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PART 1 OF 2

AIDS HELPLINE: 0800-0123-22 Prevention is the cure

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GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

No. 556 **10 May 2002**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY
NATIONAL QUALIFICATIONS FRAMEWORK
Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Primary Agriculture

Registered by NSB 01, Agriculture and Nature Conservation, publishes the following qualifications for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification. The full qualification can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 3 June 2002.*** All correspondence should be marked **Standards Setting – SGB for Primary Agriculture** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 482 0907

SAMUEL B.A. ISAACS
EXECUTIVE OFFICER

Title: NATIONAL CERTIFICATE IN FARMING, NQF 2

Field: Agriculture and Nature Conservation

Sub-field: Primary Agriculture

Level: 2

Credits: 157

RATIONALE

The range of typical learners that will enter this qualification will vary and includes:

- School leavers wishing to enter the primary agricultural sector;
- Complete novices wishing to enter the primary agricultural sector, i.e. individuals who are beneficiaries of the land reform processes;
- Learners in possession of different levels of practical experience in farming operations, which will be assessed through Recognition of Prior Learning; and
- Learners may come from both genders.

The learner will engage in all farming activities relevant to farming operations within a specific context, namely horticulture, agronomy and animal husbandry. The farming activities will be determined by the agricultural commodity, which is produced.

National processes such as the land reform processes and the acquisition of land by individuals who were previously excluded from such land ownership created a huge need in terms of relevant training. Individuals will benefit from such learning as they will receive entrance into a career path where they will be enabled to generate their own income either by establishing their own farming operation or be employed as farm operators.

In many cases, communities will benefit from such endeavours as agricultural commodities will be available within a specific community. Furthermore, the opportunity to trade commodities in joining SADC countries, could be explored.

PURPOSE OF THE QUALIFICATION

A learner assessed as competent against this qualification will be able to perform the necessary technical skills within the context of either agronomy, horticulture or animal husbandry as applicable to the agricultural commodity. The learner will be able to operate as part of the operational team.

In the case of the farm owner, the learner will be able to execute basic business skills and develop as a Small, Micro and Medium Enterprise.

In addition they will be well positioned to extend their learning and practice into other areas of agricultural commodities, or to strive towards agricultural standards and practice at higher levels.

Competent qualifying learners in this qualification will produce quality agricultural products whereby enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.

ACCESS TO THE QUALIFICATION
Open access.

ASSUMPTIONS OF LEARNING

It is assumed that a learner entering a programme leading to this qualification has achieved numeracy, literacy and technical skills pertaining to agricultural activities equivalent to NQF 1.

EXIT LEVEL OUTCOMES AND ASSOCIATED ASSESSMENT CRITERIA
On achieving this qualification the learner will be able to:

Outcome
- Compile and implement a basic business plan with a short-term focus, which includes a basic sales plan and basic budgeting plan. This plan will be specific to his/her own context of operation and agricultural commodities, whether horticulture, agronomy or animal husbandry.

Associated Assessment Criteria

- A short-term business plan, which is specific to the context of operation and the agricultural commodity(ies), is compiled and implemented. The business plan includes a basic marketing plan and basic budgeting plan.

Outcome
- Utilise unsophisticated and/or manual technology and solve problems within a specific context (either horticulture, or agronomy, or animal husbandry) and appropriate to a commodity(ies) of own choice.

Associated Assessment Criteria

- Problems specific to the utilisation, care and maintenance of technology are identified and solved appropriately.

Outcome
- Understand and apply operational safety and hygiene standards applicable to the industry and market, taking into account the level of operational requirements.

Associated Assessment Criteria

- Safety and hygiene standards applicable to the industry and market are explained and applied.

Outcome
- Be aware of and apply applicable legislation.

Associated Assessment Criteria

- Applicable legislation is named and applied.

Outcome
- Distinguish between different production systems appropriate to a specific commodity.

Associated Assessment Criteria

- Different production systems appropriate to a specific commodity are distinguished.

Outcome
- Monitor and support disaster management and conservation management.

Associated Assessment Criteria

- Disaster management and conservation management are supported and monitored.

Outcome
- Collect data and information.

Associated Assessment Criteria

- Correct information and data is collected in an appropriate format.

Outcome
- Demonstrate a basic understanding of and apply basic principles of communication within the farm operations.

Associated Assessment Criteria

- Communication with fellow workers, supervisors and other colleagues are clear and effective.

Outcome
- Work effectively with others and operate as part of a team by applying basic team-work principles.

Associated Assessment Criteria

- Basic team-work principles are applied.

Outcome
- Understand and apply basic ethical principles, values, and norms applicable to the workplace with specific reference to relationships with co-workers, clients, him- or herself as well as the environment.

Associated Assessment Criteria

- Basic ethical principles, values and norms and how they influence the agricultural process, interaction with co-workers and clients, as well as work related conflict situations are explained. Furthermore, the effect of his or her work activities on family and social life are described and appropriate steps to improve relationships are taken. Failure and/or success are dealt with constructively.

Outcome
- Identify and access basic resources.

Associated Assessment Criteria
- Agricultural basic resources are identified and accessed timeously and effectively.

Outcome

- Apply basic principles of entrepreneurship. (Should the learner choose to include this elective in the learning programme)

Associated Assessment Criteria

- An own farming unit is operated as an own business by applying basic entreprenuerial skills with the necessary support.

NOTE: Assessment should be specific to the area of operation (either horticulture or agronomy or animal husbandry) and the agricultural commodities of the learners own choice.

INTERNATIONAL COMPARABILITY

In the case of the primary agricultural context, especially at NQF 2, it is difficult to compare the qualification and unit standards because of the vast differences in the level of mechanisation, the level of literacy of the farm operators, climate and other conditions as well as the variety in commodities.

However, New Zewland and Australian qualifications and unit standards were sourced and evaluated for applicability. Also, during two separate study visits, agricultural practices were compared in the Netherlands and France. But it was clear that at this level, there is no real comparability because of the reasons above.

INTEGRATED ASSESSMENT

Integrated assessment at the level of the qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is relevant and coherent in relation to the purpose of the qualification.

Integrated assessment must judge the quality of the observable performance, but also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will be of a more practical nature while others will be of a more theoretical nature. The ratio between action and interpretation is not fixed, but varies according to the type and level of qualification.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors need:

- A minimum of 2 (two) years' practical experience;
- Competence in the generic assessor unit standards; and
- Technical competence at, at least one NQF level above the assessee.

RECOGNITION OF PRIOR LEARNING

This qualification may be achieved in part or in whole through the recognition of prior learning. Credit will be given to learning, which has already been acquired, through the appropriate process of assessment.

For example:

- Learners who have acquired skills and competencies in this qualification through for instance experience in the industry will be assessed against the unit standards the qualification comprises of prior to entering learning. Credits will be allocated to those unit standards and exit level outcomes in which the learner is found competent. The outstanding unit standards will then be sequenced according to an appropriate learning programme.
- Should a new entrant into the industry wish to enter this learning programme, recognition will be given to all appropriate learning acquired through the schooling system.
- In terms of fundamental unit standards, competencies could be acquired through life experience.

Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to take.

ARTICULATION POSSIBILITIES

A learner will be able to progress vertically from one category to another, namely horticulture, agronomy or animal husbandry. He/she will be able to do this without re-doing the whole qualification, but by only completing the necessary elective unit standards.

Furthermore, the learner can move from being employed as a farm worker to being an entrepreneur, running his/her own farming operation.

The learner will also be able to articulate with other occupations within the agricultural pharmaceutical operations such as laboratory assistant.

MODERATION OPTIONS

Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA.
Any institution offering learning that will enable achievement of this qualification, or assessment against this qualification must be accredited as a provider with the relevant ETQA.
Moderation of assessment will be overseen by the relevant ETQA according to agreed ETQA procedures.

Therefore anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution which is accredited by the relevant ETQA.

MATRIX OF QUALIFICATIONS DESIGN

National Certificate in Farming NQF Level 2

	Fundamental	NLRD ID	Level	Credit	Core	NLRD ID	Level	Credit	Elective	NLRD ID	Level	Credit
	Communication Skills		2	20	Demonstrate a basic understanding of the primary agricultural industry		2	2	Perform routine maintenance on installations		3	5
1	Maintain and adapt oral communication (C/01)	8962	2	5								
2	Access and use information from texts (C/02)	8963	2	5								
3	Write for a defined context (C/03)	8964	2	5								
4	Use Language and communication in occupational learning programmes (S/16)	8973	2	5								
	Mathematical Literacy		**2**	**16**								
1	Demonstrate understanding of rational and irrational number, and number systems, within the context of relevant calculations	8982	2	3	Operate and perform routine maintenance on equipment and tools		3	5	Control weed		2	7
2	Use mathematics to investigate and monitor the financial aspects of personal and community life	8983	2	2								
3	Apply basic knowledge of statistics in order to investigate life and work related problems	9009	2	3								
4	Measure, estimate and calculate physical quantities and explore describe and represent geometrical relationships in 2-dimensions in different life or workplace	9008	2	3								

MATRIX OF QUALIFICATIONS DESIGN

National Certificate in Farming NQF Level 2

5	Work with a range of patterns and functions to solve problems	9007	2	5								
	Apply sound financial principles		2	3	Operate in a Team	8420	2	4	Establish and cultivate hortcultural crop		2	15
	Understand and apply basic ethical principles, values, and norms applicable to the workplace		3	3	Maintain Occupational Health and Safety	8493	2	2	Provide horticultural crop with appropriate nutrition		2	7
					Demonstrate and understanding of HIV/AIDS and its implications	8493	2	4	Handle holticultural crop during the harvesting and post-harvesting processes		2	15
					Perform quality checks		2	3	Store holticultural crop		2	7
					Maintain Hygiene measures		2	3	Apply basic principles of agricultural finances		3	5
					Identify pests and diseases relevant to the agricultural commodity		2	4	Transport agricultural commodities		2	2
					Demonstrate a basic understanding of agricultural production systems		2	5	Support disaster and conservation management		2	5
					Collect, use and Communicate data that relate to agricultural commodity		2		Apply basic entrepreneurial principles to an agricultural operation		3	15
		TOTAL		**42**				**32**				**83**
											TOTAL	**157**

No. 557 **10 May 2002**

Title: NATIONAL CERTIFICATE IN FARMING, NQF 4

Field: Agriculture and Nature Conservation

Sub-field: Primary Agriculture

Level: 4

Credits: 131

RATIONALE

The range of typical learners that will enter this qualification will vary and includes:

- Farm operators who wish to progress to the level of junior farm manager;
- Learners in possession of different levels of practical experience in farming operations, which will be assessed through Recognition of Prior Learning;
- School leavers (Grade12) from agricultural schools; and
- Learners may come from both genders.

The learner will engage in all farming management and production activities relevant to farming operations within a specific context, namely horticulture, agronomy and animal husbandry. The farming activities will be determined by the agricultural commodity, which is produced.

Requests and expressions of need for this qualification, coming from the broad, but also specific farming communities forms the basis for the development of this qualification.

This qualification will form the basis for learners to extend their learning and practice into other areas of agricultural commodities within a context of either agronomy, or horticulture or animal husbandry as applicable to the agricultural commodity, or to strive towards agricultural management standards and practices at higher levels.

Competent qualifying learners in this qualification will oversee quality agricultural products whereby enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.

PURPOSE OF THE QUALIFICATION

A learner assessed as competent against this qualification will have the necessary competence to monitor, implement, co-ordinate, plan and control the agricultural processes as applicable to the agricultural commodity within a context of either agronomy, horticulture or animal husbandry. Furthermore, the learner will be able to take responsible decisions based on a sound understanding of the principles of management, human resources management, agricultural production and technical knowledge and skills. The learner will also be able to adhere to and implement according to the level of management relevant quality, safety and hygiene standards as applicable within the industry.

In addition they will be well positioned to extend their learning and practice into other areas of agricultural commodities within a context of either agronomy, or horticulture or animal husbandry as applicable to the agricultural commodity, or to strive towards agricultural management standards and practice at higher levels.

Competent qualifying learners in this qualification will oversee quality agricultural products whereby enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.

ACCESS TO THE QUALIFICATION
Open access.

ASSUMPTIONS OF LEARNING

It is assumed that a learner entering a programme leading to this qualification has achieved numeracy, literacy and communication equivalent to NQF 2 and technical skills pertaining to agricultural activities equivalent to NQF 3.

EXIT LEVEL OUTCOMES AND ASSOCIATED ASSESSMENT CRITERIA

On achieving this qualification the learner will be able to:

Outcome
- Interpret and manage a sub-section of a pre-set business plan.

Associated Assessment Criteria
- Agricultural finances are managed within the framework of a pre-set business plan.
- Cash flow is managed.
- Information in the business plan is correctly interpreted and all activities and processes are monitored accordingly.

Outcome
- Understand, interpret and apply technology within a specific context (either horticulture, or agronomy, or animal husbandry) and appropriate to a commodity(ies) of own choice. This could be applicable to both primary and secondary agricultural processes.

Associated Assessment Criteria
- Problems specific to the utilisation, care and maintenance of technology are identified and solved appropriately.

Outcome
- Understand, implement and apply safety and hygiene standards to comply with applicable legislation and industry requirements.

Associated Assessment Criteria

- Principles and requirements of safety and hygiene standards are explained.
- Safety and hygiene standards applicable to the industry and market implemented and monitoring processes managed.

Outcome
- Understand, apply and monitor different production systems appropriate to an agricultural commodity(ies).

Associated Assessment Criteria
- Characteristics and requirements of production systems are explained.
- Production systems are applied and monitored.

Outcome
- Implement applicable legislation.

Associated Assessment Criteria
- Applicable legislation is explained and implemented.

Outcome
- Identify possible disasters and apply the necessary precautions.

Associated Assessment Criteria
- Disasters are identified timeously and the necessary and correct precautions are applied.

Outcome
- Collect and apply data and information.

Associated Assessment Criteria
- Correct information and data is collected in an appropriate format and applied in the decision-making process.

Outcome
- Demonstrate an understanding and adhere to basic marketing principles, taking into account quality standards and the export market.

Associated Assessment Criteria
- An elementary marketing plan is compiled based on the field of expertise.

Outcome
- Understand and apply the communication process and evaluate the success thereof.

Associated Assessment Criteria
- Communication with fellow workers, supervisors and other colleagues are clear and effective.
- Misunderstandings are identified and clarified.

Outcome
- Work effectively with others and lead a team by applying basic teamwork principles.

Associated Assessment Criteria
- Basic teamwork principles are applied.

Outcome
- Understand what informs personal ethics, values, and norms and how it impacts on the workplace with specific reference to relationships with co-workers, clients, him- or her as well as the environment.

Associated Assessment Criteria
- Basic ethical principles, values and norms and how they influence the agricultural process, interaction with co-workers and clients, as well as work related conflict situations are explained. Furthermore, the effect of his or her work activities on family and social life are described and appropriate steps to improve relationships are taken. Failure and/or success are dealt with constructively.

Outcome
- Identify and access basic resources.

Associated Assessment Criteria
- Basic resources are identified and accessed timeously and effectively.

Outcome
- Co-ordinate production processes.

Associated Assessment Criteria
- The production processes are co-ordinated.
- Problems related to the production processes are identified and resolved by appropriate decision-making.
- Teams are supervised and monitored.

NOTE: Assessment should be specific to the area of operation (either horticulture or agronomy or animal husbandry) and the agricultural commodity(ies) of the learner's own choice.

INTERNATIONAL COMPARABILITY

In the case of the primary agricultural context it is difficult to compare the qualification and unit standards because of the vast differences in the level of mechanisation, the level of literacy of the farm operators, climate and other conditions as well as the variety in commodities.

However, New Zewland and Australian qualifications and unit standards were sourced and evaluated for applicability. Also, during two separate study visits, agricultural practices were compared in the Netherlands and France.

An example of the differences would be in animal husbandry where the cold climate (snow and ice) requires totally different feeding processes and different hygiene processes.

However, there are similarities in terms of the floriculture and viticulture processes and unit standards.

INTEGRATED ASSESSMENT

Integrated assessment at the level of the qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is relevant and coherent in relation to the purpose of the qualification.

Integrated assessment must judge the quality of the observable performance, but also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will be of a more practical nature while others will be of a more theoretical nature. The ratio between action and interpretation is not fixed, but varies according to the type and level of qualification.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors need:
- A minimum of 2 (two) years' practical experience;

- Competence in the generic assessor unit standards; and
- Technical competence at, at least one NQF level above the assessee.

RECOGNITION OF PRIOR LEARNING

This qualification may be achieved in part or in whole through the recognition of prior learning. Credit will be given to learning, which has already been acquired, through the appropriate process of assessment.

For example:

- Learners who have acquired skills and competencies in this qualification through for instance experience in the industry will be assessed against the unit standards the qualification comprises of prior to entering learning. Credits will be allocated to those unit standards and exit level outcomes in which the learner is found competent. The outstanding unit standards will then be sequenced according to an appropriate learning programme.
- Should a new entrant into the industry wish to enter this learning programme, recognition will be given to al appropriate learning acquired through the schooling system.
- In terms of fundamental unit standards, competencies could be acquired through life experience.

Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to take.

ARTICULATION POSSIBILITIES

A learner will be able to progress horizontally from one category to another, namely horticulture, agronomy or animal husbandry. He/she will be able to do this without re-doing the whole qualification, but by only completing the necessary elective unit standards.

This qualification builds on the Farming qualification on NQF 3 (refer to the SGB's brief and matrix) and gives access to the agricultural management qualification at NQF 5. In terms of competencies, the learner will progress from farming operation skills to basic managerial skills to managerial skills. The scope of practice will also increase.

The learner will be able to articulate with other occupations within the agricultural pharmaceutical operations such as laboratory assistant, marketing and selling of agricultural pharmaceutical products and fertilisers. The learner will also be able to move to the secondary agricultural field.

MODERATION OPTIONS

Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA.
Any institution offering learning that will enable achievement of this qualification, or assessment against this qualification must be accredited as a provider with the relevant ETQA.
Moderation of assessment will be overseen by the relevant ETQA according to agreed ETQA procedures.

Therefore anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution which is accredited by the relevant ETQA.

MATRIX OF QUALIFICATIONS DESIGN

National Certificate in Farming NQF Level 4

	Fundamental	NLRD ID	Level	Credit	Core	NLRD ID	Level	Credit	Elective	NLRD ID	Level	Credit
	Communication Skills		4	20	Demonstrate a thorough understanding of the primary agricultural industry		4	2	Select varieties/cultivars		4	5
1	Engage in sustained oral communication and evaluate spoken texts (C/07)	8974	4	5								
2	Read, analyse and respond to a variety of texts (C/09)	8975	4	5								
3	Write for a wide range of contexts (C/09)	8976	4	5								
4	Use language and communication in occupational learning programmes	8973	4	5								
	Mathematical Literacy		**4**	**16**								
1	Use Mathematics ot investigate and monitor the financial aspects of personal, business, and national issues	9014	4	6	Monitor and control farming operations		4	5	Control pests and diseases		4	5
2	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	9015	4	6								

MATRIX OF QUALIFICATIONS DESIGN

National Certificate in Farming NQF Level 4

3	Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two adnd three-dimensional space in the life and workplace of the adult with increasing responsibilities	9016	4	4								
4	Understand and apply basic ethical principles, values, and norms applicable to the workplace		4	3	Apply basic marketing principles		4	3	Oversee the care and maintenace of tools, equipment and installations		4	2
	Communication: Second Language		4	20	Apply basic agricultural economics principles		4	3	Identify possible disasters, apply and monitor the necessary precautions		4	5
					Operate and monitor agricultural operations within a pre-set business plan		4	5				
					Understand , apply and monitor different production systems appropriate to a agricultural commodity(ies)		4	8				
					Monitor quality within a farming operation		4	3				
					Lead a team	8665	5	4				
					Monitor occupational and health and safety		4	8				

MATRIX OF QUALIFICATIONS DESIGN

National Certificate in Farming NQF Level 4

					Contribute to information distribution regarding HIV/AIDS in the workplace	8555	4	4				
					Maintain hygiene measures		4	3				
					Identify and access resources		4	3				
					Collect and apply data to inform the decision-making process		4	4				
		TOTAL		**59**				**55**				**17**
											TOTAL	**131**

No. 558 **10 May 2002**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Early Childhood Development

Registered by NSB 05, Education, Training and Development, publishes the following unit standards for public comment.

This notice contains the titles and specific outcomes of the unit standards. These unit standards form part of the elective component of the already registered Early Childhood Development qualifications, namely National Certificate in ECD (NQF Level 1) – ID: 14406; National Certificate in ECD (NQF Level 4) – ID : 15982; National Diploma in ECD (NQF Level 5) – ID: 15983 and should be understood in the context of the registered qualifications. See qualifications grid.

The full qualifications and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 03 June 2002.*** All correspondence should be marked **Standards Setting – SGB for Early Childhood Development,** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 482 0907

SAMUEL B.A. ISAACS
EXECUTIVE OFFICER

UNIT STANDARDS IN EARLY CHILDHOOD DEVELOPMENT

UNIT STANDARDS ON NQF LEVEL 2

1. Title: Care for babies and toddlers in ECD settings

UNIT STANDARDS ON NQF LEVEL 3

1. Title: Facilitate learning and development of babies and toddlers (0-24 months) in ECD settings

2. Title: Facilitate learning and development of toddlers (18-36 months) in ECD settings

3. Title: Involve family members in supporting the development of young children

4. Title: Create an inclusive anti-bias learning environment in ECD settings

5. Title: Support children and adults living with HIV/Aids in ECD settings

6. Title: Include children experiencing barriers to learning and development in ECD settings

7. Title: Compile a portfolio in ECD practice

UNIT STANDARDS ON NQF LEVEL 5

1. Title: Manage diversity in ECD settings

2. Title: Facilitate an inclusive educational environment for children experiencing barriers to learning and development

UNIT STANDARDS AND SPECIFIC OUTCOMES IN EARLY CHILDHOOD DEVELOPMENT

UNIT STANDARDS ON NQF LEVEL 2

1. Title: Care for babies and toddlers in ECD settings

Specific Outcome 1: Feed babies and toddlers.

Specific Outcome 2: Provide routine physical care for babies and toddlers.

Specific Outcome 3: Establish trusting adult-child relationships with babies and toddlers.

Specific Outcome 4: Help babies and toddlers develop a sense of self.

Specific Outcome 5: Comfort babies and toddlers.

UNIT STANDARDS ON NQF LEVEL 3

1. **Title:** Facilitate learning and development of babies and toddlers in ECD settings.

Specific Outcome 1: Facilitate the physical development of babies and toddlers.

Specific Outcome 2: Encourage babies and toddlers to be curious and explore their environment.

Specific Outcome 3: Provide appropriate active learning experiences to facilitate the development of thinking skills in babies and toddlers.

Specific Outcome 4: Facilitate the development of language and communication skills in babies and toddlers.

2. **Title:** Facilitate learning and development of toddlers (18-36 months) in ECD settings.

Specific Outcome 1: Implement a daily programme and provide a learning environment that are adapted to the special developmental needs of toddlers aged 18 to 36 months.

Specific Outcome 2: Provide developmentally-appropriate learning opportunities for the physical development of toddlers.

Specific Outcome 3: Help toddlers learn about themselves and others.

Specific Outcome 4: Encourage toddlers to solve problems and explore their physical and social environment.

Specific Outcome 5: Facilitate language development in appropriate ways.

Specific Outcome 6: Encourage toddlers to express themselves and their feelings through creative play opportunities.

3. **Title:** Involve family members in supporting the development of young children.

Specific Outcome 1: Create partnerships with families and the community to support the development of young children

Specific Outcome 2: Affirm and support adult family members in interacting with their children in a developmentally appropriate way.

Specific Outcome 3: Use available and appropriate resources creatively in the planning and implementation of family involvement programme activities

Specific Outcome 4: Plan, reflect on and continuously evaluate the family and community involvement programme.

4. **Title:** Create an inclusive anti-bias learning environment in ECD settings.

Specific Outcome 1: Examine and address own and others' attitudes, prejudices,

biases and behaviours that result in unfair discrimination

Specific Outcome 2: Create and set up an anti-bias learning environment that respects the cultural, religious, linguistic and experiential background of the children

Specific Outcome 3: Facilitate the development of inclusive attitudes and values in children

Specific Outcome 4: Promote and encourage family and community involvement in ways that enhance inclusivity and celebrate diversity.

5. Title: Support children and adults living with HIV/AIDS in ECD settings

Specific Outcome 1: Describe the transmission and progression of HIV/AIDS in adults and children

Specific Outcome 2: Describe the socio-economic context and impact of the HIV/AIDS pandemic

Specific Outcome 3: Provide appropriate care for children and adults affected by HIV/AIDS in various ECD settings

Specific Outcome 4: Establish appropriate support systems for children, staff and families living with HIV/AIDS

6. Title: Include children experiencing barriers to learning and development in ECD settings.

Specific Outcome 1: Describe Inclusive Education and the Inclusive Education policy in South Africa

Specific Outcome 2: Identify barriers to learning and development in the ECD Programme

Specific Outcome 3: Maintain a supportive learning environment that meets the individual needs of children experiencing barriers to learning and development

Specific Outcome 4: Encourage and support family and community involvement in inclusive ECD programme

Specific Outcome 5: Reflect on own inclusion practice and make appropriate Changes

7. Title: Compile a portfolio in ECD practice

Specific Outcome 1: Explain the basic principles of lifelong learning, the National Qualifications Framework (NQF) and outcomes based education and training

Specific Outcome 2: Match ECD competence to an ECD qualification and/or unit

Standards

Specific Outcome 3: Develop skills in presenting evidence of own experience, learning and competence

Specific Outcome 4: Compile a portfolio to present evidence of competence relating to specified learning outcomes in ECD standards.

UNIT STANDARDS ON NQF LEVEL 5

1. Title: Manage diversity in ECD settings

Specific Outcome 1: Reflect on and identify the biases, attitudes and behaviours of oneself and others which result in unfair discrimination

Specific Outcome 2: Demonstrate an increased awareness of and sensitivity to the different types and levels of oppression and unfair discrimination that exist in our society, through reflective discussion of personal experiences

Specific Outcome 3: Work co-operatively and in an empowering way with all role players involved in the workplace to create and promote a culturally-fair learning environment

Specific Outcome 4: Develop and implement an inclusive anti-bias strategy in the workplace.

