

RANGE STATEMENTS

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Policies and procedures may include:

- hazard policies and procedures
- emergency, fire and accident procedures
- personal safety procedures
- procedures for the use of personal protective clothing and equipment
- use of motor vehicles
- resolution procedures
- job procedures and work instructions
- safe working practices
- workplace operating procedures

Workplace health and safety (OHS) requirements:

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures may include:
  - protective clothing and equipment
  - use of tools and equipment
  - handling of material
  - use of fire-fighting equipment
  - first aid equipment
- hazard control, including control of hazardous materials and toxic substances

Hazards may include:

- sharp cutting tooling and instruments
- electricity and water
- toxic substances
- damaged packing material or containers
- broken or damaged equipment
- flammable materials and fire hazards
- lifting practices
- spillages
- waste and debris especially on floors, ladders, trolleys

Emergency procedures may include:

- sickness or accident reporting procedure
- fire or workshop evacuation involving staff or customers
- environmental incidents
- incidents and accidents involving harmful or hazardous substances

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(1) Critical Aspects of Evidence

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- communicate effectively with others involved in or affected by the work
- identify and assess hazardous situations and rectify, or report to the relevant persons
- safely handle and store dangerous and hazardous goods and substances
- apply safe manual handling practices
- identify fire safety equipment and procedures applicable to emergency situations in an automotive workplace
- follow workplace safety, accident, incident and evacuation procedures

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- implications for occupational health and safety (OHS) of business operations and customer relations
- common automotive workplace safety terminology
- occupational health and safety (OHS) regulations, requirements, equipment and material and personal safety requirements
- safe manual handling theories and practices
- the location and application of fire fighting appliances in the workplace
- dangerous goods and hazardous chemicals handling processes
- workplace reporting procedures

Skill
The ability to:

- use communication skills to communicate verbal and written information relating to reporting procedures and unsafe conditions
- apply initiative and enterprise to:
  - adapt to emerging situations in an automotive workplace
  - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- apply literacy skills to:
  - understand workplace safety-related procedures
  - read, interpret and follow information on written instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- apply numeracy skills to understand numbers and mathematical
- apply planning and organising skills to:
  - identify risk factors and take action to minimise risk
  - plan and organise activities which implement and follow standard procedures
- apply problem-solving skills to:
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - establish diagnostic processes which recommend improvements for WHS issues
- apply self-management skills to:
  - select and use appropriate safety equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - document and report numbers for emergency procedures
  - follow workplace documentation, such as codes of practice and operating

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procedures
- apply teamwork skills to:
  - work with others and in a team by assisting and cooperating with team members
  - work with diverse individuals and groups
- apply technical skills to:
  - collect, organise and understand technical information relating to recognising and reporting unsafe situations
  - technology skills to use workplace safety-related technology to assist with safe work practices

(4) Resource Implications

The following should be made available:

- workplace location or simulated workplace
- worksite or equivalent instructions on safe working practice
- hazardous chemicals and dangerous goods information
- materials, tools and equipment relevant to an automotive workplace
- access to fire fighting appliances and equipment

(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

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(6) Context of Assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- industry codes of practice

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 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.

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ASRCOR0133B: Monitor stock levels to maintain enterprise activities

Competency Descriptor: This Unit covers the skills and knowledge required to effectively monitor stock levels to maintain enterprise activities.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Monitor and maintain stock levels	1.1 Determined optimum stock levels are maintained to ensure constant productivity.
	1.2 Purchase, receipt, storage and issue of stock are undertaken when required.
	1.3 Stock is valued using the nominated valuation method, if required.
	1.4 Stock levels are reconciled with paperwork and any discrepancies rectified or reported to nominated person/section within designated timelines.
2. Maintain stock control records	2.1 Records are checked against original orders.
	2.2 Records are updated and maintained in an accurate manner to ensure confidentiality and security of information.
	2.3 Records are kept for the necessary period.

RANGE NATIONALMENT

The Range Statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The following variables may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts

Recording mechanisms/systems may include:

- paper-based
- electronic
- enterprise accounting system

Enterprise procedures and policies may include:

- security procedures
- company guidelines

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Industry Accounting and Auditing Standards

Business source documents may include but are not exclusive to:

- purchase requisitions
- purchase orders
- delivery dockets
- invoices
- credit notes
- inventory cards

Stock variables may include:

- stationery
- equipment
- resources

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. The Evidence Guide provides advice on assessment and is an integral part of the assessment of competency and should be read in conjunction with the range statement and the performance criteria and the required skills and knowledge.

Evidence of satisfactory performance in this Unit is best obtained by observation of performance, questioning and discussion.

More specifically, to indicate understanding and knowledge of monitoring stock levels to maintain enterprise activities in accordance with enterprise procedures and policies.

Check that:

- administrative stock levels are maintained to ensure smooth running of office
- discrepancies are dealt with promptly
- records are maintained
- stock is accounted for
- appropriate legislative procedures are followed

(1) Critical Aspects of Evidence

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

- determining and satisfying enterprise stock requirements
- interpreting and communicating relevant information
- operating relevant equipment
- safe working practices
- company policies and procedures

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- company purchase/sales records system
- company ordering procedures
- personal safety requirements
- equipment safety requirements
- relevant manufacturer/enterprise policies
- techniques to determine required stock levels

Skills
The ability to:

- determine enterprise stock requirements
- order/purchase parts, components and materials
- access, interpret and apply relevant information
- use relevant equipment
- maintain relevant records
- apply relevant manufacturer/enterprise policies

(4) Resource Implications

The following resources should be made available:

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

(5) Method of Assessment

In order to ensure consistency in performance it may be necessary to collect evidence across a range of clients and in a variety of methods

Evidence may be collected in a variety of ways including:

- practical demonstration
- direct observation of processes and procedures
- alternative assessment procedure
- realistic simulations,
- projects
- problem-based tasks
- case study

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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

Competency in this unit is demonstrated by performance of all stated performance criteria, with particular attention to the critical aspects of evidence and the knowledge and skills elaborated in the Evidence Guide, and within the scope of the Range Statement. In addition:-

- 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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRCOR0143B: Inspect vehicle systems/components and determine preferred repair action

Competency Descriptor: This unit identifies the competence required to carry out an inspection of vehicle systems/components and decide on the most appropriate repair/replacement methods.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to undertake inspection	1.1	Nature and scope of work requirements are identified and confirmed.
		1.2	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		1.3	Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
		1.4	Method options are analysed and those most appropriate to the circumstances are selected and prepared.
		1.5	Technical and/or calibration requirements for vehicle systems are sourced and support equipment is identified and prepared.
		1.6	Warnings in relation to working with vehicle systems are observed.
2.	Conduct inspection	2.1	Methods for inspection is applied in accordance with workplace procedures and manufacturer/component supplier specifications.
		2.2	Observations are noted and documented during inspection.
3.	Analyse inspection results	3.1	Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.

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3.2 Results are documented with evidence and supporting information.

3.3 Preferred repair action is selected following analysis of options.

3.4 Report, including repair recommendations, is prepared and forwarded for action in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Methods are to include:

- inspection and testing
- fault finding using aural, visual and operational assessments for defects
- repair option analysis
- report writing

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

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Statutory/regulatory authorities may include

- international and local authorities administering acts
- regulations and codes of practice

Materials may include:

- spare parts
- consumables
- lubricants and cleaning materials

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to testing vehicle systems and associated components
- regulatory/legislative requirements pertaining to automotive industry
- National Environment Protection Regulations
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Tools and equipment may include:

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

Communications are to include, but not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting inspection of a range of vehicle systems in accordance with workplace requirements
- interpreting inspection results
- analysing repair options and selecting the most appropriate option
- completing report, including repair recommendations
- vehicle presentation to customer

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with vehicles and equipment
- operating principles vehicle systems and their relationship to each other
- inspection procedures
- workplace quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the determination of repair action, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the determination of repair action
- equipment, hand and power tooling appropriate to the determination of repair action
- activities covering mandatory task

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment is to comply with regulatory requirements

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CRITICAL EMPLOYABILITY SKILLS

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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 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRCOR0173B: Carry out diagnostic procedures

Competency Descriptor: This unit identifies the competence required to diagnose Vehicle/components/equipment faults from "symptoms" and decide repair action necessary.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA	
1. Prepare to diagnose faults	1.1	Information is accessed from appropriate sources.
	1.2	Symptoms and causes are differentiated.
	1.3	Fault diagnosis is identified as a process.
	1.4	System(s) are familiarised from the area of the fault's origin.
2. Apply technology to isolate fault(s)	2.1	Diagnosis strategy is developed that can be used to determine a fault within the component/equipment.
	2.2	Meters/gauges/measuring equipment is applied to isolate fault.
	2.3	Identification of fault(s) is made from test results.
	2.4	Findings are confirmed by an alternate route/plan.
	2.5	Faults are diagnosed without causing damage to workplace property, component or equipment.
	2.6	Inspections are carried out according to OHS requirements and workplace procedures/policies.
3. Recommend rectification method(s)	3.1	Report of findings is completed in workplace format.
	3.2	Rectification strategy is identified.
	3.3	Consequences of ignoring strategy are identified.
	3.4	Any faults in conflict with roadworthiness or safe operation of component/equipment are immediately brought to the attention of the supervisor for action.

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4.1 Work schedule documentation is completed.

4.2 Final inspection is made to ensure safety features are in place.

4.3 Final inspection is made to ensure work is to workplace expectations.

4.4 Job card is completed and delivered to appropriate persons.

RANGE NATIONALMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Diagnosis is a process of:

- elimination
- fault find
- fault isolation

Diagnostic methods are to include:

- removal and replacement
- dismantling
- adjusting
- visual and aural identification and testing
- component/equipment performance comparison
- on-and off-site
- indoor and outdoor diagnosis

OHS requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- workplace first aid
- hazard control
- hazardous materials and substances

Personal protective equipment is to include;

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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Communications are to include, but not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to diagnosis procedures
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised workplace or external persons

Tools and equipment may include:

- computer software
- computer hardware
- specific tooling and equipment used for dismantling
- testing and diagnosis gauges and measuring equipment
- meters

Materials may include:

- spare parts
- consumables
- cleaning materials

Environmental requirements include but not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements include but not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Safe operating procedures include but not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit include but not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting diagnosis of a range of faults in accordance with workplace requirements to test and verify symptoms
- interpret results
- confirm diagnosis of fault(s)
- diagnosis carried out to manufacturer/component supplier requirements
- complete diagnosis within workplace timeframes
- component/equipment presentation to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirements, equipment, material and personal safety requirements
- diagnostic procedures and problem-solving techniques
- documenting procedures
- symptom and cause differentiation
- documenting responsibilities
- work organisation and planning processes
- enterprise quality procedures

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
- use workplace technology related to the diagnosis of faults, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- workplace location or simulated workplace
- material relevant to diagnosis of faults
- equipment, hand and power tooling appropriate to the diagnosis of faults
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 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.

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ASRCOR0183A: Apply knowledge of engine science

Competency Descriptor: This unit describes the performance outcomes required to apply knowledge of engine components and systems.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Apply relevant information of engine construction and operation to work activities	1.1 Components of an engine are identified during reconditioning activities
	1.2 Functions of engine components are identified during reconditioning activities
	1.3 Relationships between engine components are identified during reconditioning activities
	1.4 Engine configurations are identified during reconditioning activities
2. Apply relevant information of engine diagnosis to work activities	2.1 Using knowledge of engine diagnosis, causes of engine component wear or failure are identified during reconditioning activities
	2.1 Report of findings is documented and rectification strategy is recommended

RANGE STATEMENTS

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Components may include:

- components of a rotary engine
- components of a spark ignition or compression ignition engine

Relationships may include:

- where a component has an effect on another component, such as piston to connecting rod to crankshaft to flywheel

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, Range Statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

Persons who demonstrates competency in this unit must be able to demonstrate knowledge of:

- engine components
- engine layouts
- operating principles of a range of engine types
- common diagnosis procedures

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- classifications of engines, including:
  - internal and external combustion
  - rotary and reciprocating engines
  - spark ignition and compression ignition engines
  - engine cylinder arrangements
  - engine configurations, including:
  - inline engines, vee-type engines and slant cylinder engines
  - opposed cylinder engines
- camshaft and valve locations, including:
  - overhead cam (OHC)
  - overhead valve (OHV)
- engine operating principles, including: combustion, including:
  - air-fuel ratios and flame propagation
  - direct and indirect fuel injection
  - detonation and pre-ignition
  - two-stroke and four-stroke cycles
- engine measurement and performance, including:
  - bore and stroke, including:
    - oversquare and undersquare engines
    - crank throw
    - swept volume and engine volume
    - compression ratio
  - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
  - torque and horsepower, including brake horsepower
- construction and operation of petrol engines, including:
  - basic metallurgy relating to engines
  - identification of metric and imperial threads
  - engine components, including cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, spark plugs, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, cams and flywheels

Skill
The ability to:

- technical skills to use diagnostic equipment
- literacy skills to read and interpret written technical information
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- numeracy skills to use mathematical ideas and techniques to calculate distances, areas, volumes, power and torque
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
- follow workplace documentation, such as codes of practice and operating procedures
- select and use appropriate equipment, materials, processes and procedures

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(3) Underpinning Knowledge and Skills (Cont'd)

Knowledge
Knowledge of:

- combustion chambers, including:
  - L-head, bath-tub, wedge, trapezoidal, hemispherical and heron-type shapes
  - multiple valve designs
- construction and operation of diesel engines, including:
  - direct and indirect injection
  - swirl chambers
  - pre-combustion chambers
- engine diagnosis, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - cylinder power balance tests
  - vacuum tests
  - oil pressure tests
  - sources of fluid leaks
  - exhaust smoke diagnosis
- engine noise diagnosis, including identifying:
  - common engine noises
  - common abnormal combustion noises

(4) Resource Implications

The following resources must be made available for the assessment of this unit:

- appropriate worksite
- a range of engine types and configurations

(5) Method of Assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.
- Assessment must confirm that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

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(5) Method of Assessment (Cont'd)

- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability
- Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed

(6) Context of Assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting. Performance is demonstrated consistently over a period of time and in a suitable range of contexts.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints

Assessment is to comply with relevant:

- regulatory requirements
- industry codes of practice

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Use technology	Level 1	

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

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ASREES0022B: Repair electrical systems

Competency Descriptor: This unit identifies the competence required to carry out repairs to vehicle electrical systems as applies to individuals working in the automotive service industry.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Test systems/components and identify faults	1.1 Systems/components are tested without causing damage to any component or system.
	1.2 Correct information is accessed and interpreted from appropriate manufacturer specification.
	1.3 Tests are carried out to determine faults using appropriate tools and techniques.
	1.4 Faults are identified and preferred repair action determined.
	1.5 Tests are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
2. Repair electrical systems	2.2 Repairs to electrical systems are completed without causing damage to any component or system.
	2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	2.3 Tests on electrical systems are carried out to determine faults using appropriate tools and techniques.
	2.4 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.
	2.5 Repairs are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

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RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

This competency standard applies to:

- electrical systems fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles

Sources of information/documents may include:

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

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- guidelines

Resources may include:

- hand tools, testing equipment including multimeters power tools, air tools,
- special tools for removal/adjustment, manufacturer diagnostic tools

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

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading/interpreting wiring diagrams
- soldering
- crimping
- repairing components and wiring
- remove/replace components

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Other variables may include:

- lighting
- accessories
- electric winches
- cruise control
- central locking

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental guidelines
- operation of electrical system/components relevant to application
- procedures for the repair of electrical system/components
- testing procedures of electrical system/components

Skills
The ability to:

- access, interpret and apply technical information including statutory regulations
- safely and correctly use tools and equipment
- test and identify faults in electrical systems
- repair electrical systems

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

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

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREES0032A: Inspect, test and repair 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. 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. Test systems/components and identify faults	2.1 Correct information is accessed and interpreted from appropriate manufacturer specification.
	2.2 Tests are carried out to determine faults using appropriate tools and techniques.
	2.3 Faults are identified and preferred repair action determined.
	2.4 Tests are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
	2.5 Systems/components are tested without causing damage to any component or system.

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3.	Conduct minor repairs to circuit wiring	3.1	Minor repairs to circuit wiring are completed without causing damage to any component or system.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		3.3	Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.
		3.4	Repairs are carried out according to industry regulations/guidelines OH&S guidelines and company procedures/policies.
4.	Final checks	4.1	Electrical wiring/lighting/warning systems and/or associated components are adjusted to suit specifications and operational requirements.
		4.2	Electrical wiring/lighting/warning systems and/or associated components are checked after adjustment is done.
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

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

OH&S practices must abide by:

- industry standards/OH&S legislation wiring/lighting systems may include:
  - lighting systems
  - electric brake systems
  - trailer wiring connections

Sources of information/documents may include:

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

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Resources may include:

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

Methods include:

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

Methods should be applied under normal operating conditions.

Work activities may include:

- 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

EVIDENCE GUIDE

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

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

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(1) Critical Aspects of Evidence

During assessment the individual will:

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

(2) Pre-requisite Relationship of Units

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

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

The following resources should be made available:

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

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(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

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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.

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ASREES0052B: Install, test and repair electrical circuit/ lighting systems

Competency Descriptor: This unit covers the competence to carry out lighting installations, testing and repair to low voltage systems appropriate to vehicles and trailers. The unit includes identification and confirmation of work requirement, preparation for work, installation, testing and repair of systems and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare for work	1.1 Work instructions are used to determine job requirements, including method, processes and equipment.
	1.2 Job specifications are read and interpreted.
	1.3 OHS requirements, including personal safety needs, are observed throughout the work.
	1.4 Equipment and tools are identified and checked for safe and effective operation.
	1.5 Procedures are determined to minimise task time.
2. Install wiring/lighting electrical systems	2.1 Information is accessed from manufacturer/component supplier specifications and correctly interpreted.
	2.2 Components, tools and equipment are identified, selected, and prepared in accordance with manufacturer/component supplier instructions and site procedures.
	2.3 Wiring/lighting circuit plans and designs are followed and installation procedures completed in accordance with site procedures and manufacturer/component supplier specifications.
	2.4 Legislation, industry guidelines and enterprise policies/procedures are followed.
	2.5 Undue damage to equipment or machinery is avoided.

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3.	Repair electrical systems	3.1	Information for repairing electrical wiring/lighting is accessed from manufacturer/component supplier specifications and correctly interpreted.
		3.2	Components, tooling and equipment are identified, selected, and prepared in accordance with manufacturer/ component supplier instructions and site procedures.
		3.3	Repair work is completed in accordance with site procedures.
		3.4	Workplace documents are completed in accordance with site requirements.
4.	Test electrical systems	4.1.	Information is accessed from manufacturer/component supplier specifications and correctly interpreted.
		4.2.	All tests are carried out in accordance with manufacturer/component supplier specifications and tolerances.
		4.3.	Testing is completed without causing damage to component or system.
5.	Clean up work area and maintain equipment	5.1.	Material that can be reused is collected and stored.
		5.2.	Waste and scrap is removed following workplace procedure.
		5.3.	Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.
		5.4.	Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.
		5.5.	Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.
		5.6.	Tools and equipment is maintained in accordance with workplace procedures

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Materials may include

- spare parts
- cleaning materials

Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

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Tools and equipment may include:

- hand tooling
- power tooling
- air tooling
- specialist tooling for removal/ adjustment and testing equipment
- including multimeters and test crimps

Sources of information/documents may include:

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

Installation and testing may include:

- testing and electrical measurements
- fault finding
- reading and interpreting wiring diagrams
- soldering
- crimping
- installing/repairing low voltage components and wiring

Low voltage wiring/lighting systems include:

- those in the range of vehicles
- craft
- plant and equipment

Faults may include:

- inoperative systems
- open and short circuits and earthing

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances, electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Manufacturer/component supplier procedures must be applied as poor working practices are likely to damage electronic system ECUs and/or other components

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- reading and interpreting low voltage wiring diagrams
- installing low voltage wiring/lighting to specification
- repairing low voltage wiring/lighting to specification
- testing low voltage wiring/lighting to determine short, open and earthing faults
- completing essential post activity housekeeping

(2) Pre-requisite Relationship of Units

- ASREES0011A Perform routine inspection and testing of faulty electrical system component/unit
- ASREES0031A Carry out minor repairs to electrical wiring/lighting/warning systems

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- common automotive terminology and vehicle safety requirements
- low voltage theory for automotive application, including types of materials, components and wiring systems, including gas discharge lamps, automatic aiming
- precautions to avoid side effects that could occur to ancillary systems from installation, testing and repair operations
- operation of low voltage electrical wiring/lighting circuits and components relevant to the application
- wiring and lighting testing and fault finding procedures
- wiring and lighting installation procedures
- wiring and lighting repair procedures
- working knowledge of site reporting procedures
- state/territory lighting regulations and Australian Design Rules
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- collect, organise and understand information related to work orders, plans and safety procedures for installation, testing and repairing wiring and lighting systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plain English literacy and communication skills in relation to dealing with others involved in the work
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications related to low voltage wiring/lighting systems
- questioning and active listening skills, for example when obtaining information of safe working practices and low voltage wiring/lighting systems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use pre-checking and inspection techniques to anticipate planning and scheduling problems and avoid wastage of time and material
- manipulative and dexterity skills to perform low voltage wiring/lighting system installation, testing and repair functions
- problem-solving skills for a limited range of procedural issues
- use workplace technology related to installation and repair of vehicle and trailer wiring/lighting systems, including use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/ documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to installation and repair of vehicle and trailer wiring/lighting systems
- equipment, hand and power tooling appropriate to installation and repair of vehicle and trailer wiring/lighting systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment must satisfy the endorsed Assessment Guidelines
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite. Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

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

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ASREES0062B: Install, test and repair electrical security system/components

Competency Descriptor: This unit identifies the competence required to carry out installation, testing and repair of automotive electrical security systems and components. This standard can also be applied to the installation of security systems in marine applications.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake inspection	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or calibration requirements for vehicle systems are sourced and support equipment is identified and prepared.
2. Install electrical security system/components.	2.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	2.2 Appropriate fittings/materials are selected.
	2.3 Electrical security systems/components are installed and wired using appropriate tools and techniques.
	2.4 Installation is carried out according, OH&S guidelines, and workplace procedures/policies.
	2.5 Installation is completed without causing damage to any component or system.

