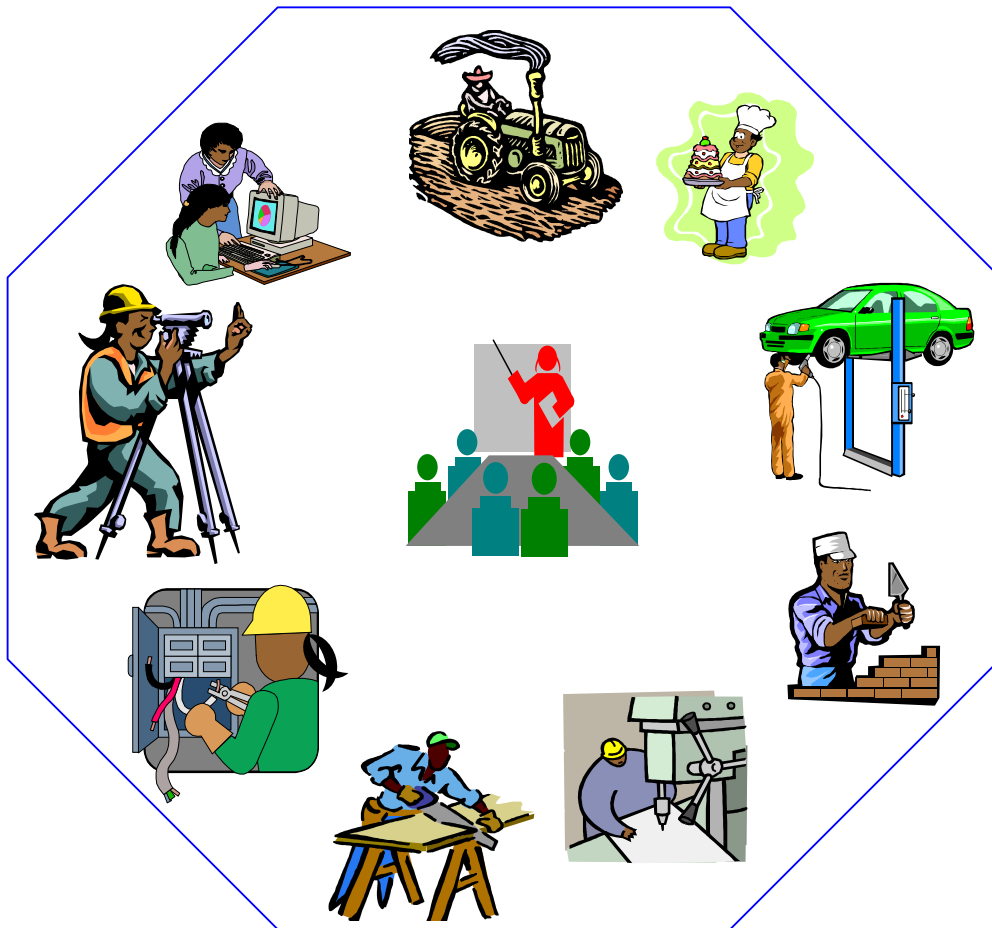




Federal Democratic Republic of Ethiopia
OCCUPATIONAL STANDARD

FARM MACHINERY AND EQUIPMENT MAINTENANCE

NTQF Level I, II, III, IV and V



*Ministry of Education
July 2014*

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labour market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Farm Machinery and Equipment Maintenance

Occupational Code: AGR MEM

NTQF Level I

<p><u>AGR MEM1 01 0714</u> Identify Environmental Regulations and Best Practice in a Workplace or Business</p>	<p><u>AGR MEM1 02 0714</u> Use and Maintain Basic Tools and equipments</p>	<p><u>AGR MEM1 03 0714</u> Prepare Farm Machineries and Equipments for Use</p>
<p><u>AGR MEM1 04 0714</u> Test, Service and Maintain Battery Storage Systems</p>	<p><u>AGR MEM1 05 0714</u> Remove and Replace Electrical/Electronic Units/Assemblies</p>	<p><u>AGR MEM1 06 0714</u> Operate a Personal Computer</p>
<p><u>AGR MEM1 07 0714</u> Remove and Tag Farm Machinery's Body Components</p>	<p><u>AGR MEM1 08 0714</u> Remove and Tag Engine System Components</p>	<p><u>AGR MEM1 09 0714</u> Remove and Tag Transmission System Components</p>
<p><u>AGR MEM1 10 0714</u> Remove and Tag Steering, Suspension and Brake System Components</p>	<p><u>AGR MEM1 11 0714</u> Apply Quality Standards</p>	<p><u>AGR MEM1 12 0714</u> Work with Others</p>
<p><u>AGR MEM1 13 0714</u> Receive and Respond to Workplace Communication</p>	<p><u>AGR MEM1 14 0714</u> Demonstrate Work Values</p>	<p><u>AGR MEM1 15 0714</u> Develop Understanding of Entrepreneurship</p>
<p><u>AGR MEM1 16 0714</u> Apply 3S</p>		

NTQF Level II**AGR MEM2 01 0714**

Implement and Monitor Environmental Regulations in the Farm Machinery Mechanical Industry

AGR MEM2 02 0714

Interpret Working Drawings and Sketches

AGR MEM2 03 0714

Test and Repair Electrical/Electronic Units/Assemblies and Low Voltage

AGR MEM2 04 0714

Repair and Overhaul Starting and Charging Systems/Components

AGR MEM2 05 0714

Perform Manual Arc and Oxy Acetylene Welding

AGR MEM2 06 0714

Inspect, Service and Repair Braking Systems

AGR MEM2 07 0714

Inspect and Service Hydrostatic and Automatic Transmissions

AGR MEM2 08 0714

Inspect and Service Manual Transmission

AGR MEM2 09 0714

Inspect and Service Suspension System

AGR MEM2 10 0714

Service and Repair Driveline Components

AGR MEM2 11 0714

Select and Use Bearings, Seals, Gaskets, Sealants and Adhesives

AGR MEM2 12 0714

Inspect and Service Hydraulic Systems

AGR MEM2 13 0714

Inspect and Service Steering System

AGR MEM2 14 0714

Inspect and Service Engine Systems

AGR MEM2 15 0714

Service and Repair Agricultural Implements Trailers

AGR MEM2 16 0714

Inspect, Service and Repair Generators and Pumps

AGR MEM2 17 0714

Service and Repair Tyres and Tubes

AGR MEM2 18 0714

Participate in Workplace Communication

AGR MEM2 19 0714

Work in Team Environment

AGR MEM2 20 0714

Develop Business Practice

AGR MEM2 21 0714

Standardize and Sustain 3S

NTQF Level III

AGR MEM3 01 0714

Carryout Diagnostic Procedures

AGR MEM3 02 0714

Inspect, Service and Repair Electronically Controlled Parts Management Systems

AGR MEM3 03 0714

Overhaul Air Conditioning System Components

AGR MEM3 04 0714

Repair Manual Transmissions

AGR MEM3 05 0714

Inspect, Test and Repair Automatic and Hydrostatic Transmissions

AGR MEM3 06 0714

Inspect, Service and/or Repair Clutch Assemblies and Associated Parts

AGR MEM3 07 0714

Repair and Install Hydraulic Systems

AGR MEM3 08 0714

Repair and Install Pneumatic Systems/Components

AGR MEM3 09 0714

Repair Engines and Associated Engine System Components

AGR MEM3 10 0714

Farm Implements/Equipment Maintenance

AGR MEM3 11 0714

Monitor Implementation of Work Plan/Activities

AGR MEM3 12 0714

Apply Quality Control

AGR MEM3 13 0714

Lead Workplace Communication

AGR MEM3 14 0714

Lead Small Teams

AGR MEM3 15 0714

Improve Business Practice

AGR MEM3 16 0714

Prevent and Eliminate MUDA

NTQF Level IV

AGR MEM4 01 0714

Carryout Diagnosis of Complex System Faults

AGR MEM4 02 0714

Overhaul Engines and Associated Engine Components

AGR MEM4 03 0714

Overhaul Power Train and Associated Components

AGR MEM4 04 0714

Inspect, Service and Repair Harvesting Equipment

AGR MEM4 05 0714

Prepare a Vehicle Repair Quotation

AGR MEM4 06 0714

Implement Operational Plan

AGR MEM4 07 0714

Plan and Organize Work

AGR MEM4 08 0714

Migrate to New Technology

AGR MEM4 09 0714

Establish Quality Standards

AGR MEM4 10 0714

Develop Individuals and Team

AGR MEM4 11 0714

Utilize Specialized Communication Skills

AGR MEM4 12 0714

Manage and Maintain Small/Medium Business Operations

AGR MEM4 13 0714

Apply Problem Solving Techniques and Tools

NTQF Level V

AGR MEM5 01 0714

Develop and Document Specifications and Procedures

AGR MEM5 02 0714

Analyse and Evaluate Electrical and Electronic Faults in Power Train

AGR MEM5 03 0714

Analyse and Evaluate Electrical and Electronic Faults in Electric over Hydraulic Systems

AGR MEM5 04 0714

Analyse and Evaluate Electrical and Electronic Faults in Engine Management Systems

AGR MEM5 05 0714

Analyse and Evaluate Electrical and Electronic Faults in Safety Systems

AGR MEM5 06 0714

Analyse and Evaluate Farm machineries and equipments Performance

AGR MEM5 07 0714

Develop Workplace Policy and Procedures for Environmental Sustainability

AGR MEM5 08 0714

Estimate and Calculate Costs to Repair, Maintain or Modify a Vehicle

AGR MEM5 09 0714

Prepare and Evaluate Technical Reports

AGR MEM5 10 0714

Develop and Apply Modifications

AGR MEM5 11 0714

Manage Operational Plan

AGR MEM5 12 0714

Manage Budgets and Financial Plans

AGR MEM5 13 0714

Manage Project Quality

AGR MEM5 14 0714

Facilitate and Capitalize on Change and Innovation

AGR MEM5 15 0714

Establish and Conduct Business Relationships

AGR MEM5 16 0714

Manage Continuous Improvement Process (Kaizen)

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Identify Environmental Regulations and Best Practice in a Workplace or Business
Unit Code	AGR MEM1 01 0714
Unit Descriptor	This unit of competency covers the competence to identify environmental regulations and avoid potential hazards in an automotive workplace.

Elements	Performance Criteria
1. Identify environment regulations	1.1. Reasons for ethical environmental practice in an automotive workshop are identified 1.2. Responsibilities of staff in an automotive workshop are identified 1.3. Penalties for individual breaches of legislation are identified 1.4. Methods to minimise waste and sort store for recycling or disposal are identified 1.5. Methods to sort and dispose of packaging on goods received are identified
2. Identify hazards to stormwater	2.1. Actions to be taken to ensure no waste water is allowed to enter stormwater system are identified 2.2. Storage methods for parts and components containing environmentally hazardous materials are identified 2.3. Recycling and storage procedures for liquid wastes are identified 2.4. Uses of a spill kit are identified 2.5. Procedures to keep workplace clean and prevent unintentional stormwater pollution are identified
3. Identify hazards to air quality	3.1. Hazards of airborne particles are identified, and methods to minimise and contain are identified 3.2. Hazards of gases and fumes are identified, and methods to minimise and contain are identified 3.3. Effects of noise creating activities and methods to minimise these are identified

Variable	Range
Materials	may include: <ul style="list-style-type: none"> Material Safety Data Sheet

Evidence Guide	
Critical Aspects of Competence	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> Demonstrate knowledge of environmental regulations and best practice as they would apply in an automotive workplace or business. Identify material used in an automotive business and assess their environmental impact

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • aspects of environmental legislation and its implications for work being undertaken in an automotive business • characteristics and potential environmental impact of products used in the automotive industry • philosophy of prevention, reuse, reduce, recycle • procedures for use of spill kit • effects of noise pollution and methods to minimize it
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • collect, organise and understand information related to environmental procedures from legislation, regulations and workshop practices in a workplace or business • communicate ideas and information to enable all work is undertaken in accordance with environmental best practice, coordination of work with site supervisor, other workers and customers, and reporting of work outcomes and problems • plan and organise activities, including preparation of Equipment and material and selection of worksite to avoid environmental contamination, backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity • use mathematical ideas and techniques to correctly complete measurements and estimate material requirements • use planning, checking and inspection techniques to avoid environmental contamination and wastage • use workplace technology related to environmental protection Equipment
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Use and Maintain Basic Tools and equipments
Unit Code	AGR MEM1 02 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use and maintain basic measuring devices, tools and Equipment to carry-out workshop activities. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment

Elements	Performance Criteria
1. Prepare work station	<p>1.1 Workstation is made ready for work activities.</p> <p>1.2 Procedures and information such as workshop manuals and specifications are acquired.</p> <p>1.3 Methods in identifying tools and equipment are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>1.4 Identified/selected testing devices, tools and equipment are checked for functionality and made ready for use.</p> <p>1.5 Unsafe or faulty tools and equipment including measuring tools are identified and marked for repair according to standard company procedure.</p> <p>1.6 OHS measures and warnings in relation to working with tools and equipment are observed throughout the work operation.</p>
2. Carry-out measurements	<p>2.1 Measuring tools/devices are selected in line with job requirements.</p> <p>2.2 Measuring/testing devices are checked and adjusted as needed in accordance with work requirements.</p> <p>2.3 Appropriate method of conducting measurements is implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>2.4 Measuring instruments are handled without damage and according to procedures.</p> <p>2.5 Measurement results are compared with manufacturer specifications to indicate compliance or non-compliance.</p> <p>2.6 Results are documented with evidence and supporting information and recommendation(s).</p>
3. Use tools and Equipment	<p>3.1 Tools and measuring equipment are used according to tasks undertaken.</p> <p>3.2 All safety procedures in using tools and Equipment are observed at all times and appropriate Personal Protective Equipment (PPE) is used.</p> <p>3.3 Tools and equipment are handled without damage and according to procedures.</p> <p>3.4 Malfunctions, unplanned or unusual events are reported to</p>

	the supervisor.
4. Maintain tools and Equipment	<p>4.1 Routine maintenance of tools is undertaken according to standard operational procedures, principles and techniques.</p> <p>4.2 Equipment and tools are cleaned before and after use in accordance with manufacturer's instructions.</p> <p>4.3 Tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or standard operating procedures.</p>

Variable	Range
Testing devices, tools and Equipment	<p>It may includes but not limited to:</p> <ul style="list-style-type: none"> • Hand tools for adjusting, dismantling, assembling, finishing, cutting • Tool set includes the following but not limited to: screw drivers, pliers, punches, wrenches, files • Generic Mechanic Tools set (Wrench, pliers) • Power tools (Impact and air Wrench....) • Measuring and testing Tools (Torque wrench, Calliper) • Special tools (Extractor, compression tester.....) • Equipment (trolley jack, hydraulic press....)
Measuring tools/devices	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Multi meter • tachometer • timing light • engine analyzer • tune scopes • test lamp • distributor test bench
Personal Protective Equipment (PPE)	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Gloves • Protective eyewear • Apron/overall • Safety shoes
Maintenance	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Cleaning • Lubricating • Tightening • Simple tool repairs • Hand sharpening • Adjustment using correct procedures

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • apply safe working practices at all times • communicate information about processes, events or tasks being undertake to ensure a safe and efficient working environment • identify appropriate measuring devices, tools and Equipment • use measuring devices, tools and Equipment according to tasks • perform all tasks to specification

	<ul style="list-style-type: none"> • maintain and store tools in appropriate location
Underpinning knowledge	<p>Demonstrate knowledge of</p> <ul style="list-style-type: none"> • Reading skills required to interpret work instruction and numerical skills • Communication skills • Problem solving in emergency situation
Underpinning skills	<p>Demonstrate knowledge of</p> <ul style="list-style-type: none"> • Safety requirements in handling tools • Tools: Function, Operation, Common faults • Maintenance of tools and Equipment • Storage of Tools and Equipment
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Prepare Farm Machineries and Equipments for Use
Unit Code	AGR MEM1 03 0714
Unit Descriptor	This unit of competency covers the skills and knowledge required to clean, and perform inspection of farm machineries and equipment /component before and after use.

Elements	Performance Criteria
1. Prepare for work	<p>1.1. Work instructions are used to determine work requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted.</p> <p>1.3. Workplace Health and Safety (WHS) requirements, including personal protection equipment needs are observed throughout the work.</p> <p>1.4. Material for work is selected.</p> <p>1.5. Equipment and tooling are identified and checked for effective and safe operating procedures.</p> <p>1.6. Procedures are determined to minimise waste material.</p> <p>1.7. Procedures are identified for maximising energy efficiency while completing the work.</p>
2. Clean Farm Machineries and equipment	<p>2.1 Farm Machineries and equipment /component are cleaned in the prescribed manner, to industry standard and secured in preparation for customer pick up.</p> <p>2.2 Cleaning is completed without causing damage to component or system.</p> <p>2.3 Cleaning operations are carried out according to industry standards/regulations/guidelines, WHS requirements, legislation and enterprise procedures/policies.</p> <p>2.4 Emergency procedures are identified and followed as per organization's guideline</p>
4. Clean up work area and maintain equipment	<p>4.1. Material that can be reused is collected and stored.</p> <p>4.2. Waste and scrap are removed following workplace and environmental requirement procedure.</p> <p>4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>4.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>4.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>4.6. Tooling and equipment and material are maintained in accordance with workplace procedures.</p>

Variable	Range
Workplace Health and Safety (WHS)	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire-fighting equipment • enterprise first aid • hazard control and hazardous material and substances
Personal protective equipment	is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Safe operating procedures	<p>are to include, but are not limited to:</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors
Farm Machineries and equipment /component	<p>may include:</p> <ul style="list-style-type: none"> • prime movers such as: <ul style="list-style-type: none"> ➤ Different types of tractors • Implements (trailed , semi-mounted, mounted and self propelled type) <ul style="list-style-type: none"> ➤ Sub soilers ➤ plough ➤ harrower ➤ planer/leveller ➤ ridger/furrowers ➤ cultivators ➤ moulder ➤ fertilizer applicator ➤ weeder ➤ sprayer ➤ harvester ➤ seeder • 3 point linkages • PTO connections • Draw bars • Hydraulic connections <ul style="list-style-type: none"> ➤ Fittings ➤ Power cylinders ➤ Couplings ➤ Hoses ➤ Control valves • other implement components/assemblies/accessories
Preparation methods	<p>are to include:</p> <ul style="list-style-type: none"> • manual or machine assisted cleaning • visual inspection and testing • checklists for systems operation • written and verbal communication

Regulations	<p>regulatory requirements are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> • award and enterprise agreements • industrial relations • Relevant Ethiopian standards and Design Rules • Environment Protection Regulations (Diesel Fuels) • National Environment Protection Measures for Diesel Vehicles (Guidelines) • confidentiality and privacy • OHS • the environment • relevant industry codes of practice • duty of care
Enterprise procedures/policies	<p>may include:</p> <ul style="list-style-type: none"> • quality policies and procedures, including relevant Ethiopian standards • OHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures
Emergency procedures	<p>related to this unit are to include, but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements • worksite evacuation
Environmental requirements	<p>are to include, but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Tooling , equipment and materials	<p>may include:</p> <p>Cleaning materials</p> <ul style="list-style-type: none"> • Hand tools and equipment • Measuring tools • Washing materials • high-pressure cleaners

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • applying farm machineries and equipments protection methods • applying inspection procedures • applying cleaning procedures • applying testing procedures
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Underpinning Knowledge and Attitudes	<p>A working knowledge of:</p> <ul style="list-style-type: none"> • WHS cleaning materials, equipment, material and personal safety requirements • environmental requirements for the disposal of substances • cleaning agents • technical information • farm machineries and equipments safety requirements • farm machineries and equipments component systems operation • cleaning procedures • inspection procedures • testing procedures • work organisation and planning processes • enterprise quality processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • collect, organise and understand information related to work orders, plans and safety procedures for preparing farm machineries and equipments for use • identifying safety and warranty information • identifying service/repair information • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with worksite supervisor, other workers and customers, and the reporting of work outcomes and problems • explaining work outcomes to customers • listening and following verbal instructions • plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work • use pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material • use workplace technology related to the preparation of farm machineries and equipments for customer use, including the use of computerised technology and communication devices and the reporting/documenting of results
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Test, Service and Maintain Battery Storage Systems
Unit Code	AGR MEM1 04 0714
Unit Descriptor	This unit covers the competence to inspect service and maintain battery storage systems in on-site major earth moving and plant equipment. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to undertake inspection	<p>1.1. Nature and scope of environmental requirements are identified and confirmed.</p> <p>1.2. OHS requirements, including individual state/territory regulatory requirements and personal protection equipment needs are observed throughout the work.</p> <p>1.3. Safe operating procedures and information such as site procedures and specifications, and tooling are sourced.</p> <p>1.4. Technical requirements for inspection are sourced and support.</p> <p>1.5. Equipment is identified and prepared.</p> <p>1.6. Warnings in relation to working with batteries are observed.</p>
2. Conduct inspection	<p>2.1. Methods for the conduct of inspection are implemented by statutory/regulatory authorities in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2. Inspection results are compared with manufacturer/component supplier specifications.</p> <p>2.3. Results are documented with evidence and supporting information and recommendations made.</p> <p>2.4. Report is forwarded to persons for action in accordance with workplace procedures.</p>
3. Prepare to service and maintain	<p>3.1 OHS requirements, including individual state/territory regulatory requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Procedures and information are identified and sourced.</p> <p>3.3 Technical and tool requirements for servicing and maintenance are identified and support.</p> <p>3.4 Equipment is identified and prepared.</p>
4. Carry out service and maintenance	<p>4.1. Methods for the conduct of service and/or maintenance are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>4.2. Adjustments made during service and/or maintenance is in accordance with manufacturer/component supplier specifications.</p>