2. Title: Facilitate an inclusive educational environment for children experiencing barriers to learning and development

Specific Outcome 1: Examine and challenge attitudes, biases and behaviours that create and maintain barriers to learning and development

Specific Outcome 2: Critically explain the nature, causes and effects of significant barriers to learning and development in the ECD programme and community

Specific Outcome 3: Create and maintain supportive networks with family, service providers and community organisations working with children experiencing barriers to learning and development

Specific Outcome 4: Develop effective strategies to address barriers to learning and development in different ECD settings through a process of reflective practice

TITLE : NATIONAL CERTIFICATE IN EARLY CHILDHOOD DEVELOPMENT (PRE-SCHOOL PHASE)-NQF LEVEL 1

LEVEL: 1

CREDITS: 120

FIELD: Education, Training and Development (05)

SUBFIELD: Early Childhood Development (ECD)

FUNDAMENTALS		**CORE**		**ELECTIVES**	
Show a critical awareness of language usage- 7524 Engage with aesthetic, affective and cultural values in texts- 7526 Identify, access, analyse, use and present information- 7528 Use appropriate communication skills, conventions and structures for specific purposes and situations- 7530 Explore and use a variety of strategies to learn- 7534 Engage with meaning, organisation and structure of texts- 7535	20 credits Level 1	Support Active Learning in ECD Programmes	24 credits Level 1	Making ECD Learning Resources	8 credits, Level 2
Demonstrate understanding about ways of working with whole numbers- Registered	16 credits Level 1	Support Healthy Development in ECD Programmes	12 credits Level 1	Facilitating Learning Through Play	12 credits, Level 2

Demonstrate understanding about ways of working with positive rational numbers- 7480 Demonstrate understanding about ways of working with integers-8982 Recognise and work with patterns- 7448 Use mathematical models to describe and present relationships between quantities in a variety of ways- 7447 Critically analyse how mathematics is used in social, political and economic relations- 7449 Collect, analyse, use and communicate numerical data- 7451 Use algebraic notation, conventions and terminology to solve problems- 7453 Analyse, interpret and give meaning to mathematical models in a variety of ways and different contexts- 7450 Use maps to access and communicate information concerning routes, location and direction- 7461					

Describe and represent objects and the environment in terms of shape,space, time and motion- 7463 Analyse cultural products and processes as representations of shape,space and time- 7464					
		Assist with Managing the Learning Programme	12 credits Level 1	Facilitating Learning Through Stories, Songs and Rhymes	8 credits, Level 3
(		(See registered unit standards for the above ECD level 1 core).		Facilitating Language Development in Bilingual/Multilingual ECD Programmes	8 credits, Level 3
				Facilitating Creative Art Activities in ECD Programmes	8 credits, Level 3
				Managing a Small-scale ECD Service	12 credits, Level 3
				(See registered unit standards for the above electives).	
				The following are new electives to be registered.	
				Care for Babies and Toddlers in ECD Settings*	12 credits, Level 2

FUNDAMENTALS		CORE		ELECTIVES	
				Facilitate Learning and Development of Babies (0-24 months) in ECD Settings*	12 credits, Level 3
				Facilitate Learning and Development of Toddlers (18-36 months) in ECD Settings*	12 credits, Level 3
				Involve Family Members in Supporting the Development of Young Children	12 credits, Level 3
				Create an Inclusive Anti-Bias Learning Environment in ECD Settings	12 credits, Level 3
				Support Children and Adults Living with HIV/AIDS in ECD Settings	8 credits, Level 3
				Include Children Experiencing Barriers to Learning and Development in ECD Settings	12 credits, Level 3
				Compile a Portfolio in ECD Practice	8 credits, Level 3
				* Elective for a Level 4 qualification specialising in the Baby and Toddler Phase only	

TITLE : NATIONAL CERTIFICATE IN EARLY CHILDHOOD DEVELOPMENT (PRE - SCHOOL PHASE)-NQF LEVEL 4

LEVEL: 4

CREDITS: 120

FIELD: Education, Training and Development (05)

SUBFIELD: Early Childhood Development (ECD)

FUNDAMENTALS		**CORE**		**ELECTIVES**	
Engage in sustained oral communication and evaluate spoken texts – 8974 Read, analyse and respond to a variety of texts- 8975 Write for a wide range of contexts- 8976 Use language and communication in occupational learning programmes-8979	20 credits Level 4	Facilitating Active Learning in ECD Programmes	30 credits Level 4	Making ECD Learning Resources	8 credits, Level 2
Use mathematics to investigate and monitor the financial aspects of personal, business, national issues- 8983 Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life-related problems- 9015	16 Credits Level 4	Facilitate Healthy Development in ECD Programmes	14 credits Level 4	Facilitating Learning Through Stories, Songs and Rhymes	8 credits, Level 3

Represent, analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts- 9016					
		Manage the Learning Programme	20 credits Level 4	Facilitating Language Development in Bilingual/Multilingual ECD Programmes	8 credits, Level 3
(See registered unit standards for the above fundamentals).		(See registered unit standards for the above ECD level 4 core).		Facilitating Creative Art Activities in ECD Programmes	8 credits, Level 3
				Managing a Small-scale ECD Service	12 credits, Level 3
				Managing a Medium-scale ECD Service	18 credits, Level 5
				Facilitating a Life Skills Learning Programme in the Reception Year	12 credits, Level 5
				Facilitating a Literacy Learning Programme in the Reception Year	12 credits, Level 5
				Facilitating a Numeracy Learning Programme in the Reception Year	12 credits, Level 5
				(See registered unit standards for the above electives).	
FUNDAMENTALS		**CORE**		**ELECTIVES (The following are new electives to be registered)**	
				Care for Babies and Toddlers in ECD Settings*	12 credits, Level 2
				Facilitate Learning and Development of Toddlers (18-36 months) in ECD Settings**	12 credits, Level 3
				Involve Family Members in Supporting the Development of Young Children	12 credits, Level 3
				Create an Inclusive Anti-Bias Learning Environment in ECD Settings	12 credits, Level 3
				Support Children and Adults Living with HIV/AIDS in ECD	8 credits, Level 3

				Settings	
				Include Children Experiencing Barriers to Learning and Development in ECD Settings	12 credits, Level 3
				Compile a Portfolio in ECD Practice	8 credits, Level 3
				Manage Diversity in ECD Settings	12 credits, Level 5
				Facilitate an Inclusive Educational Environment for Children Experiencing Barriers to Learning and Development	12 credits, Level 5
				* Elective for a Level 4 qualification specialising in the Baby and Toddler Phase only. **Elective for a Level 4 qualification specializing in the Preschool Phase only.	

TITLE : NATIONAL CERTIFICATE IN EARLY CHILDHOOD DEVELOPMENT (PRE -SCHOOL PHASE)- NQF LEVEL 5

LEVEL: 5

CREDITS: 120

FIELD: Education, Training and Development (05)

SUBFIELD: Early Childhood Development (ECD)

FUNDAMENTALS		**CORE**		**ELECTIVES**	
Communication Studies	20 credits Level 5	Mediate Active Learning in ECD Programmes	36 credits Level 5	Managing a Medium-scale ECD Service	18 credits, Level 5
Mathematics	12 Credits Level 4	Promote Healthy Development in ECD Programmes	12 credits Level 5	Facilitating a Life Skills Learning Programme in the Reception Year	12 credits, Level 5
		Develop and Manage the ECD Learning Programme	24 credits Level 5	Facilitating a Literacy Learning Programme in the Reception Year	12 credits, Level 5
		(See registered unit standards for the above ECD level 4 core).		Facilitating a Numeracy Learning Programme in the Reception Year	12 credits, Level 5
				(See registered unit standards for the above electives).	
				The following are new electives to be registered	
				Manage Diversity in ECD Settings	12 credits, Level 5
				Facilitate an Inclusive Educational Environment for Children Experiencing Barriers to Learning and Development	12 credits, Level 5

TITLE : NATIONAL DIPLOMA IN EARLY CHILDHOOD DEVELOPMENT (PRESCHOOL PHASE)- NQF LEVEL 5

LEVEL: 5

CREDITS: 240

FIELD: Education, Training and Development (05)

SUBFIELD: Early Childhood Development (ECD)

FUNDAMENTALS		**CORE**		**ELECTIVES**	
Communication Studies and Language Field	20 credits Level 5	Mediate Active Learning in ECD Programmes	36 credits Level 5	Managing a Medium-scale ECD Service	18 credits, Level 5
Physical, Mathematical, Computer & Life Sciences	12 credits Level 4	Promote Healthy Development in ECD Programmes	12 credits Level 5	Facilitating a Life Skills Learning Programme in the Reception Year	12 credits, Level 5
		Develop and Manage the Learning Programme	24 credits Level 5	Facilitating a Literacy Learning Programme in the Reception Year	12 credits, Level 5
(See registered unit standards for the above fundamentals).		(See registered unit standards for the above ECD level 4 core).		Facilitating a Numeracy Learning Programme in the Reception Year	12 credits, Level 5
				(See registered unit standards for the above electives).	
				Facilitate Active Learning in ECD Programmes	30 Credits Level 4
				Facilitate Healthy Development in ECD Programmes	14 Credits Level 4
				Manage the ECD Learning Programme	20 Credits Level 4
				Credits drawn from any field or sub-field	24 Credits Level 4 0r above
				The following are new electives to be registered	
				Manage Diversity in ECD Settings	12 credits, Level 5
				Facilitate an Inclusive Educational Environment for Children Experiencing Barriers to Learning and Development	12 credits, Level 5

No. 559 **10 May 2002**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

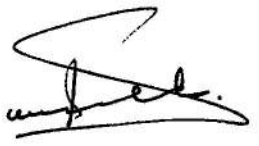
Manufacturing and Assembly

Registered by NSB 06 Manufacturing, Assembly and Technology, publishes the following qualifications and unit standard for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standard upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 3 June 2002.*** All correspondence should be marked **Standards Setting – SGB for Manufacturing and Assembly** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 482 0907



SAMUEL B.A. ISAACS
EXECUTIVE OFFICER

National Certificate in servicing vehicles: NQF Level 2

Field: Manufacturing, Engineering and Technology

Sub-field: Engineering

Level: 2
Credit: 120
Issue date:
Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of the automotive industry that relates to servicing vehicles that is expressed by employers, employees and providers both currently and for the future. This qualification provides the learner with accessibility to be employed within the functional areas that include diesel, petrol, earthmoving equipment and air-conditioning and provides the flexibility to pursue different careers in the broader vehicle maintenance industry.

Purpose:

This qualification will allow a learner in the vehicle maintenance industry to obtain a nationally recognised qualification in and for diesel, petrol, earthmoving equipment and air-conditioning. It will also contribute to the upliftment of the vehicle maintenance industry and will set a standard for professionalism in the industry. The qualification will assist in changing perceptions of the lack of integrity and business ethics of the industry. This will also assist in improving relationships between employer and employees. The obtainment of the qualification will also attract and retain quality learners and employees. This qualification will also provide for recognition of prior learning to allow for the recognition of existing and common knowledge and skills that will not only allow a learner to gain credits towards this qualification, but also to move across the different functional areas.

The generic core unit standards as well as the specialised context (functional) unit standards (where indicated) provide credits that allow access to both vertically and horizontally articulated qualifications. This qualification will enhance the status, productivity and employability of the learner within the vehicle maintenance industry as well as contribute to the quality, production rate and growth. This allows for access, progression, portability and mobility within and between the different areas. Through the electives component of the qualification learners are able to demonstrate vocational skills through which they are able to engage in life skills activities, small business development, health and environmental issues. Through recognition of prior learning adult learners are encouraged to access basic education with an understanding that they already have knowledge and experience.

Learners, once qualified, are capable of servicing vehicles (petrol, diesel, earthmoving and air-conditioning). This will allow the learner to provide a more effective service that will improve customer satisfaction. Learners will be able to move to higher levels of functionality and learning in the different areas.

This qualification will also allow for transformation within the vehicle servicing industry, as learners will be a model for other employees/learners. This will as mentioned earlier, attract quality people and allows for the aspiration of people to be part of the industry. The recognition of prior learning policies from the SETA/ETQA will formalise informal and non-formal learning and learners will be able to obtain a national qualification. This will improve the level of participation of employees in the industry.

A person acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate familiarity with local knowledge and contexts in performing the tasks related to the different areas in the vehicle servicing industry (diesel, petrol and earthmoving)
- Demonstrate an understanding of and the ability to carry out simple operations using the fundamental systems, procedures in the four functional areas
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form
- Explore broader competencies required for entrepreneurial opportunities

Access to the Qualification

The qualification is open to everyone who wishes to be part of the vehicle serving industry

Learning assumed to be in place

Literacy and numeracy at NQF 1 or equivalent.

Exit Level Outcomes

The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, a learner is able to:

- Recall, interpret and apply knowledge and competence of the servicing of vehicles within the vehicle servicing industry that will enhance the image and professionalism of the industry;
- Describe, interpret, relate and demonstrate familiarity with local knowledge and contexts in performing the tasks related to diesel, petrol, earthmoving and air-conditioning.
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form

The qualification consists of unit standards, which describes the knowledge and skills that will change the values of the learner and that describes competence in a specific unit standard.

Associated Assessment Criteria

Assessors should check that the learner must demonstrate an ability to consider a range of options and make decisions related to their context of work.

- The functions related to servicing vehicles are described, analysed, assessed and the appropriate actions are taken to customer satisfaction.
- Local knowledge and context in performing the tasks in the relevant functional area are explained, analysed and applied.
- Learners are able to communicate effectively with customers and members of the organisation.

International comparability

The unit standards were benchmarked against unit standards and qualifications form New Zealand and the United Kingdom. The qualification was compared with qualifications from the motor industry training organisation in the UK in terms of specific outcomes, assessment criteria and degree of difficulty. (?)

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the electrical installation and maintenance environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence. These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment method and or tools used by the assessor must be fair in a sense that it does not hinder or advantage the learner, valid in a sense that it measures that it intents to measure, reliable in a sense that it is consistent and delivers the same output across a range of learners and practical in a sense that it takes into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment is carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to proof the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience.

Articulation possibilities

This qualification provides the learner with the flexibility to pursue different careers in the automotive industry. The level of flexibility within the range of electives will allow the individual to pursue further learning within an entrepreneurship, supervision/management, quality assurance, health and safety and engineering sub-disciplines.

Moderation Options

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.

- Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Criteria for registration of assessors

Assessors need experience in the following areas:

- Interpersonal skills
- Subject matter and
- Assessment.

The assessor needs to be competent in the planning and conducting of assessment of learning outcomes and in the design and development of assessments as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 4. Subject matter experience must be well developed within the different areas within the vehicle servicing industry. The assessor must have completed:

- a similar qualification at the level with a minimum of 6-12 months field experience after s/he has completed the qualification or,
- The subject matter experience of the assessor can be established by recognition of prior learning.

Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

Rules of combination

Learners wishing to achieve the National Certificate in servicing vehicles need to do the 55 credits as part of the fundamental learning, the core generic credits of 52, and the core functional credits as per functional area (depends on the area of specialisation) and the rest of the credits to be obtained from the elective area that relate to the functional area to add to a total of at least 120 credits.

TITLES MATRIX: NATIONAL CERTIFICATE IN SERVICING VEHICLES – NQF LEVEL 2

Fundamental	NLRD	Credits	Core	Credits	Elective	Credits
Communication Skills		**20**				
Maintain and adapt oral communication (C/01)	8962	5	Inspect and lubricate component/vehicle systems	2	Clean vehicle using appropriate equipment and procedures	1
Access and use information from texts (C/02)	8963	5				
Write for a defined context (C/03)	8964	5				
Use Language and communication in occupational learning programmes (S/16)	8973	5	Obtain parts from store/supplier			
Mathematical Literacy		16	Dismantle vehicle component	4		
Demonstrate understanding of rational and irrational number, and number systems, within the context of relevant calculations	8982	4				
Use mathematics to investigate and monitor the financial aspects of personal and community life	8983	4				
Apply basic knowledge of statistics in order to investigate life and work related problems	9009	4	Remove vehicle component	4		
Measure, estimate and calculate physical quantities and explore describe and represent geometrical relationships in 2-dimensions in different life or workplace	9008	4	Carry out a service	5		
			Operate workshop tools and equipment	4		
Working with information			Identify and report on vehicle component and part	2		
Using information and technology reflecting agreed outcomes		5	Fit and commission air-conditioners to vehicles	4		
Life skills						
Manage personal finance		4	Safety, health, environment and quality assurance	8		
Understanding and dealing with HIV/AIDS personally and in the workplace		3	People interacting, leading and developing	8		
Develop a personal portfolio and a learning plan and prepare for assessment		6	Business relations	8		
Total fundamental		54	Total Core	52	Total electives	13
Total for qualification						120

Standards Generating Working Group: Vehicle maintenance			
Version	3	Date	9 April 2002
Level	2	Unit standard number	SV01/02
Functional Area			

INSPECT FLUID AND LUBRICANT LEVELS AND LUBRICATE COMPONENT/VEHICLE SYSTEMS

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 2

Issue date:
Review date:

Purpose
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems to maintain and report on operational condition. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has already learned how to read and write

Specific outcomes **(Learners can/learners will be able to)**
1. Identify and renew/refill components/system with correct grade and quantity of fluids and/or lubricants 2. Store and dispose of fluids and lubricants in a safe and environmental friendly manner 3. Check and top up fluid levels 4. Lubricate all lubrications points

Assessment criteria **(Evidence shows/learners can show)**
1.1 Fluid levels are checked according to manufacturers specifications 1.2 Oils are drained according to safety, manufacturers and quality procedures. 1.3 Appropriate tools are used according to safety and manufacturer's procedures and job requirements. 1.4 Attachment agents are applied according to manufacturer's procedures and job requirements. 1.5 Areas are cleaned before and after draining/filling of fluids. 1.6 Vehicle system is lubricated according to manufacturers or work place time schedules. 1.7 Different vehicle fluids/lubricants are discussed 1.8 Reasons for and methods used to clean parts.
2.1 Fluids and lubricants are stored and disposed in a safe and environmental friendly manner 2.2 SHE procedures are followed in disposal and storage of fluids and lubricants 2.3 SHE procedures to be followed.
3.1 System is inspected for leaks while engine is running. 3.2 Leaks and/or defects are recorded according to worksite procedures. 3.3Documentation is completed according to work site procedures.

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3.4 Work area and vehicle are restored to a serviceable condition according to worksite procedures.
3.5 Purpose of documentation.
3.6 Reasons for inspecting vehicle system while engine is running
Fluid levels are checked and topped up according to manufacturers specifications

4.1 Lubrication points are lubricated according to manufacturers maintenance procedures

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to the OHS Act and the Road Safety Act.
- Quality procedures include but are not limited to : ISO 9000

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Functional Area			

- Appropriate tools and equipment include but are not limited to manufacturer's special service tools, workshop equipment, hand tools.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Vehicles include but are not limited to motor, earth moving, locomotive, stationary units.
- Leaks include but are not limited to water, oil, air and fuel.
- Planning and preparing work area and vehicle include but are not limited to arranging tools and equipment, parking vehicle on stable and level surface, identification of vehicle as not operational, obtaining the necessary lubricants and parts for service, disconnecting battery from electric system safely.
- Restoring work area and vehicle to serviceable condition include but are not limited to: Tools and equipment packed away, work area cleaned, vehicle battery safely connected to electric system.
- Service information includes but is not limited to: parts books, manufacturers manuals, work site procedures.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fastners.
- Fluids include oil, water, brake fluid, anti-freeze, grease and fuel.

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Location of component on vehicle and the functions of the components
- Identification and names of vehicle system components.
- Procedures to inspect vehicle systems.
- Criteria for visual inspecting.
- Procedures to obtain service information.
- Safety procedures related to inspecting and lubricating vehicle systems.

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- Use and care for appropriate tools and equipment related to inspecting and lubricating vehicle systems.
- Recommended lubricants associated with the lubricating vehicle systems.
- Procedures to drain oil.
- Procedures to replenish oil levels.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.
- Select, use and care for measuring equipment applicable to the task.
- Technical data of vehicle component or system
- Technical vehicle of information

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems

Work effectively with others as a member of a team in inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems

Communicate effectively in inspecting fluids and lubricants and topping up and/or drain and refill fluids and lubricants on component/vehicle systems

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Functional Area			

OBTAIN PARTS FROM STORE/SUPPLIER

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 1

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of placing a parts order, obtaining and confirming that the part is correct. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has been learned to read and write.

Specific outcomes (Learners can/learners will be able to)
1. Obtain data of part or component from relevant data source 2. Order parts by completing requisition/order with relevant description/part number 3. Obtain part and confirm as correct 4. Complete information of parts on documentation

Assessment criteria (Evidence shows/learners can show)
1. Use correct source to obtain data 2. Use relevant documentation and description / Part No. 3. Compare and confirm correctness 4. Complete relevant documentation on parts obtained

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in placing a parts order, obtaining and confirming that the part is correct, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions

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- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

Data source can include parts book, micro fiche, CD's and intranet

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

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EMBEDDED KNOWLEDGE

1. Identify/know name and function and location of component and data source
2. Know what documentation to be used for ordering parts
3. Identify and use of data source
4. Understand process of completion of relevant documentation
5. Procedures to order parts

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way placing a parts order, obtaining and confirming that the part is correct

Work effectively with others as a member of a sales team in placing a parts order, obtaining and confirming that the part is correct

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to placing a parts order, obtaining and confirming that the part is correct

Communicate effectively when placing a parts order, obtaining and confirming that the part is correct

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Functional Area			

DISMANTLE VEHICLE COMPONENTS

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 4

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of dismantling vehicle components for repairs, recondition or inspection. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has been learned how to read and write

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment for dismantling 2. Dismantle component 3. Complete documentation

Assessment criteria (Evidence shows/learners can show)
1.1. Job instructions are read, interpreted and a sequence of operations is determined according to job requirements and worksite procedures. 1.2. Appropriate tools are identified and selected according to job requirements and worksite procedures. 1.3. Manufacturers' manuals are acquired according to job requirements and worksite procedures. 1.4. Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements and worksite procedures. 1.5. Work area and component is prepared according to safety, work site and manufacturer's procedures. 1.6. Reason(s) for selecting appropriate tools and equipment. 1.7. Reason(s) for preparing work area and component. 1.8. Purpose of acquiring appropriate documentation and manuals
2.1 Components are dismantled according to manufacturer's, safety and work site procedures. 2.2 Use hand tools according to safety and manufacturers procedures. 2.3 Appropriate tools, equipment and PPE are used according to job requirements. 2.4 Attachment agents are removed according to manufacturer's procedures. 2.5 Component parts are packed out in sequence of dismantling. 2.6 Communicate with competent person to carry out evaluation of parts reusability. 2.7 Identified unserviceable parts processed according to work site and quality procedures. 2.8 Serviceable component parts are cleaned according to manufacturers, work site and safety procedures.

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2.9 Components are dismantled according to manufacturers or work site times schedules.
2.10 Reason for sorting components.
2.11Reason(s) for packing out parts in sequence of dismantling.
2.12Reason used to clean components.

3.1 Work area is restored to a serviceable condition according to statutory and worksite procedures.
3.2 Documentation and reports are completed according to work site procedures.
3.3 Reasons and methods used to restore work area to serviceable condition.
3.4 Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in dismantling vehicle components for repairs, recondition or inspection, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Appropriate tools include but are not limited to: manufacturer's special service tools, workshop equipment and hand tools.

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Functional Area			

- Vehicles include but are not limited to: off road, on road, watercraft, locomotive, stationary units and agricultural.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Process unserviceable parts destiny includes but are not limited to: pack in bin and stored, discarded at identified location, pack in identified area for customer inspection.
- Task can be carried out in a workshop or field environment.
- Task undertaken autonomously or in a team environment.
- Workshop equipment may include but are not limited to lift chains, slings, drills, grinders, impact, wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to wrenches, pliers, screw drivers, files, chisels, punches, hammers, socket sets, allen keys and hacksaw.
- Attachment agents may include but are not limited to friction and anti-friction bearings, seals, gaskets and industrial fastners.

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and names of component and component parts.
- Procedures to dismantle components.
- Appropriate quality procedures ISO 9000.
- Identification of ferrous and non-ferrous metals and materials related to components.
- Safety procedures related to dismantling components.
- Use and care for appropriate tools and equipment related to the dismantling of components.
- Procedures to obtain relevant service information.
- Select, use and care for workshop equipment applicable to the task
- Select, use and care for hand tools applicable to the task
- Select and use attachment agents applicable to the task

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Functional Area			

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in dismantling vehicle components for repairs, recondition or inspection

Work effectively with others as a member of a sales team in dismantling vehicle components for repairs, recondition or inspection

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to dismantling vehicle components for repairs, recondition or inspection

Communicate effectively in dismantling vehicle components for repairs, recondition or inspection

Standards Generating Working Group: Vehicle maintenance			
Version	3	Date	9 April 2002
Level	2	Unit standard number	SV01/02
Functional Area			

REMOVE VEHICLE COMPONENTS

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 4

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of removing vehicle components for repairs, recondition or inspection. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has been learned how to read and write

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment for removing 2. Remove component 3. Complete documentation

Assessment criteria (Evidence shows/learners can show)
1.1. Job instructions are read, interpreted and a sequence of operations is determined according to job requirements and worksite procedures. 1.2. Appropriate tools are identified and selected according to job requirements and worksite procedures. 1.3. Manufacturers' manuals are acquired according to job requirements and worksite procedures. 1.4. Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements and worksite procedures. 1.5. Work area and component is prepared according to safety, work site and manufacturer's procedures. 1.6. Reason(s) for selecting appropriate tools and equipment. 1.7. Reason(s) for preparing work area and component. 1.8. Purpose of acquiring appropriate documentation and manuals
2.1 Components are removed according to manufacturer's, safety and work site procedures. 2.2 Use hand tools according to safety and manufacturers procedures. 2.3 Appropriate tools, equipment and PPE are used according to job requirements. 2.4 Attachment agents are removed according to manufacturer's procedures. 2.5 Component parts are packed out in sequence of removing. 2.6 Communicate with competent person to carry out evaluation of parts reusability. 2.7 Identified unserviceable parts processed according to work site and quality procedures. 2.8 Serviceable component parts are cleaned according to manufacturers, work site and safety procedures.

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Functional Area			

2.9 Components are removed according to manufacturers or work site times schedules. 2.10 Reason for sorting components. 2.11Reason(s) for packing out parts in sequence of removing. 2.12Reason used to clean components.
3.1 Work area is restored to a serviceable condition according to statutory and worksite procedures. 3.2 Documentation and reports are completed according to work site procedures. 3.3 Reasons and methods used to restore work area to serviceable condition. 3.4 Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in removing vehicle components for repairs, recondition or inspection, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Appropriate tools include but are not limited to: manufacturer's special service tools, workshop equipment and hand tools.

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Functional Area			

- Vehicles include but are not limited to: off road, on road, watercraft, locomotive, stationary units and agricultural.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Process unserviceable parts destiny includes but are not limited to: pack in bin and stored, discarded at identified location, pack in identified area for customer inspection.
- Task can be carried out in a workshop or field environment.
- Task undertaken autonomously or in a team environment.
- Workshop equipment may include but are not limited to lift chains, slings, drills, grinders, impact, wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to wrenches, pliers, screw drivers, files, chisels, punches, hammers, socket sets, allen keys and hacksaw.
- Attachment agents may include but are not limited to friction and anti-friction bearings, seals, gaskets and industrial fasteners.

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and names of component and component parts.
- Procedures to remove components.
- Appropriate quality procedures ISO 9000.
- Identification of ferrous and non-ferrous metals and materials related to components.
- Safety procedures related to removing components.
- Use and care for appropriate tools and equipment related to the removing of components.
- Procedures to obtain relevant service information.
- Select, use and care for workshop equipment applicable to the task
- Select, use and care for hand tools applicable to the task
- Select and use attachment agents applicable to the task

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Functional Area			

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in removing vehicle components for repairs, recondition or inspection

Work effectively with others as a member of a sales team in removing vehicle components for repairs, recondition or inspection

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to removing vehicle components for repairs, recondition or inspection

Communicate effectively in removing vehicle components for repairs, recondition or inspection

Standards Generating Working Group: Vehicle maintenance			
Version	3	Date	9 April 2002
Level	2	Unit standard number	SV01/02
Functional Area			

CARRY OUT A SERVICE

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of servicing vehicles to maintain operational condition. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has been learned how to read and write

Specific outcomes (Learners can/learners will be able to)
1. Obtain specifications 2. Do all driver operational checks 3. Raise vehicle, remove, and refit wheels 4. Do a visual inspection

Assessment criteria (Evidence shows/learners can show)
1. Check that all fluid levels meet specifications 2. Apply lubrication to all lube points 3. Source specifications correctly 4. Perform all driver operational checks 5. Perform lifting procedures and wheel removal and fitting correctly 6. Write condition report 7. Carry out service complying to SHE 8. Perform service/inspection as per manufactures procedures 9. Names and functions of components of a vehicle system are identified and described 10. Procedures for servicing a vehicle are described 11. Tools are selected and their functions are identified and described
12. Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures. 13. Appropriate tools and equipment are identified and selected according to job requirements and work site procedures. 14. Manufacturers' manuals and/or specifications are acquired according to job requirements. 15. Appropriate personal protective equipment (PPE) is identified and selected according to Statutory requirements. 16. Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.

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17. Reason(s) for selecting appropriate tools and equipment.
18. Reason(s) for selecting appropriate PPE.
19. Reason(s) for preparing work area and vehicle.
20. Purpose of acquiring appropriate documentation and manuals
21. Vehicle is serviced according to service schedule
22. Parts are cleaned
23. Visual inspection is done and vehicle is returned in good order

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in servicing vehicles to maintain operational condition, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to the OHS Act and the Road Safety Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to manufacturer's special service tools, workshop equipment, hand tools.

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Functional Area			

- Servicing on vehicles systems includes but is not limited to pre-delivery, daily inspections, minor, intermediate and major services.
- Systems include but are not limited to: engine, hydraulic, drive train, brakes.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Visual defects include but are not limited to cracks, burns, distortion, manufacturing flaws, leaks, .loose bolts and nuts, worn components and electric / electronic systems not working.
- Vehicles include but are not limited to motor, earth moving, locomotive, stationary units.
- Leaks include but are not limited to water, oil, air and fuel.
- Necessary tests include but are not limited to pressure, vacuum, compression.
- Necessary adjustments include but are not limited to linkage, cables, valve clearance, brakes and relief valves.
- Planning and preparing work area and vehicle include but are not limited to arranging tools and equipment, parking vehicle on stable and level surface, identification of vehicle as not operational, obtaining the necessary lubricants and parts for service, disconnecting battery from electric system safely.
- Restoring work area and vehicle to serviceable condition include but are not limited to: Tools and equipment packed away, work area cleaned, vehicle battery safely connected to electric system.
- Service information includes but is not limited to: parts books, manufacturers manuals, work site procedures.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification, names and functions of system components.
- Procedures to service systems.