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3.	Test electrical security systems/ components.	3.1	Tests are completed without causing damage to any component or system.
		3.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		3.3	Tests are carried out to determine faults using appropriate tools and techniques.
		3.4	Faults are identified and preferred repair action determined.
		3.5	Testing is carried out according OH&S guidelines, and workplace procedures/policies.
4.	Repair electrical security systems/ components.	4.1	Electrical security systems/ components are repaired without causing damage to any component or system.
		2.2	Correct information is accessed and interpreted from appropriate manufacturer specifications.
		4.3	Repairs, component replacement and adjustment are carried out using appropriate tools, techniques and materials.
		4.4	Repairs are carried out according to manufacturer procedures, OH&S guidelines, and workplace procedures/policies.

RANGE STATEMENT

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

- electrical security systems fitted to automotive or marine applications

Methods are to include:

- inspection and testing
- fault finding using aural, visual and operational assessments for defects
- repair option analysis
- report writing

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to testing vehicle systems and associated components
- regulatory/legislative requirements pertaining to automotive industry
- National Environment Protection Regulations
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Materials to include:

- installation kit
- component security systems

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

Resources may include:

- hand and power tools
- test equipment including:
  - multimeters
  - test lamps
- air tools
- special tools for removal adjustment

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Methods include:

- testing and electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading interpreting wiring diagrams
- soldering
- crimping
- installing/repairing components and wiring

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- installation, testing and repair of automotive security systems and components

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S guidelines
- interpretation of technical materials, graphic symbols and diagrams
- installation procedures
- operation of electrical security systems and components
- electrical principles and their application to security systems/components
- repair procedures for security systems/components
- testing and fault finding procedures
- personal safety requirements

Skills
The ability to:

- access, interpret and apply technical information
- safely and correctly use tools and equipment
- test and identify faults in security systems/components
- install security systems
- perform electrical connections; crimping and soldering
- repair security systems/components
- select and use appropriate materials for installation/repair of electrical security systems/components

(4) Resource Implications

The following resources should be made available:

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

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(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

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

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

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

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

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREES0082B: Repair ignition systems

Competency Descriptor:

This unit of competency describes the skills and knowledge required to repair Kettering and electronic ignition systems (not including systems associated with electronic engine management) and magnetos and associated components for light vehicles, plant, motorcycles, marine and outdoor power equipment.

Competency Field: Electrical

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare for work	1.1	Job requirements, including method, processes and equipment are determined.
		1.2	Job specifications are read and interpreted.
		1.3	Correct information is accessed and interpreted from manufacturer/component supplier specifications.
		1.4	Equipment and tooling identified and checked for safe and effective operation.
		1.5	Procedures to minimise task time are determined.
2.	Test ignition systems and components and identify faults	2.1	Occupational health and safety (OHS) requirements, including personal safety needs are observed throughout the work.
		2.2	Tests are carried out to determine faults using appropriate tools and techniques.
		2.3	Tests are completed without causing damage to component or system.
		2.4	Faults are identified and preferred repair action determined.
		2.5	Tests are completed according to industry regulations/ guidelines, OHS, legislation and workplace procedures and policies.

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3.	Repair ignition systems and components	3.1	Repairs, component replacement and adjustments are carried out to manufacturer/component supplier specifications.
		3.2	Appropriate tools, techniques and materials are selected and used.
		3.3	Ignition systems are repaired without causing damage to component or system.
		3.4	Retests are performed to ensure correct and safe ignition system operation, according to industry regulations/guidelines, OHS, legislation and enterprise procedures and policies.
		3.5	Workplace and equipment documents are completed in accordance with site requirements.
4.	Clean-up work area and maintain equipment	4.1	Material that can be reused are collected and stored.
		4.2	Waste and scrap are removed following workplace procedures.
		4.3	Equipment and work area cleaned and inspected for serviceable condition in accordance with workplace procedures.
		4.4	Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.
		4.5	Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.
		4.6	Tooling and equipment are maintained and stored in accordance with workplace procedures.

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RANGE STATEMENTS

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and I contexts) may also be included.

Ignition systems include:

- Kettering
- electronic ignition systems
- magnetos and associated components

Ignition systems may be fitted to:

- vehicles
- plant
- marine craft
- outdoor power equipment

Faults may include:

- engine difficult to start/will not start
- engine misfire
- poor performance
- overheating

Components and mechanisms may include:

- single and dual points
- transistor assisted
- single and multiple distributors
- ballast and non-ballast primary circuits
- suppressed and non-suppressed high-tension leads
- transistor controlled ignition (TCI) systems
- advance mechanisms (mechanical, vacuum, electronic, capacitor discharge ignition (CDI), magnetic pulse, optic and hall effect)
- spark plug
- resistor plug and cap

Repair methods include:

- pre- and post-repair testing
- component identification and testing
- diagnosing and determining faults
- conducting repairs, including disassembly, assembly, component replacement, adjustments and rechecks
- electrical measurements
- peak voltage testing
- visual and functional assessments, including damage and wear

Critical precautions include:

- manufacturer/component supplier procedures to avoid damage to electronic system
- engine control units (ECUs) and/or other components
- personal safety procedures which must be applied as contact with high output ignition systems may result in electrocution

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Tooling and equipment may include:

- hand tooling
- testing equipment, including multimeters, ohmmeters, voltmeters and tachometers
- timing light
- spark plug cleaner/tester
- insulation testers
- power tooling and air tooling
- tune scopes
- engine analysers
- dynamometers
- distributor test bench

Materials may include:

- coil
- condensers
- transistors
- leads
- cleaning material

Information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets (MSDS)
- diagrams or sketches
- safe work procedures related to testing and repairing ignition systems
- regulatory/legislative requirements pertaining to testing and repairing ignition systems
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

OHS requirements are to be in accordance with applicable legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- electrical safety
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

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Legislative requirements are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Design Rules
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

Environmental requirements may include:

- waste management
- pollution
- noise
- dust
- clean-up management

Quality requirements may include:

- regulations, including Grenada Bureau of standards
- internal organisational quality policies and procedures
- enterprise operations and procedures

Organisational policies and procedures may include:

- quality policies and procedures
- OHS
- Sustainability
- environment,
- equal opportunity
- anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(1) Critical Aspects of Evidence

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- complete the repair of a minimum of two (2) ignition systems with a minimum of one (1) electronic and one (1) other (Kettering or magneto)
- test ignition system/components
- diagnose and determine faults
- repair ignition systems to manufacturer/component supplier requirements
- post-repair test ignition systems to manufacturer/ component supplier requirements
- complete workplace and equipment documents

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirement, equipment, material and personal safety requirements
- ignition system principles of operation
- construction and operation of ignition systems relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- testing and fault identification procedures
- adjustment procedures of systems/components
- repair/removal and replacement procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable legislation, regulations, standards and codes of practice, including OHS and environment, relevant to testing and repairing ignition systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to testing and repairing ignition systems

Skill
The ability to:

- technical skills to the level required to use workplace technology and tools related to the repair of ignition systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to apply common industry terminology, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, and to locate, interpret and apply manufacturer/component supplier technical information and specifications for circuit and component testing and major repairs/component replacement, workplace policies and safety procedures
- numeracy skills to the level required to correctly calculate time, complete tests and measurements to determine electrical circuit/component major repair/replacement requirements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

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(3) Underpinning Knowledge and Skills

Skill
The ability to:

- organisational skills to the level required to plan and organise activities, including preparation and layout of worksite, and obtaining equipment and materials to avoid backtracking or workflow interruption

(4) Resource Implications

The following resources should be made available:

- a range of ignition systems and components relevant to the application
- materials relevant to testing and repairing of ignition systems
- equipment, hand and power tooling appropriate to testing and repairing of ignition systems
- specifications and work instructions

(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.

Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.

Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

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(6) Context of Assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREES0122B: Service and repair electronically controlled anti-lock braking systems

Competency Descriptor: This unit identifies the competence required to carry out service/repairs to electric/electronic anti-lock brake systems/components in accordance with manufacturer specifications.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Undertake routine checks of servicing/repairing anti-lock braking systems	1.1 Routine checks of anti-lock braking systems demonstrate knowledge of the principles of ABS system and associated components.
	1.2 The main parts of designated braking system and associated components are correctly identified.
	1.3 Engine and associated components are checked using appropriate maintenance principles, techniques, tools and equipment.
	1.4 ABS and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
2. Test, service/repair anti-lock braking systems	2.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	2.2 Tests on anti-lock braking systems are carried out to determine faults using appropriate tools and techniques.
	2.3 Appropriate service/repair procedures are determined.
	2.4 Service and repairs are carried out according to industry regulations/guidelines OH&S standards and company/procedures and policies.
	2.5 Service/repair is completed without causing damage to any component or system.

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3.	Perform final checks	3.1 Braking and/or associated components are adjusted according to manufacturer specifications and operational requirements using appropriate maintenance principles and procedures.
		3.2 Braking and/or associated components are checked after adjustment is done.
		3.3 Vehicle is prepared for storage or customer use.
4.	Clean up area	4.1 All waste material is removed and disposed of.
		4.2 Area related to work activities is cleaned.
		4.3 Tools and equipment are cleaned, maintained and stored.

RANGE STATEMENTS

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

- Automotive service streams applicable to electronic/electrical anti-locking braking systems/ components fitted to light vehicles.

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to testing vehicle systems and associated components
- regulatory/legislative requirements pertaining to automotive industry
- National Environment Protection Regulations
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons
- national regulations for vehicle road worthiness

OH&S practices must abide by:

- Industry guidelines
- OH&S guidelines

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Resources may include:

- hand tools
- multimeter
- vehicle lifting devices
- power tools
- special tools for removal/replacement
- brake dynamometer
- electronic testing equipment
- hydro-metre

Methods include:

- road testing, electrical testing
- visual, aural and functional assessments (including damage, corrosion, wear, electrical defects)
- fault codes analysis and electronic systems tests

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(1) Critical Aspects of Evidence

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

- identifying faults in electrical/electronic components of ABS systems
- testing, servicing and repairing electrical/electronic components of ABS components
- ensuring ABS system meets manufacturer specification before returning to customer

During assessment the individual will:

- Demonstrate safe working practices at all times.
- Demonstrate the ability to service/repair electrical/electronic controlled anti braking system.
- Communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment.
- Take responsibility for the quality of their work.
- Plan tasks in all situations and review task requirements as appropriate.
- Perform all tasks in accordance with standard operating procedures.
- Perform all related tasks to specification.
- Use appropriate automotive service repair techniques, practices, processes and workplace procedures.

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASREES0031B Carry out minor repairs to electrical circuits/systems

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S guidelines
- testing procedures
- equipment/material safety requirements
- the operating principles of ABS braking system
- construction and operation of ABS systems/components relevant to application
- servicing/repairing, cleaning and adjustment procedures
- the use of appropriate measuring tools, and equipment
- personal safety procedures

Skills
The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment
- test and evaluate faults in ABS braking systems
- service/repair/replace anti-lock brake systems components

(4) Resource Implications

The following resources should be made available:

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

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(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREES0132B: Service and repair charging and starting systems/ components

Competency Descriptor: This unit covers the competence required to carry out the service, repair and replacement of air compressor and associated components.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to test air compressors/components	1.1.	Nature and scope of work requirements are identified and confirmed.
		1.2.	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		1.3.	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
		1.4.	Method options are analysed and those most appropriate to the circumstances are selected and prepared.
		1.5.	Technical and/or operating pressures for testing air compressors/components are sourced and support equipment is identified and prepared.
		1.6.	Warnings in relation to working with compressed air are observed.
2.	Test compressor systems and analyse results	2.1.	Methods for the system test are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		2.2.	Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.
		2.3.	Results are documented with evidence and supporting information and recommendation(s) made.
		2.4.	Report is forwarded to persons for action in accordance with workplace procedures.

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3.	Prepare to service, repair and replace compressors and components	3.1.	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		3.2.	Procedures and information required are identified and sourced.
		3.3.	Technical and tool requirements for service, repair or replacement are identified and support equipment is identified and prepared.
4.	Carry out service, repair and replacement	4.1.	Methods for the service, repair and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		4.2.	Adjustments made during the service, repair or replacement are in accordance with manufacturer/ component supplier specifications.
5.	Prepare vehicle for use or storage	5.1.	Service, repair or replacement schedule documentation is completed.
		5.2.	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		5.3.	Final inspection is made to ensure work is to workplace expectations.
		5.4.	Vehicle is cleaned for use or storage to workplace expectations.
		5.5.	Job card is processed in accordance with workplace procedures.
6.	Clean up	6.1	Materials are stacked/stored for re-use or disposed of.
		6.3	Work area is cleared.
		6.3	Tools and equipment are cleaned, maintained and stored appropriately.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Servicing is to include:

- fluids
- filters
- adjustments and operational testing
- visual inspections and documents

Repair methods and sequence are to include

- isolation of fault(s)
- dismantling
- inspection and evaluation
- replacement of components parts
- assembly and completion of operational tests and documents

Faults to include:

- low air delivery

Variables include:

- piston
- vane
- screw
- diaphragm
- two stage compressors

Tooling and equipment may include:

- hand tooling
- meters
- gauges
- pressure testing devices

OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- personal protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to repairing radiators
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Materials may include:

- spare parts
- cleaning materials

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting test results
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- application of full repair sequence as per the Range Statement to an air compressor relative to the qualification being sought
- completing service, repair or replacement of air compressor and associated components within workplace timeframes
- vehicle is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASREES0022B Repair electrical wiring/lighting/warning systems

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with compressor equipment
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- air compressor system testing procedures
- service, repair and replacement procedures
- enterprise quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing, repair and replacement of air compressor systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of air compressor systems
- equipment, hand and power tooling appropriate to the service and repair of air compressor systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

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

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASREGS0011B: Perform routine servicing of petrol fuel systems

Competency Descriptor: This unit identifies the skills and knowledge 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.

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		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

OH&S practices must abide by:

- Industry standards/OH&S legislation

Methods of assessments may include:

- visual
- aural
- functional

Specialised equipment:

- exhaust gas analyser
- vacuum gauge
- tachometer
- multimeter

Methods should be applied under normal operating conditions and includes:

- damage
- corrosion
- fluid levels
- leaks wear
- safety aspects

Resources may include:

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

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Specific requirements may include:

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

Other variables may include:

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

EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

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

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

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(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.

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(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 GCTVET 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

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ASREGS0013A: Service and repair electronic spark ignition engine management systems

Competency Descriptor:

This unit covers the competence to service/repair electronic spark ignition engine management systems and associated components. Engine management systems are systems where the ECU incorporates control over both fuel injection and ignition systems. The unit includes identification and confirmation of work requirement, preparation for work, testing and diagnosis of faults, servicing, repair and retesting of systems and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Competency Field: Motor Vehicle Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare for work	1.1 Work instructions are used to determine job requirements, including method, process and equipment
	1.2 Job specifications are read and interpreted
	1.3 OHS requirements, including personal safety needs, are observed throughout the work
	1.4 Electronic system protection devices, processes and precautions are identified appropriate to application
	1.5 Equipment and tooling are identified and checked for safe and effective operation
	1.6 Procedures are determined to minimise task time
2. Test control system, diagnose faults and determine service/repair requirements	2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications
	2.2 Tests are carried out according to manufacturer/component supplier recommended procedures using tooling, equipment and techniques

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		2.3 Testing is completed without causing damage to component or system
		2.4 Test results are used to diagnose system/component faults
		2.5 Service/repair requirements are determined
		2.6 Testing is carried out according to industry regulations/ guidelines OHS and enterprise/procedures policies
3.	Service/repair spark ignition engine management systems	3.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications
		3.2 Service/repair requirements are carried out according to manufacturer/component supplier recommended specifications and procedures
		3.3 Service/repair is completed without causing damage to component or system
		3.4 Electronic systems are tested and results are documented in accordance with workplace policies and procedures
		3.5 Service, repair and retesting are carried out according to industry regulations/guidelines, OHS and enterprise/ procedures policies
		3.6 Workplace and equipment documents are completed in accordance with site requirements
4.	Clean up work area and maintain equipment	4.1 Material that can be reused is collected and stored
		4.2 Waste and scrap are removed following workplace procedures
		4.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.
		4.4 Unserviceable equipment are tagged and faults identified in accordance with workplace procedures.
		4.5 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and workplace procedures.

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4.6 Tools are maintained in accordance with workplace procedures

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Electronic spark ignition engine management systems may be fitted to:

- light vehicles
- motorcycles
- vessels and outdoor power equipment

Faults may include:

- engine will not start
- engine misfiring a
- poor engine performance

Fault finding methods are to include:

- diagnosis and determining faults
- pre- and post-repair testing of system and component operation
- service and repair/replacement of system components
- service and repair adjustments
- removal, dismantling
- reassembly and refitting
- retrieval and assessment of electronic systems data
- including fault codes
- testing fuel pressure
- cleaning injectors
- cleaning air induction system

Critical precautions include:

- manufacturer/component supplier procedures which must be applied as poor working practices are likely to damage electronic system ECUs and/or other components

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of materials
- use of fire fighting equipment
- enterprise first aid
- hazard control
- hazardous materials and substances

Personal protective equipment is to include

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

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Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust
- cleanup management

Quality requirements are to include, but are not limited to

- internal company quality policy and standards
- enterprise operations and procedures

Tooling and equipment may include:

- hand tooling
- testing equipment
- including multimeters
- exhaust gas analyser
- vacuum gauge
- pressure gauge
- tachometer
- multimeter
- vehicle lifting equipment
- power tooling
- air tooling
- specialist tooling for removal/adjustment
- specialised system testers
- oscilloscopes and scan tooling
- LED test lights

Materials may include:

- spare parts
- cleaning material

Engine management systems are those where the ECU incorporates control over fuel injection and ignition systems

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing, inspecting and evaluating electronic spark ignition engine management systems/components
- diagnosing and determining the repair/replacement requirements to rectify faults
- servicing/repairing electronic spark ignition engine management systems to manufacturer/component supplier requirements
- completing the work within agreed time
- completing workplace and equipment documents

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirement, equipment, material and personal safety requirements
- operating principles of electronic spark ignition engine management systems
- construction and operation of electronic spark ignition systems
- types and layout of service/repair manuals (hard copy and electronic)
- relationship to other electronically controlled systems, including shared components (e.g. ECU, sensors)

Skill
The ability to:

- collect, organise and understand information related to work orders, plans and safety procedures for servicing and repairing electronic spark ignition engine management systems
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- testing, diagnosis and fault determination procedures
- servicing/repairing, removal, replacement and adjustment procedures relevant to application
- work organisation and planning processes
- enterprise quality processes

Skill
The ability to:

- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the service and repair of electronic spark ignition engine management systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and repair of electronic spark ignition engine management systems
- equipment, hand and power tools appropriate to the service and repair of electronic spark ignition engine management systems
- activities covering mandatory task requirements
- specifications and work instructions

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(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable assessment reflects a process rather than an event and occurs over a period of time to cover the varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other appropriate persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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	
Communicate ideas and information	Level	
Plan and organise activities	Level	
Work with others and in team	Level	
Use mathematical ideas and techniques	Level	
Solve problems	Level	
Use technology	Level	

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

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ASREGS0052B: Service diesel fuel injection systems

Competency Descriptor:

This unit of competency describes the skills and knowledge required to service diesel fuel injection systems and components in an automotive retail, service and/or repair context.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to service diesel fuel system components	1.1 Determine job requirements, including method, processes and equipment.
	1.2 Read and interpret job specifications.
	1.3 Access and interpret information from manufacturer/component supplier specifications and workshop manuals.
	1.4 Identify and prepare equipment, resources and tooling and check for safe and effective operation.
	1.5 Determine procedures to minimise task time.
2. Carry out service	2.1 Observe occupational health and safety (OHS) requirements, including individual state/territory regulatory requirements and warnings, in relation to working with diesel fuel injection systems throughout the work.
	2.2 Observe National Environmental Protection Guidelines for throughout the work, as applicable to tasks.
	2.3 Perform service in accordance with workplace procedures and manufacturer/component supplier specifications.
	2.4 Select and use appropriate tooling, techniques and materials.
	2.5 Make adjustments in accordance with manufacturer/component supplier specifications.