5. Clean up work area and maintain Equipment	<p>5.1. Materials that can be reused are collected and stored.</p> <p>5.2. Waste and scrap are removed following workplace procedures.</p> <p>5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements.</p> <p>5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>5.6. Tooling and equipment are maintained in accordance with workplace procedures.</p>
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Variable	Range
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management • regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
OHS	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • protective clothing and Equipment, use of tooling and Equipment, workplace environment and safety, handling of material, use of fire fighting Equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal protective equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Personal protective Equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors • emergency shutdown and stopping of Equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, Material Safety Data Sheets (MSDS), diagrams and sketches • safe work procedures related to inspection, servicing and maintenance of battery storage systems • regulatory/legislative requirements pertaining to automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons

	<ul style="list-style-type: none"> • International standards • verbal and graphical instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Materials	Materials may include: <ul style="list-style-type: none"> • cleaning material
Tooling and Equipment	may include: <ul style="list-style-type: none"> • hand tooling

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • servicing and maintaining battery storage systems in accordance with manufacturer/component supplier and site requirements • completing inspection in accordance with manufacturer/component supplier requirements • completing work within workplace timeframes • completing workplace documents
Underpinning knowledge and attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with battery testing Equipment • operating principles and layout of battery storage systems • inspection procedures • service and/or maintenance procedures • enterprise quality procedure • work organization and planning processes
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • analytical skills for identification and analysis of technical information • questioning and active listening skills for example when obtaining information from customers • oral communication skills sufficient to convey information and concepts to customers • as applied to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements,

	<p>calculate material requirements and establish quality checks</p> <ul style="list-style-type: none"> • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use workplace technology related to inspection, servicing and maintenance of battery storage systems, including use of specialist tooling, measuring Equipment and communication devices and reporting/documenting of results
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Remove and Replace Electrical/Electronic Units/Assemblies
Unit Code	AGR MEM1 05 0714
Unit Descriptor	This unit covers the competence to remove and tag automotive electrical /electronic system components. Work involved includes electrical systems of heavy vehicles road transport, heavy vehicles mobile plant and outdoor power equipment. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to remove and tag automotive electrical/ electronic components	<p>1.1 Nature and scope of work and environmental requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and personal protection equipment needs are observed throughout the work.</p> <p>1.3 Safe operating procedures are applied and information such as workshop manuals and specifications, and tooling are sourced.</p> <p>1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.5 Dangers associated working with removal and tagging of automotive electrical system components is observed.</p> <p>1.6 Emergency procedures are identified and followed as per organization's guideline.</p>
2. Remove automotive electrical /electronic system components	<p>2.1. Automotive electrical/electronics components for removal are identified.</p> <p>2.2. Methods for the conduct of removal and tagging are implemented by the regulatory authorities in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Components are removed without damage.</p> <p>2.4. Inspection of components is carried out.</p> <p>2.5. Report is processed in accordance with enterprise procedures.</p>
3. Tag automotive electrical/ electronic components	<p>3.1 Tagging procedures are identified.</p> <p>3.2 Resource requirements for tagging are identified and supported.</p> <p>3.3 Tooling and Equipment are identified and prepared.</p> <p>3.4 Components are tagged without damage.</p>

Variable	Range
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> waste management and clean-up management regulations, including international standard internal quality policy and standards and enterprise operations and procedures
OHS requirements	are to be in accordance with legislation/ regulations/codes of

	<p>practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • protective clothing and Equipment, use of tooling and Equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal protective equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, and working in proximity to others and site visitors • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Emergency procedures	<p>are to include but may not be limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Methods	include tagging by title and application
Regulatory authorities	<p>may include:</p> <ul style="list-style-type: none"> • federal and state authorities administering acts, regulations and codes of practice
Tooling and Equipment	<p>may include:</p> <ul style="list-style-type: none"> • hand tooling and hand held power tooling

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, removing and tagging a range of components by their title and application • conducting removal and tagging without damage to components or tooling and equipment
Underpinning knowledge and attitude	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • automotive electrical terminology • function of each component • connection of body components to each other • application of body components • removal procedures

	<ul style="list-style-type: none"> • tagging procedures • quality procedures • organization and planning processes
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills, e.g. when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal • establish safe and effective work processes which anticipate and/or resolve problems and downtime to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality check • use workplace technology related to removing and tagging automotive electrical components, including use of measuring Equipment and communication devices, and reporting/documenting of results
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Operate a Personal Computer
Unit Code	AGR MEM1 06 0714
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to start up a personal computer or business computer terminal; to correctly navigate the desktop environment; and to use a range of basic functions.

Elements	Performance Criteria
1. Start computer, system information and features	<p>1.1 Workspace, furniture and equipment are adjusted to suit user ergonomic requirements</p> <p>1.2 Work organization is ensured to meet organizational and Occupational Health and Safety (OHS) requirements for computer operation</p> <p>1.3 Computer is started or logged on according to user procedures</p> <p>1.4 Basic functions and features are identified using system information</p> <p>1.5 Desktop configuration is customised, if necessary, with assistance from appropriate persons</p> <p>1.6 Help functions are used as required</p>
2. Navigate and manipulate desktop environment	<p>2.1 Features are opened, closed and accessed by selecting correct desktop icons</p> <p>2.2 Desktop windows are opened, resized and closed by using correct window functions and roles</p> <p>2.3 Shortcuts are created from the desktop, if necessary, with assistance from appropriate persons</p>
3. Organize files using basic directory and folder structures	<p>3.1 Folders/subfolders are created with suitable names</p> <p>3.2 Files are saved with suitable names in appropriate folders</p> <p>3.3 Folders/subfolders and files are renamed and moved as required</p> <p>3.4 Folder/subfolder and file attributes are identified</p> <p>3.5 Folders/subfolders and files are moved using cut and paste, and drag and drop techniques</p> <p>3.6 Folders/subfolders and files are saved to appropriate media where necessary</p> <p>3.7 Folders/subfolders and files are searched for using appropriate software tools</p> <p>3.8 Deleted folder/subfolders and files are restored as necessary</p>
4. Print information	<p>4.1 Information is printed from installed printer</p> <p>4.2 Progress of print jobs is viewed and deleted as required</p> <p>4.3 Default printer is changed if installed and required</p>

5. Shut down computer	5.1 All open applications are closed 5.2 Computer is shut-down according to user procedures
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Variable	Range
Ergonomic requirements	may include but not limited to: <ul style="list-style-type: none"> • avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organization	may include but not limited to: <ul style="list-style-type: none"> • exercise breaks • mix of repetitive and other activities • rest periods • visual display unit (VDU) eye testing
Occupational Health and Safety (OHS) requirements	may include but not limited to: <ul style="list-style-type: none"> • OHS guidelines related to the use of the screen Equipment, computing Equipment and peripherals, ergonomic work stations, security procedures, customisation requirements • statutory requirements
Desktop icons	may include but not limited to: <ul style="list-style-type: none"> • directories/folders • files • network devices • recycle bin and waste basket
File attributes	may include but not limited to: <ul style="list-style-type: none"> • dates • size
Appropriate media	may include but not limited to: <ul style="list-style-type: none"> • CDs • diskettes • local hard drive • other locations on a network • USB/ Flash/Thumb drives • zip disks

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence of: <ul style="list-style-type: none"> • navigation and manipulation of the desktop environment within the range of assigned workplace tasks • knowledge of organizational requirements for simple documents and filing conventions • application of simple keyboard functions to produce documents with a degree of speed and accuracy relevant to the level of responsibility required

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as: <ul style="list-style-type: none"> ➤ OHS ➤ basic ergonomics of computer use ➤ main types and parts of computers, and basic features of different operating systems ➤ suitable file naming conventions
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • literacy skills to identify work requirements, to comprehend basic workplace documents, to interpret basic user manuals and to proofread simple documents • communication skills to identify lines of communication, to request advice, to effectively question, to follow instructions and to receive feedback • problem-solving skills to solve routine problems in the workplace, while under direct supervision • technology skills to use Equipment safely while under direction, basic keyboard and mouse skills and procedures relating to logging on and accessing a computer • basic typing techniques and strategies
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Remove and Tag Farm Machinery's Body Components
Unit Code	AGR MEM1 07 0714
Unit Descriptor	This unit of competency covers the skills and knowledge required to remove and tag farm machinery body components. Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to remove and tag farm machinery body components	<p>1.1 Nature and scope of work and environment requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.3 Occupational Health and Safety (OHS) requirements, including regulatory requirements and personal protection equipment needs are observed throughout the work.</p> <p>1.4 Safe operating procedures are applied and information, such as workshop manuals, specifications and tooling, are sourced.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Dangers associated working with removal and tagging of vehicle body components is observed.</p>
2. Remove vehicle body system components	<p>2.1. Vehicle body components for removal are identified.</p> <p>2.2. Methods for conduct of removal and tagging are implemented in accordance with manufacturer/component supplier/component supplier specifications.</p> <p>2.3. Components are removed without damage.</p> <p>2.4. Inspection of components is carried out.</p> <p>2.5. Report is processed action in accordance with workplace procedures.</p>
3. Tag vehicle body components	<p>3.1. Tagging procedures are identified.</p> <p>3.2. Resource requirements for tagging are identified and support equipment is identified and prepared.</p> <p>3.3. Components are tagged without damage.</p>

Variable	Range
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> waste management and clean-up management regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
Information	<p>may include</p> <ul style="list-style-type: none"> enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and

	<p>industry/workplace codes of practice</p> <ul style="list-style-type: none"> • Material Safety Data Sheets (MSDS) • International Design Rules. • safe work procedures related to removing and tagging vehicle body components • organization work specifications and requirements • verbal and visual instructions and fault reporting and may include worksite specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Occupational Health and Safety (OHS) requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting Equipment • enterprise first aid • hazard control and hazardous material and substances are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include: • industrial relations • Environment Protection Regulations (Diesel Fuels) • National Environment Protection Measures for Diesel Vehicles (Guidelines) • confidentiality and privacy • OHS • the environment • relevant industry codes of practice • duty of care
Personal protective Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • is to include that prescribed under legislation/regulations/ codes of practice and workplace policies and practices
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors • emergency shutdown and stopping of Equipment • extinguishing fires • enterprise first aid requirements • worksite evacuation
Methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • tagging by title and application

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work
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	<ul style="list-style-type: none"> • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, removing and tagging a range of components by their title and application • conducting removal and tagging without damage to components or tooling and equipment
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • Machinery's body terminology • function of each component • relationship of body components to each other • application of body components • removal procedures • tagging procedures • quality procedures • organisation and planning processes
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage • use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to removing and tagging vehicle body components, including use of measuring equipment, use of communication devices and reporting/ documenting of results
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Remove and Tag Engine System Components
Unit code	AGR MEM1 08 0714
Unit descriptor	This unit covers the competence to remove and tag engine system related components. Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to remove and tag engine system related components	<p>1.1 Nature and scope of work and environmental requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.3 OHS requirements, including regulatory requirements and personal protection equipment needs are observed throughout the work.</p> <p>1.4 Safe operating procedures are applied and information such as workshop manuals and specifications, and tooling required, are sourced.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Dangers associated working with the removal and tagging of engine related components are observed.</p> <p>1.7 Emergency procedures are identified and followed as per organization's guideline.</p>
2. Remove engine system related components	<p>2.1. Engine system related components for removal are identified.</p> <p>2.2. Methods for the removal and tagging are implemented in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Components are removed without damage.</p> <p>2.4. Inspection of components is carried out.</p> <p>2.5. Report is processed in accordance with workplace procedures.</p>
3. Tag engine system related components	<p>3.1 Tagging procedures are identified.</p> <p>3.2 Resource requirements for tagging are identified and support.</p> <p>3.3 Tooling and equipment are identified and prepared.</p> <p>3.4 Components are tagged without damage.</p>

Variable	Range
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> waste management and clean-up management regulations, including International Standards, internal company quality policy and standards and enterprise

	operations and procedures
Information source	<p>may include:</p> <ul style="list-style-type: none"> • enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets and International Design Rules • safe work procedures related to removing and tagging engine system components • organisation work specifications and requirements • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
OHS requirements	are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting Equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal protective equipment	include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • emergency shutdown and stopping of Equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Emergency procedures	<p>are to include but may not be limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Tooling and Equipment	<p>may include:</p> <p>hand tooling and hand-held power tags and cleaning materials tooling</p>

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, removing and tagging a range of components by their title and application • conducting removal and tagging without damage to components or tooling and Equipment

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • engine system terminology • function of each component • relationship of components to each other • application of components • removal procedures • tagging procedures • quality procedures\ • organization and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and <i>search</i> interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • Apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality check • use workplace technology related to removing and tagging engine system components, including use of measuring equipment and communication devices and the reporting/documenting of results
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Remove and Tag Transmission System Components
Unit Code	<u>AGR MEM1 09 0714</u>
Unit Descriptor	<p>This unit covers the competence to remove and tag transmission system assembly. Work involved includes transmissions of farm machineries components</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>

Elements	Performance Criteria
1. Prepare to remove and tag transmission system assembly	<p>1.1 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.2 Nature and scope of work and environment requirements are identified and confirmed.</p> <p>1.3 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>1.4 Safe protecting procedures and information such as workshop manuals and specifications, and tooling required, are sourced.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Dangers associated working with the removal and tagging of transmission system assembly is observed.</p> <p>1.7 Emergency procedures are identified and followed as per organization's guideline.</p>
2. Remove transmission system assembly	<p>2.1. Transmission system assembly for removal are identified.</p> <p>2.2. Methods for the removal and tagging are implemented in accordance with manufacturer supplier specifications.</p> <p>2.3. Assembly are removed without damage.</p> <p>2.4. Inspection is carried out.</p> <p>2.5. Report is processed in accordance with workplace procedures.</p>
3. Tag transmission system assembly	<p>3.1. Tagging procedures are identified.</p> <p>3.2. Resource requirements for tagging are identified and support Equipment is identified and prepared.</p> <p>3.3. Assemblies are tagged without damage.</p>

Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets and International Design Rules safe work procedures related to removing and tagging transmission system assembly

	<ul style="list-style-type: none"> • organisation work specifications and requirements • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • waste management and clean-up management • regulations, including international Standards, internal company quality policy and standards and enterprise operations and procedures
OHS requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • OHS requirements are to be in accordance with legislation/regulations/ codes of practice and enterprise safety policies and procedures. This may include protective clothing and Equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting Equipment, enterprise first aid, hazard control and hazardous materials and substances
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Transmission systems	<ul style="list-style-type: none"> • may be manual and/or automatic and/or semi automatic and/or power shift transmissions, driveline components, rear axle/final drive assemblies and multiple speed and overdrive transmissions
Components	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Assemblies are to be tagged by title and application

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, removing and tagging a range of components by their title and application • conducting the removal and tagging without damage to components or tooling and equipment
Underpinning Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements

	<ul style="list-style-type: none"> • transmission terminology • function of each component • relationship of components to each other • application of components • removal procedures • tagging procedures • quality procedures • organization and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to removing and tagging transmission components, including the use of measuring Equipment and communication devices and the reporting/documenting of results
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Remove and Tag Steering, Suspension and Brake System Components
Unit Code	AGR MEM1 10 0714
Unit Descriptor	<p>This unit covers the competence to remove and tag steering, suspension and brake system components.</p> <p>Work involved includes steering, suspension and brake systems on farm machineries and equipments.</p> <p>Work requires individuals to demonstrate minimal judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>

Elements	Performance Criteria
1. Prepare to remove and tag steering, suspension and brake system components	<p>1.1 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.2 Nature and scope of work and environment requirements are identified and confirmed.</p> <p>1.3 OHS requirements, including regulatory requirements and personal protection equipment needs are observed throughout the work.</p> <p>1.4 Safe operating procedures and information such as workshop manuals and specifications, and tooling required, are sourced.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Dangers associated working with the removal and tagging of steering, suspension and brake system components are observed.</p> <p>1.7 Emergency procedures are identified and followed as per organization's guideline.</p>
2. Remove steering, suspension and brake system components	<p>2.1. Steering, suspension and brake system components for removal are identified.</p> <p>2.2. Methods for the removal and tagging are implemented in accordance with manufacturer/component supplier specifications.</p> <p>2.3. Components are removed without damage.</p> <p>2.4. Inspection of components is carried out.</p> <p>2.5. Report is processed in accordance with workplace procedures.</p>
3. Tag steering, suspension and brake system components	<p>3.1 Tagging procedures are identified.</p> <p>3.2 Resource requirements for tagging are identified and support.</p> <p>3.3 Tooling and equipment is identified and prepared.</p> <p>3.4 Components are tagged without damage.</p>

Variable	Range
Information	and procedures may include: <ul style="list-style-type: none"> • enterprise operating procedures, workshop manuals, supplier data sheets, parts catalogues, customer orders and industry/workplace codes of practice, material safety data sheets • safe work procedures related to removing and tagging of steering, suspension and brake system components • organisation work specifications and requirements • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Environmental requirements	may include but are not limited to: <ul style="list-style-type: none"> • waste management and clean-up management • regulations, including international standard, internal company quality policy and standards and enterprise operations and procedures
OHS requirements	<ul style="list-style-type: none"> • Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal protective equipment	may include but not limited to: <ul style="list-style-type: none"> • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Safe operating procedures	may include but not limited to: <ul style="list-style-type: none"> • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • Emergency procedures related to this unit are to include, but are not limited to emergency shutdown and stopping of Equipment, extinguishing fires, enterprise first aid requirements and site evacuation
System components	may include but not limited to: <ul style="list-style-type: none"> • System components include steering linkages, tie rod ends, ball joints, steering gear box, "I" beam axle, independent suspension, springs, , drum and disc braking • Tagging is to be by title and application
Emergency procedures	are to include but may not be limited to: <p>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
Tooling and Equipment	may include hand tooling and hand-held power tooling tags and cleaning materials

Evidence Guide

Critical Aspects of Competence	Must demonstrate skills and knowledge competence in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected
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	<p>by the work</p> <ul style="list-style-type: none"> • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, removing and tagging a range of components by their title and application • conducting the removal and tagging without damage to components or tooling and equipment
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • Seeing, suspension and brake system terminology • function of each component • relationship of components to each other • application of components • removal procedures • tagging procedures • quality procedures • organization and planning processes
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to removing and tagging steering, suspension and brake components, including the use of measuring equipment and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Apply Quality Standards
Unit Code	AGR MEM1 11 0714
Unit Descriptor	This unit covers the knowledge, attitudes and skills required in applying quality standards in the operational activities.