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- Identification of ferrous and non-ferrous metals and materials related to system components .
- Criteria for visually inspecting parts associated with system service schedules.
- Procedures to obtain service information.
- Safety procedures related to the servicing of systems.
- Use and care for appropriate tools and equipment related to servicing systems.
- Recommended lubricants associated with the servicing of systems.
- Procedures to take oil samples.
- Start, stop and driving procedures on vehicle.
- Fundamentals of system servicing and maintenance.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when servicing vehicles to maintain operational condition

Work effectively with others as a member of a sales team in servicing vehicles to maintain operational condition

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to servicing vehicles to maintain operational condition

Communicate effectively when servicing vehicles to maintain operational condition

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Version	3	Date	9 April 2002
Level	2	Unit standard number	SV01/02
Functional Area			

OPERATE WORKSHOP TOOLS AND EQUIPMENT

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 4

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of operating workshop tools and using equipment to assist the servicing of vehicles. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learner has been learned how to read and write

Specific outcomes (Learners can/learners will be able to)
1. Operate workshop tools and equipment 2. Maintain workshop tools and equipment 3. Use equipment and store after use

Assessment criteria (Evidence shows/learners can show)
1. Operate and handle tools correctly and safely 2. Ensure that tools, equipment and machinery are cared for, maintained and stored after use 3. Use tools equipment and machinery correctly and safely and store after use 4. Names and functions of tools and equipment are identified and described 5. Safety procedures for the use of the tools and equipment are described

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in operating workshop tools and using equipment, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations

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- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

Workshop tools include but are not limited to pedestal drills, hand drills, bench grinders, hand grinders, pneumatic power tools
Equipment includes but is not limited to jacks, stand, hydraulic/pneumatic press, pullen, lifting equipment
Maintenance includes but is not limited to storing, oiling and cleaning

Level (for level 2)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:
(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner

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- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

1. Be familiar with all tools, equipment and SHE
2. Be aware of care, use and store of tools and equipment

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when operating workshop tools and using equipment

Work effectively with others as a member of a sales team in when operating workshop tools and using equipment

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to in operating workshop tools and using equipment

Understand and apply a range of office management-related techniques, procedures and

Communicate effectively when operating workshop tools and using equipment

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Functional Area			

IDENTIFY AND REPORT ON VEHICLE COMPONENT AND PART

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 2

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of identifying and reporting on vehicle components and parts. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	It is assumed that the learners has been learned how to read and write

Specific outcomes (Learners can/learners will be able to)
1. Identify and compare of the condition of all related and/or major components of the vehicle against specifications
2. Use manual to locate location of components
3. Inspect all components and parts of the vehicle for defect to determine condition
4. Use technical information and specifications to verify corrections of component
5. Compile and submit condition report on inspection and condition carried out

Assessment criteria (Evidence shows/learners can show)
1. Component/part is identified by using appropriate manuals
2. Vehicle components/parts are inspected for defects and record findings according to workplace and manufacturers procedures
3. Manuals are used to locate location of component
4. Technical information and specifications are used to verify correctness of component
5. A condition report is submitted on the condition of the component/part
6. The condition of the component/part are identified and described
7. Technical information of the component/part are discussed and described

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in identifying and reporting on vehicle components and parts, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

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These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

Inspect: Inspect include visual, taste, feel and smell senses and could be with engine running or shut down, or both

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

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- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

Location of the component/part
Defects and condition of components/parts
Use of manuals as a source
Technical information and specifications of component/parts

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when identifying and reporting on vehicle components and parts

Work effectively with others as a member of a sales team in identifying and reporting on vehicle components and parts

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to identifying and reporting on vehicle components and parts

Communicate effectively when identifying and reporting on vehicle components and parts

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Version	3	Date	9 April 2002
Level	2	Unit standard number	SV01/02
Functional Area			

FIT AND COMMISSION AIR-CONDITIONER TO VEHICLES

Field: Manufacturing, Engineering And Technology
Sub-field: Engineering

Level: 2
Credits: 8

Issue date:
Review date:

Purpose:
Learner is capable of identifying and selecting appropriate air-conditioners, fitting the aircon system to the vehicle, charging and testing the aircon system in compliance to SHE procedures

Learning assumed to be in place	Knowledge	ABET level 4
	Skills	Basic hand tools
	Attitude	

Specific outcomes (Learners can/learners will be able to)	**Assessment criteria (Evidence shows/learners can show)**
Select the right aircon kit for the motor vehicle	• The right aircon kit is selected • The kit is checked with the factory parts list • The parts are checked for damaged
Fit aircon kit to vehicle	• Vehicle is stripped in preparation for the aircon kit components • Stripped vehicle parts are cleaned and prepared for re-fitting • The aircon kit components and stripped vehicle parts are fitted in the right order • The assembled parts, belts, brackets and pulleys are checked • SHE procedures are followed
Charge aircon system	• Charging equipment, manifold gauge are checked and fitted to vehicle • Aircon system is evacuated or gassed • No gasses and oils are leaking to the environment • Safety procedures are followed
Test aircon system	• System is switched on • Visual and noise checks are done • Temperatures are tested • Noise and vibration tests are conducted • System is checked for leaks • SHE procedures are followed
Prepare vehicle for the customer	• Vehicle is ready for hand over

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in identifying and selecting appropriate air-conditioners, fitting the aircon system to the vehicle, charging and testing the aircon system in compliance to SHE procedures, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

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Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

Applicable to all light motor vehicles.

Level (for level 2)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

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NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Product knowledge
- Auto aircon theory
- Use of manifold gauge system set
- Leak test equipment
- Charging procedures
- Vacuum procedures
- SHE procedures and standards

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems by receiving a job card to determine a course of action and following a logical diagnostic procedure. The aircon system will be fitted in a timeous manner.

Work effectively with others as a member of a workshop team in a dealership or in an automotive air-conditioning fitment and repair workshop.

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to fitting and commissioning automotive air-conditioning systems.

Understand and apply a range of office workshop-related techniques, procedures and experimental approaches required in the different specific programmes leading up to this qualification.

Understand the world as a set of related systems by recognising that air-conditioning systems can have a negative effect on the environment if gasses or oils are allowed to leak into the atmosphere.

Customer expectations and needs are understood and fulfilled by ensuring that the work is done properly and efficiently.

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CLEAN VEHICLE USING APPROPRIATE EQUIPMENT AND PROCEDURES

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 2
Credits: 1

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of cleaning a vehicle by using appropriate equipment and procedures. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	None

Specific outcomes (Learners can/learners will be able to)
1. Operate cleaning machine
2. Obtain chemicals and prepare equipment
3. Clean the engine and vehicle/chassis
4. Steam chassis

Assessment criteria (Evidence shows/learners can show)
1. Machine is used according to specifications
2. Chemicals and equipment as specified are prepared
3. Cleaning of engine / chassis and vehicle correctly carried out
4. Chemicals and equipment is cared for and stored correctly
5. Health and safety procedures are described
6. Chemicals are identified and described

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in cleaning a vehicle by using appropriate equipment and procedures, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations

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- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

This standard can be used by learners involved in car valet.

Level (for level 2)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) Ability to carry out moderate tasks that are familiar
(b) Ability to offer a clear choice of routine responses
(c) Basic operational knowledge base as indicated in the embedded knowledge component and that are readily available
(d) An understanding of known solutions to familiar problems with little generation of new ideas
(e) Ability to work under direct supervision with some responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

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EMBEDDED KNOWLEDGE

3. Identify and operation of cleaning machine/equipment
4. Must be able to distinguish between different chemicals and equipment
5. Knowledge of cleaning procedures and vehicle construction
6. Different chemicals to be used in cleaning vehicles
7. Safety procedures

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in cleaning a vehicle by using appropriate equipment and procedures

Work effectively with others as a member of a sales team in cleaning a vehicle by using appropriate equipment and procedures

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to cleaning a vehicle by using appropriate equipment and procedures

Communicate effectively in cleaning a vehicle by using appropriate equipment and procedures

No. 560 10 May 2002

National Certificate in maintaining vehicles: NQF Level 3

Field: Manufacturing, Engineering and Technology

Sub-field: Engineering

Level: 3
Credit: 180
Issue date:
Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of the automotive industry that relates to maintaining vehicles that is expressed by employers, employees and providers both currently and for the future. This qualification provides the learner with accessibility to be employed within the functional areas that include diesel, petrol, earthmoving equipment and air-conditioning and provides the flexibility to pursue different careers in the broader vehicle maintenance industry.

Purpose:

This qualification will allow a learner in the vehicle maintenance industry to obtain a nationally recognised qualification in and for diesel, petrol, earthmoving equipment and air-conditioning. It will also contribute to the upliftment of the vehicle maintenance industry and will set a standard for professionalism in the industry. The qualification will assist in changing perceptions of the lack of integrity and business ethics of the industry. This will also assist in improving relationships between employer and employees. The obtainment of the qualification will also attract and retain quality learners and employees. This qualification will also provide for recognition of prior learning to allow for the recognition of existing and common knowledge and skills that will not only allow a learner to gain credits towards this qualification, but also to move across the different functional areas.

The generic core unit standards as well as the specialised context (functional) unit standards (where indicated) provide credits that allow access to both vertically and horizontally articulated qualifications. This qualification will enhance the status, productivity and employability of the learner within the vehicle maintenance industry as well as contribute to the quality, production rate and growth. This allows for access, progression, portability and mobility within and between the different areas. Through the electives component of the qualification learners are able to demonstrate vocational skills through which they are able to engage in life skills activities, small business development, health and environmental issues. Through recognition of prior learning adult learners are encouraged to access basic education with an understanding that they already have knowledge and experience.

Learners, once qualified, are capable of maintaining vehicles (petrol, diesel, earthmoving and air-conditioning). This will allow the learner to provide a more effective service that will improve customer satisfaction. Learners will be able to move to higher levels of functionality and learning in the different areas.

This qualification will also allow for transformation within the vehicle servicing industry, as learners will be a model for other employees/learners. This will as mentioned earlier, attract quality people and allows for the aspiration of people to be part of the industry. The recognition of prior learning policies from the SETA/ETQA will formalise informal and non-formal learning and learners will be able to obtain a national qualification. This will improve the level of participation of employees in the industry.

A person acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate familiarity with local knowledge and contexts in performing the tasks related to the different areas in the vehicle servicing industry (diesel, petrol, earthmoving and air-conditioning)
- Demonstrate an understanding of and the ability to carry out simple operations using the fundamental systems, procedures in the four functional areas
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form
- Explore broader competencies required for entrepreneurial opportunities

Access to the Qualification

The qualification is open to everyone who wishes to be part of the vehicle serving industry

Learning assumed to be in place

Literacy and numeracy at NQF 1 or equivalent.

Exit Level Outcomes

The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, a learner is able to:

- Recall, interpret and apply knowledge and competence of maintaining vehicles within the vehicle servicing industry that will enhance the image and professionalism of the industry.
- Recall, interpret and apply knowledge and competence related to the reconditioning of vehicle components/parts.
- Describe, interpret, relate and demonstrate familiarity with local knowledge and contexts in performing the tasks related to diesel, petrol, earthmoving and air-conditioning.
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form.

The qualification consists of unit standards, which describes the knowledge and skills that will change the values of the learner and that describes competence in a specific unit standard.

Associated Assessment Criteria

Assessors should check that the learner must demonstrate an ability to consider a range of options and make decisions related to their context of work.

- The functions related to maintaining vehicles are described, analysed, assessed and the appropriate actions are taken to customer satisfaction.
- The functions related to the reconditioning of vehicle components/parts are described, analysed and assessed.
- Local knowledge and context in performing the tasks in the relevant functional area are explained, analysed and applied.
- Learners are able to communicate effectively with customers and members of the organisation.

International comparability

The unit standards were benchmarked against unit standards and qualifications form New Zealand and the United Kingdom.

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the electrical installation and maintenance environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence. These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment method and or tools used by the assessor must be fair in a sense that it does not hinder or advantage the learner, valid in a sense that it measures that it intents to measure, reliable in a sense that it is consistent and delivers the same output across a range of learners and practical in a sense that it takes into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment is carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to proof the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience.

Articulation possibilities

This qualification provides the learner with the flexibility to pursue different careers in the automotive industry. The level of flexibility within the range of electives will allow the individual to pursue further learning within an entrepreneurship, supervision/management, quality assurance, health and safety and engineering sub-disciplines.

Moderation Options

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.

- Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Criteria for registration of assessors

Assessors need experience in the following areas:

- Interpersonal skills
- Subject matter and
- Assessment.

The assessor needs to be competent in the planning and conducting of assessment of learning outcomes and in the design and development of assessments as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 4. Subject matter experience must be well developed within the different areas within the vehicle servicing industry. The assessor must have completed:

- a similar qualification at the level with a minimum of 6-12 months field experience after s/he has completed the qualification or,
- The subject matter experience of the assessor can be established by recognition of prior learning.

Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

Rules of combination

Learners wishing to achieve the National Certificate in servicing vehicles need to do the 55 credits as part of the fundamental learning, the core generic credits of 105, and the core functional credits as per functional area (depends on the area of specialisation) and the rest of the credits to be obtained from the elective area that relate to the functional area to add to a total of at least 180 credits.

TITLES MATRIX: NATIONAL CERTIFICATE IN MOTOR SALES AND SUPPORT SERVICES – NQF LEVEL 3

Fundamental	NLRD	Credits	Core	Credits	Elective	Credits
Communication Skills		**20**	Dismantle component	4		
Accommodate audience and context needs in oral communication	8415	5				
Interpret and use information from texts	8969	5				
Write texts for a range of communicative contexts	8970	5	Repair and assemble components	10		
Use language and communication in occupational learning programmes	8973	5	Check and adjust steering geometry	4		
Mathematical Literacy		**16**	Service and repair vehicle retardation	6		
Read and interpret engineering drawings	9885	4	Assess condition of component/part	10		
Demonstrate understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	9010	4	Install vehicle component	8		
Use mathematics to investigate and monitor the financial aspects of personal and business issues	9011	4				
Describe, apply and calculate shape and motion in 2- and 3-dimensional space in fifferent contexts	9013	4				
Working with information			Recondition a torque converter	6		
Using information and technology reflecting agreed outcomes		5	Recondition fifth wheel	3		
			Fit and commission air-conditioners to vehicles	10		
			Recondition undercarriage components	10		
Life skills			Control, handle, store and dispose hazardous substances	2		
Manage personal finance		4	Maintain a safe and healthy working environment	8		
Understanding and dealing with HIV/AIDS personally and in the workplace		3	People interacting, leading and developing	16		
Develop a personal portfolio and a learning plan and prepare for assessment		6	Business relations	8		
Total fundamental		54	Total Core	105	Total electives	24
Total for qualification						180

The following broad outcomes are identified for the following unit standards:

Control, handle, store and dispose hazardous substances (materials/chemicals)	1. Store hazardous and dangerous chemicals and materials in demarcated, safe and secure areas identifiable through the use of colour codes and relevant signage 2. Handle hazardous and dangerous chemicals and materials according to safety policies and procedures in order to prevent accidents 3. Dispose hazardous materials and chemicals according to safety procedures 4. Adhere to the safety and fire procedure policy that will include evacuation drills with the aim of maintaining safety awareness and safe practices
Maintain a safe and healthy working environment	1. Apply safety and health procedures in performing daily activities to maintain and improve safety 2. Maintain and improve SHE programmes and keep records of meetings and safety inspections and incidents 3. Create and maintain SHE awareness programmes by performing necessary drills (fire, first aid) to enable learners to identify and resolve any problems 4. Conduct SHE meetings to update learners on SHE policies and procedures and keep records of meetings

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DISMANTLE COMPONENT

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 3
Credits: 4

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of dismantling vehicle component for inspection, repair/replacement. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Names and location of parts
	Skills	Remove and replace part and/or component
	Attitude	Behaviour = planning, reporting and feedback

Specific outcomes (Learners can/learners will be able to)
1. Use manufacturers manual to identify dismantling procedure 2. Select appropriate tools and equipment 3. Use appropriate tools and manual to dismantle components 4. Dismantle component/part and store in designated area

Assessment criteria (Evidence shows/learners can show)
1.1 Select appropriate manual and identify dismantling procedures 1.2 Job instructions are read, interpreted and a sequence of operations is determined according to job requirements and worksite procedures. 1.3 Appropriate tools are identified and selected according to job requirements and worksite procedures. 1.4 Manufacturers' manuals are acquired according to job requirements and worksite procedures. 1.5 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements and worksite procedures. 1.6 Work area and component is prepared according to safety, work site and manufacturer's procedures. 1.7 Reason(s) for selecting appropriate tools and equipment. 1.8 Reason(s) for preparing work area and component. 1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Select appropriate tools/equipment 2.2 Components are dismantled according to manufacturer's, safety and work site procedures. 2.3 Use hand tools according to safety and manufacturers procedures. 2.4 Appropriate tools, equipment and PPE are used according to job requirements. 2.5 Attachment agents are removed according to manufacturer's procedures. 2.6 Component parts are packed out in sequence of dismantling.

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Functional Area			

2.7 Communicate with competent person to carry out evaluation of parts reusability. 2.8 Identified unserviceable parts processed according to work site and quality procedures. 2.9 Serviceable component parts are cleaned according to manufacturers, work site and safety procedures. 2.10 Serviceable component parts are stored according to work site procedures. 2.11 Components are dismantled according to manufacturers or work site times schedules. 2.12 Reason for sorting components. 2.13 Reason(s) for packing out parts in sequence of dismantling. 2.14 Reason used to clean components.
3.1 Use appropriate tools and apply dismantling procedures as per manufactures manual 3.2 Work area is restored to a serviceable condition according to statutory and worksite procedures. 3.3 Documentation and reports are completed according to work site procedures. 3.4 Reasons and methods used to restore work area to serviceable condition. 3.5 Purpose of documentation.
4.1 Store dismantled parts/components

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in dismantling vehicle component for inspection, repair/replacement, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools could include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA and GERIFEDQA.

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Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools include but are not limited to: manufacturer's special service tools, workshop equipment and hand tools.
- Components include but are not limited to : Electric/electronic, hydraulic, pneumatic, mechanical.
- Vehicles include but are not limited to: off road, on road, watercraft, locomotive, stationary units and agricultural.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Planning and preparing work area and component includes but are not limited to: arranging tools and equipment, cleaning component.
- Restore work area to a serviceable condition includes but is not limited to: Tools and equipment packed away, work area cleaned.
- Process unserviceable parts destiny includes but are not limited to: pack in bin and stored, discarded at identified location, pack in identified area for customer inspection.
- Task can be carried out in a workshop or field environment.
- Task undertaken autonomously or in a team environment.
- Task can be performed with or without supervision.
- Competent person is someone who is competent in assessing parts reusability on component dismantled by learner.
- Workshop equipment may include but are not limited to lift chains, slings, drills, grinders, impact, wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to wrenches, pliers, screw drivers, files, chisels, punches, hammers, socket sets, allen keys and hacksaw.
- Attachment agents may include but are not limited to friction and anti-friction bearings, seals, gaskets and industrial fastners.

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records

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- Journals/logbook

EMBEDDED KNOWLEDGE

- Must be able to identify tools and equipment and prepare work area
- Knowledge of manuals and tools
- Dismantled components to be stored
- Must know OHS Act.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when dismantling vehicle component for inspection, repair/replacement

Work effectively with others as a member of a team in dismantling vehicle component for inspection, repair/replacement

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to dismantling vehicle component for inspection, repair/replacement

Communicate effectively when dismantling vehicle component for inspection, repair/replacement

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Functional Area			

REPAIR AND ASSEMBLE COMPONENTS

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 3
Credits: 10

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of repairing/reconditioning and assembling components. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Repair procedures and sourcing specifications
	Skills	Carry out repair procedures to manufactures specifications
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes **(Learners can/learners will be able to)**
1. Verify serviceability and draw the appropriate tools and equipment to be used 2. Prepare relevant parts/components for assembly 3. Repair relevant parts/components 4. Source reconditioned and/or replacement parts/components 5. Assemble according to manufacturers specifications/procedures 6. Check and test if component is functioning as per manufacturers specifications and quality procedures

Assessment criteria **(Evidence shows/learners can show)**
1.1 Evaluate serviceability of parts/component and draw appropriate tools 1.2 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures. 1.3 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures. 1.4 Manufacturers' manuals and/or specifications are acquired according to job requirements. 1.5 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements. 1.6 Work area and component/part is prepared according to safety, work site and manufacturer's procedures. 1.7 Reason(s) for selecting appropriate tools and equipment. 1.8 Reason(s) for selecting appropriate PPE. 1.9 Reason(s) for preparing work area and component/part. 1.10Purpose of acquiring appropriate documentation and manuals.

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2.1 Prepare relevant parts/components for assembly
2.2 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.3 Parts are visually inspected for defects according to manufacturer's guidelines.
2.4 Parts are measured according to manufacturer's procedures.
2.5 Measuring equipment are used according to manufacturers procedures and job requirements.
2.6 Measurements are recorded according to work site procedures.
2.7 Measurements are compared to manufacturer's specifications for serviceability.
2.8 Unserviceable parts are separated and marked according to work site and quality procedures.
2.9 Replacement parts are ordered according to work site procedures.
2.10 Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.11 Parts are sorted according to ferrous and non-ferrous metal.
2.12 Reason for sorting ferrous and non-ferrous parts.
2.13Procedures to order replacement parts.
2.14 Reason(s) for parts been unserviceable.

3.1 Component/part is repaired
3.2 Parts are cleaned before assembly according to safety and work site procedures.
3.3 Component/parts are assembled according to manufacturer's procedures and specifications.
3.4 Attachment agents are applied according to manufacturers procedures and job requirements.
3.5 Specified lubricants are used during assembly.
3.6 Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.7 Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.8 Reason (s) for using lubricants during assembly.
3.9 Reason (s) for cleaning parts before assembly.
3.10 Reason (s) for measurements and adjustments during assembly.
3.11 Reason (s) for post-test / checks.

4.1 Obtain reconditioned/replacement parts
4.2 Component/part is prepared for storage according to manufacturer's and work site procedures.
4.3 Documentation is completed according to work site procedures.
4.4 Work area is restored to serviceable condition according to work site procedures.

5.1 Manufactures specifications and procedures are used to assemble

6.1 Components/parts are functioning according to manufactures specifications

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in repairing/reconditioning and assemble components, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:

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- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information includes but is not limited to: Manufacturer's manuals, parts manuals, and worksite procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Preparation of *Component* for storage includes but is not limited to: Plastic wrapping, anti-rust, blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned *Component* stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of *Component* and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.

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- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- This unit standard excludes transmission

Level (for level 3)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:
(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Must be able to identify condition of components and draw tools
- Should know parts/components need to be prepared prior to assembly
- Have component repair knowledge
- Know how/where to obtain manufactures specifications and procedures
- Should know that component should be checked and tested
- Know function of component

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when repairing/reconditioning and assemble components

Work effectively with others as a member of a sales team in repairing/reconditioning and assemble components

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to repairing/reconditioning and assemble components

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Communicate effectively when repairing/reconditioning and assemble components

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Level	3	Unit standard number	MV01/03
Functional Area			

CHECK AND ADJUST STEERING GEOMETRY

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 3
Credits: 4

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of checking and adjusting of steering geometry to manufacturers specifications. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Should understand fundamentals of steering geometry and equipment
	Skills	Use appropriate equipment and adjust steering geometry
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes **(Learners can/learners will be able to)**
1. Use lift equipment
2. Perform pre-checks
3. Obtain relevant specifications
4.Use alignment equipment and print reports
5. Communicate findings to customer
6. Align against specifications and test vehicle for road safety

Assessment criteria **(Evidence shows/learners can show)**
1.1 Perform lifting procedures, remove and refit wheels 1.2 Job instructions are interpreted and a sequence of operations is determined according to worksite procedures. 1.3 Appropriate tools and wheel alignment equipment related to steering systems are identified and selected according to job requirements. 1.4 Manufacturer's manuals and specifications are acquired according to job requirements. 1.5 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements. 1.6 Work area and vehicle are prepared according to worksite and manufacturer's specifications.

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1.7 Purpose and method of selecting appropriate tools and wheel alignment equipment. 1.8 Reason for acquiring manufacturer's manuals and specifications. 1.9 Reason for selecting particular protective equipment
2.1 Perform pre-checks using manufactures check list 2.2 Pre-checks are carried out according to safety procedures and manufacturer's specifications. 2.3 Measuring equipment are used according to manufacture's procedure and job requirements. 2.4 Appropriate tools, equipment and PPE are used according to job requirements, safety and manufacturer's procedures. 2.5 Wheel alignment angles are measured and compared to manufacturer's specifications. 2.6 Information is gathered, analysed and conclusions are recorded on faults in steering system. 2.7 Reasons for carrying out pre-checks. 2.8 Purpose of gathering information.
3.1 List relevant specifications 3.2 Faulty steering system components are repaired or sent for repairs according to worksite Procedures. 3.3 Wheels are balanced according to manufacturer's specifications. 3.4 Steering system is adjusted according to manufacturer's specifications. 3.5 Settings are locked according to manufacturer's specifications. 3.6 Attachment agents are applied according to manufacturer's procedure and specifications. 3.7 Appropriate tools and wheel alignment equipment are used according to job requirements. 3.8 Reasons for balancing wheels. 3.9 Reasons for locking settings.
4.1 Perform wheel alignment inspection 4.2 Documentation is completed according to worksite procedures. 4.3 Work area and vehicle are restored to a serviceable condition. 4.5 Purpose of documentation.
5.1Obtain report from printer 6.1 Report findings to customer 7.1Set alignment against specifications 8.1 Test driver vehicle

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in checking and adjusting of steering geometry to manufacturers specifications, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning

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- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited the OHS Act.
- Appropriate tools include but are not limited to manufacturer's special service tools workshop equipment and handtools.
- Industrial fasteners include but are not limited to bolts nuts, washers, locking agent, split pins.
- Wheel alignment equipment includes but is not limited to bubble gauge, dunlop gauge, turn tables, brake and steering locks, diagnostic machine and wheel balancing machine.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Gathering information includes but is not limited to customers, operator/driver, pre-checks, and measurements.
- Workshop equipment may include but are not limited to lift chains, slings, drills, grinders, impact, wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to wrenches, pliers, screw drivers, files, chisels, punches, hammers, socket sets, allen keys and hack saw.
- Attachment agents may include but are not limited to friction and anti-friction bearings, seals, gaskets and industrial fasteners.
- Measuring equipment may include but are not limited to electronic and mechanical measuring instruments to the following types: Inside micrometers, outside micrometers, telescopic gauges, ball gauges, dial gauges, vernier, depth micrometers, mechanical ruler, measuring tape, callipers and feeler gauge.

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

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NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Knowledge of lifting procedures, wheel removal and refitting
- Know what pre-checks to perform
- Knowledge of where to source specifications
- Knowledge of equipment
- Know communication channels
- Know how to apply specifications
- Knowledge of road safety aspects

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when checking and adjusting of steering geometry to manufacturers specifications

Work effectively with others as a member of a team in checking and adjusting of steering geometry to manufacturers specifications

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to checking and adjusting of steering geometry to manufacturers specifications

Communicate effectively when checking and adjusting of steering geometry to manufacturers specifications

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Level	3	Unit standard number	MV01/03
Functional Area			

SERVICE AND REPAIR VEHICLE RETARDATION

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 3
Credits: 6

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of servicing and repairing vehicle retardation system/s. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Function and operation of system/s
	Skills	Able to service and repair system/s
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes
(Learners can/learners will be able to)

1. Identify various retardation systems
2. Perform visual inspection
3. Do performance test
4. Check and renew fluid levels
5. Service, repair and test
6. Check mechanical adjustment

Assessment criteria
(Evidence shows/learners can show)

1.1 Determine applicable systems
1.2 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.3 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.4 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.5 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.6 Work area and retardation system/s is prepared according to safety, work site and manufacturer's procedures.
1.7 Reason(s) for selecting appropriate tools and equipment.
1.8 Reason(s) for selecting appropriate PPE.
1.9 Reason(s) for preparing work area and retardation system/s.
1.10 Purpose of acquiring appropriate documentation and manuals

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Functional Area			

2.1 Inspect system visually
2.2 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.3 Parts are visually inspected for defects according to manufacturer's guidelines.
2.4 Parts are measured according to manufacturer's procedures.
2.5 Measuring equipment are used according to manufacturers procedures and job requirements.
2.6 Measurements are recorded according to work site procedures.
2.7 Measurements are compared to manufacturer's specifications for serviceability.
2.8 Unserviceable parts are separated and marked according to work site and quality procedures.
2.9 Replacement parts are ordered according to work site procedures.
2.10 Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.11 Procedures to order replacement parts.
2.12 Reason(s) for parts been unserviceable.