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3.	Prepare equipment/ engine for use or storage	3.1	Complete servicing schedule documentation.
		3.2	Make final inspection to ensure work is to workplace expectations.
		3.3	Remove waste and scrap following workplace procedures.
		3.4	Clean equipment and work area in accordance with workplace procedures.
		3.5	Maintain and store tooling and equipment in accordance with workplace procedures.
		3.6	Process job card in accordance with workplace procedures.

RANGE NATIONALMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Servicing is to include:

- fluids
- filters
- adjustments and operational testing
- visual inspections and documents
- injector (pop) testing
- spill timing

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Tools and equipment may include:

- hand tooling
- meters
- gauges
- load testing devices
- calibration and pressure testing equipment

Materials may include

- lubricants
- spare parts
- cleaning materials

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Legislative requirements are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include:

- award and enterprise agreements
- industrial relations
- Environment Protection (Diesel Fuels)
- National Environment Protection Regulations and Guidelines
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

Communications are to include, but are not limited to;

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of diesel fuel systems
- regulatory/legislative requirements pertaining to automotive industry, including Environment National Environment Protection Agency () Vehicle Guidelines
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- operating safely in the event of fires
- workplace first aid requirements
- site evacuation

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Quality requirements are to include, but are not limited to regulations, including:

- internal company quality policy and standards
- enterprise operations and procedures

Organisational policies and procedures may include:

- quality policies and procedures Australian standards
- OHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- identify application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- complete service of diesel fuel system and associated components within workplace timeframes

(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

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Guidelines
- dangers of working with diesel fuel injection systems
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- engine starting procedures
- bleeding procedures
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable legislation, regulations, standards and codes of practice, including OHS and environment, relevant to servicing diesel fuel injection systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing diesel fuel injection systems

Skills
The ability to:

- technical skills to the level required to use workplace technology and tools related to servicing diesel fuel injection systems, including the use of specialist tooling and equipment, measuring equipment, computerised technology and communication devices
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to apply common industry terminology, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders and to locate, interpret and apply manufacturer/component supplier technical information and specifications, workplace policies and safety procedures
- numeracy skills to the level required to correctly calculate time, complete tests and measurements to determine repair/replacement requirements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
- organisational skills to the level required to plan and organise activities, including preparation and layout of worksite, and obtaining equipment and materials to avoid backtracking or workflow interruptions

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(4) Resource Implications

The following resources should be made available:

- a range of diesel fuel injection and components relevant to the application
- materials relevant to servicing diesel fuel injection systems
- equipment, hand and power tooling appropriate to servicing diesel fuel injection systems
- specifications and work instructions

(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.

Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.

Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with relevant regulatory requirements.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREGS0062B: Repair diesel fuel systems

Competency Descriptor:

This unit covers the competence required to carry out repairs, including removal and replacement of diesel fuel systems.
The unit includes identification and confirmation of work requirement, preparation for work, removal, inspection and testing of diesel fuel components, repair and replacement of diesel fuel system components and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to repair diesel fuel system components	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 Underpinning principles of diesel fuel system operations, including air fuel ratios and atomisation are explained and observed.
	1.3 OH&S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.
	1.4 National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks.
	1.5 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.6 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.7 Technical and/or calibration requirements for repair of diesel fuel systems are sourced and support equipment is identified and prepared.
	1.8 Warnings in relation to working with diesel fuel systems are observed.

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2.	Test fuel systems and analyse results	2.1	Methods for conducting tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.
		2.2	Component test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
		2.3	Results are documented with evidence and supporting information and recommendation(s) made.
		2.4	Report is forwarded to persons for action in accordance with workplace procedures.
3.	Repair fuel system	3.1	Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2	Diesel fuel system adjustments made during the engine operation are in accordance with manufacturer/component supplier specifications.
4.	Prepare vehicle/ equipment for use or storage	4.1	Repair schedule documentation is completed.
		4.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3	Final inspection is made to ensure work is to workplace expectations.
		4.4	Vehicle/equipment is cleaned for use or storage to workplace expectations.
		4.5	Job card is processed in accordance with workplace procedures.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Repair methods and sequence are to include

- isolation of fault(s)
- dismantling
- inspection and evaluation
- replacement of components parts
- assembly and completion of operational tests and records

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices
-

Safe operating procedures are to include, but are not limited to

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- operating safely in the event of fires
- workplace first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to regulations, including:

- internal company quality policy and standards
- enterprise operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

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Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of diesel fuel systems
- regulatory/legislative requirements pertaining to automotive industry, including Environment National Environment Protection Agency () Vehicle Guidelines
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Tooling and equipment may include:

- hand tooling
- meters
- gauges
- load testing devices
- calibration and pressure testing equipment

Materials may include:

- diesel fuels
- spare parts
- cleaning materials

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of full repair sequence as per the Range Statement to a diesel fuel system relative to the qualification being sought
- conducting repair on a range of diesel fuel systems in accordance with workplace and manufacturer/ component supplier requirements
- interpreting analysis and test results
- completing repair of diesel fuel system and associated components within workplace timeframes

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASREGS0052B Service and maintain diesel fuel injectors

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- organisation and planning processes
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation

Skills
The ability to:

- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of diesel fuel systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of diesel fuel systems
- equipment, hand and power tooling appropriate to the repair of diesel fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite. Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREGS0082A: Repair petrol fuel systems

Competency Descriptor: This unit covers the competence required to repair mechanical and basic electric/electronic petrol fuel systems/components.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake petrol fuel system repair	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or calibration requirements for repairs are sourced and support equipment is identified and prepared.
	1.6 Warnings in relation to working with petrol are observed.
2. Test fuel systems and analyse results	2.1 Methods for conducting tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.
	2.2 Component test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is forwarded to persons for action in accordance with workplace procedures.
3. Repair petrol fuel system components	3.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.

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		3.2 Repairs and adjustments of fuel system/components are carried out in accordance with manufacturer/component supplier specifications.
		3.3 Petrol fuel system component repairs are completed without causing damage to any component or system.
		3.4 Adjustments made during the repair are in accordance with manufacturer/component supplier specifications.
		3.5 Engine is run and fuel system tested for correct operation.
4.	Prepare fuel system for normal operation	4.1 Repair is documented.
		4.2 Final inspection is made to ensure work is completed to workplace expectations.
		4.3 Job card is processed in accordance with workplace procedures.
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.

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RANGE STATEMENTS

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Fuel system components are to include:

- basic EFI and/or carburettors (all positions, electronic, fixed venturi, variable venturi)
- mechanical and/or electrical fuel pumps
- engine shutdown systems and electronic/mechanical fuel injectors and associated basic fuel injection components

Repair methods are to include:

- aural
- visual and functional assessments (including damage, corrosion, fluid levels, leaks, wear and safety aspects)

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with:
  - vehicular movement
  - electrical safety
  - manual lifting and shifting
  - working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- operating safely in the event of fires
- enterprise first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to regulations, including:

- internal company quality policy and standards
- enterprise operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

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Tools and equipment may include:

- hand tooling
- power tooling
- specialist tooling for removal/replacement
- adjustment and testing equipment
- including hand-held meters
- engine analysers
- exhaust gas analysers
- fuel pump testers
- emission testers and pressure testers

Material may include oils:

- fuels
- spare parts
- cleaning materials

Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to inspection and servicing of engines
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- Instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

- It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:
- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results
- conducting repair, involving a range of system components, in accordance with workplace and manufacturer/component supplier requirements
- presentation of work to customer in compliance with workplace requirements
- completing workplace records

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment
- TLWWOP0111A Shift materials safely using manual handling methods

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with petrol
- petrol pump and carburettor construction and operation
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures
- testing and adjusting procedures
- enterprise quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers

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(3) Underpinning Knowledge and Skills (Cont'd)

Skill
The ability to:

- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the repair of petrol fuel systems, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- parts and material relevant to repairing petrol fuel systems
- equipment, hand and power tools appropriate to repairing petrol fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

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(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's training package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of petrol fuel systems
- equipment, hand and power tooling appropriate to the repair of petrol fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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	
Communicate ideas and information	Level	
Plan and organise activities	Level	
Work with others and in team	Level	
Use mathematical ideas and techniques	Level	
Solve problems	Level	
Use technology	Level	

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

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ASREMS0011B: Prepare for general servicing/repairing of motor vehicle

Competency Descriptor: This unit identifies the skills and knowledge required to prepare for general servicing/repairing and 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. 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 works are obtained in accordance with established procedures.
	1.8 Tools, equipment and testing devices are checked for correct operation and safety.
2. Prepare material/consumables selected for servicing/repair work	2.1 Activities for material/consumables usage are identified from specifications or supervisor's instructions.
	2.2 Material preparation is carried out to satisfy requirements of servicing/repairing process.

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3.	Prepare work area for general repairs/servicing	3.1	Activities to be carried out in work area are identified from type of repairs/servicing and access to area.
		3.2	Work area is prepared for servicing/repairing process according to supervisor's instructions.
4.	Set up tools, plant and equipment appropriate for servicing/repair process	4.1	Regular tools/measuring devices suitable for application processes are identified to job requirements.
		4.2	Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.
5.	Prepare to undertake the inspection of engines	5.1	Nature and scope of work requirements are identified and confirmed.
		5.2	Occupational health and safety (OHS) requirements, including personal protection needs, are observed throughout the work.
		5.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
		5.4	Job specifications are read and interpreted.
		5.5	Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures.
		5.6	Resources required for inspection of engine systems are sourced and support equipment is identified and prepared.
		5.7	Hand, power tooling and safety equipment are identified and checked for operation.
		5.8	Warnings in relation to working with engine systems are observed.
		5.9	Procedures are determined to minimise waste material.
		5.10	Procedures are identified for maximising energy efficiency while completing the job.

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6.	Conduct engine system inspections and analyse results	6.1	Engine systems inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications for engine servicing.
		6.2	Engine is started and run up to operating temperature and inspected for leaks, abnormal noises and pressures.
		6.3	Analysis results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
		6.4	Results are documented with evidence and supporting information and recommendation(s) are made.
		6.5	Report is processed in accordance with workplace procedures.
		6.6	Engine and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
7.	Prepare to service engines	7.1	Occupational health and safety (OHS) requirements, including personal protection needs, are observed throughout the work.
		7.2	Procedures and information required are identified and sourced.
		7.3	Resources required for servicing are identified and support equipment is identified and prepared.
8.	Carry out servicing	8.1	Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		8.2	Adjustments made during the service are in accordance with manufacturer/component supplier specifications.
9.	Prepare vehicle for use or storage	9.1	Servicing schedule documentation is completed.
		9.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		9.3	Final inspection is made to ensure work is completed to workplace expectations.

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	9.4	Vehicle is cleaned for use or storage to workplace expectations.
	9.5	Job card is processed in accordance with workplace procedures.
10. Clean up area	10.1	All waste material is removed and disposed of.
	10.2	Area related to work activities is cleaned.
	10.3	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 strokes spark ignition and 2 and 4 stroke compression ignition engines.

Inspection and servicing of engines includes:

- the assessment and adjustment/replacement of components in accordance with specifications including:
  - those associated with light vehicles
  - our stroke spark ignition
  - two stroke spark ignition
  - four stroke compression ignition

OH&S requirements are to be in accordance with:

- legislation/regulations/codes of practice and enterprise safety policies and procedures including:
  - protective clothing and equipment
  - use of tooling and equipment
  - workplace environment and safety
  - handling of material
  - use of fire fighting equipment
  - enterprise first aid
  - hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with:
  - vehicular movement
  - electrical safety
  - manual lifting and shifting
  - working in proximity to others and site visitors

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Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements include but not limited to:

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Tools and equipment may include:

- hand tools
- meters
- gauges
- load testing devices
- oil sample analysis equipment
- power tools
- precision measuring equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Communications include but not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Methods may include:

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

Methods should be applied under normal operating conditions

Emergency procedures related to this unit include, but not limited to:

- operating safely in the event of fires
- workplace first aid requirements
- site evacuation

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

Material may include oils:

- lubricants
- cleaning materials
- appropriate type and grade engine oil
- coolant and other liquids

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to inspection and servicing of engines
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- Instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(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.

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

- 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
- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately inspecting and documenting and interpreting analysis results
- conducting inspection and servicing of a range of engines in accordance with workplace and manufacturer/component supplier requirements and specifications
- completing the work within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- national environmental protection measures as applicable to tasks
- dangers of working with engines
- operating principles of engines, lubrication, cooling and fuel systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection and servicing of engines, including the use of:
  - tooling
  - manual and computerized
  - measuring equipment
  - servicing tooling and equipment
  - communication devices
  - he reporting/ documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of engines
- equipment, hand and power tooling appropriate to the inspection and servicing of engines
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITCAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASREMS0012B: Repair engines and associated engine components

Competency Descriptor: This unit covers the competence required to carry out repair of an engine and associated engine components on two and four stroke spark ignition and two and four stroke compression ignition engines
The unit includes identification and confirmation of work requirement, preparation for work, engine system testing and analysis, repair of engines and associated components and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake repair of engines	1.1 Nature and scope of work requirements are identified and confirmed
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
	1.3 National Environmental Protection Agency () guidelines is observed throughout the work as applicable to tasks
	1.4 Procedures and information such as workshop manuals and specifications, and tools, are sourced
	1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared
	1.6 Technical and/or calibration requirements for engine systems repair are sourced and support equipment is identified and prepared
	1.7 Warnings in relation to working with engines and associated systems are observed
2. Conduct engine systems tests and analyse results	2.1 Methods for engine systems tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
	2.2 Engine is started and run up to operating temperature and checked for leaks, abnormal noises and pressures

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		2.3	Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance
		2.4	Results are documented with evidence and supporting information and recommendation(s) made
		2.5	Report is forwarded to persons for action in accordance with workplace procedures
3.	Carry out repair	3.1	Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
		3.2	Adjustments made during the repair are in accordance with manufacturer/component supplier specifications
4.	Prepare vehicle/ equipment for use or storage	4.1	Repair schedule documentation is completed
		4.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place
		4.3	Final inspection is made to ensure task is done to workplace expectations
		4.4	Vehicle/equipment is cleaned for use or storage to workplace expectations
		4.5	Job card is processed in accordance with workplace procedures
5.	Clean up work area and maintain equipment	5.1	Material that can be reused is collected and stored
		5.2	Waste and scrap are removed following workplace procedures
		5.3	Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures
		5.4	Faulty equipment is identified, tagged and isolated according to workplace procedures

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5.5 Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures

5.6 Tools and equipment are maintained according to workplace procedures

RANGE STATEMENTS

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Engines may be:

- four stroke spark ignition engines for light vehicle, motorcycle and marine craft
- two stroke spark ignition engines for motorcycle and marine craft
- four stroke compression ignition engines for light vehicle, heavy vehicle, mobile plant and marine craft
- two stroke compression ignition for heavy vehicle, mobile plant, and marine craft

Repair methods are to include:

- identification of component wear/damage
- fluid leakage
- removal
- dismantling
- reassembly
- refitting
- adjusting and testing

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Statutory/regulatory authorities may include

- international and local authorities administering acts
- regulations and codes of practice

Materials may include

- spare parts
- consumables
- lubricants and cleaning materials

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Tools and equipment may include

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

Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

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Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to repairing engines and associated components
- regulatory/legislative requirements pertaining to automotive industry
- National Environment Protection Regulations
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- dismantling, evaluating, assembling, adjustment, measuring and testing
- repairing a range of engines and associated components to workplace requirements and specifications
- repairing of engine and associated components completed within workplace guidelines and timeframes

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Agency as applicable to tasks
- engine construction and operation relevant to application
- types and layout of service/repair manuals (hard copy and electronic)
- engine/component repair procedures
- engine removal and replacement procedures
- measuring and testing procedures
- equipment/component safety requirements
- work organisation and planning processes
- enterprise quality processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of engines and associated engine components
- equipment, hand and power tooling appropriate to the repair of engines and associated engine components
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREMS0021B: Service engines and associated engine components

Competency Descriptor: This unit identifies the skills and knowledge required to prepare for general servicing/repairing and 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. 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 material/consumables selected for servicing/repair work	2.1 Activities for material/consumables usage are identified from specifications or supervisor's instructions.
	2.2 Material preparation is carried out to satisfy requirements of servicing/repairing process.

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3.	Prepare work area for general repairs/servicing	3.1	Activities to be carried out in work area are identified from type of repairs/servicing and access to area.
		3.2	Work area is prepared for servicing/repairing process according to supervisor's instructions.
4.	Set up tools, plant and equipment appropriate for servicing/repair process	4.1	Regular tools/measuring devices suitable for application process is identified to job requirements.
		4.2	Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.
5.	Prepare to undertake the inspection of engines	5.1	Nature and scope of work requirements are identified and confirmed
		5.2	Occupational health and safety (OHS) requirements, including personal protection needs, are observed throughout the work.
		5.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced
		5.4	Job specifications are read and interpreted.
		5.5	Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures
		5.6	Resources required for inspection of engine systems are sourced and support equipment is identified and prepared
		5.7	Hand, power tooling and safety equipment are identified and checked for operation.
		5.8	Warnings in relation to working with engine systems are observed
		5.9	Procedures are determined to minimise waste material.
		5.10	Procedures are identified for maximising energy efficiency while completing the job.
6.	Conduct engine system inspections and analyse results	6.1	Engine systems inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications for engine servicing

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		6.2	Engine is started and run up to operating temperature and inspected for leaks, abnormal noises and pressures
		6.3	Analysis results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance
		6.4	Results are documented with evidence and supporting information and recommendation(s) are made
		6.5	Report is processed in accordance with workplace procedures
		6.6	Engine and associated components identified as requiring further diagnosis, repair or adjustment are documented or reported by appropriate means.
7.	Prepare to service engines	7.1	Occupational health and safety (OHS) requirements, including personal protection needs, are observed throughout the work.
		7.2	Procedures and information required are identified and sourced
		7.3	Resources required for servicing are identified and support equipment is identified and prepared
8.	Carry out servicing	8.1	Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications
		8.2	Adjustments made during the service are in accordance with manufacturer/component supplier specifications
9.	Prepare vehicle for use or storage	9.1	Servicing schedule documentation is completed
		9.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place
		9.3	Final inspection is made to ensure work is completed to workplace expectations
		9.4	Vehicle is cleaned for use or storage to workplace expectations
		9.5	Job card is processed in accordance with workplace procedures

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10.	Clean up area	10.1 All waste material is removed and disposed of.
		10.2 Area related to work activities is cleaned.
		10.3 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 strokes spark ignition and 2 and 4 stroke compression ignition engines.