Elements	Performance Criteria
1. Assess own work	<p>1.1 Completed work is checked against organization standards relevant to the activity being undertaken.</p> <p>1.2 An understanding is demonstrated on how the work activities are completed and work relate to the next process and to the final appearance of the service / product.</p> <p>1.3 Faulty service is identified and isolated in accordance with policies and procedures.</p> <p>1.4 Faults and any identified causes are recorded and reported in accordance with standard procedures.</p>
2. Assess quality of service rendered	<p>2.1 Services rendered quality is checked against standards and specifications.</p> <p>2.2 Service rendered are evaluated using the appropriate evaluation parameters and in accordance with standards.</p> <p>2.3 Causes of any identified faults are identified and corrective actions taken in accordance with policies and procedures.</p>
3. Record information	<p>3.1 Basic information on the quality performance is recorded in accordance with organization procedures.</p> <p>3.2 Records of work quality are maintained according to the requirements of the organization / enterprise.</p>
4. Study causes of quality deviations	<p>4.1 Causes of deviations from final outputs or services are investigated and reported in accordance with standard procedures.</p> <p>4.2 Suitable preventive action is recommended based on organization quality standards and causes of deviation from specified quality standards of final service or output. are identified</p>
5. Complete documentation	<p>5.1 Information on quality parameters and other indicators of service performance is recorded.</p> <p>5.2 All service processes and outcomes are recorded.</p>

Variable	Range
Quality check	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Visual inspection • Physical measurements • Check against specifications/preferences
Quality standards	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • materials • service

	<ul style="list-style-type: none"> • output • processes/procedures
Quality parameters	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • style/design/specifications • durability • service variations • materials • damage and imperfections

Evidence Guide	
Critical Aspects of Competency	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Check completed work continuously against standard • Identify and isolate faulty service / workmanship • Check service rendered against organization standards • Identify and apply corrective actions on the causes of identified faults • Record basic information regarding quality performance • Investigate causes of deviations of services against standard • Recommend suitable preventive actions
Underpinning Knowledge	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Relevant quality standards, policies and procedures • Characteristics of services • Safety environment aspects of service processes • Relevant evaluation techniques and quality checking procedures • Workplace procedures • Reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Interpret work instructions, specifications and standards appropriate to the required work or service • Carry out relevant performance evaluation • Maintain accurate work records in accordance with procedures • Meet work specifications • Communicate effectively within defined workplace procedures
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Work with Others
Unit Code	AGR MEM1 12 0714
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to develop workplace relationship and contribute in workplace activities.

Element	Performance Criteria
1. Develop effective workplace relationship	<p>1.1 Duties and responsibilities are done in a positive manner to promote cooperation and good relationship.</p> <p>1.2 Assistance is sought from workgroup when difficulties arise and addressed through discussions.</p> <p>1.3 Feedback on performance provided by others in the team is encouraged, acknowledged and acted upon.</p> <p>1.4 Differences in personal values and beliefs are respected and acknowledged in the development.</p>
2. Contribute to work group activities	<p>2.1 Support is provided to team members to ensure workgroup goals are met.</p> <p>2.2 Constructive contributions are made to workgroup goals and tasks according to organizational requirements.</p> <p>2.3 Information relevant to work is shared with team members to ensure designated goals are met.</p>

Variable	Range
Duties and responsibilities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Job description and employment arrangements • Organization's policy relevant to work role • Organizational structures • Supervision and accountability requirements including OHS • Code of conduct
Work group	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Supervisor or manager • Peers/work colleagues • Other members of the organization
Feedback on performance	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Formal/Informal performance appraisal • Obtaining feedback from supervisors and colleagues and clients • Personal, reflective behavior strategies • Routine organizational methods for monitoring service delivery
Providing support to team members	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Explain/clarify • Help colleagues • Provide encouragement • Provide feedback to another team member • Undertake extra tasks if necessary

Organizational requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Goals, objectives, plans, system and processes • Legal and organization policy/guidelines • OHS policies, procedures and programs • Ethical standards • Defined resources parameters • Quality and continuous improvement processes and standards
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Evidence Guide	
Critical aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Provide support to team members to ensure goals are met • Act on feedback from clients and colleagues • Access learning opportunities to extend own personal work competencies to enhance team goals and outcomes
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • relevant legislation that affects operations, especially with regards to safety • reasons why cooperation and good relationships are important • knowledge of the organization's policies, plans and procedures • understanding how to elicit and interpret feedback • knowledge of workgroup member's responsibilities and duties • importance of demonstrating respect and empathy in dealings with colleagues • understanding of how to identify and prioritize personal development opportunities and options
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • read and understand the organization's policies and work procedures • write simple instructions for particular routine tasks • interpret information gained from correspondence • request advice, receive feedback and work with a team • organize work priorities and arrangement • select and use technology appropriate to a task • relate to people from a range of social, cultural and ethnic backgrounds
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Receive and Respond to Workplace Communication
Unit Code	AGR MEM1 13 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to receive, respond and act on verbal and written communication.

Element	Performance Criteria
1. Follow routine spoken messages	<p>1.1 Required information are gathered by listening attentively and correctly interpreting or understanding information/instructions</p> <p>1.2 Instructions/information are properly recorded</p> <p>1.3 Instructions are acted upon immediately in accordance with information received</p> <p>1.4 Clarification is sought from workplace supervisor on all occasions when any instruction/information is not clear</p>
2. Perform workplace duties following written notices	<p>2.1 Written notices and instructions are read and interpreted correctly in accordance with organizational guidelines</p> <p>2.2 Routine written instruction is followed in sequence</p> <p>2.3 Feedback is given to workplace supervisor based on the instructions/information received</p>

Variable	Range
Written notices and instructions	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Handwritten and printed material • Internal memos • External communications • Electronic mail • Briefing notes • General correspondence • Marketing materials • Journal articles
Organizational guidelines	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Information documentation procedures • Company policies and procedures • Organization manuals • Service manual

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • organizational procedures for handling verbal and written communications • Receiving and acting on verbal messages and instructions • Demonstrating competence in recording instructions/information
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • organizational policies/guidelines in regard to processing

	<p>internal/external information</p> <ul style="list-style-type: none"> • ethical work practices in handling communications • communication process
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • receive and clarify conciseness messages/information/communication • record messages/information accurately
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Demonstrate Work Values
Unit Code	AGR MEM1 14 0714
Unit Descriptor	This unit covers the knowledge, skills and attitude required in demonstrating proper work values.

Elements	Performance Criteria
1. Define the purpose of work	<p>1.1 One's unique sense of purpose for working and the 'whys' of work is identified, reflected on and clearly defined for one's development as a person and as a member of society.</p> <p>1.2 Personal mission is achieved in harmony with company's values</p>
2. Apply work values/ethics	<p>2.1 Work values/ethics/concepts are classified and reaffirmed in accordance with the transparent company ethical standards, policies and guidelines.</p> <p>2.2 Work practices are undertaken in compliance with industry work ethical standards, organizational policy and guidelines</p> <p>2.3 Personal behavior and relationships with co-workers and/or clients are conducted in accordance with ethical standards, policy and guidelines.</p> <p>2.4 Company resources are used in accordance with transparent company ethical standard, policies and guidelines.</p>
3. Deal with ethical problems	<p>3.1 Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct are accessed and applied in accordance with transparent company ethical standard, policies and guidelines.</p> <p>3.2 Work incidents/situations are reported and/or resolved in accordance with company protocol/guidelines.</p> <p>3.3 Resolution and/or referral of ethical problems identified are used as learning opportunities.</p>
4. Maintain integrity of conduct in the workplace	<p>4.1 Personal work practices and values are demonstrated consistently with acceptable ethical conduct and company's core values.</p> <p>4.2 Instructions are provided to co-workers based on ethical, lawful and reasonable directives.</p> <p>4.3 Company values/practices are shared with co-workers using appropriate behavior and language.</p>

Variable	Range
Work values/ethics/concepts	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Commitment/ Dedication • Sense of urgency • Sense of purpose • Love for work

	<ul style="list-style-type: none"> • High motivation • Orderliness • Reliability and Dependability • Competence • Goal-oriented • Sense of responsibility • Being knowledgeable • Loyalty to work/company • Sensitivity to others • Compassion/Caring attitude • Balancing between family and work • Sense of nationalism
Work practices	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Quality of work • Punctuality • Efficiency • Effectiveness • Productivity • Resourcefulness • Innovativeness/Creativity • Cost consciousness • 5S • Attention to details
Company resources	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Consumable materials • Equipment/Machineries • Human • Time • Financial resources
Work incidents/ Situations	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Violent/intense dispute or argument • Gambling • Use of prohibited substances • Pilferages • Damage to person or property • Vandalism • Falsification • Bribery • Sexual Harassment • Blackmail

Evidence Guide

Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Define one's unique sense of purpose for working • Clarify and affirm work values/ethics/concepts consistently in the workplace • Demonstrate work practices satisfactorily and consistently in compliance with industry work ethical standards, organizational policy and guidelines • Demonstrate personal behaviour and relationships with co-workers and/or clients consistent with ethical standards,
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	<p>policy and guidelines</p> <ul style="list-style-type: none"> • Use company resources in accordance with company ethical standard, policies and guidelines. • Follow company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Occupational health and safety • Work values and ethics • Company performance and ethical standards • Company policies and guidelines • Fundamental rights at work including gender sensitivity • Work responsibilities/job functions • Corporate social responsibilities • Company code of conduct/values • Balancing work and family responsibilities
Underpinning Skills	<p>Demonstrates skills in:</p> <ul style="list-style-type: none"> • Interpersonal skills • Communication skills • Self awareness, understanding and acceptance • Application of good manners and right conduct
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Develop Understanding of Entrepreneurship
Unit Code	<u>AGR MEM1 15 0714</u>
Unit Descriptor	This unit covers skills, knowledge and attitude required to understand the principles, functions, strategies and methods of entrepreneurship. It also covers identifying and developing the major entrepreneurial competences.

Elements	Performance Criteria
1. Describe and explain the principles, concept and scope of entrepreneurship	<p>1.1 The principles, concept and terminology of entrepreneurship are analyzed and discussed.</p> <p>1.2 The different / various forms of enterprises in the community are identified and their roles understood.</p> <p>1.3 The identified enterprises are categorized and classified.</p> <p>1.4 The terms and elements involved in the concept of enterprising, both on a personal level and in the context of being enterprising in business are identified and interpreted.</p> <p>1.5 Functions of entrepreneurship in business and how the entrepreneurs improved business and economic environment are explained.</p>
2. Discuss how to become entrepreneur	<p>2.1 Self-employment is discussed and analyzed as an alternative option for an individual economic independence and personal growth.</p> <p>2.2 Advantages and disadvantages of self-employment are discussed and explained.</p> <p>2.3 Entrepreneurial characteristics and traits are identified and discussed.</p> <p>2.4 Self-potential is assessed to determine if qualified to become future entrepreneur.</p> <p>2.5 Major competences of successful entrepreneurship are identified and explained.</p>
3. Discuss how to organize an enterprise	<p>3.1 The importance and role of business entrepreneurship in the society are discussed and correlated to the operations of the economy.</p> <p>3.2 Facts about small and medium enterprises are discussed, clarified and understood.</p> <p>3.3 Key success factors in setting up small and medium business are identified and explained.</p> <p>3.4 Business opportunities are identified and assessed.</p> <p>3.5 Business ideas are generated using appropriate tools, techniques and steps.</p> <p>3.6 Procedures are discussed and understood for identifying suitable market for business.</p>

	<p>3.7 Major factors to consider in selecting a location for a business are identified and discussed.</p> <p>3.8 Basic types of business ownership are identified and explained.</p> <p>3.9 Amount of money needed to start an enterprise estimated and distinction between pre operations and initial operation payments clarified.</p> <p>3.10 Advantages and disadvantages of using various sources of capital are identified to start an enterprise.</p>
<p>4. Discuss how to operate an enterprise</p>	<p>4.1 Disadvantages and advantages of three alternatives means of becoming an entrepreneur are identified and understood.</p> <p>4.2 Processes of hiring and managing people are discussed and explained.</p> <p>4.3 The importance and techniques of managing time are discussed and understood.</p> <p>4.4 The techniques and procedures of managing sales are discussed and explained.</p> <p>4.5 Factors to consider in selecting suppliers and the steps to follow when doing business with them are identified and discussed.</p> <p>4.6 Awareness of how new technologies can affect small and medium business is developed.</p> <p>4.7 Characteristics of appropriate technology for use in small and medium business are identified and explained.</p> <p>4.8 Different types of cost that occur in a business and how to manage them are discussed and understood.</p> <p>4.9 Factors and procedures in knowing the cost of the enterprise are discussed and understood.</p> <p>4.10 Importance of financial record keeping and preparing simple financial statement is explained and understood.</p> <p>4.11 The application of self-management skills and negotiation skills is discussed in operating a business.</p> <p>4.12 Risk assessment and management of business enterprise are performed.</p>
<p>5. Develop one's own business plan</p>	<p>5.1 Process of preparing/ writing a business plan is discussed and applied.</p> <p>5.2 Standard structure and format are applied in preparing business plan.</p> <p>5.3 Findings of the business plan are interpreted, assessed and analysed.</p> <p>5.4 Feasibility of the business idea is made clear and understandable.</p> <p>5.5 Problems that may arise or encounter when starting a</p>

	business are identified and understand. 5.6 Techniques and procedures are discussed and understood in obtaining and sourcing information.
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Variables	Range
Classifying	May include but not limited to: <ul style="list-style-type: none"> • Private vs. public • Profit vs. non-profit • Formal vs. Non-formal • Individual vs. Community • Local vs. Foreign • Business vs. Social • Small vs. Large • Manufacturing vs. Service • Consumer vs. Industrial
Major factors	May include but not limited to: <ul style="list-style-type: none"> • Economics (local economy) • Population • Competition
Three alternatives	May include but not limited to: <ul style="list-style-type: none"> • Buying an existing business • Starting a new business • Operating a franchising business

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: <ul style="list-style-type: none"> • explain principles and concept of entrepreneurship • discuss how to become entrepreneur • discuss how to organize an enterprise • discuss how to operate an enterprise • develop business plan
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • Entrepreneurship principles, concepts and terminologies • Entrepreneurial competence • Entrepreneurial motivation • Risk assessment and evaluation • Principles and process of negotiations • Self-management and self-employment • Managing sales, people and time • Factors in setting up small and medium business • Small and Medium Enterprise • Business plan development • Discussion techniques and procedures
Underpinning Skills	Demonstrate skills in: <ul style="list-style-type: none"> • Planning and Leading • Presentation skills • Using technology • Managing money • Preparing simple financial statement • Selecting suppliers

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level I	
Unit Title	Apply 3S
Unit Code	AGR MEM1 16 0714
Unit Descriptor	This unit of competence covers the knowledge, skills and attitudes required by a worker to apply 3S techniques to his/her workplace. The unit assumes the worker has a particular job in the allocated workplace known by the individual.

Elements	Performance Criteria
1. Organize junior Kaizen Promotion Team (KPT).	<p>1.1 Basics, principles and stages of KPT are identified using appropriate procedures.</p> <p>1.2 Structure of Junior KPT is established in accordance with the organizational procedures.</p> <p>1.3 Effective and appropriate contributions are made to complement team activities and objectives using individual skills and competencies.</p> <p>1.4 Effective and appropriate forms of communications are used and undertaken with KPT members who contribute to know KPT activities and objectives.</p> <p>1.5 Kaizen Board (Visual Management Board) is prepared and used in harmony with different workplace contexts.</p>
2. Prepare for work.	<p>2.1 Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>2.2 Job specifications are read and interpreted following working manual.</p> <p>2.3 OHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.</p> <p>2.4 Appropriate materials are selected.</p> <p>2.5 Safety equipment and tools are identified and checked for safe and effective operation.</p>
3. Sort items.	<p>3.1 Plan is prepared to implement sorting activities.</p> <p>3.2 Cleaning activities are performed.</p> <p>3.3 All items in the workplace are identified following the appropriate procedures.</p> <p>3.4 Necessary and unnecessary items are listed using the appropriate format.</p> <p>3.5 Red tag strategy is used for unnecessary items.</p> <p>3.6 Unnecessary items are evaluated and placed in an appropriate place other than the workplace.</p> <p>3.7 Necessary items are recorded and quantified using appropriate format.</p> <p>3.8 Performance results are reported using appropriate formats.</p> <p>3.9 Necessary items are regularly checked in the workplace.</p>

4. Set all items in order.	<p>4.1 Plan is prepared to implement set in order activities.</p> <p>4.2 General cleaning activities are performed.</p> <p>4.3 Location/layout, storage and indication methods for items are decided.</p> <p>4.4 Necessary tools and equipment are prepared and used for setting in order activities.</p> <p>4.5 Items are placed in their assigned locations.</p> <p>4.6 After use, the items are immediately returned to their assigned locations.</p> <p>4.7 Performance results are reported using appropriate formats.</p> <p>4.8 Each item is regularly checked in its assigned location and order.</p>
5. Perform shine activities.	<p>5.1 Plan is prepared to implement shine activities.</p> <p>5.2 Necessary tools and equipment are prepared and used for shinning activities.</p> <p>5.3 Shine activity is implemented using appropriate procedures.</p> <p>5.4 Performance results are reported using appropriate formats.</p> <p>5.5 Regular shinning activities are conducted.</p>

Variable	Range
Junior KPT	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • 3S • 3MU (Mura, Muri and MUDA) • 4P (Policy, Procedure, People and Plant) • 4M (Material, Method, Man and Machine) • PDCA (Plan, Do, Check and Act)
OHS requirements	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment	may include but not limited to:

and tools	<ul style="list-style-type: none"> • dust masks / goggles • glove • working cloth • first aid • safety shoes
Items	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • tools • jigs/fixtures • materials/components • machine and equipment • manuals • documents • personal items (e.g. bags, lunch boxes and posters) • safety equipment and personal protective equipment • other items which happen to be in the work area
The appropriate procedures	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • steps for implementing 3S (sort, set in order and shine) activities. • written, verbal and computer based or in some other format.
Unnecessary items	<p>are not needed for current production or administrative operation and include but not limited to:</p> <ul style="list-style-type: none"> • defective or excess quantities of small parts and inventory • outdated or broken jigs and dies • worn-out bits • outdated or broken tools and inspection gear • old rags and other cleaning supplies • electrical equipment with broken cords • outdated posters, signs, notices and memos <p>some locations where unneeded items tend to accumulate may include but not limited to:</p> <ul style="list-style-type: none"> • in rooms or areas not designated for any particular purpose • in corners next to entrances or exists • along interior and exterior walls • next to partitions and behind pillars • under the eaves of warehouses • under desks and shelves and in desk and cabinet drawers • near the bottom of tall stacks of items • on unused management and production schedule boards • in tools boxes that are not clearly sorted
Appropriate format	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • all items. • necessary items. • unnecessary items.
Red tag	<p>may include but not limited to:</p> <p>A format prepared with a red color paper or card which is filled and attached temporarily on the unnecessary items until decision is made. The red tag catch people's attention because red is a color that stands out. So to fill and attach red tag on items, asks the following three questions:</p> <ul style="list-style-type: none"> • Is this item needed? • If it is needed, is it needed in this quantity?

	<ul style="list-style-type: none"> • If it is needed, does it need to be located here?
Necessary items	Are required in the workplace for current production or administrative operation in the amount needed.
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • paint • hook • sticker • signboard • nails • shelves • chip wood • sponge • broom • pencil • shadow board/ tools board
Shine activity	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Inspection • Cleaning • Minor maintenance may include: <ul style="list-style-type: none"> ➢ Tightening bolts ➢ Lubrication ➢ Replacing missing parts

Evidence Guide

Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Discuss how to organize KPT. • Describe the pillars of 5S. • Implement 3S in own workplace by following appropriate procedures.
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Kaizen principle, pillars and concept • Key characteristic of Kaizen • Elements of Kaizen • Wastes/MUDA • Basics of KPT • Aims, benefits and principles of KPT • Stages of KPT • Structure and role of the components of Junior KPT • Concept and parts of Kaizen board • Concept and benefits of 5S • The pillars of 5S • Three stages of 5S application • Benefits and procedure of sorting activities • The concept and application of Red Tag strategy • OHS procedures • Benefits and procedure of set in order activities • Set in order methods/techniques • Benefits and procedure of shine activities • Inspection methods • Planning and reporting methods • Method of Communication

Underpinning Skills	<p>Demonstrates skills of:</p> <ul style="list-style-type: none"> • Participating actively in KPT • technical drawing • communication skills • planning and reporting own tasks in implementation of 3S • following procedures to implement 3S in own workplace • using sorting formats to identify necessary and unnecessary items • improving workplace layout following work procedures • preparing labels, slogans, etc. • reading and interpreting documents • observing situations • gathering evidence by using different means • recording activities and results using prescribed formats • working with others • solving problems by applying 3S • preparing and using Kaizen board • preparing and using tools and equipment to implement 3S
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

NTQF Level II

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Implement and Monitor Environmental Regulations in the Farm Machinery Mechanical Industry
Unit Code	AGR MEM2 01 0714
Unit Descriptor	This unit covers the competence to undertake service or repair of Farm machinery and equipment or their components in a manner that ensures the protection of the environment. Work involves activities of a farm machinery specialist workplace or business, including service, removal, repair or fitting of mechanical components for farm machinery and equipment.