3.1 Perform applicable test
3.2 Parts are cleaned before assembly according to safety and work site procedures.
3.3 Retardation system/s is assembled according to manufacturer's procedures and specifications.
3.4 Attachment agents are applied according to manufacturers procedures and job requirements.
3.5 Specified lubricants are used during assembly.
3.6 Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.7 Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.8 Retardation system/s is reconditioned according to manufacturers or work site time schedules.
3.9 Reason (s) for using lubricants during assembly.
3.10 Reason (s) for cleaning parts before assembly.
3.11. Reason (s) for measurements and adjustments during assembly.
3.12 Reason (s) for post-test / checks.

4.1Replenish fluids
4.2 Retardation system/s is prepared for storage according to manufacturer's and work site procedures.
4.3 Documentation is completed according to work site procedures.
4.4 Work area is restored to serviceable condition according to work site procedures.
4.5 Reason (s) for preparing retardation system/s for storage.
4.6 Purpose of documentation.

5.1 Perform service, repair and test to criteria
6.1 Apply adjustment according to specifications

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in servicing and repairing vehicle retardation system/s, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

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Functional Area			

These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to : OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to : manufacturer's special service tools, workshop equipment and hand tools.
- Retardation systems include but are not limited to: pneumatic, hydraulic, mechanical, pneumatic over hydraulic, electro pneumatic.
- Retardation systems components include but are not limited to : Master/slave cylinders, Air/vacuum boosters, Brake clutches, Calliper, roto-chambers, valves, pumps and compressors.
- Service Information include but are not limited to : Manufacturer's manuals, parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards, part requisitions, job reports.
- Defects on visual inspection include but are not limited to : Pit marks, cracks, burns, distortion, manufacturing flaws.
- Preparation of retardation system components for storage includes but is not limited to : Anti-rust, plastic wrapping, blocking off ports.
- Work area preparation includes but is not limited to: arrange tools and equipment, set up brake system components on workbench or stand, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or working condition of component.

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Functional Area			

- Pre and post-test / checks can include any one or a combination of the following: Operation of the component: tested on a test apparatus. (Dynamic operation of component), Working condition of the component: turn freely by hand / manual, measurements checks, adjustment checks, pressure checks. (Static operation of component)
- Cleaning of components parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in team environment.
- Supervision by a competent person necessary when learner test operation of component during pre and / or post-test.
- Competent person is someone who is competent in testing operation of components on testing apparatus.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or with out supervision
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held/pedestal), impact wrenched, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as: inside/outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Knowledge of various retardation systems
- Knowledge of test criteria
- Knowledge of test procedure
- Know where to source adjustment specifications
- Operation of brake system components.
- Method to recondition brake system components.

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- Identification of ferrous and non-ferrous metals and materials related to brake system component parts.
- Methods of assessing serviceability of brake system component parts.
- Procedures to obtain relevant service information.
- Safety procedures related to reconditioning brake system components.
- Use and care for appropriate tools and equipment related to reconditioning brake system components.
- Principles of lubricants related to brake systems
- Procedures to test / check components prior to dismantling and after reconditioning.
- Select, use and care for measuring equipment applicable to the task.
- Select, use and attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when servicing and repairing vehicle retardation system/s

Work effectively with others as a member of a team in servicing and repairing vehicle retardation system/s

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to servicing and repairing vehicle retardation system/s

Communicating effectively when servicing and repairing vehicle retardation system/s

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Functional Area			

ASSESS CONDITION OF COMPONENTS/PARTS

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 3
Credits: 10

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of assessing condition of components and parts. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Function and operation of component/part
	Skills	Use test equipment for assessment
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes
(Learners can/learners will be able to)

1. Clean components for inspection
2. Assess component or part according to procedures and compare results against manufacturer's specifications
3. Use test equipment to determine the serviceability of parts and components
4. Compile and submit condition report
5. Use report to communicate the serviceability of the component or part

Assessment criteria
(Evidence shows/learners can show)

1.1 Identify components for assessment
1.2 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.3 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.4 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.5 Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and vehicle.
1.9 Purpose of acquiring appropriate documentation and manuals.

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2.1 Component cleaned for assessment according to safety and work procedures
2.2 System is serviced according to service schedule report and quality procedures.
2.3 Parts are cleaned according to safety and work site procedures.
2.4 Appropriate service tools, equipment and PPE are used according to job requirements.
2.5 Necessary tests are carried out and results recorded according to manufacturer's specifications and worksite procedures.
2.6 Measuring equipment are used according to manufacturer's procedures and job requirements.
2.7 Attachment agents are applied according to manufacturer's procedures and job requirements.
2.8 System is visually inspected for defects according to maintenance schedule, manufacturer's specifications and road ordnance.
2.9 Defects are identified and recorded according to work site procedures.
2.10 Reasons for and methods used to clean parts.
2.11 Reasons for visual inspection.
2.12 Reasons for testing and adjusting a vehicle.

3.1 Conduct pre-test/check on component according to manufacturing procedure
3.2 Condition of component inspected
3.3 Leaks and/or defects associated with the servicing of the system is repaired according to manufacturer's specifications.
3.4 Leaks and/or defects not associated with the servicing of the system is recorded according to work site procedures.
3.5 Documentation is completed according to worksite procedures.
3.6 Work area and vehicle are restored to a serviceable condition according to worksite procedures.
3.7 Purpose of documentation.
3.8 Reasons for inspecting vehicle system while engine is running.

4.1 Parts are assessed to manufacturers procedures
5.1 Finding recorded according to work procedure and compared to manufacturers specification
6.1 Identify and select appropriate test equipment

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in assessing condition of components and parts, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

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These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to the OHS Act and the Road Safety Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to manufacturer's special service tools, workshop equipment, hand tools.
- Component includes but is not limited to: engine, hydraulic, drive train, and brakes.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Visual defects include but are not limited to cracks, burns, distortion, manufacturing flaws, leaks, loose bolts and nuts, worn components and electric / electronic systems not working.
- Vehicles include but are not limited to motor, earth moving, locomotive, stationary units.
- Leaks include but are not limited to water, oil, air and fuel.
- Necessary tests include but are not limited to pressure, vacuum, compression.
- Necessary adjustments include but are not limited to linkage, cables, valve clearance, brakes and relief valves.
- Planning and preparing work area and vehicle include but are not limited to arranging tools and equipment, parking vehicle on stable and level surface, identification of vehicle as not operational, obtaining the necessary lubricants and parts for service, disconnecting battery from electric system safely.
- Restoring work area and vehicle to serviceable condition include but are not limited to: Tools and equipment packed away, work area cleaned, vehicle battery safely connected to electric system.
- Component information includes but is not limited to: parts books, manufacturers manuals, work site procedures.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

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(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Name and function of parts/component
- Properties of materials (ferrous and non ferrous)
- Know procedures on how to assess parts
- Safety procedures
- Know how to source required manufacturers technical data
- Proper cleaning procedures
- Identify and recall function maintain test equipment
- Know operation of test equipment
- Report writing skills (technical)
- Know procedures on how to submit reports
- Know how to interpret findings (results)
- Know characteristics of components

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way assessing condition of components and parts

Work effectively with others as a member of a sales team in assessing condition of components and parts

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to assessing condition of components and parts

Communicate effectively when assessing condition of components and parts

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Functional Area			

INSTALL VEHICLE COMPONENT

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 3
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of installing components to restore a vehicle to an operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Function and installation procedures of components
	Skills	Use appropriate tools and equipment for installation
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Install vehicle component
3. Test installation
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are interpreted and a sequence of operation is determined according to worksite procedures. 1.2 Appropriate service tools and equipment are identified and selected according to job requirements. 1.3 Manufacturer's manuals and/or specifications are acquired according to job requirements. 1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements. 1.5 Work area and vehicle are prepared according to worksite procedures and manufacturer's specifications. 1.6 Purpose and method of selecting specific tools and equipment. 1.7 Reason for selecting particular protective equipment.. 1.8 Reasons for preparing work area and vehicle. 1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 All openings and disconnected pipes and hoses are opened and cleaned. 2.2 Component is installed according to safety, quality procedures and manufacturer's specifications.

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2.3 Appropriate tools are used according to safety and manufacturer's procedures and job specifications. 2.4 Attachment agents are used according to manufacturer's procedures and job requirements. 2.5 Battery positive terminal is connected prior to connecting negative terminal. 2.6 Component is installed according to manufacturers or worksite time schedules. 2.7 Reason(s) for cleaning all openings and disconnected pipes and hoses. 2.8 Reason(s) for connecting battery positive prior to connecting the negative terminal.
3.1 System levels and fluids are checked according to manufacturer's procedures. 3.2 Component is lubricated according to manufacturer's procedures. 3.3 Component installation is checked prior to start up. 3.4 Reason(s) for inspecting component installation.
4.1 Documentation is completed according to worksite procedures. 4.2 Work area and vehicle are restored to a serviceable condition. 4.3 Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in installing vehicle components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

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Context

- Statutory requirements include but are not limited to the OHS Act and local authority requirements.
- Appropriate quality procedures ISO 9000.
- Appropriate tools include but are not limited to manufacturer's special service tools, workshop equipment and hand tools.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Component installation checks include but are not limited to: Water and oil leaks, loose pipes and connections.
- Planning and preparing work area and vehicle includes but are not limited to: Arrange tools and equipment, identification of vehicle as not operational.
- Restore work area and vehicle includes but is not limited to: Tools and equipment packed away, work are cleaned, vehicle battery safely connected to electric system.
- Service information includes but is not limited to: Parts books, manufacturers manuals, worksite procedures.
- Components only include those that do not require adjustments and/or tests.
- Fluids include but are not limited to: oil, water, brake fluid.
- Lubrication includes but is not limited to: greasing, oiling.
- Task can be carried out in a workshop or field environment.
- Task undertaken individually or in a team environment.
- Task can be performed with or without supervision.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held/pedestal), impact wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, sockets sets, allen keys and hacksaws.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, and industrial fasteners.

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and names of components.

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- Principles of lubricants related to installing vehicle components.
- Safety procedures associated installing vehicle components.
- Use and care for tools and equipment related to installing vehicle components.
- Start, stop and driving procedures on a vehicle.
- Procedures to obtain relevant service information.
- Appropriate quality procedures ISO 9000
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.
- Select, use and attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when installing components to restore a vehicle to an operational condition

Work effectively with others as a member of a team in installing components to restore a vehicle to an operational condition

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to installing components to restore a vehicle to an operational condition

Communicate effectively when installing components to restore a vehicle to an operational condition

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Version	3	Date	12 April 2002
Level	3	Unit standard number	MV01/03
Functional Area			

RECONDITION A TORQUE CONVERTER

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 3
Credits: 6

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning a torque converter to restore to operational condition. This will contribute to the exit level outcomes required for the National Certificate in servicing vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Knowledge of operation and function of torque converter
	Skills	Able to strip, assess and repair torque converter
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes
(Learners can/learners will be able to)

1. Identify and select correct tools and equipment
2. Assess torque converter parts
3. Assemble torque converter parts
4. Test operation of torque converter
5. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)

1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and torque converter is prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and torque converter.
1.9 Purpose of acquiring appropriate documentation and manuals

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2.1	Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment is used according to manufacturers procedures and job requirements.
2.5	Measurements are recorded according to work site procedures.
2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to work site and quality procedures.
2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Torque converter is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Torque converter is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10.	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Torque converter is prepared for storage according to manufacturer's and work site procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing torque converter for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning a torque converter and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence

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- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of torque converter for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned Undercarriage component stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of Undercarriage component and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Undercarriage components can include but is not limited to the following: idlers, bogies, sprockets, rollers.
- Reconditioning of undercarriage components does not include the repairing of wear services or worn holes, slots etc and is only limited to the assessing of parts, ordering of necessary parts and assembling of the component.
- Necessary parts include new and remanufactured parts

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- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

(g) Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
(h) Relevant certificates or awards
(i) Previous assessment records
(j) Journals/logbook

- Operation of undercarriage components.
- Identification, names and functions of undercarriage components and parts.
- Identification of ferrous and non-ferrous metals related to undercarriage components.
- Methods of assessing serviceability of undercarriage components parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to undercarriage components.
- Safety procedures related to reconditioning undercarriage components.
- Use and care for appropriate tools and equipment.
- Method to recondition undercarriage components.
- Use and care for measuring instruments related to undercarriage components reconditioning.
- Procedures to test / check undercarriage components prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in reconditioning a torque converter

Work effectively with others as a member of a team in reconditioning a torque converter

Organise and manage oneself and one's personal activities responsibly and effectively.

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Functional Area			

Collect, analyse, organise and critically evaluate information relevant to reconditioning a torque converter

Communicate effectively when reconditioning a torque converter

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Functional Area			

RECONDITION FIFTH WHEEL

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 3
Credits: 3

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning a fifth wheel to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Knowledge of functioning of fifth wheel
	Skills	Service and repair fifth wheel
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess fifth wheel
3. Assemble fifth wheel
4. Test operation of fifth wheel
5. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and components are prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and components.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, worksite and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's procedures.

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2.3 Parts are measured according to manufacturer's procedures and specifications. 2.4 Measuring equipment are used according to manufacturer's and job requirements. 2.5 Measurements are recorded according to worksite procedures. 2.5 Measurements are compared to manufacturer's specifications for serviceability. 2.6 Unserviceable parts are separated and marked according to worksite and quality procedures. 2.7 Replacement parts are ordered according to worksite procedures. 2.8 Reasons for and methods used to clean parts. 2.9 Reasons for visual inspection and measurements. 2.10 Reasons for parts being unserviceable.
3.1 Parts are cleaned before assembly according to safety and worksite procedures. 3.2 Fifth wheel is assembled according to manufacturer's procedure and specifications. 3.3 Appropriate tools, equipment and PPE are used according to safety and manufacturer's procedure and job requirements. 3.4 Attachment agents are applied according to manufacturer's and job requirements. 3.5 Fifth wheel is reconditioned according to manufacturers or worksite timesschedules. 3.6 Reasons for cleaning parts prior to assembly.
4.1 Fifth wheel is prepared for storage according to worksite procedures. 4.2 Documentation is completed according to worksite procedures. 4.3 Work area is restored to serviceable condition according to worksite procedures. 4.4 Reasons for preparing components for storage. 4.5 Purpose of documentation. 4.6 Reasons and methods used to restore work area to serviceable condition.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning a fifth wheel and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

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Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of torque converter for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned Undercarriage component stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Undercarriage components can include but is not limited to the following: idlers, bogies, sprockets, rollers.
- Reconditioning of undercarriage components does not include the repairing of wear services or worn holes, slots etc and is only limited to the assessing of parts, ordering of necessary parts and assembling of the component.
- Necessary parts include new and remanufactured parts
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws

Level (for level 3)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems

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(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

(k) Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
(l) Relevant certificates or awards
(m) Previous assessment records
(n) Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of undercarriage components.
- Identification, names and functions of undercarriage components and parts.
- Identification of ferrous and non-ferrous metals related to undercarriage components.
- Methods of assessing serviceability of undercarriage components parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to undercarriage components.
- Safety procedures related to reconditioning undercarriage components.
- Use and care for appropriate tools and equipment.
- Method to recondition undercarriage components.
- Use and care for measuring instruments related to undercarriage components reconditioning.
- Procedures to test / check undercarriage components prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning a fifth wheel to restore operational condition

Work effectively with others as a member of a team in reconditioning a fifth wheel to restore operational condition

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning a fifth wheel to restore operational condition

Communicate effectively when reconditioning a fifth wheel to restore operational condition

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Functional Area			

RECONDITION UNDERCARRIAGE COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 3
Credits: 10

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning undercarriage components to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicles and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Understanding and knowledge of undercarriage components
	Skills	Able to recondition undercarriage components
	Attitude	Behaviour = Planning, reporting and feedback

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess under carriage component parts
3. Assemble under carriage component parts
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5	Work area and component is prepared according to safety, work site and manufacturer's procedures.
1.6	Reason(s) for selecting appropriate tools and equipment.
1.7	Reason(s) for selecting appropriate PPE.
1.8	Reason(s) for preparing work area and component.
1.9	Purpose of acquiring appropriate documentation and manuals.
2.1	Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment is used according to manufacturers procedures and job requirements.
2.5	Measurements are recorded according to work site procedures.

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2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to work site and quality procedures.
2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Undercarriage component is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Undercarriage component is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Undercarriage component is prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing torque converter for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning undercarriage components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical

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Functional Area			

competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of torque converter for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned Undercarriage component stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of Undercarriage component and parts includes but is not limited to: removing oil, sendiment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Undercarriage components can include but is not limited to the following: idlers, bogies, sprockets, rollers.
- Reconditioning of undercarriage components does not include the repairing of wear services or worn holes, slots etc and is only limited to the assessing of parts, ordering of necessary parts and assembling of the component.
- Necessary parts include new and remanufactured parts
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, calipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fastners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.

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- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws

Level (for level 3)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:
(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of undercarriage components.
- Identification, names and functions of undercarriage components and parts.
- Identification of ferrous and non-ferrous metals related to undercarriage components.
- Methods of assessing serviceability of undercarriage components parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to undercarriage components.
- Safety procedures related to reconditioning undercarriage components.
- Use and care for appropriate tools and equipment.
- Method to recondition undercarriage components.
- Use and care for measuring instruments related to undercarriage components reconditioning.
- Procedures to test / check undercarriage components prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in reconditioning undercarriage components

Work effectively with others as a member of a team in reconditioning undercarriage components

Organise and manage oneself and one's personal activities responsibly and effectively.

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Functional Area			

Collect, analyse, organise and critically evaluate information relevant to reconditioning undercarriage components

Communicate effectively when reconditioning undercarriage components

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Version	3	Date	12 April 2002
Level	3	Unit standard number	MV01/03
Functional Area			

DIAGNOSE, MAINTAIN AND REPAIR AN AUTOMOTIVE AIR-CONDITION SYSTEM

Field: Manufacturing, Engineering And Technology
Sub-field: Engineering

Level: 3
Credits: 10

Issue date:
Review date:

Purpose:
Learner is capable of diagnosing auto aircon systems by converting visual, audio, mechanical checks and proceeding with the relevant repairs and or maintenance procedures

Learning assumed to be in place	Knowledge	Fit and commission air-conditioners to vehicle
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)	**Assessment criteria (Evidence shows/learners can show)**
Read job card	• Understand the contents of a job card
Connect diagnostic equipment, start engine and operate aircon system	• Connect manifold gauge system in the correct manner • Run car at correct revs and switch fan to correct speed • Safe working procedures are followed
Test aircon system	• Visual, noise and vibration tests are done • Pressure test are done • Temperature are done • Safe working procedures are followed
Determine correct action and report test results	• System is leak tested • SHE procedures are followed • Job card filled in accordingly
Conduct necessary repair or maintenance procedures	• Repairs/maintenance are carried out in line with diagnoses and in line with SHE procedures
Reinstate aircon system	• Evacuate and charge system • No gasses and oils is leaked to the environment
Retest aircon system	• Visual, noise and vibration checks are done • Pressure test are done • Temperature checks are done • Leak tests are done • SHE procedures are followed
Repair vehicle for the customer	• Vehicle is ready for handover

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing auto aircon systems by converting visual, audio, mechanical checks and proceeding with the relevant repairs and or maintenance procedures, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

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Functional Area			

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context
Applicable to all light motor vehicles.

Level (for level 3)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:
(a) A range of well-developed skills
(b) An ability to offer a significant choice of procedures
(c) Some relevant theoretical knowledge
(d) An ability to interpret available information
(e) An ability to respond to familiar problems
(f) An ability to function with significant responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

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- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Product knowledge
- Auto aircon diagnostic theory
- Diagnostic procedures
- Use of manifold gauge system set
- Charging procedures
- Vacuum procedures
- Leak test procedures
- Temperature readings
- Leak repair procedures
- SHE procedures and standards

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems by receiving a job card to determine a course of action and following a logical diagnostic procedure. The aircon system will be fitted in a timeous manner.

Work effectively with others as a member of a workshop team in an automotive repair centre.

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to results obtained from diagnostic procedures.

Understand and apply a range of office management-related techniques, procedures and experimental approaches required in the different specific programmes leading up to this qualification.

Understand the world as a set of related systems by recognising that air-conditioning systems can have a negative effect on the environment if gasses or oils are allowed to leak into the atmosphere.

Customer expectations and needs are understood and fulfilled by ensuring that the work is done properly and efficiently.

No. 561 **10 May 2002**

National Certificate in maintaining vehicle systems: NQF Level 4

Field: Manufacturing, Engineering and Technology

Sub-field: Engineering

Level: 4
Credit: 200
Issue date:
Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of the automotive industry that relates to maintaining vehicle systems that is expressed by employers, employees and providers both currently and for the future. This qualification provides the learner with accessibility to be employed within the functional areas that include diesel, petrol, and earthmoving equipment and provides the flexibility to pursue different careers in the broader vehicle maintenance industry.

Purpose:

This qualification will allow a learner in the vehicle maintenance industry to obtain a nationally recognised qualification in and for diesel, petrol, and earthmoving. It will also contribute to the upliftment of the vehicle maintenance industry and will set a standard for professionalism in the industry. This will also assist in improving relationships between employer and employees. The obtainment of the qualification will also attract and retain quality learners and employees. This qualification will also provide for recognition of prior learning to allow for the recognition of existing and common knowledge and skills that will not only allow a learner to gain credits towards this qualification, but also to move across the different functional areas.

The generic core unit standards as well as the specialised context (functional) unit standards (where indicated) provide credits that allow access to both vertically and horizontally articulated

qualifications. This qualification will enhance the status, productivity and employability of the learner within the vehicle maintenance industry as well as contribute to the quality, production rate and growth. This allows for access, progression, portability and mobility within and between the different areas. Through the electives component of the qualification learners are able to demonstrate vocational skills through which they are able to engage in life skills activities, small business development, health and environmental issues. Through recognition of prior learning adult learners are encouraged to access basic education with an understanding that they already have knowledge and experience.

Learners, once qualified, are capable of maintaining vehicle systems (petrol, diesel, and earthmoving). This will allow the learner to provide a more effective service that will improve customer satisfaction. Learners will be able to move to higher levels of functionality and learning in the different areas.

This qualification will also allow for transformation within the vehicle servicing industry, as learners will be a model for other employees/learners. This will as mentioned earlier, attract quality people and allows for the aspiration of people to be part of the industry. The recognition of prior learning policies from the SETA/ETQA will formalise informal and non-formal learning and learners will be able to obtain a national qualification. This will improve the level of participation of employees in the industry.

A person acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate familiarity with local knowledge and contexts in performing the tasks related to the different areas in the vehicle servicing industry (diesel, petrol, earthmoving and air-conditioning)
- Demonstrate an understanding of and the ability to carry out simple operations using the fundamental systems, procedures in the four functional areas
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form
- Explore broader competencies required for entrepreneurial opportunities

Access to the Qualification

The qualification is open to everyone who wishes to be part of the vehicle serving industry

Learning assumed to be in place

Literacy and numeracy at NQF 1 or equivalent.

Exit Level Outcomes

The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, a learner is able to:

- Recall, interpret and apply knowledge and competence of maintaining vehicles systems within the vehicle servicing industry that will enhance the image and professionalism of the industry.
- Recall, interpret and apply knowledge and competence related to the reconditioning of vehicle systems.
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form.

The qualification consists of unit standards, which describes the knowledge and skills that will change the values of the learner and that describes competence in a specific unit standard.

Associated Assessment Criteria

Assessors should check that the learner must demonstrate an ability to consider a range of options and make decisions related to their context of work.

- The functions related to maintaining vehicles are described, analysed, assessed and the appropriate actions are taken to customer satisfaction.
- The functions related to the reconditioning of vehicle components/parts are described, analysed and assessed.
- Local knowledge and context in performing the tasks in the relevant functional area are explained, analysed and applied.
- Learners are able to communicate effectively with customers and members of the organisation.

International comparability

The unit standards were benchmarked against unit standards and qualifications form New Zealand and the United Kingdom.

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the electrical installation and maintenance environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence. These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment method and or tools used by the assessor must be fair in a sense that it does not hinder or advantage the learner, valid in a sense that it measures that it intents to measure, reliable in a sense that it is consistent and delivers the same output across a range of learners and practical in a sense that it takes into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment is carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to proof the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience.

Articulation possibilities

This qualification provides the learner with the flexibility to pursue different careers in the automotive industry. The level of flexibility within the range of electives will allow the individual to pursue further learning within an entrepreneurship, supervision/management, quality assurance, health and safety and engineering sub-disciplines.

Moderation Options

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.
- Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass

achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Criteria for registration of assessors

Assessors need experience in the following areas:

- Interpersonal skills
- Subject matter and
- Assessment.

The assessor needs to be competent in the planning and conducting of assessment of learning outcomes and in the design and development of assessments as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 4. Subject matter experience must be well developed within the different areas within the vehicle servicing industry. The assessor must have completed:

- a similar qualification at the level with a minimum of 6-12 months field experience after s/he has completed the qualification or,
- The subject matter experience of the assessor can be established by recognition of prior learning.

Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

Rules of combination

Learners wishing to achieve the National Certificate in servicing vehicles need to do the 48 credits as part of the fundamental learning, the core generic credits of 124, and the core functional credits as per functional area (depends on the area of specialisation) and the rest of the credits to be obtained from the elective area that relate to the functional area to add to a total of at least 190 credits.

NATIONAL CERTIFICATE IN MAINTAINING VEHICLE SYSTEMS – NQF LEVEL 4

Fundamental	NLRD	Credits	Core	Credits	Elective	Credits
Communication Skills		**20**	Diagnose faults by using and reading test equipment	6	Improve a safe and healthy working environment	8
Engage in sustained oral communication and evaluate spoken texts (C/07)	8974	5	Recondition turbocharger	8		
Read, analyse and respond to a variety of texts (C/09)	8975	5	Recondition hydraulic components	12		
Write for a wide range of contexts (C/09)	8976	5				
Use language and communication in occupational learning programmes	8973	5				
Mathematical Literacy		16	Recondition steering system components	8		
Use Mathematics ot investigate and monitor the financial aspects of personal, business, and national issues	9014	6	Recondition sub-assembly	8		
Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	9015	6				
Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two adnd three-dimensional space in the life and workplace of the adult with increasing responsibilities	9016	4	Recondition drive train components	6		
Working with information			Recondition cylinder head	6		
Using information and technology reflecting agreed outcomes		10	Recondition brake system components	8		
			Diagnose and repair vehicle systems	10		
			Diagnose and repair steering systems	8		
			Recondition a transmission system	12		
Life skills			Diagnose and maintain vehicle hydraulic systems	85		
Explain financial planning options and develop a plan		2	Recondition differentials	10		
			People interacting, leading and developing	6		
			Business relations	8		
Total fundamental		48	Total Core	110	Total electives	24
Total for qualification						172

The following broad outcomes are identified for the following unit standards:

Control, handle, store and dispose hazardous substances (materials/chemicals)	1. Store hazardous and dangerous chemicals and materials in demarcated, safe and secure areas identifiable through the use of colour codes and relevant signage 2. Handle hazardous and dangerous chemicals and materials according to safety policies and procedures in order to prevent accidents 3. Dispose hazardous materials and chemicals according to safety procedures 4. Adhere to the safety and fire procedure policy that will include evacuation drills with the aim of maintaining safety awareness and safe practices
Maintain a safe and healthy working environment	1. Apply safety and health procedures in performing daily activities to maintain and improve safety 2. Maintain and improve SHE programmes and keep records of meetings and safety inspections and incidents 3. Create and maintain SHE awareness programmes by performing necessary drills (fire, first aid) to enable learners to identify and resolve any problems 4. Conduct SHE meetings to update learners on SHE policies and procedures and keep records of meetings

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DIAGNOSE FAULTS BY USING AND READING TEST EQUIPMENT

Field: Manufacturing, Engineering and Technology
Sub-field: Engineering

Level: 4
Credits: 3

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing faults by using and reading test equipment. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Knowledge of system
	Skills	Reading, interpretation and information sourcing skills Planning, reporting and feedback
	Attitude	

Specific outcomes (Learners can/learners will be able to)

1. Place vehicle/component in demarcated area/work station,
2. Connect appropriate diagnostic/test equipment
3. Obtain readings and compare to manufacturers specifications
4. Apply diagnostic techniques according to manufacturer's procedures to safely assess faults
5. Compile condition report that serve as feedback, on completion of tests/checks on all systems and components

Assessment criteria (Evidence shows/learners can show)

1. Vehicle/component is placed in demarcated area
2. Appropriate diagnostic equipment is connected
3. Test equipment is used according to manufacturers specifications
4. Condition report is submitted according to work procedure
5. Assessment decision is recorded and condition report reflects actual condition of part/component
6. Pre-test/check on component is conducted according to manufacturers procedures

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing faults by using and reading test equipment, and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that she/ he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These tools may include the following:

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- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Vehicle specification includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect vehicle system to diagnostic/test, check all fluid levels , stabilizes systems.
- Restoring work area and vehicle to serviceable condition include but is not limited to: Tools and equipment packed away, work area cleaned.
- Work undertaken individually or in a team environment.
- Tasks to be undertaken in the workshop.
- Tasks can be undertaken with or without supervision
- Vehicle systems could be anyone of the following: Engine, transmission, complete vehicle.
- Testing equipment may include but are not limited to: electronic and mechanical measuring instruments
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

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Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and functions of diagnostic/test controls and components.
- Operation of diagnostic/test.
- Procedures to obtain relevant vehicle specifications.
- Safety procedures related to testing vehicle systems on a diagnostic/test.
- Method and procedures to test a vehicle systems using a diagnostic/test.
- Vehicle start, stop and driving procedures.
- Quality procedures related to testing vehicle systems on a diagnostic/test.
- Select, use and care for diagnostic/test equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in diagnosing faults by using and reading test equipment

Work effectively with others as a member of a sales team in diagnosing faults by using and reading test equipment

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing faults by using and reading test equipment

Communicate effectively when diagnosing faults by using and reading test equipment

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Functional Area			

RECONDITION TURBOCHARGER

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning turbocharger to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Use of test and measuring equipment Planning, reporting and feedback
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess turbocharger/blower parts
3. Assemble turbocharger/blower
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and Turbocharger / blower are prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and Turbocharger / blower.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturer's procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.