Inspection and servicing of engines includes:

- the assessment and adjustment/replacement of components in accordance with specifications including:
  - those associated with light vehicles
  - our stroke spark ignition
  - two stroke spark ignition
  - four stroke compression ignition

OH&S requirements are to be in accordance with:

- legislation/regulations/codes of practice and enterprise safety policies and procedures including:
  - protective clothing and equipment
  - use of tooling and equipment
  - workplace environment and safety
  - handling of material
  - use of fire fighting equipment
  - enterprise first aid
  - hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with:
  - vehicular movement
  - electrical safety
  - manual lifting and shifting
  - working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Emergency procedures related to this unit include, but not limited to:

- operating safely in the event of fires
- workplace first aid requirements
- site evacuation

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Quality requirements include but not limited to:

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

Tools and equipment may include:

- hand tools
- meters
- gauges
- load testing devices
- oil sample analysis equipment
- power tools
- precision measuring equipment
- lifting and supporting equipment
- lubricant dispensing equipment

Material may include oils:

- lubricants
- cleaning materials
- appropriate type and grade engine oil
- coolant and other liquids

Communications include but not limited to:

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to inspection and servicing of engines
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- Instructions issued by authorised enterprise or external persons

Methods may include:

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

Methods should be applied under normal operating conditions.

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(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.

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

- 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
- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately inspecting and documenting and interpreting analysis results
- conducting inspection and servicing of a range of engines in accordance with workplace and manufacturer/component supplier requirements and specifications
- completing the work within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- national environmental protection measures as applicable to tasks
- dangers of working with engines
- operating principles of engines, lubrication, cooling and fuel systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection and servicing of engines, including the use of:
  - tooling
  - manual and computerized
  - measuring equipment
  - servicing tooling and equipment
  - communication devices
  - he reporting/ documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of engines
- equipment, hand and power tooling appropriate to the inspection and servicing of engines
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASREMS0023A: Repair and replace emission control systems

Competency Descriptor:

This unit covers the competence required to carry out repairs to emission control systems. The unit includes identification and confirmation of work requirement, preparation for work, repair of emission control systems and associated components and completion of work finalisation processes, including clean-up and documentation. This unit of competence applies to the following and should be contextualised to the qualification to which it is being applied: light and heavy vehicles, marine equipment and motorcycles. This unit of competence does not cover emission control systems associated with engine management systems.

Competency Field: Motor Vehicle Service and Repairs

Element of Competency	Performance Criteria
1. Prepare to undertake repair of emission control system	1.1 Nature and scope of work requirements are identified and confirmed
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced
	1.4 National Environment Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks.
	1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.6 Technical and/or calibration requirements for repair are sourced and support equipment is identified and prepared.
2. Repair and replace emission control systems and/or associated components	2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.
	2.2 Testing equipment is selected.
	2.3 Tests are performed and results analysed in accordance with manufacturer/component supplier specifications.

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		2.4 Emission control system repair and replacement are carried out according to industry regulations/guidelines, OH&S legislation and enterprise procedures/policies.
		2.5 Emission control systems repair/replacement is completed without causing damage to any component or system.
3.	Prepare vehicle/equipment for delivery to customer after repair is completed	3.1 Repair documentation is completed.
		3.2 Final inspection is made to ensure safety features are in place.
		3.3 Final inspection is made to ensure work is done to workplace expectations.
		3.4 Vehicle/equipment is presented according to workplace expectations.
		3.5 Job card is processed in accordance with workplace procedures.

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RANGE STATEMENTS

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Methods include:

- road testing or dynamometer testing, exhaust gas testing
- visual, aural and functional assessments (including: damage, corrosion, air leaks, wear, testing of electrical circuits)
- measurements
- electronic system tests

Repair methods and sequence are to include

- isolation of fault(s)
- dismantling
- inspection and evaluation
- replacement of components parts
- assembly and completion of operational tests and records

Faults include:

- rough running
- poor performance
- excessive fuel consumption
- and overheating

Personal protective equipment is to include

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of materials
- use of fire fighting equipment
- enterprise first aid
- hazard control
- hazardous materials and substances

Specific requirements may include:

- sensing and control systems including:
    - carbon canisters
    - mechanical devices
    - catalytic converters
    - electronic sensors
    - EGR values

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

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Environmental requirements are to include but are not limited to

- waste management
- noise
- dust
- cleanup management

Quality requirements are to include, but are not limited to

- internal company quality policy and standards
- workplace operations and procedures

Tools and equipment may include:

- hand tools, testing equipment
- Including
- exhaust gas analysers
- hand held meters
- and power tooling
- specialist tooling for testing
- removal or adjustment and dynamometers

Materials may include:

- lubricants
- cleaners
- spare parts
- sealants

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- testing, inspecting and evaluating electronic spark ignition engine management systems/components
- diagnosing and determining the repair/replacement requirements to rectify faults
- servicing/repairing electronic spark ignition engine management systems to manufacturer/component supplier requirements
- completing the work within agreed time
- completing workplace and equipment documents

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- legislation and penalties
- identification of motor vehicle emissions and their effects on the environment
- the identification of application, purpose and operation
- the identification of component parts to include physical, fluid, gases and heat generation
- the principles of emission control and reduction of HC, NOx, CO, CO_2, particulates and smog
- types and layout of service/repair manuals (hard copy and electronic)
- types of emission systems and components
- the interpretation of technical information, graphic symbols and diagrams
- testing procedures
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use workplace technology related to repair and replacement of emission control systems, including the use of measuring equipment, electronics, computerised technology, specialist emission control system tooling and equipment and communication devices and the documenting/recording of results

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(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- workplace location or simulated workplace
- material relevant to the repair and replacement of emission control systems
- equipment, hand and power tooling appropriate to the repair and replacement of emission control systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Use technology	Level 2	

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

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ASREMS0031B: 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.

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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.

Servicing is to include:

- fluids
- filters
- adjustments
- operational testing, visual inspections and documents

Inspection methods are to include:

- visual
- aural and functional assessments
- including
- damage
- corrosion
- fluid levels/leaks and wear

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Specific requirements include:

- fluid cooled systems
- air cooled systems
- combination systems functional
- methods should be applied under normal operating conditions

System variables may include:

- thermostats, water pumps, hoses, ducting, fans, drive belts, heat exchanger, electric and viscous fans, sealed and non-sealed systems, interior heater and coolant heater manifold
- cooling fins size, material, colour and finish
- ferrous and non-ferrous metals
- keel cooling, heat exchanger, raw water cooling and sacrificial anodes
- cooling system additive Santi freeze/rust inhibitor tester
- reverse flushing equipment
- pressure tester
- multimeter

Tooling and equipment may include:

- hand tooling
- meters
- gauges
- pressure testing devices

Materials may include:

- coolant
- spare parts
- cleaning materials

Information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- safe work procedures related to servicing cooling systems
- regulatory/legislative requirements pertaining to servicing cooling systems
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

OHS requirements are to be in accordance with applicable and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- hazard and risk control
- electrical safety
- elimination of hazardous materials and substances
- manual handling, including shifting, lifting and carrying
- emergency procedures

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Legislative requirements are to be in accordance with:

- applicable legislation
- regulations
- certification requirements and codes of practice, and may include:
    - award and enterprise agreements
    - industrial relations
    - confidentiality and privacy
    - OHS
    - the environment
    - equal opportunity
    - anti-discrimination
    - relevant industry codes of practice
    - duty of care

Quality requirements may include:

- regulations, including:
    - internal organisational quality policies and procedures
    - enterprise operations and procedures

Environmental requirements may include:

- waste management
- pollution
- noise
- dust
- clean-up management

Organisational policies and procedures may include:

- quality policies and procedures
- OHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(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.

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- accurately interpret analysis results
- identify application, purpose and operating principles
- conduct inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications
- complete service of cooling systems and associated components within workplace timeframes
- present equipment to customer in compliance with workplace requirements

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(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B 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

kills
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

(4) Resource Implications

The following resources should be made available:

- a range of cooling systems and components relevant to the application
- materials relevant to servicing cooling systems
- equipment, hand and power tooling appropriate to servicing cooling systems

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(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required skills and knowledge.
- Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with relevant regulatory requirements

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ASREMS0032B: Disassemble engine block and sub-assemblies and evaluate components

Competency Descriptor: This unit identifies the competence required to disassemble, inspect, evaluate and determine preferred repair action for engine block and sub-assemblies as a part of a reconditioning procedure.

Competency Field: Automotive Service and Repairs

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 Component parts are cleaned in preparation for evaluation.
	1.5 All dismantling/cleaning activities are carried out according to OH&S and environmental guidelines and company procedures/policies.
2. Inspect/measure/test engine block and sub-assembly components and determine repair procedures	2.1 Inspection/measurement/testing is completed without causing damage to any component or system.
	2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	2.3 Engine block and sub-assembly components are measured against manufacturer specifications and tolerances.
	2.4 Engine block and sub-assembly components are evaluated against the measurements, tests and inspections made.
	2.5 Repair requirements are identified and reported according to enterprise policy and procedures.
	2.6 Appropriate workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes.

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2.7 All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

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
- lifting equipment
- testing equipment
- cleaning equipment
- parts washers
- chemical cleaning equipment
- crack testing equipment
- pressure testing equipment

Methods include:

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

Specific requirements:

- short engines
- various engine components (including crankshafts
- camshafts
- cylinder blocks
- idler shafts
- pistons
- con rods
- bearings
- rings
- gears
- chains
- belts
- pulleys
- engine oil pump)

Methods should be applied:

- under normal operating conditions

Other variables may include:

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

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EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

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

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

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(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

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

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

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CRITICAL EMPLOYABILITY SKILLS

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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 1	
Use technology	Level 1	

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

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ASREMS0052B: Disassemble/Assemble cylinder heads, evaluate components and carry out testing procedures

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

Competency Field: Automotive Service and Repair

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

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		2.7	All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S guidelines and company procedures/policies.
3.	Assemble cylinder heads	3.1	Cylinder heads are assembled without causing damage to any component or system.
		3.2	Workplace tools, equipment and OHS, environmental and manufacturer procedures are strictly followed.
		3.3	Assembly is carried out to comply with manufacturer specifications and established workplace standards.
4.	Carry out relevant testing and adjustment procedures	4.1	Tests and adjustments are completed without causing damage to any component or system.
		4.2	Relevant tests and adjustments are performed using industry approved procedures and equipment.
		4.3	Testing and adjustment is carried out to comply with manufacturer specifications established industry guidelines.
		4.4	All testing and adjustment activities are carried out according to manufacture guidelines, OH&S, environmental guidelines and workplace procedures/policies.

RANGE STATEMENT

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

OH&S practices must abide by:

- Industry OH&S guidelines
- Manufacturers specification
- guidelines

Sources of information/documents may include:

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

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Methods may include:

- dismantling
- cleaning
- measuring against specifications
- various testing (e.g. crack and pressure tests)
- visual inspection
- comparing against new
- comparing against specifications
- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

- Methods should be applied under normal operating conditions.

Resources may include:

- hand tools
- power tools
- special equipment
- measuring equipment
- lifting equipment
- testing equipment
- cleaning equipment
- parts washers
- chemical cleaning equipment
- crack testing equipment
- pressure testing equipment
- relevant testing procedures
- relevant tolerance checking methods
- personal
- protective equipment
- lubricating equipment
- gasket sealing materials

Other variables may include:

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

Specific requirements:

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

Other variables may include:

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

Specific requirements:

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

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EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

- cylinder head dismantling/assembling and accurate assessment of components condition

During assessment the individual will:

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

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

The following resources should be made available:

- all tools, equipment, materials and documentation required
- relevant workplace procedures
- relevant product and manufacturing specifications
- 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 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.

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(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

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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 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASREMS0072B: 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 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 in conformance to specifications.
	2.4 Repair report is completed and submitted to the appropriate person.
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.

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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

Methods of assessments may include:

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

Methods should be applied under normal operating conditions.

Other resources may include:

- thermostats
- water pumps
- plumbing
- ducting
- fans
- belts

Resources may include:

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

OH&S practices must abide by:

- Industry standards/OH&S legislation

Specialised equipment:

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

Faults may include:

- sealed and non-sealed systems
- interior heater
- coolant heater manifold
- heat exchangers
- electric and viscous fans
- ferrous and non ferrous metals
- cooling system additives

OS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- personal protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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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

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

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASREMS0031B Service cooling systems & associated components

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- removal and replacement procedures
- cooling system construction and operation (relevant to application)
- system component testing procedures
- equipment safety requirements
- vehicle safety requirements
- OHS regulations/requirements, equipment, material and personal safety requirements
- personal safety requirements
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- repair procedures
- workplace quality procedures
- work organisation and planning processes

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
- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks

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(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

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
- 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

- 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.

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CRITICAL EMPLOYABILITY SKILLS

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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

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ASREMS0082B: Carry out radiator repairs

Competency Descriptor: This unit covers the competence required to carry out radiator repairs. The unit includes identification and confirmation of work requirement, preparation for work, repairing of radiators and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake radiator repairs	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or calibration requirements for radiator repairs are sourced and support equipment is identified and prepared.
2. Repair radiators and/or components	2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.
	2.2 Radiators and/or associated components are repaired using approved methods and equipment, according to manufacturer/component supplier specifications.
	2.3 Radiators are repaired without causing damage to any component or system.
3. Prepare radiator for installation or use or storage	3.1 Repairs are documented.
	3.2 Final inspection is made to ensure work is completed to workplace requirements.
	3.3 Radiator is prepared for use or stored to workplace expectations.

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3.4 Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Repair methods include:

- pressure testing
- tank testing
- visual and functional assessments (including corrosion, fluid leaks and wear)
- welding
- soldering
- cutting and shaping

Faults may include:

- external coolant leaks
- engine overheating

Specific requirements include:

- radiators (metal, plastic, copper, aluminium, cast)

OS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- personal protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to repairing radiators
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Tooling and equipment may include:

- hand tooling
  power tooling
- specialist tooling
- welders, soldering equipment
- testing equipment
- including pressure testers
- compressed air
- testing tanks
- jigs and vices

Materials may include:

- coolants
- minor spare parts
- cleaning materials

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operation
- application of the full repair sequence as per the Range Statement to a radiator relative to the qualification being sought
- conducting repair in accordance with workplace and manufacturer/component supplier requirements
- radiator is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- MEMFAB0051B Perform brazing and/or silver soldering

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirements, equipment, material and personal safety requirements
- dangers of working with heating equipment
- personal safety requirements
- identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- soldering processes
- repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to repairing radiators, including the use of measuring equipment, repair tooling and equipment and communication devices and the reporting/ documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to repairing radiators
- equipment, hand and power tooling appropriate to repairing radiators
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

- Application of competence is to be assessed in workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements.
- 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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRLPG0013A: Service LPG fuel systems

Competency Descriptor: The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis of inspection results and servicing of LPG fuel systems and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Competency Field: Motor Vehicle Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake inspection of LPG fuel system	1.1 Nature and scope of work requirements are identified and confirmed
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
	1.3 Procedures and information such as workshop manuals and specifications, and tools, are sourced
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared
	1.5 Technical and/or calibration requirements for LPG fuel system are sourced and support equipment is identified and prepared
	1.6 Warnings in relation to working with LPG fuel systems are observed
2. Conduct inspection and analyse results	2.1 Methods for LPG fuel system inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications
	2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance
	2.3 Results are documented with evidence and supporting information and recommendation(s) made
	2.4 Report is forwarded to persons for action in accordance

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			with workplace procedures
3.	Carry out servicing LPG fuel system	3.1	Methods for servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
		3.2	Adjustments made during the servicing are in accordance with manufacturer/component supplier specifications
4.	Prepare vehicle for use or storage	4.1	Service schedule documentation is completed
		4.2	Final inspection is made to ensure safety features are in place
		4.3	Final inspection is made to ensure work is done to workplace expectations
		4.4	Vehicle is cleaned for use or storage according to workplace expectations
		4.5	Job card is processed in accordance with workplace procedures

RANGE STATEMENTS

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the servicing of LPG fuel systems
- regulatory/legislative requirements pertaining to automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Faults to be repaired may include:

- poor engine performance
- abnormal consumption
- engine malfunction
- gas fuel leaks

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of materials
- use of fire fighting equipment
- enterprise first aid
- hazard control
- hazardous materials and substances

Personal protective equipment is to include

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements and site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- cleanup management

Quality requirements are to include, but are not limited to:

- internal company quality policy and standards
- workplace operations and procedures

Tools and equipment may include:

- hand tools
- meters
- gauges and load
- gas leak testing devices

Materials may include:

- spare parts
- cleaning materials

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, Range Statement and the Assessment Guidelines.

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct inspection in accordance with workplace and manufacturer/component supplier requirements
- interpret inspection results
- service the gas system and associated components within workplace timeframes
- present vehicle to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with LPG systems
- operating principles of LPG systems
- inspection procedures
- test procedures
- workplace quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customer

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(3) Underpinning Knowledge and Skills (Cont'd)

Skill
The ability to: (Cont'd)

- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the servicing of LPG fuel systems, including the use of specialist tools, measuring equipment, computerised technology and communication devices and the documenting/recording of results

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- workplace location or simulated workplace
- material relevant to the servicing of LPG fuel systems
- equipment, hand and power tools appropriate to the servicing of LPG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

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(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- of tasks, with
- oral/written questioning
- project
- third party report
- testimonials/awards
- training records
- workplace documents

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions.

CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Use technology	Level 2	

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

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ASRLPG0023A: Repair LPG fuel systems

Competency Descriptor:

This unit covers the competence required to carry out the repair of LPG fuel systems. The unit includes identification and confirmation of work requirement, preparation for work, repair of LPG fuel systems and completion of work finalisation processes, including clean-up and documentation.

Competency Field: Motor Vehicle Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake repair of LPG fuel system	1.1 Nature and scope of work requirements are identified and confirmed
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
	1.3 Procedures and information such as workshop manuals and specifications, and tools are sourced
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared
	1.5 Technical and/or calibration requirements for LPG fuel system are sourced and support equipment is identified and prepared
	1.6 Warnings in relation to working with LPG fuel systems are observed
2. Carry out repair	2.1 Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications
	2.2 Adjustments made during the repair are in accordance with manufacturer/component supplier specifications
3. Prepare vehicle for use or storage	3.1 Repair documentation is completed
	3.2 Final inspection is made to ensure safety features are in place

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3.3 Final inspection is made to ensure work is done to workplace expectations

3.4 Vehicle is cleaned for use or storage to workplace expectations

3.5 Job card is processed in accordance with workplace procedures

RANGE STATEMENTS

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of LPG fuel systems
- regulatory/legislative requirements pertaining to automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Faults to be repaired may include:

- poor engine performance
- abnormal consumption
- engine malfunction
- gas fuel leaks

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of materials
- use of fire fighting equipment
- enterprise first aid
- hazard control
- hazardous materials and substances

Personal protective equipment include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

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Safe operating procedures to include, but not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit include not limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

Environmental requirements to include but not limited to

- waste management
- noise
- dust
- cleanup management

Quality requirements to include, but not limited to

- internal company quality policy and standards
- enterprise operations and procedures

Tools and equipment may include:

- hand tools
- meters
- gauges
- load testing
- gas leak testing devices

Materials may include:

- repair kits
- spare parts
- gas
- sealants
- adhesives and cleaning materials

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, Range Statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct repair in accordance with workplace and manufacturer/component supplier requirements
- quality assure repair results
- repair gas system and associated components within workplace timeframes
- present vehicle to customer in compliance with workplace requirements

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with gas systems
- operating principles of LPG systems
- LPG system components
- repair procedures
- test procedures
- enterprise quality procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks

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(3) Underpinning Knowledge and Skills (Cont'd)

Skill
The ability to: (Cont'd)

- use workplace technology related to the repair of LPG fuel systems, including the use of specialist tooling, measuring equipment, computerised technology and communication devices and the documenting/recording of results

(4) Resource Implications

Competency in this unit may be assessed through access to the following resources:

- workplace location or simulated workplace
- material relevant to the repair of LPG fuel systems
- equipment, hand and power tooling appropriate to the repair of LPG fuel systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Evidence may be collected in a variety of ways including:

- direct observation
- oral/written questions related to underpinning knowledge
- third party report
- workplace documents
- practical demonstration
- case study
- projects
- testimonials/awards
- training records

(6) Context of Assessment

Assessment of the performance requirements in this unit should be undertaken either on-the-job or off-the-job where the underpinning knowledge may be assessed through an actual appropriate workplace or simulated environment for a range of conditions

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Use technology	Level 2	

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

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ASRSSS0022B: Repair steering and suspension system components

Competency Descriptor: This unit covers the competence required to carry out repairs to light vehicle steering systems and associated components:

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake repair of steering and suspension systems	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or operational requirements for inspecting and repairing steering systems are sourced and support tooling and equipment are identified and prepared.
	1.6 Warnings in relation to working with wheeled and tracked vehicles are observed.
2. Conduct test and analyse results	2.1 Methods for steering system tests are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.
	2.2 Inspection/test results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is forwarded to persons for action in accordance with workplace procedures.