Elements	Performance Criteria
1. Implement environment regulations	<p>1.1 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.2 Reasons are identified for ethical environmental requirement practices in a farm machinery mechanical workplace or business.</p> <p>1.3 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>1.4 Occupational Health and Safety (OHS) requirements including regulatory requirements and Personal Protective equipment (PPE) are observed and followed consistently in according to workplace requirements.</p> <p>1.5 Environmental responsibilities of staff in farm machinery workplace or business are identified.</p> <p>1.6 Penalties for individual breaches of legislation are identified.</p> <p>1.7 Waste is minimised, waste materials, including sludge, solids and other wastes are sorted and stored in bins for recycling or disposal.</p> <p>1.8 Packaging on goods received is sorted and reused or disposed of to recycling.</p>
2. Monitor and avoid hazards to stormwater	<p>2.1 No waste water or contaminants is/are allowed to enter stormwater systems.</p> <p>2.2 Surface cleaning, engine degreasing and preparation are undertaken in an impervious paved area and do not contaminate stormwater.</p> <p>2.3 Parts and components containing environmentally hazardous material are stored under cover in a sealed and bundled or drained treatment area.</p> <p>2.4 Liquid wastes are drained into storage or recycling containers.</p> <p>2.5 Parts washing are undertaken in an approved parts washer that does not cause contamination of stormwater or ground.</p> <p>2.6 Spill kit is located and used as needed to prevent stormwater contamination.</p>

	<p>2.7 Drip trays are used under vehicles when chance of spillage or leakage is present.</p> <p>2.8 Spills are cleaned up immediately and workplace is kept clean to prevent unintentional stormwater pollution.</p> <p>2.9 Hands are cleaned over drains connected to an oil/water separator or drums for collecting liquid waste.</p> <p>2.10 Spills are cleaned up immediately and workplace is kept clean to prevent unintentional stormwater pollution.</p>
3. Monitor and avoid hazards to air quality	<p>3.1 Vehicle exhausts and emissions are minimised and not permitted to collect in the workplace.</p> <p>3.2 Hazards of airborne particles are monitored, minimised and contained.</p> <p>3.3 Hazards of gases are monitored, minimised and contained.</p> <p>3.4 Welding is conducted in a well-ventilated area.</p> <p>3.5 Noise generating activities are minimised and carried out within approved operating hours.</p>

Variable	Range
Information	<p>may include:</p> <ul style="list-style-type: none"> • environmental legislation, regulations and advice • workplace procedures relating to the use of tooling and equipment • work instructions, including job sheets • workplace procedures relating to documenting and communication of environmental issues • manufacturer/component supplier specifications and operational procedures • site environmental policy
Environmental requirements	<p>may include:</p> <ul style="list-style-type: none"> • waste management • pollution • noise • dust • clean-up management
Farm machinery mechanical workplace or business	<p>Undertaking either general or specialist machinery repairs to; farm machinery's or their mechanical components and power equipment. Specialised mechanical repairs can include:</p> <ul style="list-style-type: none"> • transmissions, • steering and suspension, • brakes, • engine reconditioning, • diesel fuelled plant, • exhausts and radiators
Occupational Health and Safety (OHS) requirements	<p>May include:</p> <ul style="list-style-type: none"> • OHS legislation • material safety data sheets • hazardous substances and dangerous goods code and safe operating procedures

Personal Protective Equipment (PPE)	is to include that prescribed under legislation, regulations and enterprise policies and practices
Work requirements	May include: <ul style="list-style-type: none"> • work is carried out in accordance with legislative obligations, environmental legislation, OHS regulations, manual handling procedures and organisation insurance requirements • competence may be demonstrated in workplaces involved in the service, repair, overhaul, replacement or fitting of vehicles parts and components
Materials	may include: <ul style="list-style-type: none"> • material safety data sheets
Tooling and equipment	May include: <ul style="list-style-type: none"> • recycling bins and drums, • bunded or drained wash bays and preparation areas • parts washers • spill kits • quick break degreasing compounds • cleaning equipment • oil drip trays • waste management systems and waste water systems

Evidence Guide

Critical Aspects of Competence	Must demonstrate skills and knowledge competence in: <ul style="list-style-type: none"> • apply safe handling requirements for equipment, products and materials, including use of personal protective equipment • implement environmental regulations and best practice • identify materials used in an automotive workplace or business and assess their environmental impact • Follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➢ minimise risk of injury to self and others ➢ prevent damage and wastage of goods, equipment and products ➢ maintain production output and product quality • Work effectively with others • Modify activities to cater for variations in workplace context and environment • Use of a spill kit • Conduct operator maintenance on tooling and equipment to ensure environmental efficiency
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • aspects of environmental legislation and its implications to work being undertaken • characteristics and potential environmental impact of products used in automotive mechanical workplace or business • philosophy of prevention, reduce, reuse, recycle • procedures for documenting equipment faults and material defects • action to be undertaken in case of significant environmental threat in the workplace or business

	<ul style="list-style-type: none"> documenting procedures for significant environmental damage occurring in the workplace
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> collect, organise and understand information related to environmental procedures from legislation, regulations and workplace or business practices in an automotive mechanical workplace or business communicate ideas and information to enable work undertaken is in accordance with environmental best practice, coordination of work with site supervisor, other workers and customers, and documenting of work outcomes and problems plan and organise activities, including the preparation of equipment and material and the selection of worksite to avoid environmental contamination, backtracking, workflow interruptions or wastage work with others and in a team by recognising dependencies and using cooperative approaches to minimise wastage, optimise workflow and productivity use mathematical ideas and techniques to correctly complete measurements and estimate material for work use planning, checking and inspection techniques to avoid environmental contamination and wastage use workplace technology related to environmental protection equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> Interview / Written Test / Oral Questioning Observation / Demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Interpret Working Drawings and Sketches
Unit Code	AGR MEM2 02 0714
Unit Descriptor	This unit covers the competencies required to read and interpret drawings and sketches. It requires interpretations of standard drawings by using symbols, dimensional tolerances and notations.

Elements	Performance Criteria
1. Identify technical drawing	1.1 Drawing is checked and validated against job requirements. 1.2 Drawing version is checked and validated. 1.3 Instructions are confirmed and followed as required.
2. Identify views, standard symbols and lines	2.1 Orthographic and isometric drawing is identified. 2.2 Orthographic and isometric views are explained. 2.3 Alphabet of lines is identified. 2.4 Uses of the alphabet of lines are explained. 2.5 Codes and symbols are correctly identified and explained according to drawing standards.
3. Interpret technical drawing	3.1 Component, assembly or object is recognized as required. 3.2 Drawing symbols and codes are interpreted appropriately. 3.3 Dimensions and material requirements are identified, understood and followed as required. 3.4 Dimensional tolerances and notations are interpreted according to specifications.

Variables	Range
Drawing	May include but not limited to: <ul style="list-style-type: none"> • Perspective • Exploded view • Hidden view technique
Tolerance	May include but not limited to: <ul style="list-style-type: none"> • General tolerance • Angular tolerance • Geometric tolerance
Projections	May include but not limited to: <ul style="list-style-type: none"> • First angle projections • Third angle projections
Tools and equipment	May include but not limited to: <ul style="list-style-type: none"> • set square, T-square, compass, divider • different types of drawing paper • pencil • drawing board • masking tape

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence to:</p> <ul style="list-style-type: none"> • interpret technical drawings and sketches • interpret symbols, dimensional tolerances and notations
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • alphabet of lines • drawing symbols • tolerances • relationship between the views contained in the drawing • objects represented in the drawing • units of measurement used in the preparation of the drawing • dimensions of the key features of the objects depicted in the drawing • understanding of the instructions contained in the drawing • the actions to be undertaken in response to those instructions • the materials from which the object(s) are made • any symbols used in the drawing as described in range • relationship between the views contained in the drawing • objects represented in the drawing • units of measurement used in the preparation of the drawing • dimensions of the key features of the objects depicted in the drawing • understanding of the instructions contained in the drawing • the actions to be undertaken in response to those instructions • the materials from which the object(s) are made • any symbols used in the drawing as described in range statement • hazard and control measures associated with interpreting technical drawings, including housekeeping • safe work practices and procedures
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • projections • drawing technique • dimensioning techniques • checking the drawing against job requirements/related equipment in accordance with standard operating procedures • confirming the drawing version as being current in accordance with standard operating procedures • where appropriate, obtaining the current version of the drawing in accordance with standard operating procedures • reading, interpreting information on the drawing, written job instructions, specifications, standard operating procedures, charts, lists and other applicable reference documents • checking and clarifying task related information • undertaking numerical operations, geometry and calculations/formulae within the scope of this unit
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Test and Repair Electrical/Electronic Units/Assemblies and Low Voltage
Unit Code	AGR MEM2 03 0714
Unit Descriptor	This unit covers competence to remove and replace units/assemblies, such as headlights, tail-lights, electrical components, carry out lighting installations, testing and repair to low voltage systems appropriate to vehicles and trailers .and computer control units to facilitate body repair activities. The unit includes identification and confirmation of work requirement, preparation for work, removal and replacement of electrical and electronic units/assemblies and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Work instructions and information are used to determine job requirements, including method, material and equipment.</p> <p>1.2 Job specifications are read and interpreted.</p> <p>1.3 OHS requirements, including dust and fume collection, breathing apparatus and eye and ear Personal Protection Equipment (PPE) needs are observed throughout the work.</p> <p>1.4 Material appropriate to application for work is selected.</p> <p>1.5 Equipment and tooling are identified and checked for safe and effective operation.</p> <p>1.6 Safe operating procedures are determined to minimise waste material.</p> <p>1.7 Procedures are identified for maximising energy efficiency while completing the job.</p>
2. Remove electrical/ electronic units/ assemblies	<p>2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2 Electrical/electronic units/assemblies are removed using approved methods, tooling and equipment.</p> <p>2.3 Removal is completed without causing damage to component or system.</p> <p>2.4 Removal activities are carried out according to industry regulations/guidelines, OHS, legislation and enterprise procedures/policies.</p> <p>2.5 Units/assemblies are handled and stored in accordance with manufacturer/component supplier requirements.</p>
3. Install wiring/lighting electrical systems	<p>3.1 Information is accessed from manufacturer/component supplier specifications and correctly interpreted.</p> <p>3.2 Components, tooling and equipment are identified, selected, and prepared in accordance with manufacturer/component supplier instructions and site procedures.</p> <p>3.3 Wiring/lighting circuit plans and designs are followed and installation procedures completed in accordance with site</p>

	<p>procedures and manufacturer/component supplier specifications.</p> <p>3.4 Legislation, industry guidelines and enterprise policies/procedures are followed.</p> <p>3.5 Undue damage to equipment or equipment is avoided.</p>
4. Repair and replace electrical/electronic units/assemblies and systems	<p>4.1 Correct information is accessed and interpreted from manufacturer/component supplier critical specifications.</p> <p>4.2 Electrical units/assemblies are replaced using approved methods, tooling and equipment.</p> <p>4.3 Replacement is completed without causing damage to component or system.</p> <p>4.4 Components, tooling and equipment are identified, selected, and prepared in accordance with manufacturer/ component supplier instructions and site procedures.</p> <p>4.5 Repair work is completed in accordance with site procedures.</p> <p>4.6 Workplace documents are completed in accordance with site requirements.</p> <p>4.7 Replacement activities are carried out according to industry regulations/guidelines, OHS, legislation and enterprise procedures and policies.</p>
5. Test electrical systems	<p>5.1 Information is accessed from manufacturer/component supplier specifications and correctly interpreted.</p> <p>5.2 All tests are carried out in accordance with manufacturer/component supplier specifications and tolerances.</p> <p>5.3 Testing is completed without causing damage to component or system.</p>
6. Clean up work area and maintain equipment	<p>6.1 Material that can be reused is collected and stored.</p> <p>6.2 Waste and scrap are removed by following workplace and environmental procedures.</p> <p>6.3 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>6.4 Unserviceable equipment is tagged and faults are identified in accordance with environmental requirements.</p> <p>6.5 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>6.6 Equipment is maintained in accordance with workplace procedures.</p>

Variable	Range
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Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to installation and repair of vehicle and trailer wiring/lighting systems • regulatory/legislative requirements pertaining to automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • International standards • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to <u>job/task</u>, telephones and pagers
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal Protection Equipment (PPE)	<p>Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
Material	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • spare parts and cleaning material
Equipment and tooling	<p>may include:</p> <ul style="list-style-type: none"> • hand tooling, jacking • power tooling, air tooling • specialist tooling for removal/ adjustment and testing equipment, including: <ul style="list-style-type: none"> ➢ multi meters and test crimps ➢ support and lifting equipment and special equipment for removal and replacement
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Electrical/electronic units/assemblies	<p>include:</p> <ul style="list-style-type: none"> • headlights, tail-lights, electrical components and computer control units to facilitate body repair activities
Critical precautions	<p>include:</p> <ul style="list-style-type: none"> • manufacturer/component supplier procedures which must be applied as poor working practices are likely to damage electronic system ECUs and/or other components

Enterprise policies and procedures	<p>May include:</p> <ul style="list-style-type: none"> • quality policies and procedures, including Relevant Ethiopian standards • OHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management • regulations, including Ethiopian standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • removing and replacing a minimum of four units/assemblies to workplace and manufacturer/component supplier requirements, including: <ul style="list-style-type: none"> ➤ one Supplementary Restraint System ➤ one body electronic module ➤ one engine module • Reading and interpreting low voltage wiring diagrams • Installing low voltage wiring/lighting to specification • Repairing low voltage wiring/lighting to specification • Testing low voltage wiring/lighting to determine short, open and earthing faults • completing final functional test to specification • connecting storing and handing units/assemblies
Underpinning knowledge and attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • types, applications and external specifications of electrical/electronic units/assemblies • sealant selection and application • removal and replacement procedures for electrical/electronic units/assemblies • use of tooling and equipment • Common automotive terminology and vehicle safety requirements • Low voltage theory for automotive application, including types of materials, components and wiring systems, including gas discharge lamps, automatic aiming • Precautions to avoid side effects that could occur to ancillary systems from installation, testing and repair operations • Operation of low voltage electrical wiring/lighting circuits and

	<p>components relevant to the application</p> <ul style="list-style-type: none"> • Wiring and lighting testing and fault finding procedures • Wiring and lighting installation procedures • Wiring and lighting repair procedures • Working knowledge of site reporting procedures • State lighting regulations and International Design Rules • work organisation and planning processes • enterprise quality processes
Underpinning skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • collect, organise and understand information related to work orders, plans and safety procedures for removing , replacing electrical/electronic units/assemblies and installation, testing and repairing wiring and lighting systems • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and reporting of work outcomes and problems • Technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications related to low voltage wiring/lighting systems • Questioning and active listening skills, for example when obtaining information of safe working practices and low voltage wiring/lighting systems • plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • Use pre-checking and inspection techniques to anticipate planning and scheduling problems and avoid wastage of time and material • Manipulative and dexterity skills to perform low voltage wiring/lighting system installation, testing and repair functions • Problem-solving skills for a limited range of procedural issues • use workplace technology related to removal and replacement of electrical and electronic units/assemblies, installation and repair of vehicle and trailer wiring/lighting systems including use of specialist tooling, measuring equipment and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration/with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Repair and Overhaul Starting and Charging Systems/Components
Unit Code	AGR MEM2 04 0714
Unit Descriptor	<p>This unit covers the skills and knowledge required to test, repair and overhaul charging and starting systems appropriate to farm machineries, plant and equipment, and outdoor power equipment. The unit also includes identification and confirmation of work requirement, preparation for work, testing of alternators and starters, and identification of faults/causes, disassembly, overhaul, reassembly and retesting and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment. The unit applies to individuals who undertake testing and identification of faults/causes, repair and retesting of charging and starting systems.</p>

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Job requirements, including method, processes and equipment are determined.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 Job specifications are read and interpreted.</p> <p>1.4 Correct information is accessed from manufacturer/ component supplier specifications and interpreted.</p> <p>1.5 Equipment and tooling, materials are identified and checked for effective and safe operation.</p> <p>1.6 Procedures are determined to minimise task time.</p>
2. Dismantle starting motors and clean individual components/ parts	<p>2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2 Occupational Health and Safety (OHS) requirements including regulatory requirements and Personal Protective equipment (PPE) are observed and followed consistently in according to workplace requirements.</p> <p>2.3 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.4 Mechanical starting systems motors are dismantled according to component/vehicle manufacturer/component supplier procedures.</p> <p>2.5 Electrical starting systems motors are dismantled without causing damage to component.</p> <p>2.6 Component parts are cleaned according to unit/vehicle manufacturer/component supplier recommended solvents</p>

	<p>and procedures.</p> <p>2.7 All works are completed according to industry regulations/guidelines, OHS, legislation and enterprise procedures/policies.</p>
3. Test systems/ components and identify faults	<p>3.1 Occupational Health and Safety (OHS) requirements, including personal safety needs are observed throughout the work.</p> <p>3.2 Emergency procedures are identified and followed as per organization's guideline.</p> <p>3.3 Tests are carried out to determine faults using appropriate tooling and techniques.</p> <p>3.4 Tests are completed without causing damage to component or system.</p> <p>3.5 Faults are identified and preferred repair method is determined.</p> <p>3.6 Tests are completed according to industry regulations/ guidelines, OHS, legislation and enterprise procedures and policies.</p>
4. Repair starting and charging systems and associated components	<p>4.1 Repairs, component replacement and adjustments are carried out to manufacturer/component supplier specifications.</p> <p>4.2 Appropriate tooling, techniques and materials are selected and used.</p> <p>4.3 Starting and charging systems are repaired without causing damage to component or system.</p> <p>4.4 Retests are performed to ensure correct and safe starting and charging system operation, according to industry regulations/guidelines, OHS, legislation and organizational procedures and policies.</p> <p>4.5 Workplace and equipment documents are completed in accordance with environmental requirements.</p>
5. Clean up work area and maintain equipment	<p>5.1 Material that can be reused is collected and used.</p> <p>5.2 Waste and scrap are removed by following workplace procedures.</p> <p>5.3 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.4 Unserviceable equipment is tagged and faults are identified in accordance with workplace requirements.</p> <p>5.5 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>5.6 Tooling and equipment are maintained and stored in accordance with workplace procedures.</p>

Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, Material Safety Data Sheets (MSDS), diagrams or sketches • safe work procedures related to testing and repairing starting and charging systems • regulatory/legislative requirements pertaining to testing and repairing starting and charging systems • engineer's design specifications and instructions • organization work specifications and requirements • instructions issued by authorized enterprise or external persons
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> • hand tooling • testing equipment, including multi meters, voltmeters and ammeters • power tooling and air tooling • electrical loading equipment • test benches • soldering equipment • induction ammeter • test light • single and ganged panels • CRO or oscilloscopes
Materials	<p>may include:</p> <ul style="list-style-type: none"> • spare parts and materials • solder flux • cleaning material
Occupational Health and Safety (OHS) requirements	<p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • workplace environment and safety, safety equipment • enterprise first aid and first aid equipment • hazard and risk control and hazardous materials and substances electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • use of tooling and equipment, • handling of material, • use of fire fighting equipment,
Personal Protective Equipment (PPE)	<p>include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
Safe operating procedures	<p>Are to include, but are not limited to :</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical

	<p>lifting and shifting,</p> <ul style="list-style-type: none"> • working in proximity to others and site visitors • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Mechanical starting systems	<p>may include:</p> <ul style="list-style-type: none"> • pull rope • crank handle • inertia
Electrical starting systems	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Inertia type starting motor • pre-engaged starting motor • axial and coaxial • fixed and remote solenoid • direct drive • gear reduction • protection lockout • inhibitor switch • series-parallel switching • battery isolation switch • single/multiple battery system • alternators, electromagnetic and permanent magnet • generators • internal/external regulation • battery-sensed and non-battery-sensed regulation • 6 V, 12 V and 24 V operation • dynast art, solid state and mechanical regulation • belt and/or direct drive, single/multiple belt drive and adjustable tensioning devices • single phase, half wave rectified and full wave rectified • solar systems, including single and ganged panels, internal and external regulation, battery sensed and non-battery sensed, 6 V, 12 V and 24 V operation, and solid state controlled
Emergency procedures	<p>include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</p>
Faults	<p>may include:</p> <ul style="list-style-type: none"> • starting motor not working • slow or noisy operation • not engaging, including open and short circuits and ground circuits • system not charging • alternator drive problems • regulator malfunction internal alternator faults, including open and short circuits and ground circuits
Repair methods	<p>include:</p> <ul style="list-style-type: none"> • reading/interpreting wiring diagrams • fault-finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short/broken circuits, and electrical measurements

	<ul style="list-style-type: none"> • diagnosis and determining faults • pre- and post-repair testing of system and component operation • removal and replacement • repair/replacement of system components • repair adjustments
Organizational policies and procedures	<p>may include:</p> <ul style="list-style-type: none"> • quality policies and procedures, including Relevant Ethiopian standards • OHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures
Environmental requirements	<p>may include:</p> <ul style="list-style-type: none"> • waste management • pollution • noise • dust • clean-up management
Legislative requirements	<p>are to be in accordance with applicable Federal/ state legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> • award and enterprise agreements • industrial relations • International standards • International design Rules • confidentiality and privacy • OHS • the environment • equal opportunity • relevant industry codes of practice • duty of care • waste management • pollution • noise • dust • clean-up management • regulations, including international standards • internal organizational quality policies and procedures • enterprise operations and procedures