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2.7	Unserviceable parts are separated and marked according to work site and quality procedures.
2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment is used according to safety and manufacturer's procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Turbocharger / blower is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturer's procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Turbocharger / blower is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Turbocharger / blower is prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing hydraulic components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning of turbochargers/blowers and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

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Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Appropriate equipment includes but is not limited to: special manufacturer's tools.
- Turbocharger/blower information includes but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of turbocharger / blower for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sendiment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component

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(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of Turbocharger / blower and engine inlet and exhaust systems.
- Identification, names and functions of Turbocharger / blower parts.
- Identification of ferrous and non-ferrous metals related to Turbocharger / blower.
- Methods of assessing serviceability of Turbocharger / blower parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to Turbocharger / blower.
- Safety procedures related to reconditioning Turbocharger / blower.
- Use and care for tools and equipment related to Turbocharger / blower.
- Method to recondition Turbocharger / blower.
- Use and care for measuring instruments related to Turbocharger / blower reconditioning.
- Procedures to test / check Turbocharger / blower prior to dismantling and after reconditioning
- Select, use and care of measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care of workshop equipment applicable to the task.
- Select, use and care of hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning turbochargers/blowers

Work effectively with others as a member of a team in the reconditioning of turbochargers/blowers

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning of turbochargers/blowers

Communicate effectively when reconditioning of turbochargers/blowers

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RECONDITION HYDRAULIC COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning hydraulic components to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Learner should be able to read and write
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess hydraulic components
3. Assemble hydraulic components
4. Restore work area, complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.2 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.3 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.4 Work area and hydraulic components are prepared according to safety, work site and manufacturer's procedures.
1.5 Reason(s) for selecting appropriate tools and equipment.
1.6 Reason(s) for selecting appropriate PPE.
1.7 Reason(s) for preparing work area and components.
1.8 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturer's procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.
2.8 Replacement parts are ordered according to work site procedures.
2.9 Appropriate tools and equipment is used according to safety and manufacturers

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	procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and worksite procedures.
3.2	Hydraulic components are assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturer's procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Hydraulic components are reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Hydraulic components are prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored according to SHE requirements.
4.4	Reason (s) for preparing hydraulic components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning of hydraulic components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Appropriate equipment includes but is not limited to: Stands, special manufacturer's lifting equipment , workbench and vice.
- Hydraulic components include but are not limited to: Implement and steering system components, single and double acting cylinders , control valves , pressure relief valves vane and gear pumps, but excludes piston pumps and motors
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, work site procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of hydraulic components for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, set up drive train components on workbench or stand, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following: Operation of the component: tested on a test apparatus. (Dynamic testing of component), Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Supervision by a competent person necessary when learner test operation of component during pre and / or post-test.
- Competent person is someone who is competent in testing operation of components on testing apparatus.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

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Level (for level 4)
A learning programme leading to the award of this unit standard should develop learners who demonstrate:
(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of hydraulic components.
- Identification, names and functions of hydraulic components.
- Identification of ferrous and non-ferrous metals related to hydraulic components.
- Methods of assessing serviceability of hydraulic component parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to hydraulic components.
- Safety procedures related to reconditioning hydraulic components.
- Use and care for tools and equipment related to hydraulic components.
- Method to recondition hydraulic components.
- Use and care for measuring instruments related to hydraulic components.
- Procedures to test / check components prior to dismantling and after reconditioning
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning of hydraulic components

Work effectively with others as a member of a team in reconditioning of hydraulic components

Organise and manage oneself and one's personal activities responsibly and effectively.

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Collect, analyse, organise and critically evaluate information relevant to reconditioning of hydraulic components

Communicate effectively when reconditioning of hydraulic components

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RECONDITION STEERING SYSTEM COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning steering system components to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Use of workshop tools and equipment Planning, reporting and feedback
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess steering system components
3. Assemble steering system components
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5	Work area and steering components are prepared according to safety, work site and manufacturer's procedures.
1.6	Reason(s) for selecting appropriate tools and equipment.
1.7	Reason(s) for selecting appropriate PPE.
1.8	Reason(s) for preparing work area and components.
1.9	Purpose of acquiring appropriate documentation and manuals.
2.1	Parts are cleaned, before assessment, according to manufacturer's, worksite and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment are used according to manufacturer's procedure and job requirements.
2.5	Measurements are recorded according to worksite procedures.
2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to worksite and quality

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	procedures.
2.8	Replacement parts are ordered according to worksite procedures.
2.9	Appropriate tools and equipment are used according to job requirements, safety and manufacturer's procedure.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and worksite procedures.
3.2	Steering system components are assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturer's procedure and specifications.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and worksite procedures.
3.7	Steering system components are reconditioned according to manufacturers or worksite time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Steering system components are prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to worksite procedures.
4.3	Work area is restored to serviceable condition according to worksite procedures.
4.4	Reason (s) for preparing steering components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning steering component systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

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Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Steering systems/component information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of steering systems/component for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area according to SHE condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned Steering system/component component stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. (Static testing of component)
- Cleaning of steering systems/component and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Reconditioning of steering system/component components does not include the repairing of wear services or worn holes, slots etc and is only limited to the assessing of parts, ordering of necessary parts and assembling of the component.
- Necessary parts include new and remanufactured parts
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws

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Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of steering system/component components.
- Identification, names and functions of steering system/component components and parts.
- Identification of ferrous and non-ferrous metals related to steering system/component components.
- Methods of assessing serviceability of steering system/component components parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to steering system/component components.
- Safety procedures related to reconditioning steering system/component components.
- Use and care for appropriate tools and equipment.
- Method to recondition steering system/component components.
- Use and care for measuring instruments related to steering system/component components reconditioning.
- Procedures to test / check steering system/component components prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning steering system components to restore operational condition

Work effectively with others as a member of a team in reconditioning steering system components to restore operational condition

Organise and manage oneself and one's personal activities responsibly and effectively.

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Collect, analyse, organise and critically evaluate information relevant to reconditioning steering system components to restore operational condition

Communicate effectively when reconditioning steering system components to restore operational condition

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RECONDITION SUB-ASSEMBLY

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning sub-assembly to restore to operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Use of hand tools and measuring equipment Planning, reporting and feedback mechanisms
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess sub-assembly parts
3. Assemble sub-assembly
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5	Work area and sub-assembly is prepared according to safety, work site and manufacturer's procedures.
1.6	Reason(s) for selecting appropriate tools and equipment.
1.7	Reason(s) for selecting appropriate PPE.
1.8	Reason(s) for preparing work area and Sub-assembly.
1.9	Purpose of acquiring appropriate documentation and manuals.
2.1	Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment are used according to manufacturers procedures and job requirements.
2.5	Measurements are recorded according to work site procedures.
2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to work site and quality

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	procedures.
2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Sub-assembly is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Sub-assembly is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Sub-assembly is prepared for storage according to manufacturer's and work site procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to SHE condition according to work site procedures.
4.4	Reason (s) for preparing Sub-assembly for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning sub-assemblies and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked

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to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Sub-assembly information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of Sub-assembly for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a SHE condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field

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(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of internal combustion engine.
- Identification, names and functions of sub-assembly parts.
- Identification of ferrous and non-ferrous metals related sub-assemblies.
- Methods of assessing serviceability of sub-assembly parts.
- Procedures to obtain relevant sub assembly specification/general information.
- Principles of lubricants related to internal combustion engines.
- Safety procedures related to reconditioning sub-assemblies.
- Use and care for appropriate tools and equipment.
- Method to recondition sub-assembly.
- Use and care of measuring instruments related to sub-assembly reconditioning.
- Procedures to test / check sub-assembly prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning sub-assembly to restore to operational condition

Work effectively with others as a member of a team in reconditioning sub-assembly to restore to operational condition

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning sub-assembly to restore to operational condition

Communicate effectively when reconditioning sub-assembly to restore to operational condition

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RECONDITION DRIVE LINE COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 6

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning drive line components to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Use of hand tools and equipment and the sourcing of information Planning, reporting and feedback
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess drive line component parts
3. Assemble drive line components
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work place procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work place procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and drive line components are prepared according to safety, work place and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and drive line components.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work place and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturer's procedures and job requirements.
2.5 Measurements are recorded according to work place procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.

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2.7	Unserviceable parts are separated and marked according to work place and quality procedures.
2.8	Replacement parts are ordered according to work place procedures.
2.9	Reason for sorting ferrous and non-ferrous parts.
2.10	Procedures to order replacement parts.
2.11	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work place procedures.
3.2	Component is assembled according to manufacturer's procedures.
3.3	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
3.4	Attachment agents are used according to manufacturers procedures and job requirements.
3.5	Specified lubricants and sealants are used during assembly.
3.6	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.7	Drive line components are reconditioned according to manufacturers or work place times schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Drive line components is prepared for storage according to manufacturer's and workplace procedures.
4.2	Documentation is completed according to work place procedures.
4.3	Work area is restored to serviceable condition according to work place procedures.
4.4	Reason (s) for preparing drive line components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning drive line components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Drive line components and measurements and/or adjustments during assembly include but are not limited to axial and radial rim out
- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Drive line components include but are not limited to: drive shaft, axles.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Drive line information includes but is not limited to: manufacturer manuals, parts manuals, work place procedures.
- Preparation of drive line components for storage includes but is not limited to: plastic wrapping, anti-rust, blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, set up drive line components on workbench or stand, cleaning before dismantling, pre-test / checks where necessary.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or working condition of component.
- Pre and post-test / checks can include any one or a combination of the following: Operation of the component: tested on a test apparatus. (Dynamic testing of component), Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. (Static testing of component)
- Cleaning of components includes but is not limited to: removing oil, sendiment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Supervision by a competent person necessary when learner test operation of component during pre and / or post-test.
- Competent person is someone who is competent in testing operation of components on testing apparatus.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills

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(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of drive line components.
- Identification, names and functions of drive line components.
- Identification of ferrous and non-ferrous metals related to drive line components.
- Methods of assessing serviceability of drive line component parts.
- Principles of lubricants related to drive line components.
- Safety procedures related to reconditioning drive line components.
- Use and care for tools and equipment related to reconditioning drive line components.
- Method to recondition drive line components.
- Procedures to obtain relevant service information.
- Procedures to test / check components prior to dismantling and after reconditioning.
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning drive line components

Work effectively with others as a member of a team in reconditioning drive line components

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning drive line components

Communicating effectively when reconditioning drive line components

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Functional Area			

RECONDITION CYLINDER HEAD

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 6

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning cylinder head to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	It is assumed that learners can read and write
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess cylinder head parts
3. Assemble cylinder head
4. Restore work area, complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.2 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.3 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.4 Work area and cylinder head is prepared according to safety, work site and manufacturer's procedures.
1.5 Reason(s) for selecting appropriate tools and equipment.
1.6 Reason(s) for selecting appropriate PPE.
1.7 Reason(s) for preparing work area and cylinder head.
1.8 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment is used according to manufacturers procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.
2.8 Replacement parts are ordered according to work site procedures.
2.9 Appropriate tools and equipment are used according to safety and manufacturers

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	specifications and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Cylinder head is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly a according to manufacturer's procedures and specifications.
3.6	Valve and valve seats are cut, if necessary, according to manufacturers procedures and specifications.
3.7	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.8	Cylinder head is reconditioned according to manufacturers or work site time schedules.
3.9	Reason (s) for using lubricants during assembly.
3.10	Reason (s) for cleaning parts before assembly.
3.11	Reason (s) for measurements and adjustments during assembly.
3.12	Reason (s) for post-test / checks
4.1	Cylinder head is prepared for storage according to manufacturer's and work site procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored according to SHE requirements.
4.4	Reason (s) for preparing hydraulic components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning cylinder heads and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of Cylinder head for storage includes but is not limited to : Plastic wrapping , anti-rust, blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Recondition of cylinder head excludes: surface grinding and line boring procedures, valve seat replacement and crank testing

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component

(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles

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(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of Internal combustion engine.
- Identification, names and functions of cylinder head parts.
- Identification of ferrous and non-ferrous metals related to of cylinder heads.
- Methods of assessing serviceability of cylinder head parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to of cylinder heads.
- Safety procedures related to reconditioning of cylinder heads.
- Use and care for tools and equipment related to of cylinder heads.
- Method to recondition of cylinder heads.
- Use and care for measuring instruments related to of cylinder head reconditioning.
- Procedures to test / check of cylinder head prior to dismantling and after reconditioning.
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way reconditioning cylinder heads

Work effectively with others as a member of a team in reconditioning cylinder heads

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning cylinder heads

Communicate effectively when reconditioning cylinder heads

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Functional Area			

RECONDITION VEHICLE BRAKE SYSTEM COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning vehicle brake system components to restore them to an operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	Learner needs to able to read and write
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess brake system component parts
3. Assemble brake system components
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.2	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.3	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.4	Work area and Brake system/component are prepared according to safety, work site and manufacturer's procedures.
1.5	Reason(s) for selecting appropriate tools and equipment.
1.6	Reason(s) for selecting appropriate PPE.
1.7	Reason(s) for preparing work area and Brake system/component.
1.8	Purpose of acquiring appropriate documentation and manuals.
2.1	Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment are used according to manufacturer's procedures and job requirements.
2.5	Measurements are recorded according to work site procedures.
2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to work site and quality procedures.
2.8	Replacement parts are ordered according to work site procedures.
2.10	Reason for sorting ferrous and non-ferrous parts.

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2.11	Procedures to order replacement parts.
2.12	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and worksite procedures.
3.2	Cylinders are honed, where necessary, according to manufacturer's procedures.
3.3	Brake system components are assembled according to manufacturer's procedures and specifications.
3.4	Attachment agents are applied according to manufacturer's procedures and job requirements.
3.5	Appropriate tools, equipment and PPE are used according to safety and manufacturer's procedures and job requirements.
3.6	Specified lubricants are used during assembly.
3.7	Post-test / checks, where necessary / possible, are carried out according to manufacturer procedures and specifications.
3.8	Brake system components are reconditioned according to manufacturers or worksite times schedules.
3.9	Reasons for cleaning parts prior to assembly.
3.10	Reasons for honing cylinders.
3.11	Reasons for using lubricants during assembly.
3.12	Reasons for post-test / checks.
4.1	Brake system/component is prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored according to SHE requirements.
4.4	Reason (s) for preparing hydraulic components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning brake system components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

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Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to : OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to : manufacturer's special service tools, workshop equipment and hand tools.
- Brake systems include but are not limited to: pneumatic, hydraulic, mechanical, pneumatic over hydraulic, electro pneumatic.
- Brake system components include but are not limited to : Master/slave cylinders, Air/vacuum boosters, Brake clutches, Calliper, roto-chambers, valves, pumps and compressors.
- Service Information include but are not limited to : Manufacturer's manuals, parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards, part requisitions, job reports.
- Defects on visual inspection include but are not limited to : Pit marks, cracks, burns, distortion, manufacturing flaws.
- Preparation of brake system components for storage includes but is not limited to : Anti-rust, plastic wrapping, blocking off ports.
- Work area preparation includes but is not limited to: arrange tools and equipment, set up brake system components on workbench or stand, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or working condition of component.
- Pre and post-test / checks can include any one or a combination of the following: Operation of the component: tested on a test apparatus. (Dynamic operation of component), Working condition of the component: turn freely by hand / manual, measurements checks, adjustment checks, pressure checks. (Static operation of component)
- Cleaning of components parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in team environment.
- Supervision by a competent person necessary when learner test operation of component during pre and / or post-test..

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills

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(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of brake system components.
- Method to recondition brake system components.
- Identification of ferrous and non-ferrous metals and materials related to brake system component parts.
- Methods of assessing serviceability of brake system component parts.
- Procedures to obtain relevant service information.
- Safety procedures related to reconditioning brake system components.
- Use and care for appropriate tools and equipment related to reconditioning brake system components.
- Principles of lubricants related to brake systems
- Procedures to test / check components prior to dismantling and after reconditioning.
- Select, use and care for measuring equipment applicable to the task.
- Select, use and attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way in reconditioning brake system components

Work effectively with others as a member of a team in reconditioning brake system components

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning brake system components

Communicate effectively in reconditioning brake system components

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Functional Area			

DIAGNOSE AND REPAIR VEHICLE SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing and repairing vehicle systems to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Diagnose vehicle system
3. Repair vehicle system
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.2 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.3 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.4 Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.
1.5 Reason(s) for selecting appropriate tools and equipment.
1.6 Reason(s) for selecting appropriate PPE.
1.7 Reason(s) for preparing work area and vehicle.
1.8 Purpose of acquiring appropriate documentation and manuals.

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2.1	Vehicle system is tested according to manufacturer's procedures.
2.2	Vehicle system testing and measuring equipment are used according to safety and manufacturer's procedures.
2.3	Appropriate tools, equipment and PPE are used according to safety and manufacturers procedures and job requirements.
2.4	Vehicle system test data is interpreted and a conclusion is recorded according to worksite procedures.
2.5	Conclusion is tested to confirm diagnoses.
2.6	Reason (s) for testing vehicle system
2.7	Steps followed during the analytical troubleshooting procedures.
2.8	Reason (s) for conclusion after interpretation of test data.
3.1	Replacement parts / components are ordered according to work site procedures.
3.2	Vehicle system is repaired according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according too manufacturers procedures and job requirements.
3.4	Vehicle system is adjusted according to manufacturer's procedures and specifications.
3.5	Vehicle system repair(s) is tested according to manufacturer's and work site procedures.
3.6	Procedures to order replacement parts.
3.7	Reason (s) for adjustments on Vehicle system.
3.8	Reason (s) for testing repairs.
4.1	Documentation is completed according to work site procedures.
4.2	Work area is restored according to SHE procedures.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing and repairing vehicle systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

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Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Vehicle system testing equipment includes but is not limited to: Pressure, temperature and vacuum gauges special testing equipment, multi-meter.
- Service information includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect diagnostic equipment vehicle system, check all fluid levels , stabilizes systems.
- Restoring work area and vehicle to serviceable condition include but is not limited to: Tools and equipment packed away, work area cleaned, vehicle battery safely connected to electric system.
- Repairs is the replacement of parts to restore a component's operation, the replacement of components to restore the operation of the system but does not include reconditioning of components.
- Work undertaken individually or in a team environment.
- Tasks can be undertaken in the workshop or in the field.
- Tasks can be undertaken with or without supervision
- Vehicle systems include the following: Engine, drive train, brakes, electrical, electronics,
- Vehicle system does not include implements or steering hydraulics
- Diagnoses could include any one or a combination of: diagnose system condition, problem or breakdown.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Vehicle systems exclude systems that are electronically or computer controlled

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills

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Functional Area			

(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Fundamentals of vehicle drive train mechanics, Hydraulics, electric's, pneumatics, internal combustion engine and systems.
- Identification and functions of diagnostic equipment related to testing vehicle system
- Procedures to obtain relevant service information.
- Recommended lubricants related to vehicle systems.
- Safety procedures related to testing vehicle systems.
- Method and procedures to test a vehicle systems.
- Operations of vehicle system and components.
- Operations of vehicle system electrical / control systems.
- Operations of vehicle system hydraulic control systems
- Vehicle start, stop and driving procedures.
- Analytical troubleshooting procedures.
- Principles of analysing failures
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when diagnosing and repairing vehicle systems

Work effectively with others as a member of a team in diagnosing and repairing vehicle systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing and repairing vehicle systems

Communicate effectively when diagnosing and repairing vehicle systems

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Functional Area			

DIAGNOSE AND REPAIR STEERING SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing and repairing steering systems to restore vehicle to a serviceable condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Diagnose steering system
3. Repair and adjust steering system
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are interpreted and a sequence of operations is determined according to worksite procedures.
1.2 Appropriate tools and wheel alignment equipment related to steering systems are identified and selected according to job requirements.
1.3 Manufacturer's manuals and specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and vehicle are prepared according to worksite and manufacturer's specifications.
1.6 Purpose and method of selecting appropriate tools and wheel alignment equipment.
1.7 Reason for acquiring manufacturer's manuals and specifications.
1.8 Reason for selecting particular protective equipment.
2.1 Pre-checks are carried out according to safety procedures and manufacturer's specifications.
2.2 Measuring equipment is used according to manufacture's procedure and job requirements.
2.3 Appropriate tools, equipment and PPE are used according to job requirements, safety and manufacturer's procedures.
2.4 Wheel alignment angles are measured and compared to manufacturer's specifications.
2.5 Information is gathered, analysed and conclusions are recorded on faults in steering system.
2.6 Reasons for carrying out pre-checks.
2.7 Purpose of gathering information.

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3.1	Faulty steering system components are repaired or sent for repairs according to worksite procedures.
3.2	Wheels are balanced according to manufacturer's specifications
3.3	Steering system is adjusted according to manufacturer's specifications.
3.4	Settings are locked according to manufacturer's specifications.
3.5	Attachment agents are applied according to manufacturer's procedure and specifications.
3.6	Appropriate tools and wheel alignment equipment are used according to job requirements.
3.7	Reasons for balancing wheels.
3.8	Reasons for locking settings.
4.1	Documentation is completed according to worksite procedures.
4.2	Work area and vehicle are restored to a serviceable condition.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing and repairing steering systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

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Functional Area			

Context

- Statutory requirements include but are not limited the OHS Act.
- Appropriate tools include but are not limited to manufacturer's special service tools workshop equipment and hand tools.
- Industrial fasteners include but are not limited to bolts nuts, washers, locking agent, split pins.
- Wheel alignment equipment includes but is not limited to bubble gauge, dunlop gauge, turn tables, brake and steering locks, diagnostic machine and wheel balancing machine.
- Documentation includes but is not limited to job cards, part requisitions and job reports.
- Gathering information includes but is not limited to customers, operator/driver, pre-checks, and measurements.
- Workshop equipment may include but are not limited to lift chains, slings, drills, grinders, impact, wrenches, jacks, stands, lifts and cranes.
- Hand tools may include but are not limited to wrenches, pliers, screw drivers, files, chisels, punches, hammers, socket sets, allen keys and hack saw.
- Attachment agents may include but are not limited to friction and anti-friction bearings, seals, gaskets and industrial fasteners.
- Measuring equipment may include but are not limited to electronic and mechanical measuring instruments to the following types: Inside micrometers, outside micrometers, telescopic gauges, ball gauges, dial gauges, vernier, depth micrometers, mechanical ruler, measuring tape, callipers and feeler gauge.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and functions of steering system components..
- Manufacturers' and parts manuals.
- Safety procedures associated with diagnosing and adjusting steering systems.
- Steering geometry

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- Use and care for appropriate testing equipment used for steering systems.
- Diagnosing procedures and techniques.
- Methods used to adjust steering systems.
- Methods used to balance road wheels.
- Appropriate quality procedures ISO 9000.
- Procedures to obtain relevant service information.
- Select, use and care for workshop equipment applicable to the task
- Select, use and care for hand tools applicable to the task
- Select and use attachment agents applicable to the task.
- Select and care for measuring equipment applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when diagnosing and repairing steering systems

Work effectively with others as a member of a team in diagnosing and repairing steering systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing and repairing steering systems

Communicate effectively when diagnosing and repairing steering systems

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Level	4	Unit standard number	Vehicle systems
Functional Area			

RECONDITION A TRANSMISSION

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning transmissions. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment 2. Assess transmission 3. Assemble transmission 4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4.	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5	Work area and transmission is prepared according to safety, work site and manufacturer's procedures.
1.6	Reason(s) for selecting appropriate tools and equipment.
1.7	Reason(s) for selecting appropriate PPE.
1.8	Reason(s) for preparing work area and transmission.
1.9	Purpose of acquiring appropriate documentation and manuals.
2.1	Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2	Parts are visually inspected for defects according to manufacturer's guidelines.
2.3	Parts are measured according to manufacturer's procedures.
2.4	Measuring equipment are used according to manufacturers procedures and job requirements.
2.5	Measurements are recorded according to work site procedures.
2.6	Measurements are compared to manufacturer's specifications for serviceability.
2.7	Unserviceable parts are separated and marked according to work site and quality procedures.

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2.8 Replacement parts are ordered according to work site procedures. 2.9 Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements. 2.10 Parts are sorted according to ferrous and non-ferrous metal. 2.11 Reason for sorting ferrous and non-ferrous parts. 2.12 Procedures to order replacement parts. 2.13 Reason(s) for parts been unserviceable.
3.1 Parts are cleaned before assembly according to safety and work site procedures. 3.2 Transmission is assembled according to manufacturer's procedures and specifications. 3.3 Attachment agents are applied according to manufacturers procedures and job requirements.. 3.4 Specified lubricants are used during assembly. 3.5 Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications. 3.6 Post checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures. 3.7 Transmission is reconditioned according to manufacturers or work site time schedules. 3.8 Reason (s) for using lubricants during assembly. 3.9 Reason (s) for cleaning parts before assembly. 3.10 Reason (s) for measurements and adjustments during assembly. 3.11 Reason (s) for post-test / checks.
4.1 Transmission is prepared for storage according to manufacturer's and work site procedures. 4.2 Documentation is completed according to work site procedures. 4.3 Work area is restored to serviceable condition according to work site procedures. 4.4 Reason (s) for preparing Sub-assembly for storage. 4.5 Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning transmissions and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools., workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of Transmission for storage includes but is not limited to : Plastic wrapping , anti-rust, blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post checks are limited to: general working condition of component.
- Pre and post checks include the following: Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills

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(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of a transmission.
- Identification, names and functions of transmission parts.
- Identification of ferrous and non-ferrous metals related transmissions.
- Methods of assessing serviceability of transmission parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related transmissions.
- Safety procedures related to reconditioning transmissions.
- Use and care for appropriate tools and equipment.
- Method to recondition transmissions.
- Use and care for measuring instruments related to transmission reconditioning.
- Procedures to test / check transmissions prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning transmissions

Work effectively with others as a member of a team in reconditioning transmissions

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning transmissions

Communicate effectively when reconditioning transmissions

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Functional Area			

RECONDITION A DIFFERENTIAL

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 4
Credits: 10

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning differentials. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess differential
3. Assemble differential
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4. Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and differential is prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and differential.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturers procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.