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3.	Carry out repairs	3.1 Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2 Adjustments to steering and suspension systems made during the repair are in accordance with manufacturer/component supplier specifications.
4.	Prepare vehicle/ equipment for customer and/or storage	4.1 Repair schedule documentation is completed.
		4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3 Final inspection is made to ensure work is to workplace expectations.
		4.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Repair of steering systems and equipment may include:

- component and/or system adjustments
- ball joints, struts, idler arms, steering boxes, steering columns, steering racks
- electronic controlled systems and two and four wheel steer
- power assisted steering

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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Safe operating procedures include but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Tools and equipment may include

- hand tools
- meters
- gauges
- testing equipment and devices
- including camber
- caster
- KPI and toe out on turns measuring systems
- load testing devices
- computerised diagnostic equipment
- shock absorber testers

Repair methods are to include:

- operational testing, electrical testing
- principles, angles and geometry of vehicle wheel alignment
- functional testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid levels, fluid leaks, air leaks, wear, alignment)
- adjustment of shock absorbers

Quality requirements are to include, but are not limited to:

- internal quality policy and standards and operations and procedures

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to steering systems and suspension operations
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices conditions

Materials may include:

- spare parts
- lubricants
- fluids
- cleaning materials

Suspension systems may be:

- gas
- hydraulic
- pneumatic
- mechanical or rubber suspension
- lateral and longitudinal arms
- independent suspension

- ball joints
- rose joints
- self-levelling device
- ride control
- height control

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting test results
- completing repair to a range of steering and suspension systems to manufacturer/component supplier requirements
- completing repairs within workplace timeframes
- vehicle/equipment presentation to workplace expectation

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S and environmental regulations/requirements, equipment, material and personal safety requirements
- operating principles of mechanical and power assisted steering systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- dangers of working with vehicles
- steering systems testing and adjusting procedures
- steering systems repair procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- select hand tools, loosing, hammering, apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the repair of steering systems
- equipment, hand and power tooling appropriate to the repair of steering systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 3	
Communicate ideas and information	Level 2	
Plan and organise activities	Level 3	
Work with others and in team	Level 3	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 2	

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

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ASRSSS0032B: 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	Prepare to checks motor vehicle front end system	1.1	Information is gained from customer outlining handling characteristics and history.
		1.2	Nature and scope of work requirements are identified and confirmed.
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
	Check wheels	2.1	The pressure in all tyres is checked, inflated or deflated to manufacturer's specification.
		2.2	Tyre 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	Wheels are checked for run-out using the correct instrument and proper procedures.
3.	Check front end system	3.1	The main parts of designated motor vehicle front-end system are correctly identified.
		3.2	Motor vehicle front end system is checked using appropriate maintenance principles, techniques, tools and equipment.
		3.3	The operating condition of shock absorbers are accurately checked and determined.

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		3.4	The steering is checked for return from directions, inconsistent handling effort and defective indicators.
		3.5	Front-end parts are visually checked and examined for looseness and wear to identify defective part (s).
		3.6	Springs are checked for sagging or breakage and brake caliper attaching bolts checked for looseness.
		3.7	The condition of wheel bearings is accurately determined and the correct adjustment and/or recommendations made, where necessary.
		3.8	Steering gear, pivot points and arms are tested and inspected for looseness, wear and bend.
		3.9	Motor vehicle front-end component identified as requiring further diagnosis, repair or adjustment are documented and reported appropriately.
4.	Complete documentation and service history documents	4.1	Service history is updated in accordance with workplace requirements.
		4.2	Job card is processed in accordance with workplace procedures
5.	Clean up area	5.1	All waste material are removed and disposed of.
		5.2	Area related to work activities is cleaned.
		5.3	Tools and equipment are cleaned, maintained and stored.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

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

Methods of testing include:

- 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

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid, hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices conditions

Safe operating procedures are to include, but are not limited to

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances, electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

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Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to:

- internal quality policy and standards and operations and procedures

Tools and equipment may include:

- hand tools
- tyre gauge and/or specialist tooling for removal/adjustment
- measuring equipment
- lifting equipment
- two head and four head wheel aligner

Materials may include:

- minor parts
- cleaning materials

Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to wheel alignment operations
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

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Steering checks to include:

- harshness
- noise
- binding
- excessive free play
- excessive backlash
- high point (tightness)

Front end parts to check include but not limited to:

- 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

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:

(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 the skills and knowledge covered by this unit.

During assessment the individual will:

- interpret and communicate operational information
- apply front-end systems inspection procedures and condition assessment
- apply safe working practices
- 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

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(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRSSS0011B 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
- diagnose vehicle wandering, pulling, hard steering and determine needed repairs
- measure vehicle riding height and determine needed repairs
- check and adjust front and rear wheel camber (where applicable) and determining needed repairs
- check and adjust caster (where applicable) and adjusting front wheel toe
- check tow (turning radius) and determine needed repairs
- check SAI (Steering Axis Inclination) KPI (King Pin Inclination) and included angle and determine needed repairs
- check or front wheel setback and determine
- needed repairs
- check front grade (sub-frame alignment and determining needed repairs

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(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

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

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

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.
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CRITCAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRSSS0042B: Carry out wheel alignment operations

Competency Descriptor: This unit identifies the competence required to carry out wheel alignment operations for light vehicles or heavy vehicles.

Competency Field: Steering and suspension system

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1	Carry out wheel alignment pre-checks	1.1	Information is gained from customer outlining handling characteristics and history.
		1.2	Nature and scope of work requirements are identified and confirmed.
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
		1.4	Vehicle/equipment tests are performed to confirm need for alignment.
		1.5	Vehicle wheel alignment pre-checks are carried out in accordance with manufacturer/component supplier procedures and workplace requirements.
		1.6	Customer is notified of any major problem(s) prior to rework being carried out.
2.	Perform vehicle wheel alignment.	2.1	Correct information is accessed and interpreted from manufacturer/component supplier specifications.
		2.2	Wheel alignment measuring equipment is connected to vehicle in accordance with manufacturer/component supplier specifications.
		2.3	Corrective adjustments/repairs are carried out in accordance with manufacturer/component supplier specifications.
		2.4	Vehicle/equipment is tested to confirm accuracy of adjustments according to manufacturer/component supplier specifications and customer requirements.
		2.5	Wheel alignment is completed without causing damage to any component or system.

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		2.6	Wheel alignment testing and adjustment is carried out according to industry regulations/guidelines, OH&S legislation, legislation and enterprise procedures/policies.
3.	Complete documentation and service history documents	3.1	Workplace documentation is completed and dealt with relevant to alignment outcomes.
		3.2	Service history is updated in accordance with workplace requirements.
		3.3	Before and after alignment measurements is documented and included in customer documentation.
		3.4	Job card is processed in accordance with workplace procedures.
4.	Clean up area	4.1	All waste material are 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

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Wheel alignment operations are to include one or more of the following systems:

- rear wheel drive, front wheel drive
- two and four wheel steer

Methods are to include:

- chassis/underframe alignment checks
- measurement and adjustment
- road testing (before and after adjustments)
- visual, aural and functional assessment (including: damage, corrosion, wear, measurement)
- alignment equipment operation

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid, hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice and workplace policies and practices conditions

Safe operating procedures are to include, but are not limited to

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances, electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to:

- internal quality policy and standards and operations and procedures

Tools and equipment may include:

- hand tools
- tyre gauge and/or specialist tooling for removal/adjustment
- mechanical and/or electronic wheel alignment equipment
- measuring equipment
- lifting equipment
- two head and four head wheel aligner

Materials may include:

- parts
- cleaning materials

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Communications are to include, but are not limited to:

- verbal and visual instructions and fault reporting and may include
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins
- memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to wheel alignment operations
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the alignment of a range of wheels in accordance with workplace and manufacturer/component supplier requirements
- accurately interpreting wheel alignment measurements
- completing wheel alignment within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment
- ASRSSS0011B Perform basic inspection of steering and suspension system
- ASRSSS0032B Carry out preliminary checks to motor vehicle front end

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- operating principles of steering geometry and wheel alignment
- wheel alignment procedures
- relationships between fault symptoms and component defects
- frame alignment checks
- wheel alignment system types and their construction
- pre-check procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- use of measuring tools and testing equipment
- use of hand tools and specialised equipment
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to wheel alignment operations
- equipment, hand and power tooling appropriate to wheel alignment operations
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 2	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

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

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ASRSSS0051B: 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.

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		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.	Prepare equipment for customer and/or storage	5.1	Work schedule documentation is completed.
		5.2	Final inspection is made to ensure safety features are in place.
		5.3	Final inspection is made to ensure work is to workplace expectations.
6.	Clean up area	6.1	All waste material is removed and disposed of.
		6.2	Area related to work activities is cleaned.
		6.3	Tools and equipment is cleaned for use or storage to workplace expectations.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Variables must include:

- dynamic and static balance
- steel and alloy rims

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

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Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

OHS requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- workplace first aid
- hazard control and hazardous materials and substances

Environmental requirements include but not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements include but not limited to:

- regulations including internal company quality policy and standards
- and e workplace operations and procedures

Statutory/regulatory authorities may include:

- local authorities administering acts
- regulations and codes of practice

Tools and equipment may include

- hand tooling
- meters
- gauges and testing equipment including:
  - static devices
  - dynamic balancing devices

Materials may include:

- spare parts
- cleaning materials

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Activities may include:

- 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 run out
- 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

Communications are to include but not limited to:

- verbal and visual instructions
- fault reporting including:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to balancing wheels and tyres
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately interpreting inspection results
- conducting balancing procedures in accordance with workplace and manufacturer/component supplier requirements
- completing balancing of wheels and tyres within workplace timeframes

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan to undertake a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with balancing equipment
- on road operating characteristics of wheels and tyres and associated components are understood
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- balancing procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to balancing wheels and tyres, including the use of measuring equipment, specialist tooling, computerised technology communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to balancing wheels and tyres
- equipment, hand and power tooling appropriate to balancing wheels and tyres
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances.

Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRSSS0091B: 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 Appropriate personal protective equipment is selected.
	1.6 Tools and equipment selected are consistent with the job requirements, checked for serviceability and any faults reported to supervisor.
	1.7 Materials/components selected are consistent with the job requirements 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.
	2.3 Work area is prepared for service/repair process according to workplace requirements.

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5.	Set up tools and equipment appropriate for wheel alignment operations	5.1 Regular tools/measuring devices suitable for wheel alignment are identified are sourced according to job requirements.
		5.2 Regular tools/measuring devices are set up safely and effectively to carry out processes where applicable.
		5.3 Warnings in relation to working with wheel alignment operations are set up.
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

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Specific requirements: one or more of the following systems:

- Rear wheel drive, front wheel drive.
- 2 & 4 wheel steer, tandem steer

OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- workplace first aid
- hazard control and hazardous materials and substances

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Sources of information/documents may include:

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

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust and clean-up management

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust and clean-up management

Tools and equipment may include:

- hand tooling
- meters
- gauges and testing equipment
- including static and dynamic balancing devices

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

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EVIDENCE GUIDE

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

(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

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment
- ASRCOR0091B Perform manual handling and lifting

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with balancing equipment
- 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

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

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(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's training package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances.
- Evidence of performance may be provided by team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
-

(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 GCTVET 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.

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ASRSTS0011A: Inspect and service steering systems

Competency Descriptor: This unit covers the competence required carry out the inspection and servicing of wheeled and tracked type steering systems and associated components in an automotive retail, service and/or repair context.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake inspection and servicing of steering systems and related components	1.1. Nature and scope of work requirements are identified and confirmed.
	1.2. OHS requirements, including regulatory requirements and personal protection needs are identified and confirmed.
	1.3. Procedures and information such as workshop manuals and specifications, and tool required, are sourced.
	1.4. Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures.
	1.5. Resources required for inspecting and servicing steering systems are sourced and support equipment is identified and prepared.
	1.6. Warnings in relation to working with wheeled and tracked vehicles are observed.
2. Conduct inspection and analyse results	2.1. Inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
	2.2. Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.
	2.3. Results are documented with evidence and supporting information and recommendation(s) made.

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		2.4.	Report is forwarded to appropriate persons for action in accordance with workplace procedures.
3.	Carry out servicing	3.1	Servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2	OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.
		3.3	Service report is completed and forwarded to appropriate persons.
4.	Prepare vehicle for customer and/or storage	4.1	Service schedule documentation is completed.
		4.2	Final inspection is made to determine that protective guards, safety features and cowlings are in place.
		4.3	Final inspection is made to determine that work is done to workplace expectations.
		4.4	Inspection is undertaken to determine that all instrumentation are working.
		4.5	Vehicle/equipment is cleaned for use or storage to workplace expectations.
		4.6	Job card is processed in accordance with workplace procedures.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Steering systems may be in:

- wheeled vehicles
- light vehicles
- motorcycles and outdoor power equipment

System components for inspection may include:

- wheel bearings
- ball joints
- rose joints
- struts
- idler arms
- steering boxes and columns
- electronic controlled systems
- two and four wheel steer and full hydraulic steering

Methods are to include:

- visual
- aural
- functional assessments including:
  - damage
  - corrosion
  - wear
  - electrical/electronics

OHS requirements are to be in accordance with legislation/regulations/codes of practice and workplace safety policies and procedures including:

- protective clothing and equipment
- use of tools and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- hazardous substances
- electrical safety
- machinery movement and operation
- manual lifting and shifting
- working in proximity to others and site visitors

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Emergency procedures related to this unit are to include, but are not limited to

- emergency shutdown and stopping of equipment operating safely in the event of fires
- workplace first aid requirements
- site evacuation-controlled steering systems components

Quality requirements are to include, but not limited to:

- regulations, including internal workplace quality policy and standards
- workplace operations and procedures
- Motor Vehicle Repairers Association (MRAJ)

Tooling and equipment may include

- hand tooling
- meters
- gauges
- hydraulic testing equipment and devices

Communications are to include but are not limited to:

- verbal and visual instructions and fault reporting and may include site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust and clean-up management

Statutory/regulatory authorities may include:

- international and local authorities administering acts
- ITA regulations and codes of practice

Materials may include

- lubricants
- cleaning materials

Sources of information/documents may include:

- verbal or written and graphical instructions
- signage
- work schedules/plans/specifications
- work bulletins, memos
- material safety data sheets
- diagrams or sketches
- safe work procedures related to the inspection and servicing of wheeled steering systems and associated components
- regulatory/legislative requirements pertaining to the automotive industry engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised workplace or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting service of a range of steering systems in accordance with the workplace and manufacturer/component supplier requirements
- accurately interpreting inspection results
- servicing of steering systems completed within workplace timeframes
- vehicle is presented to customer in compliance with Motor Vehicle Repairers Association (MVRA), ITA and workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled vehicles
- operating principles of mechanical and hydraulic/electronic steering systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)
- inspection procedures
- service procedures
- workplace quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and servicing of steering systems and associated components, including the use of electronic measuring equipment, computerised technology and communication devices and the reporting/documenting of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of steering systems and associated components
- equipment, hand and power tools appropriate to the inspection and servicing of steering systems and associated components
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's training package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite.
Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
Assessment is to comply with regulatory requirements and standards.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRSUS0011A: Inspect and service suspension systems

Competency Descriptor:

This unit covers the competence required to carry out the service of suspension systems and associated components in an automotive retail, service and/or repair context.

Competency Field: Automotive Service and Repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to inspect and service suspension systems and associated components	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 Procedures and information such as workshop manuals and specifications, and tools required, are sourced.
	1.3 Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures.
	1.4 Resources required for servicing suspension systems are sourced and support equipment and tooling are identified and prepared.
	1.5 Warnings in relation to working with wheeled equipment are observed.
2. Conduct inspection and analysis	2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
	2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is forwarded to appropriate persons for action in accordance with workplace procedures.

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3.	Carry out service	3.1	Service are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
		3.2	OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.
4.	Prepare vehicle/ equipment for use or storage	4.1	Service schedule documentation is completed.
		4.2	Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3	Final inspection is made to ensure work is to workplace expectations.
		4.4	Inspection is undertaken to determine that all instrumentation are working.
		4.5	Vehicle/equipment is cleaned for use or storage to workplace expectations.
		4.6	Job card is processed in accordance with workplace procedures.

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Suspension systems may be:

- gas
- hydraulic
- pneumatic
- mechanical and rubber suspension
- outdoor power equipment

Methods are to include:

- functional testing
- pressure testing
- measurement
- visual
- aural and functional assessments (including damage, corrosion, leakage, wear)
- adjustment of shock absorbers

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OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Systems may include

- lateral and longitudinal arms
- independent suspension
- ball joints
- rose joints
- self levelling device
- ride control
- height control and tracked type systems

Personal protective equipment is to include:

- that prescribed under legislation/ regulations/codes of practice and workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement,
- hazardous substances
- machinery movement and operation
- manual lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment operating safely in the event of fires
- workplace first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations including national standards
- internal company quality policy and standards
- workplace operations and procedures

Tools and equipment may include

- hand tools
- lifting equipment
- safety stands and supporting equipment
- measuring equipment
- power tools and testing equipment

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Materials may include

- spare parts
- lubricants and fluids
- cleaning materials

Communications are to include, but are not limited to

- verbal and visual instructions and fault reporting and may include
- site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the inspection and servicing of suspension systems
- regulatory/legislative requirements pertaining to the automotive industry
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the training package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- conducting the inspection and servicing a range of suspension systems in accordance with workplace and manufacturer/component supplier requirements
- accurately interpreting test results
- completing service of suspension system and associated components within workplace timeframes
- vehicle/equipment is presented to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties
- ASRCOR0051B Use and maintain workplace tools and equipment
- ASRCOR0091B Perform manual handling and lifting

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OHS regulations/requirements, equipment, material and personal safety requirements
- operating principles of suspension systems relevant to the qualification to which it is applied
- dangers of working with stored energy
- types and layout of service/repair manuals (hard copy and electronic)
- suspension system servicing procedures
- suspension system testing procedures
- workplace quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the inspection and service of suspension systems, including the use of measuring equipment, computerised technology, specialist tooling and testing devices communication devices, the reporting/documenting of results and diagnostic and specialised tools and equipment

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of suspension systems
- equipment, hand and power tooling appropriate to the inspection and servicing of suspension systems
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

- Assessment must satisfy the endorsed assessment guidelines of the automotive industry's Training Package.
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.
- Assessment may be applied under project related conditions and require evidence of process.
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances.
- Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.
  Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with regulatory requirements and standards.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRTRN0011B: Prepare for manual/automatic transmission service/repair

Competency Descriptor: This unit identifies the skills and knowledge required to prepare for manual and 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/prevent risk to self and others.
	1.5 Materials, tools and equipment are selected according to work instructions.
	1.6 Materials are safely handled and stored/located ready for application.
	1.7 Appropriate personal protective equipment selected 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.

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2.	Prepare lifting and supporting equipment, material/spare parts/consumables s for service/repair process	2.1	Equipment preparation is carried out to satisfy requirements of service/repair process.
		2.2	Material/spare parts/consumables preparation is carried out to satisfy requirements of service/repair process.
		2.3	Work area is prepared for service/repair process according to supervisor's instructions.
3	Set up tools and equipment appropriate for service/repair process	3.1	Tools/measuring devices suitable for application processes are identified to job requirements.
		3.2	Regular tools/measuring devices is set up safely and effectively to carry out processes.
4.	Clean up	4.1	Materials are stacked/stored for re-use or disposed of.
		4.2	Work area is cleared.
		4.3	Tools and equipment are cleaned, maintained and stored appropriately.

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RANGE STATEMENT

This unit applies to the processes carried out in preparing for manual and automatic transmission service/repair as per instructions.

Sources of information/documents may include:

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

Tools and equipment may include:

- hand tools
- meters
- gauges and testing equipment including static and dynamic balancing devices

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures and may include:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control
- hazardous materials and substances

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- MRAJ and workplace operations and procedures

Sources of information/documents may include:

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

Personal protective equipment is to include:

- that prescribed under legislation/regulations/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but are not limited to:

- the conduct of operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust and clean-up management

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Emergency procedures related to this unit are to include, but are not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements and site evacuation

Environmental requirements are to include but are not limited to

- waste management
- noise
- dust and clean-up management

EVIDENCE GUIDE

The evidence guide relates directly to the performance criteria and range statement for this unit and will inform and provide guidance for assessment of the unit in the workplace and/or training programme.