Evidence guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observe safety procedures and requirements • communicate effectively with others involved in or affected by the work • select methods and techniques appropriate to the circumstances • complete preparatory activity in a systematic manner • test starting systems/components
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	<ul style="list-style-type: none"> • test charging systems/components • diagnose and determine faults • repair starting systems and charging systems to manufacturer/component supplier requirements • post-repair test starting systems to manufacturer/component supplier requirements • complete workplace and equipment documents
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • charging system principles of operation • construction and operation of charging systems relevant to application • principles of estimating and job costing • enterprise quality procedures • work organisation and planning processes • contract law • sale-contracting principles • written communication and report writing skills procedures relevant to application • oral communication skills procedures relevant to application
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • technical skills - to use workplace technology and tools related combine the physical and sensory skills needed to operate equipment with understanding of scientific and technological principles needed to explore and adapt systems • communication skills - to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to apply common industry terminology, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities • literacy skills - to understand information related to work orders, and to locate, interpret and apply manufacturer/component supplier technical information and specifications for circuit and component testing and major repairs/component replacement, workplace policies and safety procedures • numeracy skills - to correctly calculate time, complete tests and measurements to determine electrical circuit/component major repair/replacement requirements, calculate material requirements and establish quality checks • problem-solving skills - to plan and organise activities and establish safe and effective work processes which anticipate and/or resolve problems and downtime, and to systematically develop solutions to avoid or minimise reworking and avoid wastage

	<ul style="list-style-type: none"> • team skills - to work effectively and cooperatively with others to optimise workflow and productivity • organizational skills - to plan and organise activities, including preparation and layout of worksite, and obtaining equipment and materials to avoid backtracking or workflow interruptions
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be accessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Perform Manual Arc and Oxy Acetylene Welding
Unit Code	AGR MEM2 05 0714
Unit Descriptor	This unit of competency covers the skills and knowledge required to carry out manual metal arc and routine oxy acetylene welding procedures. The unit includes identification and confirmation of work requirement, preparation for work and the completion of welding and work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Identify weld requirements	<p>1.1 Weld requirements are identified from job instructions.</p> <p>1.2 Location of welds is identified in accordance with standard operating procedures and job specifications.</p>
2. Prepare for work	<p>2.1 Work instructions are used to determine job requirements, including job sheets, quality and quantity of materials.</p> <p>2.2 Job specifications are read and interpreted.</p> <p>2.3 OHS requirements, including Personal Protection Equipment (PPE) needs are observed throughout the work.</p> <p>2.4 Materials for repairs and replacements are selected, cleaned and inspected for quality and prepared ready for welding</p> <p>2.5 Hand, power tooling and safety equipment are identified, set up correctly and checked for safe use.</p> <p>2.6 Products are determined to minimise waste material.</p> <p>2.7 Procedures are identified for maximising energy efficiency while completing the job.</p>
3. Carry out manual metal arc procedures	<p>3.1 Information is accessed from sources to enable welding to be performed in accordance with vehicle and equipment manufacturer/component supplier procedures.</p> <p>3.2 Manual metal arc welding is completed using approved methods and equipment according to type of material and repairs required.</p> <p>3.3 Manual metal arc welding procedures are completed without causing damage to component or system</p> <p>3.4 Manual metal arc welding is carried out according to a standard that meets industry regulations/guidelines, OHS requirements, legislation and enterprise policy/procedures.</p>
4. Perform routine welding using oxy acetylene	<p>4.1 Safe welding practices are applied according to the safe operating procedures.</p> <p>4.2 Materials are welded to job requirements.</p> <p>4.3 Welds are cleaned in accordance with standard operating procedures.</p>

5. Clean up work area and maintain equipment	<p>5.1 Material that can be reused is collected and stored.</p> <p>5.2 Waste and scrap are removed following workplace procedures.</p> <p>5.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.</p> <p>5.4 Unserviceable equipment is tagged and faults are identified in accordance with workplace procedures.</p> <p>5.5 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and worksite procedures.</p> <p>5.6 Tooling is maintained in accordance with workplace procedures.</p>
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Variable	Range
Materials	<p>may include:</p> <ul style="list-style-type: none"> • rods/electrodes and cleaning materials • mild and low carbon steel and cast iron • filler rods, fluxes
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment, enterprise first aid • hazard control and hazardous material and substances
Personal Protection Equipment (PPE)	<p>is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to manual metal arc welding • regulatory/legislative requirements pertaining to automotive industry, including Ethiopian Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • Ethiopian standards
Manual metal arc welding method	<p>are to include:</p> <ul style="list-style-type: none"> • equipment selection and preparation, • material selection/ confirmation and preparation, • the application of welding techniques and the operator maintenance of equipment

Safe operating procedures	<p>Are to include, but are not limited to:</p> <ul style="list-style-type: none"> operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and worksite visitors emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and worksite evacuation
Job requirements	<p>are to include, but are not limited to:</p> <ul style="list-style-type: none"> waste management, noise, dust and clean-up management regulations, including Ethiopian standards, internal company quality policy and standards and enterprise operations and procedures
Cleaning	<p>May include:</p> <ul style="list-style-type: none"> Fluxes
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> hand tooling welding equipment including: <ul style="list-style-type: none"> manual metal arc welding machines, safety equipment, measuring equipment, marking out equipment and lifting equipment , hoses, blowpipes, regulators
Prepared	<p>May include:</p> <ul style="list-style-type: none"> preheating setting up jigs fixtures clamps joint preparation
Oxy acetylene	<p>May include:</p> <ul style="list-style-type: none"> The term 'oxy-acetylene' is used here to describe a range of fuel gases, including acetylene, LPG, hydrogen etc.
Communications	<p>are to include, but are not limited to:</p> <ul style="list-style-type: none"> verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> worksite specific instructions written instructions plans or instructions related to job/task telephones and pagers

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> observing safety procedures and requirements communicating effectively with others involved in or affected by the work selecting methods and techniques appropriate to the circumstances completing preparatory activity in a systematic manner setting up, operating and maintaining manual metal arc welding, safety, lifting and measuring equipment completing a range of manual metal arc welding tasks to
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	specification
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • common farm machinery technology • types of metals, electrodes and their application • manual metal arc welding and oxyacetylene procedures • equipment maintenance procedures • workplace guidelines regarding acceptable tolerance levels to be considered as per job sheet and manufacturer/component supplier specification • procedures for reporting faults and material defects • work organisation and planning processes • enterprise quality processes • preparatory requirements • equipment and equipment settings • fuel gas properties and applications • post welding treatments • use and application of personal protective equipment for routine oxy acetylene welding
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for the identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and wastage • use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to welding systems, including the use of measuring equipment and communication devices and the reporting/documenting of results • preparing materials • setting up welding equipment • welding with oxy acetylene fuel gas • reading and interpreting routine information on written job instructions, specifications and standard operating procedures • following oral instructions • using measurement skills for joint preparation and routine

	oxy acetylene and arc welding
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect, Service and Repair Braking Systems
Unit Code	AGR MEM2 06 0714
Unit Descriptor	This unit covers the competence required to carry out inspection servicing, and repair of braking systems and associated components. It includes engine and exhaust brakes and retarders. The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of braking systems and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to undertake inspection of braking systems	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including individual and state regulatory requirements and personal protective equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information are sourced such as workshop manuals and specifications and tooling as required.</p> <p>1.5 Method options are analysed and those most appropriate are selected and prepared to the circumstances.</p> <p>1.6 Relevant tools, equipment and materials requirements are identified and made ready for use prior to the start of work practice as per job specification and work place procedures.</p> <p>1.7 Technical and/or calibration requirements for the inspection of air braking systems are sourced and support equipment is identified and prepared.</p> <p>1.8 Warnings in relation to working with air braking systems are observed.</p>
2. Conduct inspection and analyse results	<p>2.1 Methods for the inspection are implemented in accordance with road safety legislation, workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) is/are made.</p> <p>2.4 Report is processed in accordance with workplace procedures.</p>
3. Prepare to service braking systems	<p>3.1 Procedures and information required are identified and sourced.</p> <p>3.2 Technical and tool requirements for servicing are identified</p>

	<p>and support equipments prepared.</p> <p>3.3 Relevant tools, equipment and materials requirements are identified and made ready for use prior to the start of work practice as per job specification and work place procedures.</p>
4. Carry out servicing braking system	<p>4.1 Methods for the servicing are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>4.2 Emergency procedures are identified and followed as per organization's guideline.</p> <p>4.3 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines</p> <p>4.4 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>4.5 Service and repair adjustments are made during the work in accordance with manufacturer/component supplier specifications.</p> <p>4.6 Brakes are tested for normal operation against manufacturer/component supplier specifications following the service and repair.</p> <p>4.7 Adjustments are made during the service to standard quality requirements.</p>
5. Prepare equipment for use or storage	<p>5.1 Service schedule documentation is completed and communicated to appropriate personnel.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include :</p> <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal protective	<ul style="list-style-type: none"> • Is to include that prescribed under legislation/regulations/codes of practice and workplace

equipment	policies and practices
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection, analysis and servicing of air braking systems • regulatory/legislative requirements pertaining to the automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • International Standards
Tools and equipment	May include hand tooling, specialist tooling, meters, gauges, brake testing devices load testing devices
Materials	<p>may include:</p> <ul style="list-style-type: none"> • fluids, • minor parts, • spare parts • filters and cleaning materials
Workplace procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Component	<p>to be serviced include but not limited:</p> <ul style="list-style-type: none"> • compressors • pressure regulator • four way protection valve • air tanker and tubes • load sensing valve • break chamber/wheel cylinder • relay valve • receivers • drive belts • actuator mechanisms
Requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management: • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures

Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement • toxic substances • electrical safety • equipment movement and operation • manual and mechanical lifting and shifting • working in proximity to others and site visitors
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> • regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
Communicating	May include but are not limited to: <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> ➤ site specific instructions ➤ written instructions ➤ plans or instructions related to job/task ➤ telephones and pagers

Variable	Range
OHS requirements	Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include : <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal protective equipment	include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Information	may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection, analysis and servicing of air braking systems • regulatory/legislative requirements pertaining to the automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements

	<ul style="list-style-type: none"> instructions issued by authorised enterprise or external persons International Standards
Tools and equipment	May include hand tooling, specialist tooling, meters, gauges, brake testing devices load testing devices
Materials	Materials may include: <ul style="list-style-type: none"> fluids, minor parts, spare parts filters and cleaning materials
Workplace procedures	May include but are not limited to: <ul style="list-style-type: none"> the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Component	to be serviced include but not limited: <ul style="list-style-type: none"> compressors pressure regulator four way protection valve air tanker and tubes load sensing valve break chamber/wheel cylinder relay valve receivers drive belts actuator mechanisms
Requirements	May include but are not limited to: <ul style="list-style-type: none"> waste management, noise, dust and clean-up management: regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> waste management, noise, dust and clean-up management
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> operational risk assessment and treatments associated with vehicular movement toxic substances electrical safety equipment movement and operation manual and mechanical lifting and shifting working in proximity to others and site visitors
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> regulations, including International standards, internal

	company quality policy and standards and enterprise operations and procedures
Communicating	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> ➤ site specific instructions ➤ written instructions ➤ plans or instructions related to job/task ➤ telephones and pagers

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • accurately interpreting inspection results • conducting the service in accordance with workplace and manufacturer/component supplier requirements • completing service of air braking systems and associated components within workplace timeframes • equipment is presented to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with air brakes • operating principles of air braking systems and components and their relationship to each other • inspection procedures • types and layout of service/repair manuals • servicing procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid

	<p>wastage</p> <ul style="list-style-type: none"> • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to servicing tooling and equipment, inspection, analysis and servicing of air braking systems, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Hydrostatic and Automatic Transmissions
Unit Code	AGR MEM2 07 0714
Unit Descriptor	This unit covers the competence required to carry out the inspection and service of semi-automatic, automatic and hydrostatic transmissions and associated components, including torque converters in farm machinery service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis, servicing and testing of automatic transmissions and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to inspect semi-automatic, automatic and hydrostatic transmission	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.4 Procedures and information such as workshop manuals and specifications and tooling are sourced as required.</p> <p>1.5 Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures.</p> <p>1.6 Resources required are sourced for the inspection of transmissions and support equipment is identified and prepared.</p> <p>1.7 Relevant tools, equipment and materials requirements are identified and made ready for use prior to the start of work practice as per job specification and work place procedures.</p> <p>1.8 Warnings are observed in relation to working with transmissions.</p>
2. Conduct inspection and analyse results	<p>2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation is made.</p> <p>2.4 Report is processed in accordance with workplace procedures.</p>

3. Prepare to service semi-automatic, automatic and hydrostatic transmission	<p>3.1 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Procedures and information required are identified and sourced.</p> <p>3.3 Resources required for servicing transmissions are identified and support equipment is identified and prepared.</p>
4. Carry out service to transmission	<p>4.1 Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>4.2 Adjustments are made during the service in accordance with manufacturer/component supplier specifications.</p>
5. Prepare equipment for use or storage	<p>5.1 Service schedule records and documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Equipment is cleaned and stored to workplace expectations.</p> <p>5.5 Job card is processed in accordance with workplace procedures and accomplishment is communicated to relevant personnel.</p>

Variable	Range
Requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	<p>Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
Procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, equipment movement and operation, manual lifting and shifting, working in proximity to others and site visitors • emergency shutdown and stopping of equipment, operating

	safely in the event of fires, enterprise first aid requirements and site evacuation
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection and servicing of automatic transmissions • regulatory/legislative requirements pertaining to the automotive industry, including international design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
Methods	<p>may include:</p> <ul style="list-style-type: none"> • operational testing • visual, aural and functional assessment (including: fluid leakage, selection)
Transmissions	<p>may be:</p> <ul style="list-style-type: none"> • automatic • semi-automatic and hydrostatic and power shift transmissions, front and/or rear wheel drive configurations and include power take-off assemblies • pre-selective transmissions and electronically controlled transmissions
Tooling and equipment	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • hand tooling • meters • gauges and load testing devices
Materials	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • lubricants, minor spare parts and cleaning materials
Communicating	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • identify application, purpose and operating principles • conducting the inspection and servicing of a range of transmission types in accordance with workplace and manufacturer/component supplier requirements • completing service of transmissions and associated components within workplace timeframes • presenting equipment to customer in compliance with workplace requirements

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • dangers of working with transmissions • fluid dynamics • drive flow paths • gear selection mechanisms • three laws of compound planetary gear sets • five laws of simple planetary gear sets • superior driving member rule • identification of application, purpose and operating principles • identification of component parts to include: <ul style="list-style-type: none"> ➢ physical fluids ➢ gases • heat generated
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and servicing of automatic transmissions, including the use of diagnostic and servicing tooling and equipment, measuring equipment, computerised technology and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Manual Transmission
Unit Code	AGR MEM2 08 0714
Unit Descriptor	This unit covers the competence required to inspect and service manual transmissions in farm machinery service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of manual transmissions and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities

Elements	Performance Criteria
1. Prepare to undertake the inspection of manual transmissions	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including regulatory requirements and Personal Protective equipment (PPE) needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications and tooling, equipment and materials required are identified and made ready for use prior to the start of work.</p> <p>1.5 Inspection methods appropriate to the circumstances are selected and prepared in accordance with standard safe operating procedures.</p> <p>1.6 Resources required are sourced for inspection of manual transmissions and support equipment is identified and prepared.</p> <p>1.7 Warnings are observed in relation to working with manual transmissions.</p>
2. Conduct inspection and analyse results	<p>2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.4 Report is processed in accordance with workplace procedures.</p>
3. Prepare to service manual transmissions	<p>3.1 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Procedures and information required are identified and</p>

	sourced. 3.3 Resources required for servicing manual transmissions are identified and support equipment is identified and prepared.
4. Carry out service	4.1 Emergency procedures are identified and followed as per organization's guideline. 4.2 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines. 4.3 Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications. 4.4 Adjustments are made during the service in accordance with manufacturer/component supplier specifications and quality requirements .
5. Prepare equipment for use or storage	5.1 Service schedule documentation is completed. 5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place. 5.3 Final inspection is made to ensure work is to workplace expectations. 5.4 Equipment is prepared for use or stored to workplace expectations. 5.5 Job card is processed in accordance with workplace procedures. 5.6 Performances are recorded, documented and communicated to relevant personnel according to enterprise policies and procedures.

Variable	Range
Requirements	may include: <ul style="list-style-type: none"> • manual transmissions, front and/or rear wheel drive configurations • belt drive transmissions
Information sources	may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection, analysis and servicing of manual transmissions • regulatory/legislative requirements pertaining to the automotive industry, including international design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
OHS requirements	Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:

	<ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal Protective Equipment (PPE)	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	May include: <ul style="list-style-type: none"> • hand tooling • meters • gauges and load testing devices
Materials	may include: <ul style="list-style-type: none"> • lubricants • spare parts and cleaning materials
Inspection methods	include: <ul style="list-style-type: none"> • visual • aural and functional assessment (including: fluid leakage, selection)
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ hazardous substances ➤ electrical safety ➤ equipment movement ➤ manual lifting and shifting ➤ working in proximity to others and site visitors
Regulatory requirements	are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include: <ul style="list-style-type: none"> • award and enterprise agreements • industrial relations • International and Ethiopian standards • Relevant Design Rules • Environment Protection Regulations (Diesel Fuels) • National Environment Protection Measures for Diesel Vehicles (Guidelines) • confidentiality and privacy • OHS • equal opportunity • the environment • relevant industry codes of practice • duty of care • waste management • pollution • noise • dust • clean-up management • regulations, including international standards

	<ul style="list-style-type: none"> • internal organizational quality policies and procedures • enterprise operations and procedures
Servicing	include fluids, filters, adjustments and operational testing, visual inspections and documents
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
Communicating	May include but are not limited to: <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Variables	may include: <ul style="list-style-type: none"> • multiple forward and reverse gears, • synchronised and non-synchronised gear selection, • transverse/longitudinal mounting • helical, double helical and spur gears • transaxle, overdrive, transfer case

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of application, purpose and operating principles • conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications • completing service of manual transmissions and associated components within workplace timeframes • present equipment to customer in compliance with workplace requirements
Underpinning knowledge and attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • dangers of working with manual transmissions • identification of application, purpose and operating principles • types and layout of service/repair manuals inspection procedures • service procedures

	<ul style="list-style-type: none"> • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and servicing of manual transmissions, including the use of diagnostic and servicing tooling and equipment, measuring equipment and communication devices and the • reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Suspension System
Unit Code	AGR MEM2 09 0714
Unit Descriptor	This unit covers the competence required to carry out the service of suspension systems and associated components in farm machinery service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection, analysis and servicing of suspension systems and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to inspect and service suspension systems and associated components	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including individual state regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications, and tooling required are sourced.</p> <p>1.5 Methods appropriate to the circumstances are selected and prepared in accordance with standard safe operating procedures.</p> <p>1.6 Resources required for servicing suspension systems are sourced and support equipment, tool and materials are identified and prepared.</p> <p>1.7 Warnings in relation to working with wheeled and/or tracked equipment are observed.</p>
2. Conduct inspection and analysis	<p>2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.4 Report is forwarded to persons for action in accordance with workplace procedures.</p>
3. Carry out service	<p>3.1 Emergency procedures are identified and followed as per organization's guideline.</p> <p>3.2 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>3.3 Service is implemented in accordance with workplace procedures and manufacturer/component supplier</p>

	specifications. 3.4 Adjustments are made during the service in accordance with manufacturer/component supplier specifications.
4. Prepare vehicle/equipment for use or storage	4.1 Service schedule documentation is completed. 4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place. 4.3 Final inspection is made to ensure work is to workplace expectations. 4.4 Vehicle/equipment is cleaned for use or storage to workplace expectations. 4.5 Job card is processed in accordance with workplace procedures.