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2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Differential is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements..
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Differential is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Differential is prepared for storage according to manufacturer's and work site procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing Sub-assembly for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning differentials and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools., workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of Differential for storage includes but is not limited to : Plastic wrapping , anti-rust, blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post checks are limited to: general working condition of component.
- Pre and post checks include the following: Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills

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Functional Area			

(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of a differential.
- Identification, names and functions of differential parts.
- Identification of ferrous and non-ferrous metals related differentials.
- Methods of assessing serviceability of differential parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related differentials.
- Safety procedures related to reconditioning differentials.
- Use and care for appropriate tools and equipment.
- Method to recondition differentials.
- Use and care for measuring instruments related to differential reconditioning.
- Procedures to test / check differentials prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning differentials

Work effectively with others as a member of a team in reconditioning differentials

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning differentials

Communicate effectively when reconditioning differentials

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Level	4	Unit standard number	Vehicle systems
Functional Area			

DIAGNOSE AND REPAIR VEHICLE HYDRAULIC SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing and repairing hydraulic systems to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	It is assumed a learner can read and write
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Diagnose vehicle hydraulic system
3. Repair vehicle hydraulic system
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.2 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.3 Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.
1.4 Reason(s) for selecting appropriate tools and equipment.
1.5 Reason(s) for selecting appropriate PPE.
1.6 Reason(s) for preparing work area and vehicle.
1.7 Purpose of acquiring appropriate documentation and manuals.
2.1 Vehicle hydraulic system is tested according to manufacturer's procedures.
2.2 Vehicle hydraulic system testing and measuring equipment are used according to safety and manufacturer's procedures and job requirements..
2.3 Appropriate tools, equipment and PPE are used according to safety and manufacturers procedures and job requirements.
2.4 Vehicle hydraulic system test data is interpreted and a conclusion is recorded according to worksite procedures.
2.5 Conclusion is tested to confirm diagnoses.
2.6 Reason (s) for testing vehicle hydraulic system.
2.7 Steps followed during the analytical troubleshooting procedures.
2.8 Reason (s) for conclusion after interpretation of test data.

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3.1	Replacement parts / components are ordered according to work site procedures.
3.2	Vehicle hydraulic system is repaired according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Vehicle hydraulic system is adjusted according to manufacturer's procedures and specifications.
3.5	Vehicle hydraulic system repair(s) is tested according to manufacturer's and work site procedures.
3.6	Procedures to order replacement parts.
3.7	Reason (s) for adjustments on vehicle hydraulic system.
3.8	Reason (s) for testing repairs.
4.1	Documentation is completed according to work site procedures.
4.2	Work area is restored to serviceable condition according to work site procedures.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing and repairing hydraulic systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

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Functional Area			

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Vehicle hydraulic system testing equipment includes but is not limited to: Pressure, temperature and vacuum gauges special testing equipment, multi-meter.
- Service information includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect diagnostic equipment hydraulic system, check all fluid levels , stabilizes systems.
- Repairs are the replacement of parts to restore a component's operation, the replacement of components to restore the operation of the system but does not include reconditioning of components.
- Work undertaken individually or in a team environment.
- Tasks can be undertaken in the workshop or in the field.
- Tasks can be undertaken with or without supervision
- Vehicle hydraulic systems include the following: Implements and/or steering.
- Diagnoses could include any one or a combination of: diagnose system condition, problem or breakdown.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Vehicle hydraulic system is controlled mechanically and/or with pilot oil

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

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- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Fundamentals of hydraulics, and pneumatics.
- Identification and functions of diagnostic equipment related to testing hydraulic systems.
- Procedures to obtain relevant service information.
- Recommended lubricants related to vehicle hydraulic systems.
- Safety procedures related to testing vehicle hydraulic systems.
- Method and procedures to test hydraulic systems.
- Operations of vehicle hydraulic system and components.
- Operations of vehicle hydraulic control systems.
- Vehicle start, stop and driving procedures.
- Analytical troubleshooting procedures.
- Principles of analysing failures
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way diagnosing and repairing hydraulic systems

Work effectively with others as a member of a team in diagnosing and repairing hydraulic systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing and repairing hydraulic systems

Communicate effectively when diagnosing and repairing hydraulic systems

No. 562 10 May 2002

National Certificate in diagnostic and advanced vehicle systems: NQF Level 5

Field: Manufacturing, Engineering and Technology

Sub-field: Engineering

Level: 5
Credit: 152
Issue date:
Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of the automotive industry that relates to diagnosing and maintaining advanced vehicle systems that is expressed by employers, employees and providers both currently and for the future. This qualification provides the learner with accessibility to be employed within the functional areas that include diesel, petrol, and earthmoving equipment and provides the flexibility to pursue different careers in the broader vehicle maintenance industry.

Purpose:

This qualification will allow a learner in the vehicle maintenance industry to obtain a nationally recognised qualification in and for diesel, petrol, and earthmoving. It will also contribute to the upliftment of the vehicle maintenance industry and will set a standard for professionalism in the industry. This will also assist in improving relationships between employer and employees. The obtainment of the qualification will also attract and retain quality learners and employees. This qualification will also provide for recognition of prior learning to allow for the recognition of existing and common knowledge and skills that will not only allow a learner to gain credits towards this qualification, but also to move across the different functional areas.

The generic core unit standards as well as the specialised context (functional) unit standards (where indicated) provide credits that allow access to both vertically and horizontally articulated qualifications. This qualification will enhance the status, productivity and employability of the learner within the vehicle maintenance industry as well as contribute to the quality, production rate and growth. This allows for access, progression, portability and mobility within and between the different areas. Through the electives component of the qualification learners are able to demonstrate vocational skills through which they are able to engage in life skills activities, small business development, health and environmental issues. Through recognition of prior learning adult learners are encouraged to access basic education with an understanding that they already have knowledge and experience.

Learners, once qualified, are capable of diagnosing, repairing and reconditioning advanced vehicle systems (petrol, diesel, and earthmoving). This will allow the learner to provide a more effective service that will improve customer satisfaction. Learners will be able to move to higher levels of functionality and learning in the different areas.

This qualification will also allow for transformation within the vehicle servicing industry, as learners will be a model for other employees/learners. This will as mentioned earlier, attract quality people and allows for the aspiration of people to be part of the industry. The recognition of prior learning policies from the SETA/ETQA will formalise informal and non-formal learning and learners will be able to obtain a national qualification. This will improve the level of participation of employees in the industry.

A person acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate familiarity with local knowledge and contexts in performing the tasks related to the different areas in the vehicle servicing industry (diesel, petrol, earthmoving and air-conditioning)
- Demonstrate an understanding of and the ability to carry out simple operations using the fundamental systems, procedures in the four functional areas
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form
- Explore broader competencies required for entrepreneurial opportunities

Access to the Qualification

The qualification is open to everyone who wishes to be part of the vehicle serving industry

Learning assumed to be in place

Literacy and numeracy at NQF 1 or equivalent.

Exit Level Outcomes

The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, a learner is able to:

- Recall, interpret and apply knowledge and competence of diagnosing advanced vehicle systems.
- Recall, interpret and apply knowledge and competence related to repairing and reconditioning advanced vehicle systems.
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form.

The qualification consists of unit standards, which describes the knowledge and skills that will change the values of the learner and that describes competence in a specific unit standard.

Associated Assessment Criteria

Assessors should check that the learner must demonstrate an ability to consider a range of options and make decisions related to their context of work.

- The functions related to diagnosing advanced vehicle systems are described, analysed, assessed and the appropriate actions are taken to customer satisfaction.
- The functions related to repairing and reconditioning advanced vehicle systems are described, analysed and assessed.
- Local knowledge and context in performing the tasks in the relevant functional area are explained, analysed and applied.
- Learners are able to communicate effectively with customers and members of the organisation.

International comparability

The unit standards were benchmarked against unit standards and qualifications form New Zealand and the United Kingdom.

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the electrical installation and maintenance environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence. These tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment method and or tools used by the assessor must be fair in a sense that it does not hinder or advantage the learner, valid in a sense that it measures that it intents to measure, reliable in a sense that it is consistent and delivers the same output across a range of learners and practical in a sense that it takes into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment is carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to proof the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience.

Articulation possibilities

This qualification provides the learner with the flexibility to pursue different careers in the automotive industry. The level of flexibility within the range of electives will allow the individual to pursue further learning within an entrepreneurship, supervision/management, quality assurance, health and safety and engineering sub-disciplines.

Moderation Options

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.
- Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass

achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Criteria for registration of assessors

Assessors need experience in the following areas:

- Interpersonal skills
- Subject matter and
- Assessment.

The assessor needs to be competent in the planning and conducting of assessment of learning outcomes and in the design and development of assessments as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 4. Subject matter experience must be well developed within the different areas within the vehicle servicing industry. The assessor must have completed:

- a similar qualification at the level with a minimum of 6-12 months field experience after s/he has completed the qualification or,
- The subject matter experience of the assessor can be established by recognition of prior learning.

Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

Rules of combination

Learners wishing to achieve the National Certificate in servicing vehicles need to do the 35 credits as part of the fundamental learning, the core generic credits of 97, and the core functional credits as per functional area (depends on the area of specialisation) and the rest of the credits to be obtained from the elective area that relate to the functional area to add to a total of at least 152 credits.

NATIONAL DIPLOMA IN DIAGNOSTIC AND REPAIR OF ADVANCED VEHICLE SYSTEMS – NQF LEVEL 5

Fundamental	Credits	Core	Credits	Elective	Credits
Communication	15	Diagnose and repair hydraulic systems	12	Test vehicle systems on a dynamometer	8
SAQA registered communication standards at NQF level 5		Evaluate undercarriage condition	6		
Maths	16	Recondition and test hydraulic pumps and motors	8		
SAQA registered maths standards at NQF level 5		Recondition diesel/fuel injector pump	12		
		Recondition electrical components	12		
SAQA registered standards dealing with working with information	4	Recondition fuel system components	8		
		Diagnose and repair advanced vehicle systems	12		
		SAQA registered standards dealing with Quality	5		
		Health and safety standards	6		
		People interacting, leading and development	8		
		Business relations	8		
Total fundamental	35	Total Core	97	Total electives	
Total for qualification					152

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Functional Area			

DIAGNOSE AND REPAIR ADVANCED VEHICLE HYDRAULIC SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing and repairing hydraulic systems to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	It is assumed a learner can read and write
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Diagnose advanced vehicle hydraulic system
3. Repair advanced vehicle hydraulic system
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.2 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.3 Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.
1.4 Reason(s) for selecting appropriate tools and equipment.
1.5 Reason(s) for selecting appropriate PPE.
1.6 Reason(s) for preparing work area and vehicle.
1.7 Purpose of acquiring appropriate documentation and manuals.
2.1 Advanced vehicle hydraulic system is tested according to manufacturer's procedures.
2.2 Advanced vehicle hydraulic system testing and measuring equipment are used according to safety and manufacturer's procedures and job requirements..
2.3 Appropriate tools, equipment and PPE are used according to safety and manufacturers procedures and job requirements.
2.4 Advanced vehicle hydraulic system test data is interpreted and a conclusion is recorded according to worksite procedures.
2.5 Conclusion is tested to confirm diagnoses.
2.6 Reason (s) for testing advanced vehicle hydraulic system.
2.7 Steps followed during the analytical troubleshooting procedures.
2.8 Reason (s) for conclusion after interpretation of test data.

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3.1	Replacement parts / components are ordered according to work site procedures.
3.2	Advanced vehicle hydraulic system is repaired according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Advanced vehicle hydraulic system is adjusted according to manufacturer's procedures and specifications.
3.5	Advanced vehicle hydraulic system repair(s) is tested according to manufacturer's and work site procedures.
3.6	Procedures to order replacement parts.
3.7	Reason (s) for adjustments on advanced vehicle hydraulic system.
3.8	Reason (s) for testing repairs.
4.1	Documentation is completed according to work site procedures.
4.2	Work area is restored to serviceable condition according to work site procedures.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing and repairing hydraulic systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

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Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Advanced vehicle hydraulic system testing equipment includes but is not limited to: Pressure, temperature and vacuum gauges special testing equipment, multi-meter.
- Service information includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect diagnostic equipment hydraulic system, check all fluid levels , stabilizes systems.
- Repairs are the replacement of parts to restore a component's operation, the replacement of components to restore the operation of the system but does not include reconditioning of components.
- Work undertaken individually or in a team environment.
- Tasks can be undertaken in the workshop or in the field.
- Tasks can be undertaken with or without supervision
- Advanced vehicle hydraulic systems include the following: Implements and/or steering.
- Diagnoses could include any one or a combination of: diagnose system condition, problem or breakdown.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Advanced vehicle hydraulic systems are systems that are electronically or computer controlled

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component
(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles
(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

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- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Fundamentals of hydraulics, and pneumatics.
- Identification and functions of diagnostic equipment related to testing hydraulic systems.
- Procedures to obtain relevant service information.
- Recommended lubricants related to advanced vehicle hydraulic systems.
- Safety procedures related to testing advanced vehicle hydraulic systems.
- Method and procedures to test hydraulic systems.
- Operations of advanced vehicle hydraulic system and components.
- Operations of vehicle hydraulic control systems.
- Vehicle start, stop and driving procedures.
- Analytical troubleshooting procedures.
- Principles of analysing failures
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way diagnosing and repairing hydraulic systems

Work effectively with others as a member of a team in diagnosing and repairing hydraulic systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing and repairing hydraulic systems

Communicate effectively when diagnosing and repairing hydraulic systems

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Functional Area			

EVALUATE UNDERCARRIAGE CONDITION

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 6

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of evaluating undercarriage condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment 2. Evaluate undercarriage 3. Repair undercarriage 4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures. 1.2 Manufacturer's manuals and/or specifications are acquired according to job requirements. 1.3 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements. 1.4 Work area and vehicle are prepared according to worksite and manufacturer's procedures. 1.5 Reason for selecting specific tools and equipment. 1.6 Reason for selecting particular protective equipment.
2.1 Undercarriage is visually inspected according to manufacturer's procedures and guidelines. 2.2 Undercarriage measurements are taken according to safety and manufacturer's procedures. 2.3 Measuring equipment are used according to manufacturers procedures and job requirements. 2.4 Appropriate service tools and equipment are used according to safety and manufacturers procedures and job requirements. 2.5 Undercarriage visual and measurement data are recorded according to work site procedures. 2.6 Undercarriage recorded data is interpreted and a conclusion is recorded according to work site procedures. 2.7 Reason (s) for evaluating undercarriage. 2.8 Reason (s) for conclusion after interpretation of recorded data.
3.1 Documentation is completed according to work site procedures. 3.2 Work area and vehicle are restored to serviceable condition according to work site

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procedures.
3.3 Purpose for documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in evaluating undercarriage condition and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:
- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to : OHS Act .
- Appropriate tools and equipment include but are not limited to : Hand tools, manufacturer's special service tools, workshop equipment.
- Information systems include but are not limited to : Manufacturer's manuals , parts manuals
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Documentation includes but is not limited to : Job cards , job reports
- Undercarriage includes but is not limited to : Idlers , rollers , track frames , tracks , track plates , sprockets.

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Functional Area			

- Visual inspection includes but is not limited to : Oil leaks , loose or damaged bolts , cracks , distortion of frames , excessive wear.
- Evaluation includes but is not limited to : Visual , measurements , testing.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) An ability to acquire a wide range of technical skills
(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and functions of parts related to an undercarriage.
- Principles and application of seals and gaskets related to an undercarriage.
- Identification and application of industrial fasteners related to an undercarriage.
- Information systems.
- Safety procedures related to evaluating a undercarriage.
- Use and care for appropriate tools and equipment related to evaluating an undercarriage.
- Method of evaluating an undercarriage.
- Reading, interpreting drawings and schematic diagrams related to an undercarriage.
- Use and care for measuring instruments related to an undercarriage.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when evaluating undercarriage condition

Work effectively with others as a member of a team in evaluating undercarriage condition

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to evaluating undercarriage condition

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Communicate effectively when evaluating undercarriage condition

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Level	5	Unit standard number	Advanced systems
Functional Area			

RECONDITION AND TEST HYDRAULIC PUMPS AND MOTORS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning and testing hydraulic pumps and motors to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess hydraulic motor parts/pumps
3. Assemble and test hydraulic motor parts/pumps
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and hydraulic pump / motor is prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and components.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturers procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.

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2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Hydraulic pump / motor is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test is carried out on completion of the reconditioning procedures according to manufacturers, work site and quality procedures.
3.7	Testing equipment is operated according to manufacturers, work site and safety procedures.
3.8	Hydraulic pump / motor is adjusted according to manufacturers procedures and specifications.
3.9	Hydraulic pump / motor is reconditioned and tested according to manufacturers or worksite time schedules.
3.10	Reason (s) for using lubricants during assembly.
3.11	Reason (s) for cleaning parts before assembly.
3.12	Reason (s) for measurements and adjustments during assembly.
3.13	Reason (s) for post-test / checks.
4.1	Hydraulic pump / motor is prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing hydraulic pump / motor for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning and testing hydraulic motor parts/pumps and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical

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competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of hydraulic pump / motor for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded and house keeping
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

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(a) An ability to acquire a wide range of technical skills
(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of hydraulic pumps and motors
- Operation of hydraulic pumps and motor testing equipment.
- Identification, names and functions of hydraulic pumps and motor parts.
- Identification of ferrous and non-ferrous metals related to hydraulic pumps and motors.
- Methods of assessing serviceability of hydraulic pumps and motor parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to hydraulic pumps and motors.
- Safety procedures related to reconditioning hydraulic pumps and motors.
- Use and care for appropriate tools and equipment.
- Method to recondition hydraulic pumps and motors.
- Use and care for measuring instruments related to hydraulic pumps and motor reconditioning and testing.
- Procedures to test / check hydraulic pumps and motors prior to dismantling and after reconditioning
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning and testing hydraulic motor parts/pumps

Work effectively with others as a member of a team in reconditioning and testing hydraulic motor parts/pumps

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning and testing hydraulic motor parts/pumps

Communicate effectively when reconditioning and testing hydraulic motor parts/pumps

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Functional Area			

RECONDITION DIESEL FUEL INJECTOR PUMP

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning diesel fuel injector pumps to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess diesel fuel pump parts
3. Assemble diesel fuel pump
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and diesel fuel pump is prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and Turbocharger / blower.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturers, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturers procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.

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2.8	Replacement parts are ordered according to work site procedures.
2.9	Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements.
2.10	Parts are sorted according to ferrous and non-ferrous metal.
2.11	Reason for sorting ferrous and non-ferrous parts.
2.12	Procedures to order replacement parts.
2.13	Reason(s) for parts been unserviceable.
3.1	Parts are cleaned before assembly according to safety and work site procedures.
3.2	Diesel fuel pump is assembled according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according to manufacturers procedures and job requirements.
3.4	Specified lubricants are used during assembly.
3.5	Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications.
3.6	Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures.
3.7	Turbocharger / blower is reconditioned according to manufacturers or work site time schedules.
3.8	Reason (s) for using lubricants during assembly.
3.9	Reason (s) for cleaning parts before assembly.
3.10	Reason (s) for measurements and adjustments during assembly.
3.11	Reason (s) for post-test / checks.
4.1	Diesel fuel pump is prepared for storage according to manufacturer's and worksite procedures.
4.2	Documentation is completed according to work site procedures.
4.3	Work area is restored to serviceable condition according to work site procedures.
4.4	Reason (s) for preparing hydraulic components for storage.
4.5	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning diesel fuel injection pumps and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

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Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of diesel fuel pump for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Diesel fuel pump means a pump that meters fuel to the injectors

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) An ability to acquire a wide range of technical skills
(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

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NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of diesel fuel pump.
- Identification, names and functions of diesel fuel pump parts.
- Identification of ferrous and non-ferrous metals related to diesel fuel pumps.
- Methods of assessing serviceability of diesel fuel pump parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to diesel fuel pumps.
- Safety procedures related to reconditioning diesel fuel pumps.
- Use and care for appropriate tools and equipment.
- Method to recondition diesel fuel pumps.
- Use and care for measuring instruments related to diesel fuel pump reconditioning.
- Procedures to test / check diesel fuel pump prior to dismantling and after reconditioning
- Operating procedures of diesel fuel pump test bench.
- Select and use attachment agents applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning diesel fuel injector pumps

Work effectively with others as a member of a team in reconditioning diesel fuel injector pumps

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning diesel fuel injector pumps

Communicate effectively when reconditioning diesel fuel injector pumps

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Level	5	Unit standard number	Advanced systems
Functional Area			

RECONDITION VEHICLE ELECTRICAL COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning electrical components to restore them to an operational condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess electrical components
3. Assemble electrical components
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operation is determined according to worksite procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and worksite procedures.
1.3 Manufacturer's manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and electrical components are prepared according to safety, work site and manufacturer's procedures.
1.6 Reasons for selecting appropriate tools and equipment.
1.7 Reasons for selecting appropriate PPE
1.8 Purpose of acquiring appropriate documentation and manuals.
1.9 Reasons for preparing work area and components.
2.1 Parts are cleaned, before assessment, according to manufacturer's, worksite and safety procedure.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Parts are tested according to manufacturer's procedures.
2.5 Measuring equipment are used according to manufacturer's procedure and job requirements.
2.6 Measurements are recorded according to worksite procedures.
2.7 Measurements are compared to manufacturer's specifications for serviceability.
2.8 Unserviceable parts are separated and marked according to worksite and quality procedures.

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2.9 Replacement parts are ordered according to worksite procedures. 2.10 Parts are sorted according to ferrous and non-ferrous metals and materials. 2.11 Reasons for sorting ferrous and non-ferrous parts. 2.12 Reasons for and methods used to clean parts. 2.13 Procedures to order replacement parts. 2.14 Reasons for parts being unserviceable. 2.15 Reasons for testing parts.
3.1 Electrical components parts are cleaned before assembly according to safety and worksite procedures. 3.2 Bushes and seals are lubricated according to manufacturer's specifications. 3.3 Electrical components are assembled according to manufacturer's procedures and specifications. 3.4 Appropriate tools and equipment are used according to job requirements, safety and manufacturer's procedures. 3.5 Reasons for cleaning electrical component parts prior to assembly. 3.6 Reasons and methods used to lubricate bushes and seals.
4.1 Electrical components are fitted to test bench according to manufacturer's procedures. 4.2 Adjustments and tests are carried out according to manufacturer's procedures and specifications. 4.3 Test results are recorded according to worksite procedures. 4.4 Reasons for tests and adjustments.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning electrical components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

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Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned Undercarriage component stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of ELECTRICAL component and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Electrical components can include but is not limited to the following: starters, alternators, regulators, contactors and motors
- Necessary parts include new and remanufactured parts
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws
- Vehicle include but is not limited to automotive, earth moving and locomotive

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) An ability to acquire a wide range of technical skills
(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

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NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of electrical components.
- Identification and functions of parts related to electrical components.
- Methods used to test electrical components.
- Fundamentals of electrical systems.
- Identification of ferrous and non-ferrous metals and materials related to electrical components
- Appropriate quality procedures ISO 9000
- Procedures to obtain relevant service information.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.
- Select and use attachment agents applicable to the task.
- Select and care for measuring equipment applicable to the task.
- Methods of assessing parts related to electrical components.
- Method to recondition fuel system components.
- Safety procedures related to overhauling electrical components.
- Use and care for appropriate testing equipment related to overhauling electrical components.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning electrical components

Work effectively with others as a member of a team in reconditioning electrical components

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning electrical components

Communicate effectively when reconditioning electrical components

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Functional Area			

RECONDITION FUEL SYSTEM COMPONENTS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of reconditioning fuel system components to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Assess fuel system component parts
3. Assemble fuel system component
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Job instructions are read, interpreted and a sequence of operations is determined according to work site procedures.
1.2 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5 Work area and fuel system components are prepared according to safety, work site and manufacturer's procedures.
1.6 Reason(s) for selecting appropriate tools and equipment.
1.7 Reason(s) for selecting appropriate PPE.
1.8 Reason(s) for preparing work area and components.
1.9 Purpose of acquiring appropriate documentation and manuals.
2.1 Parts are cleaned, before assessment, according to manufacturer's, work site and safety procedures.
2.2 Parts are visually inspected for defects according to manufacturer's guidelines.
2.3 Parts are measured according to manufacturer's procedures.
2.4 Measuring equipment are used according to manufacturers procedures and job requirements.
2.5 Measurements are recorded according to work site procedures.
2.6 Measurements are compared to manufacturer's specifications for serviceability.
2.7 Unserviceable parts are separated and marked according to work site and quality procedures.

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2.8 Replacement parts are ordered according to work site procedures. 2.9 Appropriate tools and equipment are used according to safety and manufacturers procedures and job requirements. 2.10 Parts are sorted according to ferrous and non-ferrous metal. 2.11 Reason for sorting ferrous and non-ferrous parts. 2.12 Procedures to order replacement parts. 2.13 Reason(s) for parts been unserviceable.
3.1 Parts are cleaned before assembly according to safety and work site procedures. 3.2 Fuel system components are assembled according to manufacturer's procedures and specifications. 3.3 Attachment agents are used according to manufacturers procedures and job requirements. 3.4 Specified lubricants are used during assembly. 3.5 Measurements and / or adjustments are carried out during assembly according to manufacturer's procedures and specifications. 3.6 Post-test / checks, where necessary / possible, are carried out on completion of the reconditioning procedures according to manufacturers and work site procedures. 3.7 Fuel system components are reconditioned according to manufacturers or work site time schedules. 3.8 Reason (s) for using lubricants during assembly. 3.9 Reason (s) for cleaning parts before assembly. 3.10 Reason (s) for measurements and adjustments during assembly. 3.11 Reason (s) for post-test / checks..
4.1 Fuel system components are prepared for storage according to manufacturer's and worksite procedures. 4.2 Documentation is completed according to worksite procedures. 4.3 Work area is restored to serviceable condition according to worksite procedures. 4.4 Reason (s) for preparing hydraulic components for storage. 4.5 Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in reconditioning fuel system components and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

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Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to, OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Fuel system components include: Petrol engines: carburator, pump, Diesel engines: injectors, transfer pump, pressure relief valves.
- Service Information include but are not limited to : Manufacturer's manuals , parts manuals, worksite procedures.
- Documentation includes but is not limited to : Job cards , part requisitions , job reports.
- Preparation of fuel system components for storage includes but is not limited to : Plastic wrapping , anti-rust , blank off plugs.
- Work area preparation includes but is not limited to: arrange tools and equipment, cleaning before dismantling, pre-test / checks where necessary / possible.
- Restore work area to a serviceable condition includes but is not limited to: tools and equipment packed away, work area cleaned, reconditioned components stored, unserviceable / scrap parts discarded.
- Pre and post-test / checks are limited to: operation and / or general working condition of component.
- Pre and post-test / checks can include any one or a combination of the following:
- Operation of the component: tested on a test apparatus. (Dynamic testing of component)
- Working condition of the component: turn freely by hand / manual, measurements, adjustment and pressure checks. . (Static testing of component)
- Cleaning of components and parts includes but is not limited to: removing oil, sediment, carbon build up, rust inhibitor.
- Tasks undertaken individually or in a team environment.
- Tasks can be under taken in a workshop or field environment.
- Tasks can be under taken with or without supervision.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) An ability to acquire a wide range of technical skills

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(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Operation of fuel system components.
- Identification, names and functions of fuel system components.
- Identification of ferrous and non-ferrous metals related to fuel system components.
- Methods of assessing serviceability of fuel system component parts.
- Procedures to obtain relevant service information.
- Principles of lubricants related to fuel system components.
- Safety procedures related to reconditioning fuel system components.
- Use and care for tools and equipment related to fuel system components.
- Method to recondition fuel system components.
- Use and care for measuring instruments related to fuel system components.
- Procedures to test / check fuel system components prior to dismantling and after reconditioning
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when reconditioning fuel system components

Work effectively with others as a member of a team in reconditioning fuel system components

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to reconditioning fuel system components

Communicate effectively when reconditioning fuel system components

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Functional Area			

DIAGNOSE AND REPAIR ADVANCED VEHICLE SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 12

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of diagnosing and repairing advanced vehicle systems to restore operational condition. This will contribute to the exit level outcomes required for the National Certificate in maintaining advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Diagnose advanced vehicle system
3. Repair advanced vehicle system
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)
1.1 Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.2 Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.3 Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.4 Work area and vehicle are prepared according to safety, work site and manufacturer's procedures.
1.5 Reason(s) for selecting appropriate tools and equipment.
1.6 Reason(s) for selecting appropriate PPE.
1.7 Reason(s) for preparing work area and vehicle.
1.8 Purpose of acquiring appropriate documentation and manuals.