(1) Critical Aspects of Evidence

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

- interpreting and communicating operational information
- transmission/components service/repair procedures

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 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 and specification
- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner

(2) Pre-requisite Relationship of Units

- ASRCOR0011B Follow principles of occupational Health and safety in work environment
- ASRCOR0031B Plan a routine task
- ASRCOR0041B Perform routine housekeeping duties

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- vehicle/equipment safety requirements
- relevant manufacturer/company policies
- manual handling techniques
- personal safety procedures
- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with transmissions
- identification of application, purpose and operating principles
- types and layout of service/repair manuals (hard copy and electronic)
- service procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- prepare for service/repairs of manual/automatic transmission without causing damage to any component or system
- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal

(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

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(5) Method of Assessment

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.

Assessment may be applied under project related conditions and require evidence of process.

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

(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 GCTVET 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.

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ASRTRN0012B: Service manual transmission assemblies

Competency Descriptor:

This unit covers the competence required to inspect and service manual transmissions in an automotive retail, service and/or repair context.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to undertake the inspection of manual transmissions	1.1	Nature and scope of work requirements are identified and confirmed
		1.2	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced
		1.4	Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures
		1.5	Resources required for inspection of manual transmissions are sourced and support equipment is identified and prepared
		1.6	Warnings in relation to working with manual transmissions are observed
2.	Conduct inspection and analyse results	2.1	Inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications
		2.2	Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance
		2.3	Results are documented with evidence and supporting information and recommendation(s) made
		2.4	Report is processed in accordance with workplace procedures
3.	Prepare to service transmission	3.1	OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work

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		3.2 Procedures and information required are identified and sourced
		3.3 Resources required for servicing transmissions are identified and support equipment is identified and prepared
4.	Carry out service to transmission	4.1 All waste material is removed and disposed of.
		4.2 Area related to work activities is cleaned.
5.	Prepare equipment for use or storage	5.1 Service schedule documentation is completed
		5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place
		5.3 Final inspection is made to ensure work is to workplace expectations
		5.4 Equipment is cleaned stored to workplace expectations
		5.5 Job card is processed in accordance with workplace procedures

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Transmissions include:

- automatic and semi automatic transmissions power shift, front and/or rear wheel drive configurations
- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

Methods are to include:

- operational testing
- testing under operating conditions
- test bench testing,
- electrical testing
- visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

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

Emergency procedures related to this unit include not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

Quality requirements include, but not limited to regulations:

- internal workplace quality policy and standards operations and procedures

Tools and equipment may include:

- hand tools
- meters
- gauges
- load and pressure testing devices

Methods include:

- operational testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Methods should be applied under normal operating conditions

Safe operating procedures are to include, but are not limited to

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements include but not limited to:

- waste management
- noise
- dust and clean-up management

Regulatory authorities may include:

- local authorities administering acts, regulations and codes of practice (ITA)

Materials may include

- transmission fluids
- spare parts
- cleaning materials

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Communications include but not limited to:

- verbal and visual instructions and fault documenting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components
- regulatory/legislative requirements pertaining to automotive industry, including Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

On vehicle test/inspection/measuring to include:

- 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
- 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

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the assessment guidelines for the training package.

(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.

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

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

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(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

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(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRTRN0052B: Repair manual transmission

Competency Descriptor:

This unit covers the competence required to inspect and service manual transmissions in an automotive retail, service and/or repair context.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Prepare to undertake the inspection of manual transmissions	1.1	Nature and scope of work requirements are identified and confirmed
		1.2	OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work
		1.3	Procedures and information such as workshop manuals and specifications, and tooling required, are sourced
		1.4	Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures
		1.5	Resources required for inspection of manual transmissions are sourced and support equipment is identified and prepared
		1.6	Warnings in relation to working with manual transmissions are observed
2.	Conduct inspection and analyse results	2.1	Inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications
		2.2	Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance
		2.3	Results are documented with evidence and supporting information and recommendation(s) made
		2.4	Report is processed in accordance with workplace procedures
3.	Prepare to service transmission	3.1	OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work

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		3.2 Procedures and information required are identified and sourced
		3.3 Resources required for servicing transmissions are identified and support equipment is identified and prepared
4.	Carry out service to transmission	4.1 All waste material is removed and disposed of.
		4.2 Area related to work activities is cleaned.
5.	Prepare equipment for use or storage	5.1 Service schedule documentation is completed
		5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place
		5.3 Final inspection is made to ensure work is to workplace expectations
		5.4 Equipment is cleaned stored to workplace expectations
		5.5 Job card is processed in accordance with workplace procedures

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Transmissions include:

- automatic and semi automatic transmissions power shift, front and/or rear wheel drive configurations
- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

Methods are to include:

- operational testing
- testing under operating conditions
- test bench testing,
- electrical testing
- visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

Emergency procedures related to this unit include not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

Quality requirements include, but not limited to regulations:

- internal workplace quality policy and standards operations and procedures

Methods include:

- operational testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Methods should be applied under normal operating conditions

Safe operating procedures are to include, but are not limited to

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Environmental requirements include but not limited to:

- waste management
- noise
- dust and clean-up management

Regulatory authorities may include:

- local authorities administering acts, regulations and codes of practice (ITA)

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Tools and equipment may include:

- hand tools
- meters
- gauges
- load and pressure testing devices

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

Materials may include

- transmission fluids
- spare parts
- cleaning materials

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components
- regulatory/legislative requirements pertaining to automotive industry, including Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

Communications include but not limited to:

- verbal and visual instructions and fault documenting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

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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

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting diagnosis results
- conducting servicing of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- vehicle/transmissions presentation to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements
- equipment, material and personal safety requirements
- dangers of working with transmissions
- operating principles of automatic and semi automatic transmissions and their relationship to other systems
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers

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(3) Underpinning Knowledge and Skills (Cont'd)

Skills
The ability to: (Cont'd)

- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out servicing to automatic and semi-automatic transmissions and associated components
- equipment, hand and power tooling appropriate to carrying out servicing to automatic and semi-automatic transmissions and associated components
- activities covering mandatory task requirements
- specifications and work instructions

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(5) Method of Assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

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

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite
Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
Assessment is to comply with regulatory requirements,

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRTRN0062B: 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.

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	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

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment.

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

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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

EVIDENCE GUIDE

The evidence guide relates directly to the performance criteria and range statement for this unit and will inform and provide guidance for assessment of the unit in the workplace and/or training programme.

(1) Critical Aspects of Evidence

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

- interpreting and communicating operational information
- automatic transmission and drive train system removal/replacement procedures and condition assessment
- safe working practices

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

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

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(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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRTRN0092B: 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. Prepare to inspect semi automatic, automatic transmission	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling required, are sourced.
	1.4 Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures.
	1.5 Resources required for the inspection of transmissions are sourced and support equipment is identified and prepared.
	1.6 Warnings in relation to working with transmissions are observed.
2. Conduct inspection and analyse results	2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.
	2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is processed in accordance with workplace procedures.
3. Prepare to service transmission	3.1 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.

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		3.2 Procedures and information required are identified and sourced.
		3.3 Resources required for servicing transmissions are identified and support equipment is identified and prepared
4.	Carry out service to transmission	4.1 All waste material is removed and disposed of.
		4.2 Area related to work activities is cleaned.
5.	Prepare equipment for use or storage	5.1 Service schedule documentation is completed
		5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place
		5.3 Final inspection is made to ensure work is to workplace expectations
		5.4 Equipment is cleaned stored to workplace expectations
		5.5 Job card is processed in accordance with workplace procedures

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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Transmissions include:

- automatic and semi automatic transmissions power shift, front and/or rear wheel drive configurations
- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

Methods are to include:

- operational testing
- testing under operating conditions
- test bench testing,
- electrical testing
- visual, aural and functional assessment (including fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

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OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Methods include:

- operational testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Methods should be applied under normal operating conditions

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

Safe operating procedures are to include, but are not limited to

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit include not limited to:

- emergency shutdown and stopping of equipment
- extinguishing fires
- enterprise first aid requirements
- site evacuation

Environmental requirements include but not limited to:

- waste management
- noise
- dust and clean-up management

Quality requirements include, but not limited to regulations:

- internal workplace quality policy and standards operations and procedures

Regulatory authorities may include:

- local authorities administering acts, regulations and codes of practice (ITA)

Tools and equipment may include:

- hand tools
- meters
- gauges
- load and pressure testing devices

Materials may include

- transmission fluids
- spare parts
- cleaning materials

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Communications include but not limited to:

- verbal and visual instructions and fault documenting and may include:
  - site specific instructions
  - written instructions
  - plans or instructions related to job/task
  - telephones
  - pagers

Sources of information/documents may include:

- verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches
- safe work procedures related to the repair of automatic and semi-automatic transmissions and associated components
- regulatory/legislative requirements pertaining to automotive industry, including Design Rules
- engineer's design specifications and instructions
- organisation work specifications and requirements
- instructions issued by authorised enterprise or external persons

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- interpreting diagnosis results
- conducting servicing of a range of transmissions in accordance with workplace and manufacturer/component supplier requirements
- completing work within workplace timeframes
- vehicle/transmissions presentation to customer in compliance with workplace requirements

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements
- equipment, material and personal safety requirements
- dangers of working with transmissions
- operating principles of automatic and semi automatic transmissions and their relationship to other systems
- types and layout of service/repair manuals (hard copy and electronic)
- diagnostic procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

Skills
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to carrying out servicing to automatic and semi-automatic transmissions and associated components
- equipment, hand and power tooling appropriate to carrying out servicing to automatic and semi-automatic transmissions and associated components
- activities covering mandatory task requirements
- specifications and work instructions

(5) Method of Assessment

Assessment must satisfy the endorsed assessment guidelines of the automotive industry's Training Package

Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies

Assessment may be applied under project related conditions and require evidence of process

Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

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

Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

Application of competence is to be assessed in the workplace or simulated worksite. Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with regulatory requirements.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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

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ASRTRN0102B: Repair automatic transmission

Competency Descriptor: This unit identifies the competence required to carry out the repair, removal or replacement of automatic transmissions and/or associated components for light/heavy vehicles and outdoor power equipment.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Repair, removal and replacement automatic transmissions and/or associated components	1.1 Automatic transmission is repaired without causing damage to any component or system.
	1.2 Information is accessed from appropriate sources to enable this competency element to be carried out using approved methods and equipment, in accordance with manufacturer specifications.
	1.3 Repairs and adjustments to transmission components are carried out in accordance with manufacturer current specifications for methods, equipment used and tolerance.
	1.4 Appropriate workplace documentation is completed and dealt with relevant to repair, removal and replacement outcomes.
	1.5 All transmission system repairs and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

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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. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

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 and/or plant transmissions and/or outdoor power equipment (automatic)

Sources of information/documents may include:

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

OH&S practices must abide by:

- State/industry OH&S legislation
  Award provisions

Resources may include:

- hand tools, torque wrench, special tools for removal/adjustment
- pressure gauges, multimeters and tachometers
- measuring equipment, lifting equipment
- test bench

Methods include:

- operational testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Methods should be applied under normal operating conditions.

Specific requirements:

- Automatic transmissions, front and/or rear wheel drive configurations

Other variables may include:

- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

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EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines.

(1) Critical Aspects of Evidence

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

- interpreting and communicating procedural information
- transmission/components repair procedures followed

(2) Pre-requisite Relationship of Units

Service transmissions (automatic)

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- removal, replacement and repair procedures
- construction and operation of automatic transmissions (relevant to application)
- measuring and testing procedures
- relevant technical information
- equipment safety requirements
- vehicle/plant safety requirements
- relevant manufacturer/enterprise policies
- manual handling techniques
- personal safety procedures

Skills
The ability to:

- access, interpret and apply technical information
- use relevant tools and equipment
- identify faults in transmission system
- repair, remove and replace automatic transmissions/components
- test and adjust transmissions/components
- apply manual handling methods
- apply personal safety procedures
- maintain customer records

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(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.

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.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Solve problems	Level 2	
Use technology	Level	

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

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ASRTRN0112B: Inspect, service and/or repair clutch assemblies and associated operating system components

Competency Descriptor: This unit covers the competence required to carry out the service and/or repair of clutch assemblies and associated components.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to undertake servicing and repair of clutch assemblies	1.1 Nature and scope of work requirements are identified and confirmed.
	1.2 OH&S requirements, including regulatory requirements and personal protection needs are observed throughout the work.
	1.3 Procedures and information such as workshop manuals and specifications, and tooling, are sourced.
	1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.
	1.5 Technical and/or adjustment requirements for inspection, servicing and repair of clutch assemblies are sourced and support equipment is identified and prepared.
	1.6 Warnings in relation to working with clutch assemblies are observed.
2. Test clutch and assembly systems	2.1 Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.
	2.2 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.
	2.3 Results are documented with evidence and supporting information and recommendation(s) made.
	2.4 Report is forwarded to persons for action in accordance with workplace procedures.

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3.	Carry out service and/or repair	3.1 Methods for service and/or repair are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.
		3.2 Adjustments made during the service are in accordance with manufacturer/component supplier specifications.
4.	Prepare vehicle/equipment for use or storage	4.1 Service schedule documentation is completed.
		4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.
		4.3 Final inspection is made to ensure work is to workplace expectations.
		4.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.
		4.5 Job card is processed in accordance with workplace procedures.

RANGE STATEMENTS

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and contexts) may also be included.

Servicing to include:

- lubrication
- adjustments and operational tests
- visual inspection and records

Specific requirements may include:

- clutch assemblies, including:
  - single or multi-plate
  - wet and dry construction
  - standard and heavy duty types
  - actuating mechanisms
  - including mechanical
  - hydraulic and pneumatic assisted

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Other variables may include:

- centrifugal
- semi-centrifugal
- dog
- one-way
- cone
- over centre
- slip
- two-stage construction
- steering clutches

Repair methods and sequence are to include:

- isolation of fault(s)
- dismantling
- inspection and evaluation
- replacement of components parts
- assembly
- completion of operational tests and records

Faults to include:

- slipping clutch
- clutch not fully releasing

Materials may include

- lubricants
- spare parts
- cleaning materials

Tooling and equipment may include

- hand tooling
- meters
- gauges
- load testing devices

Communications are to include, but are not limited to

- verbal and visual instructions and fault documenting including site specific instructions
- written instructions
- plans or instructions related to job/task
- telephones and pagers

OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures including:

- protective clothing and equipment
- use of tooling and equipment
- workplace environment and safety
- handling of material
- use of fire fighting equipment
- enterprise first aid
- hazard control and hazardous materials and substances

Personal protective equipment is to include:

- that prescribed under legislation/regulation/codes of practice
- workplace policies and practices

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Safe operating procedures are to include, but not limited to:

- operational risk assessment and treatments associated with vehicular movement
- toxic substances
- electrical safety
- machinery movement and operation
- manual and mechanical lifting and shifting
- working in proximity to others and site visitors

Emergency procedures related to this unit are to include but may not be limited to

- emergency shutdown and stopping of equipment
- extinguishing fires
- workplace first aid requirements
- site evacuation

Environmental requirements are to include but are not limited to:

- waste management
- noise
- dust
- clean-up management

Quality requirements are to include, but are not limited to

- regulations
- internal company quality policy and standards
- workplace operations and procedures

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

(1) Critical Aspects of Evidence

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

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques, appropriate to the circumstances
- completing preparatory activity in a systematic manner
- identification of application, purpose and operating principles
- conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications
- application of full repair sequence as per the Range Statement to a clutch assembly relative to the qualification being sought
- interpreting test results
- completing service and repair of the clutch assembly and associated components within workplace timeframes
- vehicle/equipment presentation to customer in compliance with workplace requirements

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- dangers of working with wheeled and track equipment
- the identification of application, purpose and operation
- identification of component parts to include physical, fluid, gases and heat generation
- types and layout of service/repair manuals (hard copy and electronic)
- clutch testing procedures
- clutch servicing procedures
- clutch repair procedures
- work organisation and planning processes

Skill
The ability to:

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage and the documenting/recording of results

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(4) Resource Implications

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the service and/or repair of clutch assemblies and associated components
- equipment, hand and power tooling appropriate to the service and/or repair of clutch assemblies and associated components
- activities covering mandatory task requirements specifications and work instructions

(5) Method of Assessment

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment may be applied under project related conditions and require evidence of process
- Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

(6) Context of Assessment

- Application of competence is to be assessed in the workplace or simulated worksite
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment is to comply with regulatory requirements

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Use technology	Level 2	

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

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ASRTRN0122B: Repair constant velocity joints (CV) assembly and/or associated operating system components

Competency Descriptor: This unit identifies the competence required to repair constant velocity joints (CV) assembly and or associated operating system components for light/heavy vehicles, plant, motorcycles, and outdoors power equipment and marine.

Competency Field: Automotive Service and Repair

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Remove and replace repair constant velocity joints (CV) assembly and or associated operating system components	1.1 Removal and replacement of constant velocity joints (CV) assembly and or is achieved without causing damage to any component or system.
	1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	1.3 All removal and replacement procedures carried out in accordance with manufacturer specifications.
	1.4 All activities are carried out in accordance with industry regulations/guidelines.
2. Repair constant velocity joints (CV) assembly and or associated operating system components	2.1 Repair of constant velocity joints (CV) assembly and or associated operating system components is achieved without causing damage to any component or system.
	2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
	2.3 All repair/removal and replacement procedures carried out in accordance with manufacturer specifications and tolerances.
	2.4 All activities are carried out according to industry regulations/guidelines.

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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, ABS rings

Work activities:

- removing/repairing/replacing drive and half shaft
- removing/repairing/replacing universal and constant-velocity (CV) joint from vehicle
- removing/repairing/replacing ring and pinion gears and differential case
- removing/repairing/replacing limited slip differential
- removing/repairing/replacing axle shaft
- removing/repairing/replacing four-wheel drive components

Checks may include:

- wear
- distortion
- tensions
- misalignment
- leaks
- other related malfunctions

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EVIDENCE GUIDE

(1) Critical Aspects of Evidence

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

- constant velocity joints (CV) assembly and or associated operating system components repair/removal and replacement procedures

During assessment the individual will:

- demonstrate safe working practices at all times
- demonstrate the ability to repair constant velocity joints (CV) assembly and or associated operating 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 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
- ASRTRN0031A Service clutch CV joints and final drive assemblies and/or associated components

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- constant velocity joints (CV) assembly and or associated operating system components construction and operation (relevant to application)
- relevant repair/removal, replacement and adjustment procedures
- equipment safety requirements
- vehicle safety requirements
- relevant manufacturer/enterprise policies
- personal protection procedures

Skills
The ability to:

- access, interpret and apply technical information
- identify faults in constant velocity joints (CV) assembly and comp
- remove and replace constant velocity joints (CV) assembly and components
- test system/components for correct operation
- use relevant tools and equipment
- maintain customer records
- apply personal protection 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:

- 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

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

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

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BSBSBM0012C: 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. Source information on the nature of entrepreneurship	1.1 Concepts associated with entrepreneurship are researched and defined clearly.
	1.2 Factors, which influence entrepreneurship in and outside of Grenada, 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 discussed and clearly presented.
	1.5 Differences between wage employment and entrepreneurial ventures are correctly stated.
2. Identify and assess the entrepreneurial characteristics	2.1 Relevant research is carried out and required entrepreneurial characteristics identified and discussed.
	2.2 Entrepreneurial characteristics identified are assessed and ranked.
	2.3 A thorough 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 provide assistance to the entrepreneur in terms of business risk and uncertainties of the future are identified and discussed.
3. Develop self-assessment profile	3.1 Self-assessment tools and methods are identified and utilized effectively to determine the personal potential of the future entrepreneur.
	3.2 Creativity, problem-solving techniques and principles are acquired and demonstrated to solve business related problems.