Variable	Range
Information/ Documents sources	may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection and servicing of suspension systems • regulatory/legislative requirements pertaining to the automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • International Standards
OHS requirements	Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal Protective equipment	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Suspension systems	May include but not limited to: <ul style="list-style-type: none"> • Gas, hydraulic, pneumatic • mechanical and rubber suspension found on heavy vehicles, • trailers and outdoor power equipment
Systems	May include but not limited to: <ul style="list-style-type: none"> • lateral and longitudinal arms • independent suspension • ball joints, rose joints • self levelling device, ride control • height control and tracked type systems

Methods	<p>Methods are to include:</p> <ul style="list-style-type: none"> • functional testing, pressure testing, measurement • visual, aural and functional assessments (including damage, corrosion, leakage, wear) • adjustment of shock absorbers
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tooling, lifting equipment • safety stands and supporting equipment • measuring equipment • power tooling and testing equipment
Materials	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • spare parts, • lubricants and fluids and cleaning materials
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, equipment movement and operation, manual lifting and shifting, working in proximity to others and site visitors
Emergency procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, • operating safely in the event of fires, • enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • waste management, • noise, dust and clean-up management
Quality requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
Communications	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • conducting the inspection and servicing a range of suspension systems in accordance with workplace and manufacturer/component supplier requirements • accurately interpreting test results • completing service of suspension system and associated components within workplace timeframes • vehicle/equipment is presented to customer in compliance with workplace requirements

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • operating principles of suspension systems relevant to the qualification to which it is applied • dangers of working with stored energy • types and layout of service/repair manuals (hard copy and electronic) • suspension system servicing procedures • suspension system testing procedures • enterprise quality procedure • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and service of suspension systems, including the use of measuring equipment, computerised technology, specialist tooling and testing devices communication devices, the reporting/documenting of results and diagnostic and specialised tooling and equipment
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Service and Repair Driveline Components
Unit Code	AGR MEM2 10 0714
Unit Descriptor	This unit covers the competence required to carry out the servicing, removing, repairing and refitting of driveline components in farm machinery retail, service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection of drivelines, the analysis of inspections results, servicing of drivelines and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to undertake inspections and servicing of drivelines	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Procedures and information are sourced such as workshop manuals and specifications, and tool, equipment and materials required.</p> <p>1.4 Methods appropriate to the circumstances are selected and prepared in accordance with standard safe operating procedures.</p> <p>1.5 Resources required for inspection and servicing of drivelines are sourced and support equipment is identified and prepared.</p> <p>1.6 Tools, equipment and materials requirements are identified and made ready for use prior to the start of work practice as per job specification and work place procedures.</p> <p>1.7 Warnings are observed in relation to working with rotating devices.</p>
2. Conduct inspections and analyse results	<p>2.1 Inspections are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/ component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.4 Report is forwarded to persons for action in accordance with workplace procedures.</p>
3. Carryout driveline repair	<p>3.1 Emergency procedures are identified and followed as per organization's guideline.</p>

	<p>3.2 Environmental requirements are observed and precautions are implemented according to workplace and environmental protection regulation or guidelines.</p> <p>3.3 Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.4 Adjustments are made during the repair work in accordance with manufacturer/component supplier specifications.</p>
4. Carry out service	<p>4.1 Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications and quality requirements.</p> <p>4.2 Adjustments are made during the service in accordance with manufacturer/component supplier specifications.</p>
5. Prepare equipment/ vehicle for use or storage	<p>5.1 Service/repair schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Equipment/vehicle is cleaned for use or storage to workplace expectations.</p> <p>5.5 Job card is processed in accordance with workplace procedures.</p> <p>5.6 Accomplishment are recorded, documented and communicated to relevant personnel according to enterprise policies and procedures.</p>

Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal protective Equipment	include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the servicing of final drive drivelines and associated components • regulatory/legislative requirements pertaining to the farm machinery industry, including International Design Rules • Engineer's Design Specifications and Instructions

	<ul style="list-style-type: none"> • Organisation Work Specifications and Requirements • Instructions issued by authorised enterprise or external persons
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges and grease guns
Materials	<p>may include:</p> <ul style="list-style-type: none"> • lubricants, spare parts and cleaning materials
Operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➢ vehicular movement, ➢ hazardous substances, ➢ equipment movement and operation, ➢ manual lifting and shifting, ➢ working in proximity to others and site visitors
Emergency procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • operating safely in the event of fires • enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Quality requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
Servicing and repairing	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Changing fluids and filters • greasing, adjustments and operational testing • visual inspections and documents
Communicating	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Variables	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Universal joints and their alignment • Constant velocity joints • Centre bearings • Final drives • Axles and wheel hubs

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of application, purpose and operating principles • conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component
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	<p>supplier specifications</p> <ul style="list-style-type: none"> • accurately interpreting inspection results • completing service of drivelines and associated components within workplace timeframes • vehicle is presented to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge to:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with wheeled and tracked vehicles • identification of application, purpose and operating principles • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the servicing of final drive drivelines and associated components, including the use of measuring equipment, computerised technology and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting.</p>

Occupational standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Select and Use Bearings, Seals, Gaskets, Sealants and Adhesives
Unit Code	AGR MEM2 11 0714
Unit Descriptor	This unit covers the competence required to carry out the selection and use of bearings, seals, gaskets, sealants and adhesives relevant to the vehicle industry. The unit includes identification and confirmation of work requirement, preparation for work, installation of bearings, seals, gaskets, use of sealants and adhesives and completion of work finalisation processes, including documentation.

Elements	Performance Criteria
1. Prepare to select and use bearings, seals, gaskets, sealants and adhesives	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications and tooling and equipment and materials required are sourced, and made ready for use prior to the start of work practice.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical requirements are sourced for testing and installation and support equipment is identified and prepared.</p> <p>1.7 Relevant tools, equipment and materials requirements are identified.</p> <p>1.8 Warnings are observed in relation to working with sealants and adhesives.</p>
2. Select and use sealants	<p>2.1 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>2.2 Sealants and adhesives those most appropriate for the work requirement are selected.</p> <p>2.3 Sealants and adhesives are used in accordance with manufacturer/component supplier instructions.</p> <p>2.4 Sealants and adhesives are stored in accordance with manufacturer/component supplier instructions.</p>
3. Prepare to install bearings, seals and gaskets	<p>3.1 OHS requirements including individual regulatory requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Procedures and information required are identified and sourced.</p> <p>3.3 Technical and tool requirements for installation are identified</p>

	and support equipment is identified and prepared.
4. Carry out installation of bearings, seals and gaskets	<p>4.1 Methods for the installation are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p> <p>4.2 Adjustments are made during the service and/or repair in accordance with manufacturer/component supplier specifications.</p> <p>4.3 Emergency procedures are identified and followed as per organization's guideline.</p> <p>4.4 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>

Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges, and load testing devices
Materials	<p>May include:</p> <ul style="list-style-type: none"> • bearings, seals • gaskets, sealants • adhesives and cleaning materials
Sealants	Are to include hardening and non-hardening types which may be used with another seal (e.g. special papers) or as the only seal
Adhesives	Are to include polymers (silicone) which may be used for glass (windscreens) engine and transmission components
Regulatory requirements	<p>are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice and may include:</p> <ul style="list-style-type: none"> • industrial relations • International standards • Relevant Ethiopian standards and Design Rules • Environment Protection Regulations (Diesel Fuels) • National Environment Protection Measures for Diesel Vehicles (Guidelines) • OHS • the environment • relevant industry codes of practice • duty of care • waste management

	<ul style="list-style-type: none"> • clean-up management • regulations, including international standards • internal organizational quality policies and procedures • enterprise operations and procedures
Emergency procedures	related to this unit are to include, but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, • extinguishing fires, • enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management • noise • dust and clean-up management
Bearings	May include plain (bushes and bearing inserts) and anti-friction (ball and roller)
Seals	May include: <ul style="list-style-type: none"> • lip, face and 'O' ring (dynamic and static)
Gaskets	May include: <ul style="list-style-type: none"> • special papers, cork, and composite material types used for cylinder head (heat and pressure), cooling system and transmission system

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • selecting and installing the following bearings to workplace and manufacturer/component supplier requirements: <ul style="list-style-type: none"> ➢ plain ➢ anti-friction ➢ adjusting/pre-loading taper roller bearings • selecting and using a minimum of three different types of lip seals and 'O' rings to workplace and manufacturer/ component supplier requirements • selecting and applying two different types of gaskets to manufacturer/component supplier requirements • selecting and applying hardening and non-hardening sealants to manufacturer/component supplier requirements • selecting and applying a polymer (silicone) adhesives to manufacturer/component supplier requirements • vehicle/component is presented to customer in compliance with workplace requirements
Underpinning knowledge and attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with sealants and adhesives • operating principles of bearings, seals, gaskets and their relationship to other components

	<ul style="list-style-type: none"> • types, characteristics, uses and limitations of sealants and adhesives • types and layout of service/repair manuals • bearings, seals and gaskets installation procedures • sealant and adhesives application techniques • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use workplace technology related to the selection and use of bearings, seals, gaskets, sealants and adhesives including the use of measuring equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Hydraulic Systems
Unit Code	AGR MEM2 12 0714
Unit Descriptor	This unit covers the competence required to carry out the inspection and servicing of hydraulic systems. The unit includes identification and confirmation of work requirement, preparation for work, testing of systems, analysis of results and servicing of hydraulic systems and completion of work finalisation processes, including clean-up and documentation. Work involves vehicles fitted with hydraulic systems that are lifting and supporting nature.

Elements	Performance Criteria
1. Prepare to undertake testing and servicing of hydraulic systems	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements including regulatory requirements and personal protective needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications and tooling, equipment and materials are sourced as required.</p> <p>1.5 Method options are analyzed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical requirements are sourced for testing and servicing of hydraulic systems and support equipment is identified and prepared.</p> <p>1.7 Warnings are observed in relation to working with hydraulics.</p>
2. Test hydraulic systems and analyse results	<p>2.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.2 Methods are implemented for the system tests and in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.3 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.4 Results are documented with evidence and supporting information and recommendation is made.</p> <p>2.5 Report is processed in accordance with workplace procedures.</p>
3. Carry out servicing	<p>3.1 Methods are implemented for the service in accordance with workplace procedures and manufacturer/component supplier specifications.</p>

	<p>3.2 Adjustments are made during the service in accordance with manufacturer/component supplier specifications</p> <p>3.3 Emergency procedures are identified and followed as per organization's guideline.</p> <p>3.4 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>
4. Prepare vehicle/system for use or storage	<p>4.1 Servicing schedule documentation is completed.</p> <p>4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>4.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>4.4 Vehicle/system is prepared for use or stored to workplace expectations.</p> <p>4.5 Job card is processed in accordance with workplace procedures.</p> <p>4.6 Performances are recorded, documented and communicated to relevant personnel according to enterprise policies and procedures.</p>

Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to servicing hydraulic systems • regulatory/legislative requirements pertaining to the automotive industry, including international design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal protective needs	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges and fluid dispensing, disposal and load testing devices
Materials	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • fluids, spare parts and cleaning materials

Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ toxic substances ➤ electrical safety ➤ equipment movement and operation ➤ manual and mechanical lifting and shifting ➤ working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation
Servicing	may include fluids, filters, adjustments and operational testing, visual inspections and documents
Communicating	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> ➤ site specific instructions ➤ written instructions ➤ plans or instructions related to job/task ➤ telephones and pagers

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • accurately interpreting inspection results • identification of application, purpose and operating principles • conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/component supplier specifications • completing servicing of hydraulic systems and associated components within workplace timeframes • vehicle/hydraulic system is presented to customer in compliance with workplace requirements
Underpinning knowledge and attitude	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with pressurised fluids • identification of application, purpose and operating principles • types and layout of service/repair manuals • inspection procedures • servicing procedures • enterprise quality procedures • work organisation and planning processes

Underpinning skills	<p>Must demonstrate skills to apply:</p> <ul style="list-style-type: none"> • interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • analytical skills required for identification and analysis of technical information • questioning and active listening skills for example when obtaining information from customers • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to servicing hydraulic systems, including the use of measuring equipment, diagnostic and specialist tooling and equipment, computerised technology and communication devices and the reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Steering System
Unit Code	AGR MEM2 13 0714
Unit Descriptor	This unit covers the competence required carry out the inspection and servicing of wheeled and tracked type steering systems and associated components in farm machinery service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of wheeled and tracked type steering systems and associated components and completion of work finalisation processes, including clean-up and documentation

Elements	Performance Criteria
1. Prepare to undertake inspection and servicing of steering systems and related components	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements including individual regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications, and tooling, equipment and materials are sourced as required.</p> <p>1.5 Methods appropriate to the circumstances are selected and prepared in accordance with standard safe operating procedures.</p> <p>1.6 Resources required are sourced for inspecting and servicing steering systems and support equipment is identified and prepared.</p> <p>1.7 Warnings are observed in relation to working with wheeled and tracked vehicles.</p>
2. Conduct inspection and analyse results	<p>2.1 Inspection is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) is made.</p> <p>2.4 Report is forwarded to persons for action in accordance with workplace procedures.</p>
3. Carry out servicing	<p>3.1 Servicing is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.2 Adjustments, including wheel bearing adjustments are made during the service in accordance with</p>

	<p>manufacturer/component supplier specifications.</p> <p>3.3 Emergency procedures are identified and followed as per organization's guideline.</p> <p>3.4 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>
4. Prepare vehicle for customer and/or storage	<p>4.1 Service schedule documentation is completed.</p> <p>4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>4.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>4.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.</p> <p>4.5 Job card is processed in accordance with workplace procedures.</p> <p>4.6 Performances are recorded, documented and communicated to relevant personnel according to enterprise policies and procedures.</p>

Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the inspection and servicing of farm machinery steering systems and associated components • regulatory/legislative requirements pertaining to the automotive industry, including international design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges • hydraulic testing equipment and devices

Materials	may include but not limited to: <ul style="list-style-type: none"> • lubricants and cleaning materials
Methods	May include: <ul style="list-style-type: none"> • visual, aural and functional assessments, including damage, corrosion, wear and electrical
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ hazardous substances ➤ electrical safety ➤ equipment movement and operation ➤ manual lifting and shifting ➤ working in proximity to others and site visitors
Steering systems	may be in: <ul style="list-style-type: none"> • wheeled and tracked vehicles • heavy vehicles and outdoor power equipment
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • operating safely in the event of fires • enterprise first aid requirements and site evacuation
Environmental requirements	are to include but are not limited to waste management, noise, dust and clean-up management
Communicating	are to include but are not limited to: <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> ➤ site specific instructions ➤ written instructions ➤ plans or instructions related to job/task ➤ telephones and pagers
System components	for inspection may include but not limited to: <ul style="list-style-type: none"> • wheel bearings, ball joints • rose joints, struts • idler arms • steering boxes and columns • electronic controlled systems • two and four wheel steer and full hydraulic steering, including articulated vehicles and tracked type systems

Evidence Guide			
Critical Aspects of Competence	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • conducting service of a range of steering systems in accordance with the workplace and manufacturer/component supplier requirements • interpreting inspection results accurately servicing of steering systems completed within workplace timeframe 		
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Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with farm machineries • operating principles of mechanical and hydraulic steering systems and their relationship to each other • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organizing skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimize reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerance, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and servicing of steering systems and associated components, including the use of electronic measuring equipment, computerised technology and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect and Service Engine Systems
Unit Code	AGR MEM2 14 0714
Unit Descriptor	This unit covers the competence required to carry out the inspection and service of two and four stroke compression ignition engines. Describes the skills and knowledge required to carry out the inspection and service of air and liquid cooling systems, diesel fuel injection systems, exhaust system, service and/or repair context. The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of engines systems and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to undertake the inspection and repair of engine systems	<p>1.1 Nature and scope of work requirements including method, processes and equipment are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed, interpreted and procedures strictly adhered.</p> <p>1.3 OHS requirements including regulatory requirements and Personal Protective Equipment needs are observed throughout the work</p> <p>1.4 Procedures and information such as workshop manuals and specifications, and tooling required are sourced.</p> <p>1.5 National Environment Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work (applicable to heavy vehicle diesel engine exhaust systems).</p> <p>1.6 Methods appropriate to the circumstances are selected and prepared in accordance with standard safe operating procedures.</p> <p>1.7 Resources required for inspection of engine systems are sourced and support equipment is identified and prepared.</p> <p>1.8 Technical requirements for repairs are sourced and support equipment is identified and prepared.</p> <p>1.9 Tools, equipment and materials requirements are identified and made ready for use prior to the start of work practice as per job specification and work place procedures.</p> <p>1.10 Warnings are observed in relation to working with engine systems.</p>
2. Prepare for work	<p>2.1 Information is accessed and interpreted from manufacturer/ component supplier specifications and workshop manuals.</p> <p>2.2 Equipment and tooling are identified and checked for safe and effective operation.</p>

	2.3 Procedures are determined to minimise task time.		
3. Conduct engine system inspections and analyse results	<p>3.1 Engine systems inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications for engine servicing.</p> <p>3.2 Engines are started and run up to operating temperature and inspected for leaks, abnormal noises and pressures.</p> <p>3.3 Warnings are observed in relation to working with pressurised cooling systems.</p> <p>3.4 Cooling system inspection is performed in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.5 Analysis results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance</p> <p>3.6 Results are documented with evidence and supporting information and recommendation(s) are made.</p> <p>3.7 Report is processed in accordance with workplace procedures.</p>		
4. Carry out servicing	<p>4.1 Occupational Health and Safety (OHS) requirements including regulatory requirements and warnings are observed in relation to working with diesel fuel injection systems throughout the work.</p> <p>4.2 Service is implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>4.3 Appropriate tooling, techniques and materials are selected and used.</p> <p>4.4 Adjustments are made during the service in accordance with manufacturer/component supplier specifications.</p> <p>4.5 Final inspection is made to ensure work is to workplace expectations.</p>		
5. Prepare equipment/engine for use or storage	<p>5.1 Servicing schedule documentation is completed.</p> <p>5.2 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.3 Waste and scrap are removed by following workplace procedures.</p> <p>5.4 Tooling and equipment are maintained and stored in accordance with workplace procedures.</p> <p>5.5 Final inspection is made to workplace expectations to ensure protective guards, safety features and cowlings are in place.</p> <p>5.6 Job card is processed in accordance with workplace procedures.</p> <p>5.7 Performances are recorded, documented and</p>		
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	communicated to relevant personnel according to enterprise policies and procedures.
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Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to inspection and servicing of engines • regulatory/legislative requirements pertaining to the automotive industry, including International Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • Instructions issued by authorised enterprise or external persons • International Standards
OHS requirements	<p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures
Personal Protective Equipment	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Methods	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • visual, aural and functional assessments, including, damage, corrosion, fluid levels/leaks and wear
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, manual lifting and shifting, working in proximity to others and site visitors
Inspection of engine systems	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • inspection and servicing of engine systems includes the assessment and adjustment/replacement of components in accordance with specifications including those associated with farm machineries • it includes two and four stroke compression ignition
Tooling and equipment	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges, calibration, pressure testing devices ,load testing devices and oil sample analysis equipment

Materials	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> oils, lubricants , coolant ,spare parts cleaning materials
Service	<p>May include but not limited to:</p> <ul style="list-style-type: none"> fluids radiators water pump filters injector (pop) testing spill timing adjustments and operational testing visual inspections and documents operational testing, visual inspections and documents
Specific requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> fluid cooled systems combination systems
System variables	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> radiators, thermostats, water pumps, hoses, ducting, fans, drive belts, heat exchanger, electric and viscous fans, sealed and non-sealed systems, interior heater and coolant heater manifold cooling fins size, material, colour and finish ferrous and non-ferrous metals keel cooling, heat exchanger, raw water cooling and sacrificial anodes cooling system additives
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> operating safely in the event of fires, enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> waste management, noise, dust and clean-up management
Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> regulations, including International standards internal organizational quality policies and procedures enterprise operations and procedures
Communications	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Organizational policies and procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> quality policies and procedures, including International standards OHS, sustainability, environment, manufacturer specifications and industry codes of practice safe work procedures reporting and recording procedures

Evidence Guide

<p>Critical Aspects of Competence</p>	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of application, purpose and operation • accurately inspecting and documenting and interpreting analysis results • identify application, purpose and operating principles • select methods and techniques appropriate to the circumstances • conducting inspection and servicing of a range of engines in accordance with workplace and manufacturer/component supplier requirements and specifications • completing the work within workplace timeframes • equipment is presented to customer in compliance with workplace requirements
<p>Underpinning knowledge and Attitude</p>	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • operating principles of engines, lubrication, cooling and fuel systems and their relationship to each other • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes • dangers of working with engine systems • selection, checking and use of tooling and equipment • manufacturer and/or component supplier specifications • environment, relevant to inspection and servicing of applicable legislation, regulations, standards and codes of practice, including OHS and cooling systems • organizational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to inspection and servicing of engine systems
<p>Underpinning skills</p>	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance