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2.1	Advanced vehicle system is tested according to manufacturer's procedures.
2.2	Advanced vehicle system testing and measuring equipment are used according to safety and manufacturer's procedures.
2.3	Appropriate tools, equipment and PPE are used according to safety and manufacturers procedures and job requirements.
2.4	Advanced vehicle system test data is interpreted and a conclusion is recorded according to worksite procedures.
2.5	Conclusion is tested to confirm diagnoses.
2.6	Reason (s) for testing advanced vehicle system
2.7	Steps followed during the analytical troubleshooting procedures.
2.8	Reason (s) for conclusion after interpretation of test data.
3.1	Replacement parts / components are ordered according to work site procedures.
3.2	Advanced vehicle system is repaired according to manufacturer's procedures and specifications.
3.3	Attachment agents are applied according too manufacturers procedures and job requirements.
3.4	Advanced vehicle system is adjusted according to manufacturer's procedures and specifications.
3.5	Advanced vehicle system repair(s) is tested according to manufacturer's and work site procedures.
3.6	Procedures to order replacement parts.
3.7	Reason (s) for adjustments on Advanced vehicle system.
3.8	Reason (s) for testing repairs.
4.1	Documentation is completed according to work site procedures.
4.2	Work area is restored according to SHE procedures.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in diagnosing and repairing advanced vehicle systems and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools may include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying

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towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Advanced vehicle system testing equipment includes but is not limited to: Pressure, temperature and vacuum gauges special testing equipment, multi-meter.
- Service information includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.
- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect diagnostic equipment advanced vehicle system, check all fluid levels , stabilizes systems.
- Restoring work area and vehicle to serviceable condition include but is not limited to: Tools and equipment packed away, work area cleaned, vehicle battery safely connected to electric system.
- Repairs is the replacement of parts to restore a component's operation, the replacement of components to restore the operation of the system but does not include reconditioning of components.
- Work undertaken individually or in a team environment.
- Tasks can be undertaken in the workshop or in the field.
- Tasks can be undertaken with or without supervision
- Advanced vehicle systems include the following: Engine, drive train, brakes, electrical, electronics,
- Advanced vehicle system does not include implements or steering hydraulics
- Diagnoses could include any one or a combination of: diagnose system condition, problem or breakdown.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Advanced vehicle systems exclude systems that are electronically or computer controlled

Level (for level 4)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) A foundational knowledge base as indicated in the embedded knowledge component

(b) An understanding of the discipline/field's fundamental terms, rules, concepts and principles

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(c) Familiarity with some of the essential procedures, operations and techniques of this field
(d) An ability to use a range of procedures to solve routine problems
(e) Basic information gathering, analysis and presentation skills
(f) An ability to communicate and present information clearly and reliability following prescribed formats and conventions

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:
- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Fundamentals of vehicle drive train mechanics, Hydraulics, electric's, pneumatics, internal combustion engine and systems.
- Identification and functions of diagnostic equipment related to testing advanced vehicle system
- Procedures to obtain relevant service information.
- Recommended lubricants related to advanced vehicle systems.
- Safety procedures related to testing advanced vehicle systems.
- Method and procedures to test a advanced vehicle systems.
- Operations of advanced vehicle system and components.
- Operations of advanced vehicle system electrical / control systems.
- Operations of advanced vehicle system hydraulic control systems
- Vehicle start, stop and driving procedures.
- Analytical troubleshooting procedures.
- Principles of analysing failures
- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when diagnosing and repairing advanced vehicle systems

Work effectively with others as a member of a team in diagnosing and repairing advanced vehicle systems

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to diagnosing and repairing advanced vehicle systems

Communicate effectively when diagnosing and repairing advanced vehicle systems

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Functional Area			

TEST VEHICLE SYSTEMS

Field: Engineering, Manufacturing and Technology
Sub-field: Engineering

Level: 5
Credits: 8

Issue date:
Review date:

Purpose:
Learners in the field of vehicle maintenance require the skills, knowledge and values reflected in this unit standard.

The learner is capable of using test equipment to measure effectively. This will contribute to the exit level outcomes required for the National Certificate in diagnostic and repair of advanced vehicle systems and related qualifications.

This unit standard has been designed as the start of a progression within the vehicle maintenance industry.

Learning assumed to be in place	Knowledge	
	Skills	
	Attitude	

Specific outcomes (Learners can/learners will be able to)
1. Identify and select correct tools and equipment
2. Test vehicle system on a dynamometer
3. Interpret results
4. Complete documentation and report on condition

Assessment criteria (Evidence shows/learners can show)	
1.1	Job instructions are read, interpreted and a sequence of operations is determined according to worksite procedures.
1.2	Appropriate tools and equipment are identified and selected according to job requirements and work site procedures.
1.3	Manufacturers' manuals and/or specifications are acquired according to job requirements.
1.4	Appropriate personal protective equipment (PPE) is identified and selected according to statutory requirements.
1.5	Work area and vehicle / system is prepared according to safety, work site and manufacturer's procedures.
1.6	Reason(s) for selecting appropriate tools and equipment.
1.7	Reason(s) for selecting appropriate PPE.
1.8	Reason(s) for preparing work area and vehicle.
1.9	Purpose of acquiring appropriate documentation and manuals.
2.1	Vehicle system is tested according to manufacturer's procedures.
2.2	Dynamometer is used according to safety and manufacturer's procedures.
2.3	Appropriate tools, equipment and PPE are used according to safety and manufacturers procedures and job requirements.
2.4	Reason (s) for testing vehicle system.
2.5	Reason (s) for specific PPE selected.
3.1	Vehicle system test data recorded according to quality and work site procedures.
3.2	Vehicle system is adjusted, when specified, according to manufacturer's procedures and specifications.
3.3	Measuring equipment are used according to manufacturers procedures and job

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	requirements.
4.1	Documentation is completed according to work site procedures.
4.2	Work area is restored to serviceable condition according to work site procedures.
4.3	Purpose of documentation.

ACCREDITATION PROCESS (including moderation):

The standard describes competent performance in testing a vehicle system on a dynamometer and lay down the criteria by which competence should be judged, as well as the range of circumstances in which competence should be demonstrated.

Integrated assessment methods and tools will allow the candidate to demonstrate that s/he has acquired knowledge of and can safely and effectively apply competence identified in this unit standard.

These assessment methods and tools include the following:

- In-situ (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Written reports (e.g. tests, exams, case studies, projects, registers, logbooks, workbooks)
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects (physical visits to Government Departments)
- Experiential learning
- Working in teams
- Scenario sketching

These methods must be carefully selected based on the purpose of the assessment (For example, the written method of assessing knowledge or on-job demonstration of practical competence). The assessment must integrate a number of different methods in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

Candidates are assessed against these assessment criteria. Currently employed candidates are observed carrying out their normal work duties by an assessor. They may also be asked to carry out simulated tasks and to answer written and/or oral questions. Candidates studying towards a Unit Standard, and who are not currently employed, will also be assessed using variety of assessment tools.

Training providers offering the qualifications, or part thereof, shall be accredited in terms of the criteria laid down by the relevant SETA/ETQA.

Qualified Assessors will be appointed by the training institutions offering the qualifications and must be registered and accredited with the relevant SETA/ETQA.

RANGE

Context

- Statutory requirements include but are not limited to: OHS Act.
- Quality procedures include but are not limited to: ISO 9000
- Appropriate tools and equipment include but are not limited to: manufacturer's special service tools, workshop equipment, hand tools.
- Service information includes but is not limited to: Manufacturer's manuals, parts manuals, work site procedures.
- Documentation includes but is not limited to: Job cards, part requisitions, job reports.

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- Work area and vehicle preparation include but is not limited to: Arrange tools and equipment, connect vehicle system to dynamometer, check all fluid levels , stabilizes systems.
- Restoring work area and vehicle to serviceable condition include but is not limited to: Tools and equipment packed away, work area cleaned.
- Work undertaken individually or in a team environment.
- Tasks to be undertaken in the workshop.
- Tasks can be undertaken with or without supervision
- Vehicle systems could be anyone of the following: Engine, transmission, complete vehicle.
- Dynamometer can be a: Transmission, engine or a vehicle testing station that tests the system(s) dynamically.
- Measuring equipment may include but are not limited to: electronic and mechanical measuring instruments such as; inside / outside micrometer, telescopic gauge, ball gauges, dial gauge, vernier, measuring tape, callipers, feeler gauge.
- Attachment agents may include but are not limited to: friction and anti-friction bearings, seals and gaskets, industrial fasteners.
- Workshop equipment may include but are not limited to: lifting equipment, drills, grinders (hand held / pedestal), impact wrenches, jacks, stands, lifts, cranes.
- Hand tools may include but are not limited to: wrenches, pliers, screwdrivers, files, chisels, punches, hammers, socket sets, allen keys, hacksaws.

Level (for level 5)

A learning programme leading to the award of this unit standard should develop learners who demonstrate:

(a) An ability to acquire a wide range of technical skills
(b) An ability to discuss a considerable choice of procedures
(c) A broad knowledge that incorporates theoretical concepts
(d) An ability to critically analyse information
(e) An ability to make judgements to unknown problems
(f) An ability to work on its own with complete responsibility

NOTES

REQUIREMENTS OF A PORTFOLIO

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience which serves to supplement the assessment of applied competence.

The portfolio may include inter alia:

- Written statements from persons (e.g. current and/or previous employer, colleague, peer, manager, external customers) confirming competence of the learner
- Relevant certificates or awards
- Previous assessment records
- Journals/logbook

EMBEDDED KNOWLEDGE

- Identification and functions of dynamometer controls and components.
- Operation of dynamometer.
- Procedures to obtain relevant service information.
- Recommended lubricants related to vehicle systems.
- Safety procedures related to testing vehicle systems on a dynamometer.
- Method and procedures to test a vehicle systems using a dynamometer.
- Vehicle start, stop and driving procedures.
- Quality procedures related to testing vehicle systems on a dynamometer.

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- Select, use and care for measuring equipment applicable to the task.
- Select and use attachment agents applicable to the task.
- Select, use and care for workshop equipment applicable to the task.
- Select, use and care for hand tools applicable to the task.

CRITICAL CROSS FIELD OUTCOMES

Identify and solve problems in a critical and creative way when using test equipment

Work effectively with others as a member of a team in using test equipment

Organise and manage oneself and one's personal activities responsibly and effectively.

Collect, analyse, organise and critically evaluate information relevant to using test equipment

Communicate effectively when recording results of readings

No. 563 **10 May 2002**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Retail and Wholesale

Registered by NSB 11, Services, publishes the following qualifications and unit standard for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standard upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 3 June 2002.*** All correspondence should be marked **Standards Setting – SGB for Retail and Wholesale** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 482 0907

SAMUEL B.A. ISAACS
EXECUTIVE OFFICER

National Certificate in Motor Sales and Support Services: NQF Level 4

Field: Services – NSB 11

Sub-field: Retail and Wholesale

Level: 4
Credit: 145
Issue date:
Review date:

Rationale for the qualification

This qualification reflects the workplace-based needs of the retail automotive industry that relate to motor sales and support services that are expressed by employers and employees, both currently and for the future. This qualification provides the learner with accessibility to be employed within the functional areas, vehicle sales, parts sales, service sales and tyre sales as functional areas in the automotive industry and provides the flexibility to pursue different careers in the broader automotive industry and articulation within the vehicle sales, parts sales, service sales and tyre sales contexts.

Purpose:

This qualification will allow a learner in the retail automotive industry to obtain a nationally recognised qualification in and for the four functional areas, namely vehicle sales, parts sales, services sales and tyre sales. It will also contribute to the upliftment of the automotive industry and will set a standard for professionalism in the industry. The qualification will assist in changing perceptions of the lack of integrity and business ethics of the industry. This will also assist in improving relationships between employer and employees. The obtainment of a qualification in the four functional areas of the retail automotive industry will also attract and retain quality learners and employees. This qualification will also provide for recognition of prior learning to allow for the

recognition of existing and common knowledge and skills that will not only allow a learner to gain credits towards this qualification, but also to move across the functional areas.

The generic core unit standards as well as the specialised context (functional) unit standards provide credits that allow access to both vertically and horizontally articulated qualifications. This qualification will enhance the status, productivity and employability of the learner within the automotive industry as well as contribute to the quality, production rate and growth of the four functional areas. This allows for access, progression, portability and mobility within and between the functional areas. Through the electives component of the qualification learners are able to demonstrate vocational skills through which they are able to engage in life skills activities, small business development, health and environmental issues. Through recognition of prior learning adult learners are encouraged to access basic education with an understanding that they already have knowledge and experience.

Learners, once qualified, are capable of increasing sales in the different functional areas in the automotive industry. This will allow the learner to provide a more effective service that will improve customer satisfaction. Learners will also be capable of representing products and services in the four functional areas effectively to assist customers to make an informed decision. Learners will be able to move to higher levels of functionality and learning in different functional areas.

This qualification will also allow for transformation within the retail automotive industry as learners will be models for other employees/learners. This will, as mentioned earlier, attract quality people and allows for the aspiration of people to be part of the industry. The recognition of prior learning policies from the SETA/ETQA will formalise informal and non-formal learning and learners will be able to obtain a national qualification. This will improve the level of participation of employees in the industry.

A person acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate familiarity with local knowledge and contexts in performing the tasks related to the four functional areas in the automotive industry
- Demonstrate an understanding of and the ability to carry out simple operations using the fundamental systems, procedures in the four functional areas
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form
- Explore broader competencies required for entrepreneurial opportunities

Access to the Qualification

The qualification is open to everyone who wishes to be part of the automotive industry

Learning assumed to be in place

Literacy and numeracy at NQF 2 or equivalent.

Exit Level Outcomes

The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, a learner is able to:

- Recall, interpret and apply knowledge and competence of the sales function within Motor Sales and Support Services that will enhance the image and professionalism of Motor Sales and Support Services;
- Identify, interpret and demonstrate knowledge and competence in the areas of customer service within Motor Sales and Support Services that will assist the customer to make an informed decision
- Describe, interpret, relate and demonstrate familiarity with local knowledge and contexts in performing the tasks related to the four functional areas in Motor Sales and Support Services i.e. Part Sales, Vehicle Sales, Service Sales and Tyre Sales.
- Apply and demonstrate knowledge and competence in presenting the unique product features, advantages and benefits related to the various functional areas and allow the customer to make an informed decision.
- Communicate with peers, customers and members of supervisory/management levels by demonstrating the ability to summarise information and express opinions on given information in spoken and written form

The qualification consists of unit standards which describe the knowledge and skills that will change the values of the learner and that describe competence in a specific unit standard. It allows the learner to specialise in one of the functional areas. There are unit standards that can be clustered together in a skills programme for forecourt attendants. This will allow mobility for the forecourt attendant to complete a full qualification and progress to one of the functional areas.

Associated Assessment Criteria

Assessors should check that the learner must demonstrate an ability to consider a range of options and make decisions related to their context of work.

- The functions related to sales are described, analysed, assessed and the appropriate actions are taken to ensure that the customer makes an informed decision.

- Customers requirements, concerns and needs are analysed and appropriate strategies are designed to assist customers in the motor sales and support services industry.
- Local knowledge and context in performing the tasks in the relevant functional area are explained, analysed and applied.
- Customers are able to make an informed decision when buying products or services after explaining and presenting the features, advantages and benefits of the products and services.
- Learners are able to communicate effectively with customers and members of the organisation.

International comparability

The unit standards were benchmarked against unit standards and qualifications from New Zealand and the United Kingdom (Motor sales, parts sales and tyre sales), as well as against criteria from the motor industry in Japan with regard to service sales. The qualification was compared with qualifications from the motor industry training organisation in the UK in terms of specific outcomes, assessment criteria and degree of difficulty.

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge of problem solving and application of the world as a set of related systems is/are integrated within the electrical installation and maintenance environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence. These tools include the following:

- In-situ (on-the-job) observations

- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Verbal report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment method and or tools used by the assessor must be fair in the sense that it does not hinder or advantage the learner, valid in the sense that it measures what it intends to measure, reliable in the sense that it is consistent and delivers the same output across a range of learners and practical in the sense that it takes into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment is carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to proof the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience.

Articulation possibilities

This qualification provides the learner with the flexibility to pursue different careers in the automotive industry and articulation within retail and wholesale. The level of flexibility within the range of electives will allow the individual to pursue further learning within an entrepreneurship, supervision/management, quality assurance, health and safety and engineering sub-disciplines.

Moderation Options

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.
- Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Criteria for registration of assessors

Assessors need experience in the following areas:

- Interpersonal skills
- Subject matter and
- Assessment.

The assessor needs to be competent in the planning and conducting of assessment of learning outcomes and in the design and development of assessments as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 4. Subject matter experience must be well developed within the different functional areas of the automotive industry. The assessor must have completed:

- a similar qualification at the level with a minimum of 6-12 months field experience after he/she has completed the qualification or,
- The subject matter experience of the assessor can be established by recognition of prior learning.

Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

Rules of combination

Learners wishing to achieve the National Certificate in Motor Sales and Support Service need to do the 36 credits as part of the fundamental learning, the core generic credits of 58, and the core functional credits as per functional area (depending on the area of specialisation) and the rest of the credits to be obtained from the elective area that relate to the functional area to add to a total of at least 145 credits. Learners wishing to progress to higher levels of learning (NQF level 5 to 8) (that is to achieve a Further Education and Training Certificate) need to do at least 20 credits on NQF level 3 relating to communications as prescribed by the Further Education and Training Certificate Policy document.

TITLES MATRIX: NATIONAL CERTIFICATE IN MOTOR SALES AND SUPPORT SERVICES – NQF LEVEL 4

Component	Area	Level	Unit standards tile	Standard number	Credits	NLRD ID
Fundamental		4	Communication studies • Engage in sustained oral communication and evaluate spoken texts • Read, analyse and respond to a variety of texts • Write for a wide range of contexts • Use language and communication in occupational learning programmes		(20) 5 5 5 5	 8974 8975 8976 8979
		4	Physical, mathematical, computer and life science • Use mathematics to investigate and monitor the financial aspects of personal, business, national issues • Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life-related problems • Represent, analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts		(16) 6 6 4	 8983 9015 9016
TOTAL					36	
Core Generic	Parts, Vehicle, Service and Tyres	4	Identify customers and generate selling opportunities	CG01	8	
		4	Identify the needs and concerns of customers and advise customers to optimise choice and benefits	CG02	7	
		4	Forecast, monitor and evaluate personal sales performance in the automotive business	CG03	5	
		4	Create and maintain a positive relationship with the customer within Motor Sales and Support Services	CG04	14	
		4	Conduct sales in Motor Sales and Support Services	CG05	16	
		3	Maintain health and safety within the internal and external environment	CG06	4	
		3	Communicate and liaise with internal and external sales support services	CG07	4	
TOTAL					58	
Core functional	Vehicle sales	3	Prepare and execute vehicle delivery	CFVS01	8	
		3	Merchandise and display products, services and related goods	CF02	6	
		4	Present and demonstrated features, advantages and benefits of products and services to customers and prospective buyers	CF03	8	
		4	Procure and buy stock	CF04	4	
TOTAL					24	
Core Functional	Service Sales	4	Receive customer, confirm initial requirements and investigate further service and repair concerns	CFSS01	8	
		4	Control, balance and channel workflow to complete required work	CFSS02	3	
		4	Implement quality control system in Motor Sales and Support Services	CFSS03	2	
		4	Hand over vehicle	CFSS04	4	
		4	Make appointments and control flow of customer vehicle	CFSS05	16	
TOTAL					33	
Core Functional	Tyre Sales	3	Merchandise and display products, services and related goods	CF02	6	
		4	Present and demonstrated features, advantages and benefits of products and services to customers and prospective buyers	CF03	8	
		4	Procure and buy stock	CF04	4	
		3	Receive and process stock in Motor Sales and Support Services	CF05	8	
		4	Processing of orders and payments in the areas of Part Sales and Tyre Sales in Motor Sales & Support Services.	CF06	8	
					34	
Core Functional	Parts Sales	3	Merchandise and display products, services and related goods	CF02	6	

Elective	Tyre Sales	3	Identify tyre application for tractors and agriculture machinery and remove and replace tyres	CETS01	4
		3	Repair and replace light and heavy commercial vehicle tyres	CETS02	17
		3	Remove and replace wheels and tyres from industrial machines and equipment	CETS03	10
		4	Check, demount and mount a heavy off the road equipment tyre	CETS04	10
		2	Remove and replace wheels and tyres and balance wheels	CETS05	2
		3	Demonstrate knowledge of, and rectify faults in, motor vehicle tyres and wheels	CETS06	7
		3	Repair punctures and fit tyres on wheels	CETS07	3
					53
Elective	Vehicle sales	5	Explain and practically apply the fundamentals of vehicle finance and insurance	CEVS01	15
		5	Sell products and services to corporate fleet owners	CEVS02	16
		5	Provide options on heavy commercial vehicle and add-on products for heavy commercial vehicles	CEVS03	7
		4	Appraise and valuate used vehicle	CEVS04	8
					46
Elective	Forecourt attendant	2	Direct, receive and communicate with customers on the forecourt	EFC01	4
		2	Perform basic safety checks	EFC02	8
TOTAL					12
TOTAL OF CERTIFICATE					145

UNIT STANDARDS IN NATIONAL CERTIFICATE IN MOTOR SALES AND SUPPORT SERVICES – NQF LEVEL 4

UNIT STANDARDS – NQF LEVEL 2

1. Title: Remove and replace wheels and tyres and balance wheels
2. Title: Direct, receive and communicate with customers on the forecourt
3. Title: Perform basic safety records

UNIT STANDARDS – NQF LEVEL 3

1. Title: Maintain health and safety within the internal and external environment
2. Title: Communicate and liaise with internal and external support services
3. Title: Prepare and execute vehicle delivery
4. Title: Merchandise and display products, services and related goods
5. Title: Receive and process stock in motor sales and support services
6. Title: Identify tyre application for tractors and agriculture machinery and remove and replace tyres
7. Title: Repair and replace light and heavy commercial vehicle tyres
8. Title: Remove and replace wheels and tyres from industrial machines and equipment
9. Title: Demonstrate knowledge of and rectify faults in motor vehicle tyres and wheels
10. Title: Repair punctures and fit tyres on wheel

UNIT STANDARDS – NQF LEVEL 4

1. Title: Identify customers and generate selling opportunities
2. Title: Identify the needs and concerns of customers and advise customers to optimise choice and benefits
3. Title: Forecast, monitor and evaluate personal sales performance in the automotive business
4. Title: Create and maintain a positive relationship with the customer within motor sales and support services
5. Title: Conduct sales in motor sales and support services
6. Title: Present and demonstrate features, advantages and benefits of products and services to customers and prospective buyers
7. Title: Procure and buy stock
8. Title: Receive customer, confirm initial requirements and investigate further service and repair concerns
9. Title: Control, balance and channel workflow to complete required work

10. Title: Implement quality control system in motor sales and support services

11. Title: Hand over vehicle

12. Title: Make appointments and control flow of customer vehicle

13. Title: Processing orders and payments in the area of part sales and tyres sales in motor sales and support services

14. Title: Identify vehicle part

15. Title: Check, demount and mount a heavy off road equipment tyre

16. Title: Appraise and valuate used vehicle

UNIT STANDARDS – NQF LEVEL 5

1. Title: Explain and practically apply the fundamentals of vehicle finance and insurance

2. Title: Sell products and services to corporate fleet owners

3. Title: Provide options on heavy commercial vehicle and add-on products for heavy commercial vehicles

UNIT STANDARDS AND SPECIFIC OUTCOMES IN NATIONAL CERTIFICATE IN MOTOR SALES AND SUPPORT SERVICES – NQF LEVEL 4

UNIT STANDARDS – NQF LEVEL 2

1. Title: Remove and replace wheels and tyres and balance wheels

Specific outcome 1.1 Remove and replace a wheel

Specific outcome 1.2 Interchange the wheels

Specific outcome 1.3 Determine the serviceability of a wheel and tyre

Specific outcome 1.4 Balance a wheel and tyre assembly

2. Title: Direct, receive and communicate with customers on the forecourt

Specific outcome 2.1 Direct vehicles to the required pumps and apply basic business procedures

Specific outcome 2.2 Identify customer requirements

Specific outcome 2.3 React correctly in various pressured customer interface situations

Specific outcome 2.4 Advice customers on different products on offer on forecourt

Specific outcome 2.5 Process payments

3. Title: Perform basic safety records

Specific outcome 3.1 Check for damages on tyres and tread depth

Specific outcome 3.2 Check oil level, water, battery and tyre air pressure and automatic transmission fluid

Specific outcome 3.3 Check shocks, brakes, break pads, wheel nuts, studs , brake fluid and air gauge

Specific outcome 3.4 Use tools correctly and effectively adhering to safety requirements and instruments specifications

UNIT STANDARDS – NQF LEVEL 3

1. Title: Maintain health and safety within the internal and external environment

Specific outcome 1.1 Demarcate working areas and walkways.

Specific outcome 1.2 Report accidents.

Specific outcome 1.3 Establish safety committees.

Specific outcome 1.4 Maintain sufficient light, adequate ventilation and minimised noise levels.

Specific outcome 1.5 Ensure safety and security

Specific outcome 1.6 Maintain housekeeping

2. Title: Communicate and liaise with internal and external support services

Specific outcome 2.1 Understand the functions and roles of team members and of the internal departments of the business

Specific outcome 2.2 Understand the functions and roles of the external sales support structures

Specific outcome 2.3 Optimise relationships with team members and the internal departments and the external sales support structures

Specific outcome 2.4 Communicate and liaise team members, with internal departments and external sales support structures

3. Title: Prepare and execute vehicle delivery

Specific outcome 3.1 Examine and test vehicle according to company's quality policy and procedures and ensure compliance with customers' order specification

Specific outcome 3.2 Prepare for handover

Specific outcome 3.4 Conduct vehicle hand-over

Specific outcome 3.5	Conduct after sales follow-up programme

4. Title: Merchandise and display products, services and related goods

Specific outcome 4.1	Group, display and present product, services, promotional material and related goods
Specific outcome 4.2	Mark products, services and related goods with prices and other relevant marketing information
Specific outcome 4.3	Perform a range of housekeeping activities
Specific outcome 4.4	Evaluate the effectiveness of the display of products, services and related goods
Specific outcome 4.5	Influence merchandising and display policies

5. Title: Receive and process stock in motor sales and support services

Specific outcome 5.1	Receive and secure the correct stock
Specific outcome 5.2	Unpack the stock
Specific outcome 5.3	Bin stock in correct storage location
Specific outcome 5.4	Count stock and check for accuracy

6. Title: Identify tyre application for tractors and agriculture machinery and remove and replace tyres

Specific outcome 6.1	Demonstrate knowledge of tractor and agricultural machinery tyre types and sizes
Specific outcome 6.2	Demonstrate knowledge of tyre damage, repair techniques, and maintenance requirements
Specific outcome 6.3	Demonstrate knowledge of tractor wheels
Specific outcome 6.4	Remove and replace tractor tyres.

7. Title: Repair and replace light and heavy commercial vehicle tyres

Specific outcome 7.1	Remove wheels from light and heavy commercial vehicles.
Specific outcome 7.2	Remove light and heavy commercial vehicle tyres from wheels
Specific outcome 7.3	Repair punctured tubes and resultant damage to tyres
Specific outcome 7.4	Repair punctured tubeless tyres.
Specific outcome 7.5	Fit light and heavy commercial vehicle tubed tyres to wheels
Specific outcome 7.6	Fit light and heavy commercial vehicle tubeless tyres to wheels.

8. Title: Remove and replace wheels and tyres from industrial machines and equipment

Specific outcome 8.1	Demonstrate knowledge of industrial tyres.
Specific outcome 8.2	Remove wheels from industrial machines and/or equipment
Specific outcome 8.3	Remove industrial pneumatic tyres from wheels and replace them
Specific outcome 8.4	Remove and fit industrial cushion solid type (resilient) tyres
Specific outcome 8.5	Refit wheels to industrial machines and/or equipment.

9. Title: Demonstrate knowledge of and rectify faults in motor vehicle tyres and wheels

Specific outcome 9.1	Demonstrate knowledge of vehicle tyre standards
Specific outcome 9.2	Demonstrate knowledge of vehicle tyres, types, and sizes.
Specific outcome 9.3	Diagnose and rectify tyre abnormalities in vehicle tyre conditions.
Specific outcome 9.4	Demonstrate knowledge of vehicle wheels and rectify wheel defects.