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		3.3	Feedback from others for the purpose of becoming aware of blind spots and for reinforcing or changing existing perceptions of strengths/ weaknesses is obtained appropriately.
4.	Craft a personal entrepreneurial strategy	4.1	A profile of past accomplishments and preferences in terms of life and work styles is identified and documented.
		4.2	The future business objectives in terms of development plans, business goals and strategies are identified, established and documented.
		4.3	Competencies for effective management and leadership skills are identified and opportunities for acquiring these skills sought.
		4.4	Principles of effective goal setting are examined and discussed.
		4.5	A goal setting framework is developed for the business and strategies for formulated business goals are applied.
		4.6	Potential problems, obstacles and risks management strategies are identified and discussed.
		4.7	A risk register is developed for the business.
		4.8	The procedures for measuring results are documented.
		4.9	Milestones for reviewing progress are established and tied to specific dates on a calendar.
		4.10	Resources needed are determined and sources of help to obtain them identified.
		4.11	The entrepreneurial process is reviewed periodically and goals revised, as necessary.

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RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between organizations. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit.

Concepts may include those associated with:

- risk
- entrepreneurship
- macro-screening
- micro-screening
- competition
- wage employment
- self employment

Influencing factors may include**:**

- market conditions
- markets – demand/supply
- global trends
- level of economic activities
- funding
- economic stability
- social stability
- resources availability

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

Pitfalls may include:

- proceeding without effective planning
- failure to adhere to procedures outlined in business plan

Enentrepreneurship may involves:

- planning and starting a business
- taking advantage of a business opportunity
- assuming the risks of a business venture
- providing some kind of innovation

Management competencies may include:

- commitment
- determination
- perseverance
- orientation towards goals
- taking initiative
- accepting personal responsibility

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Risk register include:

- a description of each risk and its potential consequences (operational and strategic);
- factors that may impact upon the likelihood and consequence of the risk;
- an assessed risk grade – Low, Medium, High or Extreme;
- whether the risk grade is acceptable;
- actions and controls that currently exist to mitigate risks;
- early warning factors and upward reporting thresholds

Goals established should be:

- specific
- measurable
- attainable
- realistic
- time bound

Business concept may be defined as:

- a business opportunity with a complete description of the :
  - target market
  - an estimation of the size of the target market
  - the core benefit of the product
  - a description of how the concept will generate revenue
  - product
  - once a concept is developed, it is incorporated into a business plan

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EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

To obtain competence it is essential that candidate demonstrate the ability to:

- conduct a research and source information on the nature of entrepreneurship
- assess the entrepreneurial characteristics
- examine the framework for a self-assessment
- conduct a self- analysis of the entrepreneur profile
- develop a personal entrepreneurial strategy
- identify data collection for self-assessment process
- obtain feedback on setting goals
- develop a business concept and outline goals

(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
- Strength Weakness Opportunity and strength (SWOT) Analysis

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
- plan and execute activities
- use computer technology

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(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.
- Samples of business planning
- actual appropriate workplace or simulated environment

(5) Method of Assessment

In order to ensure consistency in performance it may be necessary to collect evidence across a range of clients and in a variety of methods.

Assessment methods may include:

- Practical demonstration
- Cases study
- Written question
- Project
- Third party
- portfolio of evidence
- interview
- individual activities/projects/assignments
- reflection of required attitudes

(6) Context of Assessment

Competency in this unit is demonstrated by performance of all stated performance criteria, with particular attention to the critical aspects of evidence and the knowledge and skills elaborated in the Evidence Guide, and within the scope of the Range Statement.

Assessment of the performance requirements in this unit should be undertaken either on the job or off-the job as stated in the method of assessment. Assessment should reinforce the integration of the critical employability skills for the particular level of competency at the end of this unit.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 2	
Communicate ideas and information	Level 1	
Plan and organise activities	Level 2	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 1	
Solve problems	Level 2	
Use technology	Level 1	

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

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CRICOM0011B: Apply language and communication skills

Competency Descriptor: This unit provides skills and knowledge required to apply the rules of spoken and written English to enhance the development of language and communication skills necessary to communicate effectively in a wide range of contexts.

Competency Field: Language and Communication

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Apply grammar and usage	1.1 The different parts of speech are identified correctly.
	1.2 The different tenses are identified and used appropriately.
	1.3 Knowledge of the different types of nouns is demonstrated.
	1.4 The correct forms of verbs are identified and used appropriately.
	1.5 Different kinds of phrases are identified.
	1.6 Knowledge of the types of sentences is demonstrated.
	1.7 Sentences are constructed showing correct use of agreement between subjects and verbs.
	1.8 Sentences are constructed showing agreement between pronouns and the antecedents.
	1.9 Sentences are constructed using different subordinates clauses.
	1.10 Sentences are constructed using verbs in their active and passive voice.
	1.11 Knowledge of the correct use of other parts of speech is demonstrated.
	1.12 Sentence faults are identified and corrected.

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2.	Apply the rules for mechanics, vocabulary and spelling	2.1	Knowledge of rules governing the use of capitalization, punctuation and abbreviation is demonstrated.
		2.2	Punctuation marks are used correctly in written exercises.
		2.3	Abbreviations are identified and used as related to skill area.
		2.4	Capitalization used correctly in written sentences.
		2.5	The spelling rules are identified and applied.
		2.6	Word meanings are interpreted through context clues and industry standards.
3.	Develop writing skills	3.1	Essential characteristics of a paragraph are identified.
		3.2	Paragraph from given information are developed.
		3.3	Main points in a written document are correctly identified and expanded.
		3.4	Summarization skills are developed.
		3.5	Types of written communication such as letters, memoranda and reports are identified.
		3.6	Reports, letters and memoranda are coherently written using appropriate sentence construction techniques, mechanics, vocabulary/terminology and, where required, industry jargon.
		3.7	Job-related forms are completed to the required standards.
		3.8	Written activities are completed within specified time.
		3.9	References are acknowledged as required.
4.	Develop oral and visual communication skills	4.1	The purposes of oral and visual communication are correctly stated.
		4.2	Methods of non-verbal communication are identified and used where appropriate.
		4.3	Appropriate tools and devices are used to communicate effectively in the oral mode.

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		4.4	Subject matter is identified and orally or visually communicated.
		4.5	Listening skills are developed and applied to aid effective communication in the workplace.
		4.6	Effective interpersonal communication skills are applied in the work environment.
5.	Use information system	5.1	The functions of a library are identified.
		5.2	Manual/electronic databases of catalogues are correctly used.
		5.3	A variety of media is used to access information.

RANGE STATEMENT

The Range Statement explains the scope and context of the unit of competency allowing for differences between workplaces. The scope of variables chosen for training and assessment requirements will depend on the particular work situation,

The following variables may be present:

Grammar and usage may include:

- parts of speech
- parts of a sentence
- types and functions of sentences (e.g. simple and compound)
- phrases and their functions
- subordinate clauses (adverbial adjectival, noun)
- rules for subject-verb agreement (focus on indefinite pronoun as subject; collective noun as subject)
- pronouns and their antecedents
- verbs: action, linking, regular, irregular
- tenses: present, past, future, present perfect, past perfect, future perfect
- adjectives and adverbs
- sentence faults: fragments and run-on

Mechanics, vocabulary and spelling may include:

- rules governing the use of capitalization, punctuation and abbreviation
- punctuation marks: end marks, commas, semi-colon and colon, quotation marks, dashes and parentheses, hyphen, apostrophes
- Abbreviations: symbols, measurements, time, number
- spelling words and interpretation of their meanings through context clues and word analysis, prefixes, suffixes, root (focus on words used in skill area)

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Interpersonal communication skills include:

- goal setting
- effective communication practice
- good customer service
- oral and written presentation techniques

Communication skills may include:

- effective listening skills (eliciting feedback, developing objectivity, learning to empathize
- kinds of communication barriers
- clear logical reasoning
- identification and evaluation of propaganda techniques
- formal report/speech
- purposes/goal for written, visual and oral communication
- methods of non-verbal communication
- oral/written instructions
- use of telephone, fax machine, advertisement
- use of statistics and graphical presentation differentiating between facts and opinions

A report:

- is used to denote any required written communication that goes beyond a simple recording of facts (such as completion of a shift production schedule) to include level of analysis and/or research
- may be of a technical nature and it should be based on the writer having technical knowledge. Conclusions and/or recommendations, where required, are based on research or analysis of data
- includes graphs, charts, tables, etc. as required
- analysis and conclusions should be consistent with the level of skill and knowledge of the employee working at that level

Other parts of speech may include:

- adjectives
- adverbs
- preposition
- conjunction

Writing skills may include:

- methods of paragraph development – chronological, order of importance, spatial order, comparison or contrast
- paragraphs with – topic sentences and supporting sentences, unity and coherence,
- linking expressions and connectives,
- sentence length and structure
- different types of reports and letters – styles and format
- filling out of job-related forms
- writing of resume
  preparation of notices

Information systems include:

- functions of library and documentation centre
- use of catalogues in libraries/documentation centres to locate books
- use of dictionaries and encyclopaedias
- use of technical handbooks, manuals, directories and maps
- use of newspapers and periodicals

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Visual communication skills may include:

- body language
- gestures
- facial expressions
- sign language
- signs
- graphs, charts and so on

EVIDENCE GUIDE

Competency is to be demonstrated by the effective use of communication skills 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 applicable to the individual's work.

During assessment the individual will:

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

(2.) Pre-requisite Relationship of Units

- Nil

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(3.) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- the eight parts of speech
- grammar and usage
- types of sentences
- parts of sentences
- types of paragraphs
- rules of mechanics, vocabulary and spelling
- writing styles (technical or non-technical)
- communication skills
- information systems
- reports including graphs, charts, tables

Skills
The ability to:

- communicate concepts in writing
- identify main points
- expand main points
- apply language and communication skills (orally and in writing) in the workplace

(4.) Resource Implications

The candidate will be provided with:

- 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:

- answer questions put by the assessor
- communicate in the work environment (oral assessment)
- 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.

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(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 GCTVET 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.

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CRIMAT0011B: Perform basic mathematical computations

Competency Descriptor: This unit is designed to strengthen basic mathematical skills. It explores basic mathematical principles and techniques which are applicable to various work applications. Topics include rounding off, estimating, comparing, converting, and computing whole numbers, fractions, and decimals, perimeters, volume. 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.	Perform addition, subtraction, multiplication and division, of whole numbers using the rules of order of operations	1.1	Concepts of the number system, basic rules of operation and symbols are correctly demonstrated.
		1.2	Simple calculations are performed using four basic rules, addition, subtraction, multiplication and division of whole numbers.
		1.3	Related trade application problems involving whole number are solved using number system.
2.	Solve problems involving vulgar fractions.	2.1	Concepts are understood and simple calculations are performed involving multiplication, division and reducing fractions; including mixed numbers.
		2.2	Simple calculations are performed involving addition, subtraction and order like fractions, unlike fractions and mixed numbers.
		2.3	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
3.	Solve related skill problems involving decimal fractions.	3.1	Concepts are understood and simple calculations are performed involving use of decimal equivalent table.
		3.2	Concepts involving rounding off of number are understood and simple decimal calculations are performed.

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		3.3	Answers to related trade application problems involving decimal fractions are provided with appropriate units to a degree of accuracy commensurate with related application.
4.	Use ratio and proportion to solve related skill problems	4.1	The concepts of ratio and proportion are understood; comparison of like quantities using ratios and comparison of unlike quantities using rates demonstrated.
		4.2	Simple calculations using ratio are performed involving whole numbers, fractions, and decimal numbers.
		4.3	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application
5.	Use percentage to solve related skill problems	5.1	An understanding of the concepts of percent calculation is demonstrated.
		5.2	Simple calculations converting from percentage to its decimal equivalent and vice versa are performed.
		5.3	Simple calculations using percentages are performed involving whole numbers.
		5.4	Simple calculations converting from percentages to fractional equivalent and vice versa are performed.
		5.5	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application
6.	Perform simple calculation of perimeters and areas of applications in related trade	6.1	Concepts of calculating perimeters and areas are understood.
		6.2	Calculations using squares and rectangles are performed involving related applications.
		6.3	Calculations using circles (circumferences and areas) are performed involving related applications.
		6.4	Calculations using trapezoids are performed involving related applications.
		6.5	Calculations using cones are performed involving related applications.
		6.6	Calculations using cylinders are performed involving related applications.

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		6.7	Calculations using triangles (hypotenuse) are performed involving related applications.
		6.8	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
7.	Calculate volume of applications in related trade	7.1	Concepts of calculating volume are understood.
		7.2	Simple calculations using squares and rectangles cross section are performed.
		7.3	Simple calculations using conical cross section are performed.
		7.4	Simple calculations using cylindrical cross section are performed.
		7.5	Simple calculations using triangular cross section are performed.
		7.6	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
8.	Apply angular measurement between 0 and 360 degrees with the use of a protractor	8.1	Concepts of calculating angles are understood.
		8.2	Protractor is used to solve simple problems in related trade situations.
		8.3	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.

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RANGE STATEMENT

The Range statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between applications. It relates to the unit as a whole and facilitates holistic assessment. It allows for different work situations that may affect performance in all trade areas.

The following variables may be present with training and assessment depending on the work situation, needs of the candidate.

Whole Number calculations are:

- Reading and writing whole numbers
- Addition of whole numbers
- Subtraction of whole numbers
- Multiplication of whole numbers
- Division of whole numbers
- Long division
- Rounding
- Roots and order of operations
- Solving application problems

Decimal calculations are:

- Reading and writing decimals
- Rounding decimals
- Adding decimals
- Subtracting decimals
- Multiplying decimals
- Dividing decimals
- Writing fractions as decimals

Skills may be demonstrated in relation to:

- measurement
- fundamentals of general mathematics
- statistical application (Basic tables, graphs)
- ratio and proportion
- estimation
- calculations with fractions and decimals
- interpretation of mathematical statements and formulae
- interpretation of numbers and arithmetic operations

Multiplying and dividing fractions are:

- Identifying fractions
- Mixed numbers
- Factors
- Writing a fraction in lowest terms
- Multiplication of fractions
- Applications of multiplication
- Dividing fractions
- Multiplication and division of mixed numbers

Adding and subtracting fractions are:

- Adding and subtracting like fractions
- Least common multiple
- Adding and subtracting unlike fractions
- Adding and subtracting mixed numbers
- Order relations and the order of operations

Percentage calculations are:

- Definition and examples
- Percents and fractions
- The percent proportion
- Identifying the parts in a percent problem
- Using proportions to solve percent problems
- The percent equation
- Applications of percent
- Simple interest
- Compound interest

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Ratio and Proportion calculations are:

- Ratios and rates
- Proportions
- Solving proportions
- Applications of proportions

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
-

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EVIDENCE GUIDE

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

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

To be deemed competent the candidate must:

- Perform the operations of addition, subtraction, multiplication a division, on whole numbers using the rules of order of operations.
- Multiply, divide and reduce fractions; including mixed numbers.
- Add, subtract and order like fractions, unlike fractions and mixed numbers.
- Read and write fractions.
- Add, subtract, multiply, divide and convert decimals to fractions.
- Compare like quantities using ratios, compare unlike quantities using rates, set up and solve proportions.
- Calculate percent. Convert from percent to its decimal equivalent, fractional equivalent, and vice versa. Solve interest problems using percent.
- Solve application problems, including, but not limited to interest, commission, sales tax, and discount.
- Take responsibility for the quality of own work.
- Perform computations in accordance with standard principles.
- Perform computations accurately.

(2.) Pre-requisite Relationship of Units

- Nil

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(3.) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- the four arithmetic operations with whole numbers, positive fractions, positive decimals, and positive and negative integers
- statistics and probability
- the concepts of mean, median, and mode of data sets
- analyze data and sampling processes for possible bias and misleading conclusions
- use of addition and multiplication of fractions routinely to calculate the probabilities for compound events
- conceptually understanding and working with ratios and proportions
- computation of percentages
- pie and the formulas for the circumference and area of a circle
- letters for numbers in formulas involving geometric shapes and in ratios to represent an unknown part of an expression
- measurement and calculations
- costing relative to the trade applications
- numbers and arithmetic operations
- calculations with fractions and decimals
- estimation and measurement
- basic statistics (data, tables, graphs and sales)
- basic mathematical statements and formulae
- basic operations in simple geometry

Skills
The ability to:

- read and interpret drawings and symbols
- 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 should be provided with:

- all relevant tools, equipment, materials, procedure and documentation required

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(5) Method of Assessment

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

- observation
- written questioning
- examination of assessee's portfolio/CV
- supporting statement from senior personnel
- examples of work 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

Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement.

Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment.

As a minimum, assessment must be conducted through oral and/or written response in solving appropriate mathematical problems.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ETERNE0072A: Apply occupational health and safety regulations, codes and practices in the workplace

Competency Descriptor: This unit specifies the mandatory requirements of occupational health and safety and how they apply to the various electro technology work functions. It encompasses responsibilities for health and safety, risk management processes at all operative levels and adherence to safety practices as part of the normal way of doing work.

Competency Field: Renewable and Management of Energy

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
1. Prepare to enter a work area	1.1 Work area access permits are obtained from appropriate personnel according to established procedures.
	1.2 Safe work methods for controlling risk obtained, read and understood prior to undertaking a work activity.
	1.3 Preparations for electrical and non-electrical isolation are carried out to prevent creation of hazards from loss of machine/system/process control according to established procedures.
	1.4 Tools and equipment needed for the work are checked for safety and correct functionality according to established procedures and regulatory requirements.
2. Apply safe working practices.	2.1 Safe work methods for controlling risk are followed accurately.
	2.2 Workplace procedures for dealing with accidents, fires and emergencies are followed according to work procedures and scope of responsibility and competencies.
3. Follow workplace procedures for hazard identification and risk control	3.1 Hazards are identified and control measures implemented and monitored through active participation in the consultation process with employer and other employees.
	3.2 Hazards in the work area are recognised and reported to appropriate personnel according to established procedures.
	3.3 OHS records of incidents are completed in accordance with regulatory requirements and established procedures.
	3.4 Workplace instructions and training are followed accurately within established procedures.

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RANGE STATEMENTS

This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to each of the following:

- Relevant Occupational Health and Safety legislation, regulations and codes of practice related to hazards present in the industry and particular workplace
- Accepted industry work procedures and the specific safety procedures and work instructions for particular workplace.

Hazards may include:

- poor ventilation of area for storing batteries
- high voltage areas

Safe work practices may include:

- Safe electrical practices, which may include:
- appropriate grounding
- use of trained personnel
- appropriate over current devices

Personal protective equipment may include:

- gloves
- safety helmet
- steel toed boots
- masks

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EVIDENCE GUIDE

(1) Critical Aspects and Evidence

Evidence shall also comprise:

- a representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function, and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

    - implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement encompassing:

        - apply sustainable energy principles and practices as specified in the performance criteria and range statement
        - demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that Registered Training organization (RTOs) provide a percentile graded result for the purpose of regulatory or licensing requirements
        - demonstrate an appropriate level of skills enabling employment
        - conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
        - demonstrated consistent performance across a representative range of contexts from the prescribed items below:

- applying OHS practices in the workplace including:

    - preparing to enter the workplace including, the use of work permits and clearances and isolation permissions
    - understanding and following risk control safe work methods
    - applying work procedures and instructions as they apply to risk control measures
    - dealing with accidents and emergencies within the scope of responsibility
    - participation in consultation processes, identifying hazards and implementing and monitoring control measures
    - dealing with unplanned events

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- Occupational Health and Safety to an extent indicated by the following aspects:
  - the basic legal requirements covering occupational health and safety in the workplace encompassing:
    - underlying principles of OH&S
    - general aims and objectives of the relevant state or territory legislation relating to OH&S
    - employer and employee responsibilities, rights and obligations.
    - major functions of safety committees and representatives
    - powers given to Occupational Health and Safety Inspectors
    - housekeeping and potential hazards in relation to improper housekeeping
    - selecting appropriate personal protective equipment (PPE) given hazardous situations
    - the work environment encompassing:
    - typical hazards associated with a range of work environments
    - procedures used to control the risks associated with these hazards
    - principles of risk assessment / management and state the purpose of each
    - hierarchy of OH&S hazard control measures
    - required documentation for risk assessment

Skill
The ability to:

- identify typical manual handling injuries and the effect they can have on lifestyle
- identify situations that may cause manual handling injuries
- apply correct procedures for lifting and carrying to prevent manual handling injuries
- identify hazardous substances and dangerous goods
- classify chemicals as hazardous substances and/or dangerous goods
- carry out requirements for labelling of chemicals in the workplace
- follow safe storage procedures for chemicals
- define purpose of and interpret material safety data sheet (MSDS)
- work at heights encompassing:
  - dangers associated with working on ladders and scaffolds
- identify work area as a height risk and use appropriate safety equipment to prevent a fall
- select an appropriate ladder for a given situation and perform a safety check before use
- use precautions that should be taken when ascending and working off a ladder
- use precautions that should be taken when working on and around a scaffold and elevated platforms
- use confined spaces encompassing:
  - hazards associated with working in a confined space
- identify workplace situations that could be classified as a confined space
- use control measures for working in a designated confined space

- identify physical and psychological hazards encompassing:
  - short and long term effects of excessive noise and techniques to avoid damage to

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Underpinning Knowledge and Skills (cont'd)

Knowledge
Knowledge of:

- commonly used workplace safety signs
- workplace emergencies that pose a threat to health and safety and suitable procedure for an emergency workplace evacuation
- appropriate fire extinguisher for a given type of fire
- requirements for the location, mounting and maintenance of portable fire extinguishers
- basic process of fighting a fire
- importance of safe premises, buildings and security in an industrial setting and the consequences of non- compliance
- standard work procedure

Skill
The ability to:

hearing due to excessive noise
  - effects of vibration on the human body and work practices to protect against vibration
  - effects of thermal stress on the human body and work practices to protect against thermal stress
  - effects of ultraviolet (UV) radiation on the human body and work practices to protect against UV radiation
  - dangers associated with laser operated equipment and tools and suitable protective measures to overcome the danger
  - occupational overuse syndrome, how it occurs and means to overcome it
  - factors that cause stress in the workplace, symptoms of a person suffering from stress and personal stress management techniques
  - detrimental effects and dangers of drug and alcohol use in the workplace

- work safely with electricity encompassing:
  - effects of electric shock on the human body
  - common causes of electrical accidents
  - precautions that can minimise the chance of electric shock (earthing, extra low voltage, fuses, circuit breakers and residual current devices – RCDs)
  - protection offered by a residual current device (RCD)
  - need for ensuring the (safe) isolation of an electrical supply
  - appropriate method of removing an electric shock victim from a live electrical situation

- use life support - CPR in the workplace encompassing:
  - First Aid.
  - responsibilities of the First Aider
  -

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Underpinning Knowledge and Skills (cont'd)

Skill
The ability to:

- priorities of first aid management for any accident or injury
- procedures required at an accident scene
- legal and ethical issues, which may impact on the management of care
- 'Duty of Care'.