	<ul style="list-style-type: none"> • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to inspection and servicing of engines, including the use of tooling, manual and computerised, measuring equipment, servicing tooling and equipment and communication devices and the reporting/ documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Service and Repair Agricultural Implements Trailers
Unit Code	AGR MEM2 15 0714
Unit Descriptor	This unit of competency describes the skills and knowledge required to service and repair Agricultural implements and load carrying trailers. This unit applies to individuals who undertake and document the adjustment, testing, servicing, repair, attaching and detaching of couplings, hitching draw bars and three point linkages agricultural implements and load carrying trailers of varying types and in varying environments.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Nature and scope of work to be carried out are confirmed.</p> <p>1.2 Occupational Health and Safety (OHS) and workplace environmental and sustainable procedures and practices applicable are identified to the work.</p> <p>1.3 Service procedures and relevant workshop manuals and manufacturer information are sourced.</p> <p>1.4 Regulations and requirements are accessed and interpreted.</p> <p>1.5 Tools, equipment and materials are checked and prepared.</p> <p>1.6 Service and/or repair method are decided in accordance with ohs, environmental and industry regulations and guidelines, and enterprise procedures.</p> <p>1.7 Work area is set up.</p>
2. Adjust implements and trailer to suit individual applications	<p>2.1 Trailer, implements and axles applications are identified.</p> <p>2.2 Ascertain ride height is measured in preparation for trailer adjustment.</p> <p>2.3 Methods, equipment and tolerances suitable to the trailer application are used in accordance with manufacturer specifications.</p> <p>2.4 Adjustment is carried out in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices.</p>
3. Test, service, repair and/or maintain	<p>3.1 Appropriate diagnostic test is selected.</p> <p>3.2 Testing of trailer is undertaken.</p> <p>3.3 Service is identified, repaired and/or requirements are maintained.</p> <p>3.4 Testing servicing, repairing and/or maintenance are carried out using methods, equipment and tolerances suitable to the implementation and trailer application in accordance with manufacturer specifications, OHS, and workplace environmental and sustainable procedures and</p>

	practices.
4. Verify system	<p>4.1 Visual and audible tests are undertaken.</p> <p>4.2 Identified issues are repaired and eliminated.</p> <p>4.3 Implements and trailers are organized to be test driven.</p>
5. Clean up work area and maintain equipment	<p>5.1 Equipment and tooling are cleaned and inspected according to workplace requirements.</p> <p>5.2 Unserviceable equipment and faults identified are tagged in accordance with workplace requirements.</p> <p>5.3 Work completion documentation, update customer and warranty information are finalized and processed and given to appropriate persons, as required.</p> <p>5.4 Work area is cleaned waste and scrap disposed of and re-useable material, tools and equipment are stored in accordance with workplace procedures.</p>

Variable	Range
Occupational Health and Safety (OHS)	<p>Are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • road rules • safe driving policy
Information	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • verbal, written and graphical instructions issued by authorized internal and external persons • parts listing prices and catalogues • inventory systems • Repair Times Manuals • Material Safety Data Sheet (MSDS) • manufacturer specifications • industry standards • workplace specifications and requirements
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tools • testing equipment, including multi meters • power tools • air tools • specialist tools and equipment • lubricating equipment • measuring equipment • pressure gauges • vacuum gauges • manufacturer special tools

	<ul style="list-style-type: none"> • lifting equipments • sledge hammer
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • spare parts • lubricants • fluids • cleaning materials
Trailers	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • box trailers (skeleton type) • heavy goods trailers • low loaders • farm trailers • multiple carriers • mobile equipment • cane trailers • semi-trailers • tandem trailers
Implements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • trailed • semi-mounted • mounted • self propelled • manual operated • used for different agricultural operations in various operational performance capacities
Axles	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • single • tandem • tri-axle • quad-axle • non-pivoting axles • pivoting front axles
Servicing, repair and/or maintaining	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • cleaning • reconditioning • measuring and checking • minor adjustments and calibration • operational testing • replacement of fluids and filters
Verify system	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • sub-frame • suspensions components • axles • wheel end • wheels • king pins • coupling • valves • cylinders • fittings • joints

	<ul style="list-style-type: none"> • connections and bearings • linkages (side link, top link and lower link) • draw bars
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Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observe safety procedures and requirements • communicate effectively with others involved in or affected by the work • select servicing and repair methods and techniques appropriate to the circumstances implements and trailer types • complete preparatory activity in a systematic manner • service and repair a variety of implements and trailers to regulatory and manufacturer ,and component supplier requirements • complete workplace and equipment records and workplace clean-up requirements
Underpinning knowledge and attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • types of implements and load carrying trailers • operating principles and their relationship to each other of braking systems and components, including disc, drum and air braking systems, and their sub-systems • operating principles of suspension types • operating principles of steering systems • operating principles of hydraulic systems • operating principles of wheel alignment • inspection and repair procedures applicable to the implement and trailer type and including , coupling, frames ,hoses, fittings and adjustments • work organisation and planning processes • service and repair manuals • manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing and repairing of implements and trailers with their components • applicable common wealth, state or territory legislation, regulations, standards and codes of practice, including OHS, personal safety and environment, relevant to the servicing and repairing of implements and trailers with state and territory requirements • organizational policies and procedures, including quality requirements and reporting and recording procedures, related to servicing and repairing of implements and trailers with their components

Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • technical skills to the level required to adjust, service and repair, including use of workplace computerised technology for the testing, reporting and recording of results • communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems • literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, to interpret technical information and specifications, and to complete workplace documents • numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage • team skills to the level required to work effectively and cooperatively with others to optimise workflow and production
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Inspect, Service and Repair Generators and Pumps
Unit Code	AGR MEM2 16 0714
Unit descriptor	This unit of competency describes the skills and knowledge required to carry out testing, servicing and repairing of generators and pumps (centrifugal and positive displacement pumping systems). The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of generators and pumps and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Element	Performance Criteria
1. Prepare to undertake inspection, service and repair	<p>1.1 Nature and scope of work requirements are confirmed.</p> <p>1.2 Procedures, information and tooling, equipment and material and sources are identified as required.</p> <p>1.3 Job specifications are read and interpreted.</p> <p>1.4 Method options, those most appropriate to the circumstances are analysed and selected, and preparations are made.</p> <p>1.5 Technical and/or calibration requirements are sourced for preparation of inspection, pumps generators are serviced and repaired and equipment is supported.</p>
2. Conduct and analyse operational results.	<p>2.1 Workplace Occupational Health and Safety (OHS) requirements including individual regulatory requirements and personal protection needs are observed throughout the work.</p> <p>2.2 Warnings are observed in relation to working with pumps and generators output.</p> <p>2.3 Inspection is performed, serviced and repaired in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.4 Test results are compared with specifications to indicate compliance or non-compliance.</p> <p>2.5 Results are documented with evidence and supporting information and recommendations are made.</p> <p>2.6 Report is forwarded to persons for action in accordance with organisational policies and procedures.</p>
3. Prepare for inspection, service and repair operation	<p>3.1 Work to be carried out is confirmed.</p> <p>3.2 Operational procedures, workshop manuals and manufacturer's information are accessed and interpreted.</p> <p>3.3 Tools, equipment and materials required for the job are identified and prepared.</p>

	3.4 Work area is set up.
4. Carry out the operation	<p>4.1 Applicable OHS requirements including regulatory requirements and personal protection needs are identified and observed.</p> <p>4.2 Tooling and equipment are selected to meet job requirements and checked to ensure they are in good working order.</p> <p>4.3 Generators and pumps are inspected, serviced and repaired by following manufacturer/component supplier recommended procedures and specifications.</p>
5. Complete work and return unit to customer	<p>5.1 Performance schedule documentation is completed and customer and warranty information are updated as required.</p> <p>5.2 Inspected, serviced and repaired unit is checked to ensure protective guards, cowlings and safety features are in place.</p> <p>5.3 Unit is cleaned to workplace expectations.</p> <p>5.4 Work area is cleaned, waste is disposed of and tools and equipment are stored in accordance with workplace procedures.</p> <p>5.5 Customer report on service is provided and use and care of equipment and warranty requirements are explained.</p>

Variable	Range
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • specific service/repair and general workshop equipment and tooling • meters and gauges • circuit tester and load testing device • load appliances and equipment • cleaning equipment
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • spare parts • lubricants • cleaning materials
Pumps	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • electrical water pumps • diesel engine water pumps
Generators	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • electrical • diesel engine/portable and fixed
Occupational Health and Safety (OHS) requirements	<p>are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control

	<ul style="list-style-type: none"> • electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures
Servicing and repairing	relates cleaning, adjusting calibrating, dismantling, measuring, reconditioning or replacing and installing generators and pumps components (suction and discharge lines inspection) in fields and/or in workshop
Test	Testing relates to generators and pumps performance and output may include but not limited to: <ul style="list-style-type: none"> • AC output voltage and frequency • battery voltage • engine speed • rotor magnet • circuit breaker
Organisational policies and procedures	May include but not limited to: <ul style="list-style-type: none"> • quality policies and procedures • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures
Information	Information/documents may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, Material Safety Data Sheets (MSDS), diagrams or sketches • safe work procedures related to testing and servicing portable generators • regulatory/legislative requirements pertaining to testing and servicing pumps and generators • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons

Evidence Guide	
Critical Aspects of Competence	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> • observe safety procedures and requirements • communicate effectively with others involved in or affected by the work • select inspecting, servicing and repair methods and techniques appropriate to the circumstances generators and pumps type • complete preparatory activity in a systematic manner • inspect, service and repair a variety of pumps and generators to regulatory and manufacturer and component supplier requirements • complete workplace and equipment records and workplace clean-up requirements
Underpinning knowledge and attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • operating principles of pumps and generators ,and their

	<p>components relationship to each other</p> <ul style="list-style-type: none"> • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes • dangers of working with pumps and generators • selection, checking and use of tooling and equipment • manufacturer and/or component supplier specifications • applicable legislation, regulations, standards and codes of practice, including OHS and environment, relevant to inspecting, servicing and repairing of pumps and generators • organizational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to inspecting servicing and repairing of pumps and generators
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to inspecting ,servicing and repairing of pumps and generators, including the use of tooling, manual and computerised, measuring equipment, servicing tooling and equipment and communication devices and the reporting/ documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Service and Repair Tyres and Tubes
Unit Code	AGR MEM2 17 0714
Unit Descriptor	This unit covers the competence required to remove and refit farm machinery tyres and tubes from rims, inspect tyres and tubes to assess serviceability and carry out tyre and tube repairs. The unit includes identification and confirmation of work requirement, preparation for work, removal, repair and fitting of heavy tyres and tubes and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to remove, repair and fit heavy tyres and tubes	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Procedures and information such as workshop manuals and specifications and tooling, equipment and materials required are sourced.</p> <p>1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.5 Technical requirements are sourced for repair and fitting of tyres and tubes and support equipment is identified and prepared.</p> <p>1.6 Warnings are observed in relation to working with rims, tyres and tubes.</p>
2. Conduct inspection and analyse results	<p>2.1 Methods are implemented for the inspection in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.4 Report is processed in accordance with workplace procedures.</p>
3. Carry out removal, repair and refit	<p>3.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>3.2 Methods for the removal, repair and refit are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.3 Adjustments are made during the removal, repair and refit in accordance with manufacturer/component supplier</p>

	<p>specifications.</p> <p>3.4 Emergency procedures are identified and followed as per organization's guideline.</p>
4. Remove wheel assemblies for inspection	<p>4.1 Information required for inspection is accessed from manufacturer/component supplier specifications and correctly interpreted.</p> <p>4.2 Wheel is removed in accordance with manufacturer/component supplier requirements and approved safety practices.</p> <p>4.3 Inspection of road wheel assemblies, mounting points and fittings for damage and wear is completed without causing damage to any component or system.</p> <p>4.4 Removed components are inspected in accordance with authorised procedures and inspection reports raised and processed.</p>
5. Fit wheel assemblies	<p>5.1 Information required for fitting/refitting and adjustment of wheel assemblies are accessed from manufacturer/component supplier specifications and correctly interpreted.</p> <p>5.2 Wheel fitting and adjusting procedures are carried out in accordance with legislation, industry and enterprise policies/procedures guidelines.</p> <p>5.3 Tightening sequence, torque settings and spoke retensioning are completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>5.4 Wheel operation is checked for correct assembly, run-out, offset and even wears in accordance with site procedures.</p> <p>5.5 Findings and recommendations are completed in accordance with enterprise procedures.</p>
6. Carry out balancing procedures	<p>6.1 Methods for balancing wheels and tyres are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>6.2 Adjustments are made during the balancing procedure in accordance with manufacturer/component supplier specifications.</p>
7. Prepare equipment for use or storage	<p>7.1 Repair schedule documentation is completed.</p> <p>7.2 Final inspection is made to ensure safety features are in place.</p> <p>7.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>7.4 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>7.5 Equipment is cleaned for use or storage to workplace expectations.</p> <p>7.6 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
OHS requirements	Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • enterprise first aid, • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include: that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling, equipment and materials	May include but are not limited to: <ul style="list-style-type: none"> • hand tooling, breaker devices, gauges, jacks, hoists and pressure testing devices
Sources of information	may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, • safe work procedures related to the removal, repair and fitting of heavy tyres and tubes • regulatory/legislative requirements pertaining to the automotive industry, including Ethiopian design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • Ethiopian Standards
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • the conduct of operating risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movements, ➤ toxic substances, ➤ electrical safety, ➤ equipment movement and operation, ➤ manual and mechanical lifting and shifting, ➤ working in proximity to others and site visitors
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, • extinguishing fires, • enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, • noise, dust and clean-up management

Evidence Guide			
Critical Aspects of Competence	Must demonstrate skills and knowledge competence in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • accurately interpreting inspection results • conducting the removal, repair and refit of tyres and tubes in 		
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	<p>accordance with workplace and manufacturer/component supplier requirements</p> <ul style="list-style-type: none"> • completing removal, repair and refit of wheels, tyres and tubes and associated components within workplace timeframes • present equipment to customer in compliance with workplace requirements
Underpinning knowledge and attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with tyre and tube repair equipment • operating principles of tyre and tube repair equipment and their relationship to each other • types and layout of service/repair manuals • inspection procedures • repair procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the removal, repair and fitting of heavy tyres and tubes, including the use of measuring equipment, specialist tooling and communication devices and the reporting/documenting of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Participate in Workplace Communication
Unit Code	AGR MEM2 18 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

Elements	Performance Criteria
1. Obtain and convey workplace information	<p>1.1 Specific and relevant information is accessed from appropriate sources.</p> <p>1.2 Effective questioning, active listening and speaking skills are used to gather and convey information.</p> <p>1.3 Appropriate medium is used to transfer information and ideas.</p> <p>1.4 Appropriate non- verbal communication is used.</p> <p>1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed.</p> <p>1.6 Defined workplace procedures for the location and storage of information are used.</p> <p>1.7 Personal interaction is carried out clearly and concisely.</p>
2. Participate in workplace meetings and discussions	<p>2.1 Team meetings are attended on time.</p> <p>2.2 Own opinions are clearly expressed and those of others are listened to without interruption.</p> <p>2.3 Meeting inputs are made consistent with the meeting purpose and protocols established.</p> <p>2.4 Workplace interactions are conducted in a courteous manner.</p> <p>2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded.</p> <p>2.6 Meetings outcomes are interpreted and implemented.</p>
3. Complete relevant work related documents	<p>3.1 Range of forms relating to conditions of employment is completed accurately and legibly.</p> <p>3.2 Workplace data is recorded on standard workplace forms and documents.</p> <p>3.3 Basic mathematical processes are used for routine calculations.</p> <p>3.4 Errors in recording information on forms/ documents are identified and properly acted upon.</p> <p>3.5 Reporting requirements to supervisor are completed according to organizational guidelines.</p>

Variable	Range
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Appropriate sources	May include but not limited to: <ul style="list-style-type: none"> • Team members • Suppliers • Trade personnel • Local government • Industry bodies
Medium	May include but not limited to: <ul style="list-style-type: none"> • Memorandum • Circular • Notice • Information discussion • Follow-up or verbal instructions • Face to face communication
Storage	May include but not limited to: <ul style="list-style-type: none"> • Manual filing system • Computer-based filing system
Protocols	May include but not limited to: <ul style="list-style-type: none"> • Observing meeting • Compliance with meeting decisions • Obeying meeting instructions
Workplace interactions	May include but not limited to: <ul style="list-style-type: none"> • Face to face • Telephone • Electronic and two way radio • Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
Forms	May include but not limited to: <ul style="list-style-type: none"> • Personnel forms, telephone message forms, safety reports

Evidence Guide	
Critical Aspects of Competency	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Prepare written communication following standard format of the organization • Access information using communication equipment • Make use of relevant terms as an aid to transfer information effectively • Convey information effectively adopting the formal or informal communication
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • Effective communication • Different modes of communication • Written communication • Organizational policies • Communication procedures and systems • Technology relevant to the enterprise and the individual's work responsibilities
Underpinning Skills	Demonstrate skills to: <ul style="list-style-type: none"> • Follow simple spoken language • Perform routine workplace duties following simple written notices • Participate in workplace meetings and discussions

	<ul style="list-style-type: none"> • Complete work related documents • Estimate, calculate and record routine workplace measures • Do basic mathematical processes of addition, subtraction, division and multiplication • relate to people of social range in the workplace • Gather and provide information in response to workplace Requirements
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Work in Team Environment
Unit Code	AGR MEM2 19 0714
Unit Descriptor	This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

Elements	Performance Criteria
1. Describe team role and scope	<p>1.1 The role and objective of the team are identified from available sources of information.</p> <p>1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources.</p>
2. Identify own role and responsibility within team	<p>2.1 Individual role and responsibilities within the team environment are identified.</p> <p>2.2 Roles and responsibility of other team members are identified and recognized.</p> <p>2.3 Reporting relationships within team and external to team are identified.</p>
3. Work as a team member	<p>3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives.</p> <p>3.2 Effective and appropriate contributions are made to complement team activities and objectives, based on individual skills and competencies and workplace context.</p> <p>3.3 Protocols are observed in reporting using standard operating procedures.</p> <p>3.4 Contribution is made to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.</p>

Variable	Range
Role and objective of team	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Work activities in a team environment with enterprise or specific sector • Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment
Sources of information	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Standard operating and/or other workplace procedures • Job procedures • Machine/equipment manufacturer's specifications and instructions • Organizational or external personnel • Client/supplier instructions • Quality standards • OHS and environmental standards

Workplace context	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Work procedures and practices • Conditions of work environments • Legislation and industrial agreements • Standard work practice including the storage, safe handling and disposal of chemicals • Safety, environmental, housekeeping and quality guidelines
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Evidence Guide	
Critical aspects of competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • Operate in a team to complete workplace activity • Work effectively with others • Convey information in written or oral form • Select and use appropriate workplace language • Follow designated work plan for the job • Report outcomes
Underpinning Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Communication process • Team structure • Team roles • Group planning and decision making
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • Communicate appropriately, consistent with the culture of the workplace
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Develop Business Practice
Unit Code	AGR MEM2 20 0714
Unit Descriptor	This unit specifies the outcomes required to establish a business operation from a planned concept. It includes researching the feasibility of establishing a business operation, planning the setting up of the business, implementing the plan and reviewing operations once commenced.