10. Title: Repair punctures and fit tyres on wheel

Specific outcome 10.1	Demonstrate knowledge of fitting and repairing tyres and inspecting wheels
Specific outcome10.2	Repair a puncture in a tube and tubeless tyre

UNIT STANDARDS – NQF LEVEL 4

1. Title: Identify customers and generate selling opportunities

Specific outcome 1.1	Identify potential customers
Specific outcome 1.2	Generate selling opportunity
Specific outcome 1.3	Deal with customer objections and requests
Specific outcome 1.4	Record, Evaluate and use all leads or contacts for future practice

2. Title: Identify the needs and concerns of customers and advise customers to optimise choice and benefits

Specific outcome 2.1	Establish rapport with prospective customers
Specific outcome 2.2	Establish and confirm the customers needs and interest in relation to the product/ service
Specific outcome 2.3	Advise the customer on options based on identified needs
Specific outcome 2.4	Give customer the opportunity to fully investigate products/ services
Specific outcome 2.5	Suggest alternative course of action, where the product / service does not suit the customers requirements

3. Title: Forecast, monitor and evaluate personal sales performance in the automotive business

Specific outcome 3.1	Obtain and evaluate information for forecasting sales against company expectation
Specific outcome 3.2	Analyse and assess past sales performance against personal performance
Specific outcome 3.3	Identify and assess new factors affecting sales trends, market conditions and potential selling opportunities
Specific outcome 3.4	Make and record sales forecasts using appropriate information and methods and follow organisational lines
Specific outcome 3.5	Monitor and Evaluate and assess previous sales

4. Title: Create and maintain a positive relationship with the customer within motor sales and support services

Specific outcome 4.1	Promote and maintain quality and customer service standards according to organisational requirements
Specific outcome 4.2	Update and maintain customer records
Specific outcome 4.3	Deal with customer complaints and queries
Specific outcome 4.4	Obtain and evaluate marketing information and trends to enhance customer service

5. Title: Conduct sales in motor sales and support services

Specific outcome 5.1	Present and/or demonstrate products and services to prospective customer
Specific outcome 5.2	Negotiate and/or agree to terms and conditions of sales
Specific outcome 5.3	Prepare quotations
Specific outcome 5.4	Handle and deal with customer objections and concerns
Specific outcome 5.5	Close deal and create customer commitment

6. Title: Present and demonstrate features, advantages and benefits of products and services to customers and prospective buyers

Specific outcome 6.1	Qualify needs of prospective buyers
Specific outcome 6.2	Present the vehicle using the senses of the prospective buyer
Specific outcome 6.3	Conduct a dynamic demonstration of the vehicle using senses of the prospective buyer
Specific outcome 6.4	Identify early buying signals and act upon

7. Title: Procure and buy stock

Specific outcome 7.1	Establish source of supply of vehicle stock
Specific outcome 7.2	Issue order for vehicle stock and prepare and/or verify relevant documentation
Specific outcome 7.3	Negotiate profitable and acceptable conditions and develop relationships that will ensure effective supply of vehicle stock to the business
Specific outcome 7.4	Evaluate current suppliers against the supplier specification and performance

8. Title: Receive customer, confirm initial requirements and investigate further service and repair concerns

Specific outcome 8.1	Receive customer and establish the customer's concerns and requirements related to services and repairs
Specific outcome 8.2	Use the customer's history to ensure continuity of the service relationship
Specific outcome 8.3	React correctly in various pressured customer interface situations
Specific outcome 8.4	Understand, verify and record the concerns and requirements of the customer
Specific outcome 8.5	Advise customers on appropriate service and repair options
Specific outcome 8.6	Interpret warranties and guarantees and apply accordingly
Specific outcome 8.7	Quote a price for a service or repair and gain the customer's commitment
Specific outcome 8.8	Conclude service consultancy process

9. Title: Control, balance and channel workflow to complete required work

Specific outcome 9.1	Load jobs onto a specific type of control mechanism.
Specific outcome 9.2	Allocate appropriate jobs to specific technical staff.
Specific outcome 9.3	Feed in information and update a control mechanism.
Specific outcome 9.4	Monitor and control the timeous completion of sublet work
Specific outcome 9.5	Contact customer to gain approval for extra work required and notify of potential delays.

10. Title: Implement quality control system in motor sales and support services

Specific outcome 10.1	Explain and apply the quality standards of a motor dealership
Specific outcome 10.2	Recognise and describe sub-standard quality
Specific outcome 10.3	Record, correlate and interpret incidents of sub-standard quality
Specific outcome 10.4	Communicate statistical interpretations of sub-standard quality incidents
Specific outcome 10.5	Coach adults in on-the-job situations to achieve quality standards

11. Title: Hand over vehicle

Specific outcome 11.1	Perform quality control measures to ensure customers concerns have been attended to and the customer's vehicle is fixed right the first time.
Specific outcome 11.2	Prepare the customer's vehicle for hand over.
Specific outcome11.3	Prepare and check the documentation required to hand over the customer's vehicle.
Specific outcome 11.4	Describe the service actions that were carried out to the customer.
Specific outcome 11.5	Process the customer's payment and apply the correct office procedures within the service centre's policy.
Specific outcome 11.6	Advise the customer on post service care and operation.

12. Title: Make appointments and control flow of customer vehicle

Specific outcome 12.1	Operate clerical systems and apply business practices
Specific outcome 12.2	Cost a job for an automotive repair
Specific outcome 12.3	Book in work for an automotive business
Specific outcome 12.4	Sell goods and services telephonically
Specific outcome 12.5	Attend to customer inquiries face-to-face and on the telephone

13. Title: Processing orders and payments in the area of part sales and tyres sales in motor sales and support services

Specific outcome 13.1	Source non stock and stock out items required
Specific outcome 13.2	Process order
Specific outcome 13.3	Process payment
Specific outcome 13.4	Deal with returned goods by the customer

14. Title: Identify vehicle part

Specific outcome 14.1	Identify customers requirements
Specific outcome 14.2	Identify specific vehicle system
Specific outcome 14.3	Identify specific components within vehicle systems
Specific outcome 14.4	Identify specific parts
Specific outcome 14.5	Use parts catalogue system

15. Title: Check, demount and mount a heavy off road equipment tyre

Specific outcome 15.1	Carry out maintenance checks on off-the-road (OTR) tyres
Specific outcome 15.2	Remove a wheel from a heavy OTR machine
Specific outcome 15.3	Demount a heavy OTR tyre from a wheel
Specific outcome 15.4	Demount a tyre from a heavy OTR machine

16. Title: Appraise and valuate used vehicle

Specific outcome 16.1	Identify the used vehicle status
Specific outcome 16.2	Assess used vehicle's condition
Specific outcome 16.3	Establish and calculate the final value of the used vehicle
Specific outcome 16.4	Negotiate and agree on final price and issue an offer to purchase to the vendor

UNIT STANDARDS – NQF LEVEL 5

1. Title: Explain and practically apply the fundamentals of vehicle finance and insurance

Specific outcome 1.1	Establish rapport with customers, during the hand over from a sales executive
Specific outcome 1.2	List, explain and advise customers on the available Finance and Insurance options as well as the importance of, in aim of selling additional "non-tangible" products
Specific outcome 1.3	Explain and demonstrate what makes up "second gross" and how it adds to the profitability of dealership sales
Specific outcome 1.4	Correctly complete an application for Finance and successfully submit it to a Financial Institution for approval
Specific outcome 1.5	Settle an outstanding amount of money owed to a bank, on behalf of a customer (settlement)
Specific outcome 1.6	Know, apply and interpret relevant legislation

2. Title: Sell products and services to corporate fleet owners

Specific outcome 2.1	Seek own corporate prospects
Specific outcome 2.2	Make contact with corporate prospects via telephone canvassing
Specific outcome 2.3	Meet decision makers of corporate prospects face-to-face
Specific outcome 2.4	Establish appropriate corporate prospect's purchasing options
Specific outcome 2.5	Prepare and present a proposal with quotation to the corporate prospect so as to influence the customer's decision making
Specific outcome 2.6	Obtain necessary approval to conclude the deal

3. Title:	**Provide options on heavy commercial vehicle and add-on products for heavy commercial vehicles**
Specific outcome 3.1	Establish customer needs in terms of the use/purpose of the Heavy Commercial Vehicle
Specific outcome 3.2	Determine the correct vehicle ratings and specifications
Specific outcome 3.3	Determine the need and specifications of add-on products for Heavy Commercial Vehicles
Specific outcome 3.4	Calculate the vehicle's operating costs estimates

No. 564 **10 May 2002**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Cleaning, Domestic, Hiring, Property and Rescue Services

Registered by NSB 11, Services, publishes the following qualifications and unit standard for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standard upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 3 June 2002.*** All correspondence should be marked **Standards Setting – SGB for Cleaning, Domestic, Hiring, Property and Rescue Services** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 482 0907

pp **SAMUEL B.A. ISAACS**
EXECUTIVE OFFICER

TITLE: National Certificate in Hygiene & Cleaning NQF Level 1

FIELD: Services

SUB-FIELD: Cleaning, Domestic, Hiring, Property and Rescue Services

NQF LEVEL: 1

CREDITS: 120

RATIONALE FOR THE QUALIFICATION

The narrow consultation process followed, clearly indicated the need for a qualification and incorporated unit standards that will allow employees in the Cleaning Industry to obtain qualifications and / or standards at NQF Level 1.

This qualification is needed to transform the Hygiene and Cleaning Services Industry by:

- Promoting and continually improving a professional image;
- By instilling a culture of awareness of a clean environment that will improve the quality of life for all South Africans.

The qualification aims to:

- allow employees within the industry to identify a career path within the Hygiene and Cleaning Industry.
- develop a sense of pride amongst employees for their jobs and their industry.
- develop a better understanding of the industry amongst employees.
- enhance a code of ethics inclusive of viable and sustainable environmental management practices.
- provide consistent quality and safety standards.
- educate clients about hygiene, for the purpose of using "best practice" cleaning methods.

PURPOSE OF THE QUALIFICATION

The primary purpose of this qualification is to develop the foundational, practical and reflexive competencies in a learner required for a career in the Hygiene & Cleaning Services Industry.

Central to the qualification is the development of a culture of quality service and professionalism in the cleaning industry. This qualification intends to produce employable cleaners who can find gainful employment in the cleaning industry.

Credits gained at one level in this qualification will be transferable throughout the system, giving the learner the opportunity of building up credits towards additional qualifications in a related field (e.g. Hospitality, Health Care or Manufacturing), or a related branch of cleaning (e.g. Industrial or Textile Cleaning

The credits reflect the practical and theoretical education and training aspects of the qualification.

LEARNING PATHWAYS AND TITLES MATRIX

BAND	NQF LEVEL	STANDARDS & QUALIFICATIONS	JOB CLASSIFICATION
Higher Education & Training	8		
	7		
	6		
	5	National Diploma in Hygiene and Cleaning Management	▪ Municipal Cleaning Officer ▪ Municipal Waste / Environmental Health Officer ▪ Operations Manager in the Contract Cleaning Industry ▪ Laundry Manager ▪ Environmental Officer / Assembly Line Manufacturing ▪ Self-employment as independent cleaning contractor in the elective field of learning (e.g. Laundry, Commercial Contract Cleaner, etc.) ▪ Housekeeping Manager (Health Care Facilities, etc.) ▪ Food Safety Officer (Food Production Facilities) ▪ Assessor ▪ Moderator
Further Education & Training	4		
	3	National Certificate in Hygiene and Cleaning Services	▪ Internal auditor (quality systems) in the cleaning industry. ▪ Supervisor ▪ Stores controller ▪ Assessor
	2	National Certificate in Hygiene and Cleaning Services	▪ Specialist cleaners in the cleaning industry (most notably Textile, Industrial and Health Care Cleaning) ▪ Team Leaders
General Education & Training	1	National Certificate in Hygiene and Cleaning Services	▪ Cleaner ▪ Laundry assistant

UNIT STANDARD TITLES, LEVELS AND CREDITS

Where unit standards with similar titles and content are available, the SGB applied a 60/40 principle, where it was decided that if 60% of the unit standard would fit the purposes of the cleaning industry, the standard would be imported. Where this was not the case, new standards were developed.

The balance between Core and Electives was influenced by the modular system and by the Specific Outcomes of the standards. (For example, a unit standard title such as "Sweep Floors" would appear to be generic to cleaning, but, as the Specific Outcomes refer to specialised skills such as "Sweep the floor using a walk behind non-motorised sweeper", this standard would only be applicable in certain of the modules and therefore it was decided that it should be an elective.)

TITLE	CREDITS	NO.	LEVEL
FUNDAMENTALS			
Demonstrate an understanding of and use the numbering system.	1	NUM101	1
Solve simple realistic and abstract problems involving the combination, separation, comparison, equalization, sharing and grouping of numbers.	3	NUM102	1
Extract and use information derived from simple tables and organize information into tables	2	NUM103	1
Perform basic calculations	3	XX18	2
Manage Personal Finances	8		1
Engage in a range of speaking and listening interactions	6	COM101	1
Maintain effective work relationships in a cleaning environment	4		1
Apply quality principles in everyday cleaning tasks	12		1
Practice environmental awareness	4		1
Plan and manage time in the workplace	4		1
TOTAL FUNDAMENTALS	**47**		
CORES			
Maintain personal hygiene, health and presentation	4		1
Identify surfaces, soilage and its cleaning procedures	4		1
Deal with customers in a cleaning environment	4		1
Use chemicals in cleaning procedures	4		1
Handle and store cleaning chemicals	4		1
Clean and maintain toilets and urinals	4		1
Understand basic cleaning principles and perform basic cleaning tasks	6		1
Wet mop floors	4		1
Clean and maintain restrooms and bathrooms	4		1
TOTAL CORES	**38**		
ELECTIVES			
Clean above the floor surfaces	4		1
Operate a scrubbing /buffing and burnishing machine	8		1
Identify, collect, classify and handle waste	4		1
Vacuum clean dry surfaces	4		1
Sweep floors	4		1

Clean small kitchens, kitchenettes and tea kitchens	10		1
Clean windows, frames and glass panels.	4		1
Remove spots from carpets	4		1
Remove spots from upholstery	4		1
Clean building surrounds	4		1
Buff, burnish and scrub hard and resilient floors	10		1
TOTAL ELECTIVES	**60**		

NOTE: To obtain this qualification, learners are required to select a minimum number of:

- 16 credits from the field of Mathematics;
- 20 credits from the field of Communication and Language Studies;
- 36 credits from the core titles listed, and;
- the remaining number of credits from the elective titles listed.

TOTAL NUMBER OF CREDITS REQUIRED AT NQF LEVEL 1 = 120

QUALIFICATION SUMMARY

TOTAL	Fundamentals	Core	Elective
	47	38	60

ACCESS TO THE QUALIFICATION

The typical learners will be semiliterate or illiterate employees within the cleaning industry. Since the cleaning industry is the largest employer within the industry there are no limitations as far as access to the qualification is concerned.

ASSUMPTIONS OF LEARNING

As this is an NQF Level 1 qualification, and therefore the starting point of a career and of training and development in the cleaning industry, no formal learning is assumed to be in place. It is however expected that learners have ABET Level 1 communication skills (verbal or written) to confirm the knowledge required in the individual unit standards.

EXIT LEVEL OUTCOMES AND ASSOCIATED ASSESSMENT CRITERIA

The critical cross-field outcomes are integrated into the assessment criteria of each individual unit standard. Whilst each unit standard is designed to be assessed on its own, (including the critical cross-field outcomes), unit standards have been combined into modules of marketable skills which can be assessed accordingly.

Thus, although the qualification is aimed at providing the opportunity for learners to obtain a qualification at Level 1, the modular approach enables them to become productive in a short time. Once a learner has completed all the modules successfully, s/he would have completed the full Level 1 Qualification.

The assessment of critical cross-field outcomes is integrated with the modules and thus the module serves as an exit level outcome. **In terms of the modular structure, the exit level outcomes for this qualification are:**

MODULE 1/Generic: INDUCTION INTO THE CLEANING INDUSTRY

No. of Unit Standard	Title	Notional Hours	Credits
	Understand basic cleaning principles and perform basic cleaning tasks	60	6
COM 101	Engage in a range of speaking and listening interactions	60	6
	Maintain effective work relationships in a cleaning environment	40	4
	Apply quality principles in everyday cleaning tasks	120	12
	Plan and manage time in the workplace	40	4
	Deal with customers in a cleaning environment	40	4
	TOTAL	**360**	36

MODULE 2/Generic: GENERIC CLEANING SKILLS

No. of Unit Standard	Title	Notional Hours	Credits
	Wet mop floors	40	4
	Sweep floors	40	4
	Clean above the floor surfaces	40	4
	Vacuum clean dry surfaces	40	4
	Clean windows, frames and glass panels.	40	4
	TOTAL	**200**	20

MODULE 3/Generic: WORKING WITH CHEMICALS

No. of Unit Standard	Title	Notional Hours	Credits
NUM 102	Solve simple realistic, abstract problems involving the combination, separation, comparison, equalization, sharing and grouping of numbers	30	3
NUM 103	Extract and use information derived from simple tables and organize information into tables.	20	2
XX18	Perform basic calculations	30	3
	Use chemicals in cleaning procedures	40	4
	Handle and store cleaning chemicals	40	4
	TOTAL	**160**	16

The above three Modules will be completed consecutively in the order outlined above, as this will form the basis of further learning within the scope of the qualification, regardless of the sub-field chosen by the learner (e.g. Commercial or Industrial Cleaning).

The Module titles listed below can be pursued, regardless of the order in which they are listed. The Modules listed below deal with Commercial Cleaning. More modules, for example Laundry Cleaning, would be added to the qualification.

MODULE 4/Commercial: ABLUTIONS CLEANING

No. of Unit Standard	Title	Notional Hours	Credits
	Clean and maintain restrooms and bathrooms	40	4
	Clean and maintain toilets and urinals	40	4
	TOTAL	**80**	8

MODULE 5/Commercial: KITCHEN CLEANING

No. of Unit Standard	Title	Notional Hours	Credits
	Clean small kitchens, kitchenettes and tea kitchens	100	10
	TOTAL	**100**	10

MODULE 6/Commercial: HARD AND RESILIENT FLOOR CLEANING

No. of Unit Standard	Title	Notional Hours	Credits
	Operate a scrubbing /buffing and burnishing machine	40	4
	Buff, burnish and scrub hard and resilient floors	100	10
	TOTAL	**140**	14

MODULE 7/Commercial: CARPET AND UPHOLSTERY CLEANING

No. of Unit Standard	Title	Notional Hours	Credits
	Remove spots from carpets	40	4
	Remove spots from upholstery	40	4
	TOTAL	**80**	8

MODULE 8/Commercial: ENVIRONMENTAL CARE

No. of Unit Standard	Title	Notional Hours	NQF Level
	Practice environmental awareness	40	4
	Clean building surrounds	40	4
	Identify, collect, classify and handle waste	40	4
	TOTAL	**120**	12

MODULE 9/Generic: LIFESKILLS AND PERSONAL DEVELOPMENT

No. of Unit Standard	Title	Notional Hours	Credits
NUM 101	Demonstrate an understanding of & use the numbering system	10	1
	Manage personal finances	80	8
	Maintain personal hygiene, health and presentation	40	4
	Maintain effective work relationships in a cleaning environment	40	4
	Applying quality principles in every day cleaning tasks	120	12
	Plan and manage time in the workplace	40	4
	Deal with customers in a cleaning environment	40	4
	TOTAL	**370**	37

INTERNATIONAL COMPARABILITY

The SGB used the New Zealand and Australian cleaning standards as a point of departure in comparing the standards internationally. In addition, the appropriate UK City & Guilds standards (general cleaning), and the Scottish SVQ's (Waste Management) were reviewed.

As no industrial cleaning standards were available, major assembly line manufacturers were approached for input and relationships with the suppliers and builders of production equipment in use in these production plants, formed. Such suppliers included Heinemann, Oehnle, Siemens and AEG.

Principles from a range of other international standards of practice have been incorporated into the unit standards. These include the HACCP, Coddex Alimentarius and AIB standards (applicable to food safety), GMP (applicable to pharmaceuticals), the

International Sanitary Supply Association (general cleaning practice), and the US Centre for Disease Control guidelines (applicable to hygiene, health care and contamination control.)

Standards were further developed in such manner that they interface with ISO 9000, ISO 14000 and VDA 6 quality and environmental systems where these exist in the workplace.

In addition the following SABS Codes of Practice were consulted:

- SABS 049 - Hygiene Management
- SABS 0330 - HACCP Food Safety
- SABS 0245 - Maintenance of Textile Floor Coverings
- SABS 0247 - Cleaning of Textile Upholstered Furniture

The following standards developed by the National Contract Cleaners' Association were consulted:

- NCCA Cleaning Chemical Standard
- NCCA Cleaning Equipment Standard
- NCCA Window Cleaning Safety Standard

INTEGRATED ASSESSMENT

The assessment of competence in the cleaning industry needs to remain practical in nature, and should be conducted in the workplace, as far as possible.

1. NATURE AND TYPE OF ASSESSMENT

There is a need for two kinds of assessment:

1.1. **Ongoing formative assessment, aimed at the development of learners.**

This could include assessment of areas such as:

- Hygiene
- Client care
- Communication skills
- Individual skills and combinations of skills, under different circumstances
- Critical outcomes such as problem solving, communicating with clients and colleagues, practicing environmental awareness, working effectively as a member of a team in a cleaning context, practicing personal time management and ensuring that there is always sufficient stock on hand to perform the tasks required

1.2. **Summative assessment** in which it can be seen whether under real life working conditions and in the presence of an industry-based assessor, a learner is able to demonstrate competency against a particular unit standard. The summative assessment can also be used as a diagnostic assessment tool aimed at identifying the learner's skills gaps.

2. PLACE OF ASSESSMENT

2.1. Workplace assessment

The nature of the cleaning industry is such that labour is the most significant cost factor. To save costs it would therefore be advisable for learning and assessment to take place at his/her workplace while performing the actual job. In addition the assessment would thus take place in an environment familiar to the learner.

Assessment against individual unit standards will take place in terms of the assessment policy of the Services SETA ETQA. The SGB responsible for the generation of assessment standards will therefore, with the support of the Services SETA ETQA, be approached with a request to develop an Assessor standard at NQF Level 3.

Assessment needs to take place at the request of the learner, at a time and venue mutually agreed to by the assessor and the learner. The assessor should be a person that the learner knows. An assessor can be a supervisor in the industry or a colleague of the learner, on condition that the colleague is a registered assessor. Peer assessment will significantly enhance the credibility of the assessment process.

Where assessment takes place at the workplace, it must be ensured that the appropriate facilities, tools, equipment, chemicals and support systems are available and accessible to both the assessor and the learner. For a workplace to be used as an assessment venue, it needs to have a quality management system in place to ensure the consistency and quality of assessments conducted. In addition, the workplace must have a clear policy guiding the control, storage and traceability of assessment results and documents, which complies with the requirements set out by the Services SETA ETQA.

2.2. Assessment centres

In the absence of workplace assessment capacity, assessment centres can be used. These will have to be registered and accredited by the Services SETA ETQA. It is also expected that the centres have adequate physical facilities resembling actual cleaning contexts that would satisfy cleaning industry requirements.

3. ASSESSORS

There is a need for assessors and moderators.

3.1 Assessors will perform assessments of competence against the unit standards

Assessments of competence against the unit standards include all kinds of assessment. It is foreseen that these assessors will be accredited at NQF Level 3. The degree of integrated competence required at this level does not require a final integrated assessment.

As agreed with the Services SETA ETQA, assessors must meet the following requirements:

- Be an accredited and registered assessor in terms of the Services SETA ETQA Assessment Policy.
- Be fluent in the official language in which the learner prefers to be assessed.
- Be able to adequately record assessment responses, minutes of meetings between learner and assessor and any other information that may be needed for the performance of moderation activities.
- Be competent and accredited against the unit standard to be assessed.
- Be a fair and approachable person and have time available for assessment activities.
- In the event of an outstanding appeal against an assessment decision, (lodged with the Services SETA ETQA or a duly constituted Workplace Education and Training Committee), the assessor will not be allowed to perform further assessments.

3.2. Moderators

The moderator has the following functions:

- Monitoring and evaluating the standard of all summative assessments in terms of the Services SETA ETQA policy.
- To review both substantive and process related matters in the case of an appeal against an assessment decision.
- Maintaining standards by exercising appropriate influence and control over assessors to ensure good standards of practice.
- Exercising a moderation function in case of a dispute between assessors, or between any assessor and learner.
- Giving written feedback to Workplace Education and Training Committees and the Services SETA as and when required.
- Submitting reports to the Services SETA ETQA in terms of the ETQA policy.

The moderator does not necessarily have to be competent against the unit standards assessments under moderation, as his / her primary function is to ensure quality and due process.

4. CRITERIA FOR THE ACCREDITATION OF ASSESSORS

In addition to the criteria mentioned under the headings above, assessors need to demonstrate the following:

- Knowledge of the NQF and the role of SAQA and the ETQA.
- Knowledge of the unit standards, the qualification, the skills content and the assessments required.
- Knowledge of assessment practices.
- Knowledge of career structures and employment levels within the cleaning industry.
- The ability to write reports and provide objective recommendations to the Accreditation Body.

RECOGNITION OF PRIOR LEARNING (RPL)

Learners who already work in the cleaning industry and who believe that they possess the competencies to enable them to meet all of the outcomes listed in the unit standard will be able to present themselves for assessment against the unit standards of their choice.

ARTICULATION POSSIBILITIES

Depending on the elective combinations pursued by candidates, this qualification articulates well with the envisaged NQF Level 1 Certificate in Domestic Services. In the absence of NQF Level 1 qualifications in a number of related fields of learning, this qualification can serve as a useful building block or basis of progression into these industries at NQF Level 2. The industries we refer to include:

1. Health Care
2. Waste Management
3. Hospitality (Accommodation Services)
4. Food Production
5. Retail and Merchandising

As the NQF becomes populated over the next few years, the SGB would be in a better position to put into place articulation agreements that grant recognition of credits from one qualification to another.

UNIT STANDARDS IN NATIONAL CERTIFICATE IN HYGIENE & CLEANING NQF LEVEL 1

UNIT STANDARDS ON NQF LEVEL 1

1. **Title:** Demonstrate an understanding of and use the numbering system.
2. **Title:** Solve simple realistic and abstract problems involving the combination, separation, comparison, equalization, sharing and grouping of numbers.
3. **Title:** Extract and use information derived from simple tables and organize information into tables
4. **Title:** Manage Personal Finances
5. **Title:** Engage in a range of speaking and listening interactions
6. **Title:** Maintain effective work relationships in a cleaning environment
7. **Title:** Apply quality principles in everyday cleaning tasks
8. **Title:** Practice environmental awareness
9. **Title:** Plan and manage time in the workplace
10. **Title:** Maintain personal hygiene, health and presentation
11. **Title:** Identify surfaces, soilage and its cleaning procedures
12. **Title:** Deal with customers in a cleaning environment
13. **Title:** Use chemicals in cleaning procedures
14. **Title:** Handle and store cleaning chemicals
15. **Title:** Clean and maintain toilets and urinals
16. **Title:** Understand basic cleaning principles and perform basic cleaning tasks
17. **Title:** Wet mop floors
18. **Title:** Clean and maintain restrooms and bathrooms
19. **Title:** Clean above the floor surfaces
20. **Title:** Operate a scrubbing /buffing and burnishing machine
21. **Title:** Identify, collect, classify and handle waste
22. **Title:** Vacuum clean dry surfaces
23. **Title:** Sweep floors
24. **Title:** Clean small kitchens, kitchenettes and tea kitchens
25. **Title:** Clean windows, frames and glass panels.
26. **Title:** Remove spots from carpets
27. **Title:** Remove spots from upholstery
28. **Title:** Clean building surrounds
29. **Title:** Buff, burnish and scrub hard and resilient floors

UNIT STANDARD TITLE AT NQF LEVEL 2

1. Title: Perform basic calculations

UNIT STANDARD TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 1

1. Title: **Demonstrate an understanding of and use the numbering system.**

Specific Outcome 1.1 Count and/or estimate a number of items and an amount of money and record the number or amount orally and in writing.

Specific Outcome 1.2 Demonstrate understanding of and use the continuous, recurring, patterned nature of the whole number system to generate, order and compare numbers, and identify and complete simple number and visual patterns.

Specific Outcome 1.3 Work with fractions and demonstrate understanding of the size, concept and use of fractions and the link between fractions, decimals and percentages.

Specific Outcome 1.4 Demonstrate understanding of and use mathematical language, symbols and notation to represent and communicate mathematical relations, concepts and generalisations.

2. Title: **Solve simple realistic and abstract problems involving the combination, separation, comparison, equalization, sharing and grouping of numbers.**

Specific Outcome 2.1 Solve realistic and abstract problems by estimation and calculation involving the combination, separation, comparison and equalisation of two numbers and demonstrate understanding of the processes used.

Specific Outcome 2.2 Solve realistic and abstract problems involving the sharing and grouping of quantities.

Specific Outcome 2.3 Use a variety of standard measures of time in everyday contexts

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