- examination of a casualty for injuries
  - effect of cardio pulmonary arrest on the body
  - managing simulated conditions of: airway obstruction; respiratory arrest and cardio pulmonary arrest, single and two-person cardio pulmonary resuscitation (CPR)
  - signs and symptoms of an altered level of consciousness management of simulation of a casualty with an altered level of consciousness
  - signs and symptoms of shock
  - management of simulation of a casualty in shock

(4) Resource Implications

The following resources should be made available

- first aid manual and kit, stretchers and medical/first aid facility
- organization health and safety policies and procedures
- personal protective equipment
- "patient(s)" for assimilation
- mannequins

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(5) Method of Assessment

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Methods of assessment should include:

- practical demonstration
- questioning
- workplace document
- training document

(6) Context of Assessment

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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.

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ITICOR0011B: 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

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.
	1.4	Access codes are correctly entered.
	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.

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		2.8	Inconsistencies 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 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	Retrieved data report or information conformed to required format.
		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	Tools to achieve the desired format and layout are correctly identified, accessed and used.
		5.4	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.

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		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.
		6.6	Wear and faults are identified are promptly reported to the appropriate personnel.
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.

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RANGE STATEMENT

This unit applies to activities associated with essential operations linked to using and maintaining basic computer equipment.

Work environment but not limited to:

- equipment
- furniture
- cabling
- power supply

Equipment:

- install supplied computer
- install supplied peripherals

Input devices but not limited to:

- keyboard
- mouse
- scanner
- microphone
- camera

Data:

- textual
- numerical
- graphical

Software systems include but not limited to:

- 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
- external media
- personal PC

Maintenance:

- cleaning: enclosures, screen, input devices, output devices
- checking cables, etc.

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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 and use on the equipment.
- Use document layout and data format tools.
- Locate and access data.
- Use file operations.
- Manipulate input devices.
- Key-in and format reports.
- Access to the internet.
- Close down computer system

(2) Pre-requisite Relationship of Units

- Nil

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(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
- close down computer system appropriately

(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.

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(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 GCTVET 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.

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MEMCAC0012B: Perform technical computations (general)

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

Competency Field: Calculations and Computations

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Apply the fundamentals of general mathematics	1.1	Concepts of whole numbers are understood and calculations are performed involving practical applications.
		1.2	Concepts of common fractions are understood and calculations are performed involving practical applications.
		1.3	Concepts of decimal fractions are understood are understood and calculations are performed involving practical applications.
		1.4	Concepts of percentages are understood are understood and calculations are performed involving practical applications.
		1.5	Concepts of graphs: bar and line are understood are understood and calculations are performed involving practical applications.
2.	Apply the fundamentals of measurements	2.1	Concepts of precision, accuracy and tolerance are understood and calculations are performed involving practical applications.
		2.2	Concepts of measurement units are understood and calculations are performed involving practical applications.
		2.3	Application of steel rules and vernier callipers are understood and calculations are performed involving practical applications.

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		2.4	Applications of micrometers are understood and calculations are performed involving practical applications.
		2.5	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
3.	Apply the fundamentals of algebra	3.1	Concepts of algebra operations are understood and calculations are performed involving practical applications.
		3.2	Concepts of simple equations are understood and calculations are performed involving practical applications.
		3.3	Concepts of ratio and proportion are understood and calculations are performed involving practical applications.
		3.4	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
4.	Apply the fundamentals of plane geometry	4.1	Concepts of plane geometry are understood and calculations are performed involving practical applications.
		4.2	Concepts of angular measure are understood and calculations are performed involving practical applications.
		4.3	Concepts and applications of triangles are understood and calculations are performed involving practical applications.
		4.4	Concepts and applications of polygons are understood and calculations are performed involving practical applications.
		4.5	Concepts and applications of circles are understood and calculations are performed involving practical applications.
		4.6	Concepts and applications of cones are understood and calculations are performed involving practical applications.
		4.7	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
5.	Apply the fundamentals of trigonometry	5.1	Concepts of trigonometric functions are understood and calculations are performed involving practical applications.
		5.2	Concepts of trigonometric functions with right angles are understood and calculations are performed involving practical applications.

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		5.3	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.
6.	Use the principles of computed measure to solve problems	6.1	Concepts of computed measure are understood and computations are performed involving the calculation of areas of common polygons using practical applications.
		6.2	Concepts of computed measure are understood and computations are performed involving the calculation of areas of circles, sectors, segments and ellipses using practical applications.
		6.3	Concepts of computed measure are understood and computations are performed involving the calculation of volumes of prisms and cylinders, surface areas and weights using practical applications.
		6.4	Numerical answers are provided with appropriate units to a degree of accuracy commensurate with related application.

RANGE STATEMENT

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. All problems should have appropriate applications depending on the workplace.

Fundamentals of advanced mathematics in practical applications may include:

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

Data may be:

- generated from readings taken
- computer generated

Applications may include computation of:

- pressure
- volume
- temperature
- heat
- speed
- density
- mass
- force
- efficiency

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Interpretation of charts and graphs would usually extend to:

- simple histograms
- control charts
- pie charts
- line graphs

Steel rules, vernier callipers and micrometer applications may include:

- measurements that do not fall on rule graduations
- reading decimal-inch measurements on steel rule
- reading metric measurements on steel rule
- reading measurements on an English (imperial) vernier calliper
- reading measurements on a metric vernier calliper
- reading measurements on an English (imperial) micrometer
- reading measurements on a metric micrometer

Areas for application may include:

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

Calculations may be performed using:

- manual applications
- calculator
- tables
- computer software

Fundamentals of trigonometry may include:

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

Fundamentals of plane geometry may include practical applications of :

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

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Fundamentals of algebra may include:

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

Computed measures may include:

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

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

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

(1) Critical Aspects of Evidence

During assessment the individual will:

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

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(2) Pre-requisite Relationship of Units

- Nil

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

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

Skills
The ability to:

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

(4) Resource Implications

The candidate will be provided with:

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

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(5) Method of Assessment

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

- observation
- written questioning
- examination of assessee's portfolio/CV
- supporting statement from section engineer, supervisor or equivalent
- examples of installation activities to which applicant has contributed, or worked on
- evidence of credit for any off-job training related to this unit
- examples of authenticated assessments and/or assignments from formal education courses self assessment reports

(6) Context of Assessment

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

CRITICAL EMPLOYABILITY SKILLS

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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 1	
Work with others and in team	Level 1	
Use mathematical ideas and techniques	Level 2	
Solve problems	Level 2	
Use technology	Level 1	

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

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MEMCOR0101B: Prepare basic engineering drawing

Competency Descriptor: This unit deals with the skills, knowledge and attitudes 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	All data necessary to produce the drawing is identified and collected.
		1.3	Drawing requirements are confirmed with relevant personnel and timeframes for completion are established.
2.	Prepare or make changes to engineering drawing	2.1	Drafting equipment is selected appropriate to the drawing method chosen.
		2.2	Drafting principles are applied to produce a drawing that is consistent with standard operating procedures within the enterprise.
		2.3	All work is undertaken safely and 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.

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RANGE STATEMENT

The Range Statement explains the scope and context of the unit of competency allowing for differences between workplaces. The scope of variables chosen for training and assessment requirements will depend on the particular work situation.

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

Drawing records may include:

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

Consultations may include reference to appropriate personnel including:

- technical personnel
- supervisors
- manufacturers
- suppliers
- contractors
- customers

Alphabet of line:

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

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

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

Specifications may be obtained from:

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

This unit applies to any of the full range of engineering disciplines:

- mechanical
- electrical/electronic
- fabrication

Drawing instruments, equipment and supplies may include :

- drafting kit/instruments
- blue prints
- drawings/modules/photographs
- computer aided drafting designs

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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

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 centre lines

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

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(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 engineering drawings and their applications
- constructing plane geometry, loci and ellipse
- procedure for producing an initial drawing
- procedure for changing an existing drawing
- drafting principles to be applied to the production/changing of a drawing
- standards to which the drawings is to be produce
- the persons responsible for checking and approving drawing

Skills
The ability to:

- estimate measurements
- read and interpret working drawings
- prepare basic engineering drawing
- measure accurately
- communicate effectively
- use drafting equipment appropriate to the drawing method chosen
- obtain all relevant requirements, information specifications necessary to produce the drawing
- produce/change the drawing to conform with the relevant standard
- produce the components parts list with the relevant details
- handle and store the approved drawing and parts list
- undertake numerical operation, geometry and calculations formulae within the scope of the unit

(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

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(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 GCTVET 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	

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MEMCOR0122C: Write technical reports (basic)

Competency Descriptor: This unit applies to the skills and knowledge necessary to write reports effectively in a wide range of different contexts in the metal engineering and maintenance industry.

Competency Field: Communication

ELEMENT OF COMPETENCY		PERFORMANCE CRITERIA	
1.	Apply grammar and usage	1.1	Knowledge of the types and functions of sentences are demonstrated.
		1.2	Different kinds of phrases are identified.
		1.3	Sentences are constructed using different subordinates clauses.
		1.4	Sentences are constructed showing correct use of agreement between subject and verb.
		1.5	Sentences are constructed showing agreement between pronouns and the antecedents.
		1.6	The correct forms of verbs are identified and appropriately used.
		1.7	Different tenses are identified and appropriately used.
		1.8	Knowledge of the correct use of adjectives is demonstrated.
		1.9	Sentences are constructed showing verbs in their active and passive voice.
		1.10	Sentences faults are identified and corrected.
2.	Apply mechanics vocabulary and spelling	2.1	Knowledge of rules governing the use of capitalization, punctuation and abbreviation is demonstrated.
		2.2	Punctuation marks are used correctly in written exercises.
		2.3	Abbreviations are identified and used as related to skill area.

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		2.4	Words are spelt and their meanings interpreted through context clues and industry standards.
3.	Write technical Reports	3.1	Reports are written using appropriate terminology/relevant jargons where required.
		3.2	Reports are written using paragraph development techniques.
		3.3	Reports are coherent, adequately developed and based on an analysis or research undertaken.
		3.4	Main points are identified and expanded in report.
		3.5	Conclusions are based on the facts and recommendations are made if required.
		3.6	Reports are completed within specified time.
		3.7	References are acknowledged as required.

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RANGE STATEMENT

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

Reports may be of a technical nature and should be based on the writer having technical knowledge.

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

Reports include graphs, charts, tables, etc. as required.

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

Grammar and usage may include:

- types and functions of sentences
- phrases and their functions
- subordinate clauses (adverbial adjectival, noun)
- subject and verb (focus on compound subjects, indefinite pronoun as subject collective noun as subject)
- pronouns and their antecedents
- verbs – action, linking, regular, irregular
- tenses- present, past, future, present perfect, past perfect, future perfect
- adjectives and adverbs
- sentence faults – fragments and run-on

Mechanics, vocabulary and spelling may include:

- rules governing the use of capitalization, punctuation and abbreviation
- punctuation marks: end marks, commas, semi-colon and colon, quotation marks, dashes and parentheses, hyphen, apostrophes
- Abbreviations – symbols, measurements, time, number
- Spelling of words and interpretation of their meanings through context clues and word analysis, prefixes, suffixes, root (focus on words used in skill area)

Communication skills may include:

- good listening skills
- effective listening skills (eliciting feedback, developing objectivity, learning to empathize
- kinds of communication barriers
- clear logical reasoning
- identification and evaluation of propaganda techniques
- formal report/speech

Writing skills may include:

- methods of paragraph development – chronological, order of importance, spatial order, comparison or contrast
- paragraphs with: topic sentences and supporting sentences, unity and coherence,
- linking expressions and connectives,
- sentence length and structure
- different types of reports

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EVIDENCE GUIDE

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

(1) Critical Aspects of Evidence

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

During assessment the individual will:

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

(2) Pre-requisite Relationship of Units

- MEMCOR0131A Undertake interactive work place communication

(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- grammar and usage
- mechanics, vocabulary and spelling
- writing styles (technical or non-technical)
- communication skills
- information systems
- reports including graphs, charts, tables

Skills
The ability to:

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

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(4) Resource Implications

The candidate will be provided with:

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

(5) Method of Assessment

The candidate will be required to:

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

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

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

(6) Context of Assessment

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

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

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CRITICAL EMPLOYABILITY SKILLS

Three levels of performance denote level of competency required to perform a task. These levels do not relate to the GCTVET 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 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.

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MEMFAB0051B: 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 OH&S requirements are identified and adhered to in accordance with application tasks and workplace environment
	1.3 Materials are correctly prepared using appropriate tools and techniques.
	1.4 Materials are correctly assembled/aligned to meet specifications as required.
	1.5 Distortion prevention measures are identified and appropriate action taken as required.
	1.6 Heating equipment is assembled and set up safely and correctly in accordance with standard operating procedures.
	1.7 Correct and appropriate consumables are selected and prepared.
	1.8 Ensure that the relevant safety equipment including fire extinguisher are in place
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.

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		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.

Location/condition:

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

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)
- specific types of silver solder and brazing rods

Types of welding joints:

- fillet weld
- lap weld
- butt weld
- single and multi-run

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Welding position:

- flat
- vertical
- horizontal
- overhead

Work activities:

- measuring
- marking
- grinding
- lifting
- welding
- cutting
- aligning
- shaping
- filing
- general machining
- swaging
- reaming

Materials:

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

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
- removal of excess slag

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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

- Nil

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(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:

- follow safety 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.

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(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 GCTVET 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.

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MEMFAB0111B: Perform basic welding using manual metal arc welding process (MMAW)

Competency Descriptor:

This unit deals with the skills, knowledge and attitudes required to effectively perform welding using basic manual arc welding processes and 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 for welding	1.1 Weld requirements are identified from specifications and/or drawings.
	1.2 Material is correctly prepared using appropriate tools, equipment and technique.
	1.3 Materials are assembled/aligned to specification where required.
2. Select welding machine settings and electrodes	2.1 Welding machine and electrodes are identified against pre determined welding procedures and specifications and/or technical drawings.
	2.2 Selection of welding machine and electrodes are done in consultation with workplace procedures or supervisor's instruction.
3. Assemble and set up welding equipment	3.1 Welding equipment is assembled and set up safely and correctly in accordance with standard operating procedures.
	3.2 Test runs undertaken and verified in accordance with specifications.
4. Identify distortion prevention measures	4.1 Distortion prevention measures are identified.
	4.2 Appropriate action taken to minimise and rectify distortion.

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5.	Carry out manual metal arc procedures	5.1	Manual metal arc welding is carried out according to a standard that meets industry regulations/guidelines, WHS requirements, legislation and enterprise policy/procedures.
		5.2	Welds are deposited correctly in flat, horizontal and vertical can position and to specifications.
		5.3	Distortion, preventative action taken where required.
		5.4	Joints are cleaned to specifications using correct and appropriate tools and techniques.
6.	Inspect welds	6.1	Weld joints are visually inspected against specifications.
		6.2	Weld defects are identified.
7.	Correct faults	7.1	Defects are removed with minimum loss of sound metal using correct and appropriate techniques and tools.
		7.2	Correct remedial action taken and appropriate techniques and tools used.
8	Clean up	8.1	Materials that can be reused is collected and stored.
		8.2	Waste and scrap is removed following workplace procedures.
		8.3	Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.
		8.4	Operator maintenance is completed in accordance with manufacturer/component supplier specification and worksite procedures.

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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. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Manual metal arc welding (MMAW) would be carried out using a range of material for heavy or light fabrication.

The person would work under supervision or within a team environment using predetermined standards of quality, safety, work and welding procedures and the skills applied to a range of fabrication activities.

Remedial action using thermal processes may include oxyacetylene and air arc equipment.

Hand tools to include:

- chipping hammer
- ball pein hammer
- wire brushes
- measuring tape
- steel rule
- files
- cold chisels
- tin snips
- centre punch
- scriber
- pliers
- adjustable wrenches
- allen keys
- vice grips
- slip joint pliers
- vice grip clamp
- divider
- compass
- screwdrivers

Protective clothing and equipment:

- safety boots
- coverall
- goggles
- dust mask
- safety helmet
- leggings/sleeves
- welding helmet
- fire extinguisher
- leather coat/apron
- air plugs/air muffs

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Work activities may include:

- measuring
- marking
- cutting
- filing
- levelling
- hammering
- squaring
- straightening metal

Preparation of materials may include:

- preheating
- setting up of jigs
- fixtures
- clamps etc.

Materials used may include carbon steel Material:

- low carbon steel plate up to 10 gauge
- low carbon steel plate up to 7mm
- steel and galvanised pipes up to 50mm

Weld procedures may include

- amperage setting
- earthing
- electrode flux condition etc.

Joint preparation:

- lap joints
- vee joints
- butt joints
- tee joints

Condition for satisfactory weld:

- pre-heating
- arc strike
- travel speed
- electrode angle
- arc dynamic/electrical stability

Location/condition:

- workshops
- plants
- in the field
- confined spaces
- elevated positions

Machine attachments:

- welding leads
- grounding clamp
- electrode holder

Welding type may include:

- fillet weld
- lap weld
- butt weld

Welding machines:

- AC and DC arc welding plant - electrical and portable engine driven

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Welding position may include:

- flat
- vertical up and down
- horizontal

EVIDENCE GUIDE

Competency is to be demonstrated by the effective use of the manual arc welding process 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 manual metal arc welding all process or other competencies 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 perform manual arc and/or gas metal arc welding in the flat, horizontal and vertical position and to specifications
- demonstrate correct procedures in setting up and shutting down manual arc welding equipment
- communicate information about 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

(2) Pre-requisite Relationship of Units

- Nil

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(3) Underpinning Knowledge and Skills

Knowledge
Knowledge of:

- workplace and equipment safety requirements including relevant OH&S legislation and regulations
- metal classification
- welding technique
- welding processes
- manual welding equipment identification, transportation and storage
- hand tools and equipment
- materials /consumables relative to perform routine manual arc and/or gas metal arc welding
- manual handling and lifting
- measurement
- drawings, sketches and instructions
- types of electrodes and their applications
  manual metal arc welding procedures

Skills
The ability to:

- work safely to instructions
- communicate effectively
- interpret related drawings and instructions
- use power tools and hand tools
- identify/select material
- identify/select welding processes
- handle material, tools and equipment safely
- measure relative to welding processes
- identify/select materials relative to manual arc and/or gas metal arc welding
- perform manual metal arc welding processes

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(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
- practical demonstration

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.

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CRITICAL EMPLOYABILITY SKILLS

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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	

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