Elements	Performance Criteria
1. Identify business opportunity	<p>1.1 Business opportunities are investigated and identified.</p> <p>1.2 Feasibility study is undertaken to determine likely business viability.</p> <p>1.3 Market research on product or service is undertaken.</p> <p>1.4 Assistance is sought with feasibility study of specialist and relevant parties as required.</p> <p>1.5 Impact of emerging or changing technology including e-commerce, on business operations is evaluated.</p> <p>1.6 Practicability of business opportunity is assessed in line with perceived risks, returns sought and resources available.</p> <p>1.7 Business plan is completed for operation.</p>
2. Identify personal business skills	<p>2.1 Financial and business skills available are identified and taken into account when business opportunities are researched.</p> <p>2.2 Personal skills/attributes are assessed and matched against those perceived as necessary for a particular business opportunity.</p> <p>2.3 Business risks are identified and assessed according to resources available and personal preferences.</p>
3. Plan for establishment of business operation	<p>3.1 Business structure and operations are determined and documented.</p> <p>3.2 Procedures are developed and documented to guide operations.</p> <p>3.3 Financial backing is secured for business operation.</p> <p>3.4 Business legal and regulatory requirements are identified and complied.</p> <p>3.5 Human and physical resources required to commence business operation are determined.</p> <p>3.6 Recruitment strategies are developed and implemented.</p>
4. Implement establishment plan	<p>4.1 Marketing of business operation is undertaken.</p> <p>4.2 Physical and human resources are obtained to implement business operation.</p> <p>4.3 Operational unit is established to support and coordinate</p>

	<p>business operation.</p> <p>4.4 Monitoring process is developed and implemented for managing operation.</p> <p>4.5 Legal documents are carefully maintained and relevant records kept and updated to ensure validity and accessibility.</p> <p>4.6 Contractual procurement rights for goods and services including contracts with relevant people are negotiated and secured as required in accordance with the business plan.</p> <p>4.7 Options for leasing/ownership of business premises are identified and contractual arrangements completed in accordance with the business plan.</p>
5. Review implementation process	<p>5.1 Review process is developed and implemented for implementation of business operation.</p> <p>5.2 Improvements in business operation and associated management process are identified.</p> <p>5.3 Identified improvements are implemented and monitored for effectiveness.</p>

Variable	Range
Business opportunities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • expected financial viability • skills of operator • amount and types of finance available • returns expected or required by owners • likely return on investment • finance required • lifestyle issues
Business viability	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • opportunities available • market competition • timing/ cyclical considerations • skills available • resources available • location and/ or premises available • risk related to a particular business opportunity, especially • in regard to Occupational Health and Safety and • environmental considerations
Specialist and relevant parties	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Chamber of commerce • Financial planners and financial institution representatives, business planning specialists and marketing specialists • accountants • lawyers and providers of legal advice • government agencies • industry/trade associations • online gateways • business brokers/business consultants

Personal skills/attributes	May include but not limited to: <ul style="list-style-type: none"> • technical and/ or specialist skills • business knowledge and skills • entrepreneurship • willingness to take risks
Business risks	May include but not limited to: <ul style="list-style-type: none"> • occupational health and safety and environmental considerations • relevant legislative requirements • security of investment • market competition • security of premises/ location • supply and demand • resources available
Human and physical resources	May include but not limited to: <ul style="list-style-type: none"> • software and hardware • office premises • communications equipment • specialist services through outsourcing, contracting and consultancy • staff • vehicles
Operational unit	May include but not limited to: <ul style="list-style-type: none"> • office location staffed with required personnel and equipped to service and support business • home-based site or other location such as leased or owned property
Legal documents	May include but not limited to: <ul style="list-style-type: none"> • partnership agreements, constitution documents, statutory books for companies (Register of Members, Register of Directors and Minute Books), Certificate of Incorporation, Franchise Agreements and financial documentation, appropriate software for financial records • recordkeeping including personnel, financial, taxation, OHS and environmental
Contracts with relevant people	May include but not limited to: <ul style="list-style-type: none"> • owners, suppliers, employees, landlords, agents, distributors, customers or any person with whom the business has, or seeks to have, a performance-based relationship

Evidence Guide

Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • that a business operation has been planned and implemented from initial research into feasibility of the business and completion of the plan, through to implementing the plan and commencing operations • the ability to evaluate the results of research and assess the likely viability and practicability of a business opportunity, taking into account the current business/market climate and resources available
Underpinning Knowledge and	Demonstrate knowledge of: <ul style="list-style-type: none"> • Federal and regional government legislative requirements

Attitudes	<p>affecting business operations, especially in regard to Occupational Health and Safety (OHS), Equal Employment Opportunity (EEO), industrial relations and anti-discrimination</p> <ul style="list-style-type: none"> • Technical or specialist skills relevant to the business operation • Financing options • Business systems and operations • Relevant marketing, management, sales and financial concepts • Methods for researching business opportunities • Principles of risk management relevant to the business • Methods of identifying relevant specialist services to complement the business • Forms and administrative systems • Services available and charges • Planning and control systems (sales, • Advertising and promotion, distribution and logistics • Financial recording systems • Legal rights and responsibilities • Record keeping duties • Operational factors relating to the business (provision of professional services, products)
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • Literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands • Marketing skills • Business planning skills • Entrepreneurial skills • Problem-solving skills • OHS skills • Time management skills • Belief in services and products offered by the business • Communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • Technical and analytical skills to interpret business documents, reports and financial statements and projections • Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • Problem solving skills to develop contingency plans • Using computers and software packages to record and manage data and to produce reports • Literacy skills to enable interpretation of business information, numeracy skills for data analysis to aid research • Research skills to identify a business opportunity and to conduct a feasibility study • Analytical skills to assess personal attributes and to identify business risks • Observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level II	
Unit Title	Standardize and Sustain 3S
Unit Code	<u>AGR MEM2 21 0714</u>
Unit Descriptor	This unit of competence covers the knowledge, skills and attitudes required by worker to standardize and sustain 3S to his/her workplace. It covers responsibility for the day- to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	<p>1.1 Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2 Job specifications are read and interpreted following working manual.</p> <p>1.3 OHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.</p> <p>1.4 Safety equipment and tools are identified and checked for safe and effective operation.</p> <p>1.5 Tools and equipment are prepared and used to implement 3S.</p>
2. Standardize 3S.	<p>2.1 Plan is prepared and used to standardize 3S activities.</p> <p>2.2 Tools and techniques to standardize 3S are prepared and implemented based on relevant procedures.</p> <p>2.3 Checklists are followed for standardize activities and reported to relevant personnel.</p> <p>2.4 The workplace is kept to the specified standard.</p> <p>2.5 Problems are avoided by standardizing activities.</p>
3. Sustain 3S.	<p>3.1 Plan is prepared and followed to standardize 3S activities.</p> <p>3.2 Tools and techniques to sustain 3S are discussed, prepared and implemented based on relevant procedures.</p> <p>3.3 Workplace is inspected regularly for compliance to specified standard and sustainability of 3S techniques.</p> <p>3.4 Workplace is cleaned up after completion of job and before commencing next job or end of shift.</p> <p>3.5 Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken.</p> <p>3.6 Improvements are recommended to lift the level of compliance in the workplace.</p> <p>3.7 Checklists are followed to sustain activities and reported to relevant personnel.</p> <p>3.8 Problems are avoided by sustaining activities.</p>

Variable	Range
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OHS requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • dust masks / goggles • glove • working cloth • first aid • safety shoes
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • paint • hook • sticker • signboard • nails • shelves • chip wood • sponge • broom • pencil • shadow board/ tools board
Tools and techniques	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • 5S Job Cycle Charts • Visual 5S • The Five Minute 5S • Standardization level checklist • 5S checklist • The five Whys and one How approach(5W1H) • Suspension • Incorporation • Use Elimination
Relevant procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Assign 3S responsibilities • Integrate 3S duties into regular work duties • Check on 3S maintenance level • OHS measures such as signage, symbols / coding and

	labeling of workplace and equipment <ul style="list-style-type: none"> • Creating conditions to sustain your plans • Roles in implementation
Reporting	May include but not limited to: <ul style="list-style-type: none"> • verbal responses • data entry into enterprise database • brief written reports using enterprise report formats
Relevant personnel	May include but not limited to: <ul style="list-style-type: none"> • supervisors, managers and quality managers • administrative, laboratory and production personnel • internal/external contractors, customers and suppliers
Tools and techniques	May include but not limited to: <ul style="list-style-type: none"> • 5S slogans • 5S posters • 5S photo exhibits and storyboards • 5S newsletter • 5S maps • 5S pocket manuals • 5S department/benchmarking tours • 5S months • 5S audit • Awarding system • Big cleaning day • Patrolling system may include: <ul style="list-style-type: none"> ➢ Top management Patrol ➢ 5S Committee members and Promotion office Patrol ➢ Mutual patrol ➢ Self-patrol ➢ Checklist patrol ➢ Camera patrol

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: <ul style="list-style-type: none"> • Discuss the relationship between Kaizen elements. • Standardize and sustain 3S activities by applying appropriate tools and techniques.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Elements of Kaizen • Ways to improve Kaizen elements • Benefits of improving kaizen elements • Relationship between Kaizen elements • The fourth pillar of 5S • Benefits of standardizing and sustaining 3S • Procedures for standardizing and sustaining 3S activities • Tools and techniques to sustain 3S • Relevant Occupational Health and Safety (OHS) and environment requirements • Plan and report • Method of communication
Underpinning Skills	Demonstrates skills of: <ul style="list-style-type: none"> • improving Kaizen elements by applying 5S

	<ul style="list-style-type: none"> • standardizing and sustaining procedures and techniques to avoid problems • technical drawing • procedures to standardizing 3S activities • analyzing and preparing shop layout of the workplace • standardizing and sustaining checklists • preparing and implementing tools and techniques to sustain 3S • working with others • reading and interpreting documents • observing situations • solving problems by applying 5S • communication skills • preparing labels, slogans, etc. • gathering evidence by using different means • using Kaizen board properly in accordance the procedure • reporting activities and results using report formats
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

NTQF Level III

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Carryout Diagnostic Procedures
Unit Code	AGR MEM3 01 0714
Unit Descriptor	This unit covers the competence required to diagnose farm machineries and equipments component faults from different symptoms and to nominate repair action.

Elements	Performance Criteria
1. Prepare to diagnose faults	1.1 Information is accessed from appropriate sources. 1.2 Between "symptoms" and "causes" are differentiated. 1.3 Fault diagnosis is identified as a process. 1.4 System(s) is/are familiarized from the area of the fault's origin.
2. Apply technology to isolate fault(s)	2.1 Diagnosis strategy that can be used to determine a fault is developed within the component/equipment. 2.2 Diagnostic methods are identified and identification of fault(s) is made from test results. 2.3 Tools, equipment and materials requirements are identified and made ready for use to isolate fault prior to the start of work practice as per job specification. 2.4 Findings are confirmed by an alternate route/plan. 2.5 Faults are diagnosed without causing damage to workplace property, component or equipment. 2.6 Inspections are carried out according to industry regulations/guidelines, OHS legislation, PPE , legislation and enterprise procedures/policies.
3. Recommend rectification method(s)	3.1 Report of findings is completed in workplace approved format. 3.2 Rectification strategy and consequences of ignoring strategy are identified are identified. 3.3 Any faults in conflict with roadworthiness or safe operating procedures of component/ tools, equipment and materials are immediately brought to the attention of the supervisor for action.
4. Component/ equipment is prepared for customer use	4.1 Work schedule documentation is completed. 4.2 Final inspection is made to ensure safety features are in place. 4.3 Final inspection is made to ensure work is to workplace expectations. 4.4 Job card is completed and delivered to appropriate persons.

Variable	Range
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Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the diagnosis of faults • regulatory/legislative requirements pertaining to automotive industry, including International design Rules, Environment Protection Regulations (Diesel Fuels) • engineer's design specifications and instructions • organization work specifications and requirements • instructions issued by authorized enterprise or external persons • International standards
Diagnose	is a process of elimination, fault find and fault isolation
Diagnostic methods	<p>May include:</p> <ul style="list-style-type: none"> • removal and replacement, dismantling, adjusting • visual and aural identification and testing • component/equipment performance comparison • on-and off-site, indoor and outdoor diagnosis
Tooling and equipment	<p>May include:</p> <ul style="list-style-type: none"> • computer software, computer hardware, specific tooling and equipment used for dismantling, testing and diagnosis, meters, gauges and measuring equipment
Materials	<p>May include:</p> <ul style="list-style-type: none"> • minor spare parts and consumables and cleaning materials
OHS	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of firefighting equipment • enterprise first aid • hazard control and hazardous materials and substances
PPE	Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ toxic substances ➤ electrical safety ➤ equipment movement and operation ➤ manual and mechanical lifting and shifting ➤ working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management

Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
Communications	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • verbal and visual instructions and fault documenting and may include: <ul style="list-style-type: none"> ➤ site specific instructions, ➤ written instructions, ➤ plans or instructions related to job/task, ➤ telephones and pagers

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • conducting diagnosis of a range of faults in accordance with workplace requirements to test and verify symptoms • interpret results • confirm diagnosis of fault(s) • diagnosis carried out to manufacturer/component supplier requirements • complete diagnosis within workplace timeframes • component/equipment presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • diagnostic procedures and problem-solving techniques • documenting procedures • symptom and cause differentiation • documenting responsibilities • work organization and planning processes • enterprise quality procedures
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organizing skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • interact effectively with other persons both on a one-to-one

	<p>basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal</p> <ul style="list-style-type: none"> • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome • use workplace technology related to the diagnosis of faults, including the use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and the documenting/recording of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Inspect, Service and Repair Electronically Controlled Parts Management Systems
Unit Code	AGR MEM3 02 0714
Unit Descriptor	This unit covers the competence to service and repair Electronically controlled parts management systems and associated components.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Work instructions and information sources are used to determine job requirements, including faults finding method, process and equipment.</p> <p>1.2 Job specifications are read and interpreted.</p> <p>1.3 OHS requirements, including Personal Protective Equipment are observed throughout the work.</p> <p>1.4 Electronic system protection devices, processes and precautions appropriate to application are identified.</p> <p>1.5 Equipment, tooling and materials are identified and checked for safe and effective operation.</p> <p>1.6 Procedures are determined to minimize task time.</p>
2. Service and repair Electronically controlled parts management systems and/or associated components	<p>2.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>2.2 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.3 Tests on electronically controlled parts management systems are carried out to determine faults using tooling, equipment and techniques.</p> <p>2.4 Service and repairs, component replacement and adjustments are carried out using tooling, techniques and materials.</p> <p>2.5 Service and repairs are completed without causing damage to component or system.</p> <p>2.6 Emergency procedures are identified and followed as per organization's guideline.</p> <p>2.7 Service and repairs are carried out according to industry regulations/guidelines OHS, legislation and enterprise procedures/policies.</p>
3. Clean up work area and maintain equipment	<p>3.1 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>3.2 Material that can be reused is collected and stored.</p> <p>3.3 Waste and scrap are removed following workplace procedure.</p> <p>3.4 Equipment and work area are cleaned and inspected for</p>

	<p>serviceable condition in accordance with workplace procedures.</p> <p>3.5 Unserviceable equipment is tagged and faults are identified in accordance with workplace requirements.</p> <p>3.6 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.</p> <p>3.7 Tooling and equipment are maintained in accordance with workplace procedures.</p>
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Variable	Range
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the service and repair of electronic compression ignition engine management systems • regulatory/legislative requirements pertaining to automotive industry, including International design Rules and National Environmental Protection Measure for diesel vehicles • engineer's design specifications and instructions • organization work specifications and requirements • instructions issued by authorized enterprise or external persons • International standards
Faults	<p>may include:</p> <ul style="list-style-type: none"> • engine will not start, engine misfiring and poor engine performance • component malfunction, system adjustment, open and short circuits • incorrect inputs and outputs and incorrect information
Fault finding method	<p>may include:</p> <ul style="list-style-type: none"> • diagnosis and determining faults, including interpretation of exhaust emissions • pre- and post-repair testing of system and component operation • service and repair/replacement of system components • service and repair adjustments • removal, dismantling, reassembly and refitting • retrieval and assessment of electronic systems data, such as fault codes
OHS requirements	<p>are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures and may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of firefighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances

Personal Protective Equipment	Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Tooling and equipment	<p>May include:</p> <ul style="list-style-type: none"> • hand tooling, testing equipment, including: <ul style="list-style-type: none"> ➤ multi meters ➤ exhaust gas analyzer ➤ vacuum gauge, pressure gauge ➤ tachometer, multi meter ➤ vehicle lifting equipment ➤ power tooling, air tooling ➤ specialist tooling for removal/adjustment ➤ specialized system testers ➤ oscilloscope and scan tooling ➤ LED test light and injector testing equipment
Materials	<p>May include:</p> <ul style="list-style-type: none"> • spare parts and cleaning material
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ high-pressure diesel systems ➤ electrical safety ➤ equipment movement and operation ➤ manual and mechanical lifting and shifting ➤ working in proximity to others and site visitors
Electronically controlled management systems	<p>May Include:</p> <ul style="list-style-type: none"> • engine management systems are systems where the ECU incorporates control over both fuel injection and timing control systems • electronically controlled automatic transmissions and electronically controlled 4WD drivelines, such as automatic freewheeling hubs, differentials and anti lock braking systems • electronically controlled anti-locking braking systems fitted to heavy vehicles • engine immobilization, central locking, power windows, electric mirrors, electronic seat adjustment with memory and security systems • electronically controlled suspension and steering • electronically operated traction control systems
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Critical precautions	<p>may include:</p> <ul style="list-style-type: none"> • manufacturer/component supplier procedures which must be applied as poor working practices are likely to damage electronic system ECUs and/or other components

Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
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Evidence Guide	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> observing safety procedures and requirements, including those for high-pressure diesel systems communicating effectively with others involved in or affected by the work selecting methods and techniques appropriate to the circumstances completing preparatory activity in a systematic manner testing electronic compression ignition engine management systems and identifying faults determining the repair/replacement/adjustment requirements to rectify faults servicing/repairing/adjusting electronically controlled parts management systems to workplace and manufacturer/component supplier requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> OHS regulations/requirements, equipment, material and personal safety requirements national environment protection measure for diesel vehicles, as applicable operating principles of Electronically controlled parts Management Systems /components construction and operation of Electronically controlled parts Management Systems /components relevant to application relationship to other electronically controlled systems, including shared components (e.g. ECU, sensors) test, diagnosis and fault determination procedures service/repair, removal, replacement and adjustment procedures of Electronically controlled parts Management Systems management systems work organization and planning processes enterprise quality processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> collect, organize and understand information related to work orders, plans and safety procedures for servicing and repairing Electronically controlled parts Management Systems communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems plan and organize activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions work with others and in a team by recognizing dependencies and using cooperative approaches to optimize workflow and

	<p>productivity</p> <ul style="list-style-type: none"> • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimize reworking and avoid wastage • use mathematical ideas and techniques to correctly complete tests and measurements to determine serviceability and/or parts for the work • use workplace technology related to the service and repair of electronic compression ignition engine management systems, including the use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and the reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be accessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Overhaul Air Conditioning System Components
Unit Code	AGR MEM3 03 0714
Unit Descriptor	This unit covers the competence required to overhaul air conditioning system components. The unit includes identification and confirmation of the work requirement, preparation for work, testing and analysis of systems, dismantling, reassembling and retesting of air conditioning system components and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to overhaul air conditioning components	<p>1.1 Nature and scope of the work specific requirements identified and confirmed are accessed.</p> <p>1.2 OHS requirements including regulatory/licensing requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Procedures and information are sourced, identified and prepared such as workshop manuals, specifications and tooling, equipment and materials.</p> <p>1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.5 Workplace information sources and technical and/or calibration requirements are accessed for overhauling air conditioning components and procedures strictly adhered.</p> <p>1.6 Hazards are observed in relation to working with refrigerants.</p> <p>1.7 Awareness of proper decanting and disposal of ozone depleting substances is recognized.</p>
2. Test air conditioning systems and analyse results	<p>2.1 Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines</p> <p>2.3 Emergency procedures are identified and followed as per organization's guideline.</p> <p>2.4 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.5 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.6 Report is processed in accordance with workplace procedures.</p>

<p>3. Overhaul air conditioning system components</p>	<p>3.1 Information is accessed and interpreted from manufacturer/component supplier specifications.</p> <p>3.2 Air conditioning system components are dismantled, reassembled and tested to manufacturer/component supplier specifications.</p> <p>3.3 Worn, damaged, deteriorated or faulty components are identified and replaced/repared.</p> <p>3.4 Air conditioning system overhaul is completed without causing damage to any component or system.</p> <p>3.5 System components are tested prior to placing into service and results are documented in accordance with enterprise policies and procedures.</p> <p>3.6 Air conditioning system components are overhauled according to industry regulations/guidelines, OHS legislation, legislation and enterprise procedures/policies.</p>
<p>4. Prepare air conditioning components and/or system for service or storage</p>	<p>4.1 Work schedule documentation is completed.</p> <p>4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>4.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>4.4 Air conditioning systems/components are cleaned and/or stored to workplace expectations.</p> <p>4.5 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
<p>Specific requirements</p>	<p>May include:</p> <ul style="list-style-type: none"> • compressors • Air dryer • evaporators • condensers
<p>OHS requirements</p>	<p>are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures and may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of material, • use of firefighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
<p>Personal Protective Equipment</p>	<p>Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices</p>
<p>Tooling and equipment</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tooling • cleaning equipment • pressure testing equipment

	<ul style="list-style-type: none"> • sealing equipment • leak detection equipment • thermometer • evacuation equipment • heating/soldering equipment • refrigerant recovery and/or recycling equipment • refrigerant recharging equipment
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • refrigeration oils • refrigerants • spare parts and cleaning materials
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to overhauling air conditioning system components • regulatory/legislative requirements pertaining to the automotive industry, including International design Rules • engineer's design specifications and instructions • organization work specifications and requirements • instructions issued by authorized enterprise or external persons • International standards
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement, ➤ toxic substances, ➤ electrical safety, ➤ equipment movement and operation, ➤ manual and mechanical lifting and shifting, ➤ working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation
Overhaul methods and sequences	<p>are to include the:</p> <ul style="list-style-type: none"> • complete dismantling of component parts, • measuring and evaluation of wear • the replacement, repair • rebuilding or reconditioning of parts comparable to original parts • the assembly of parts • performance of functional testing and the completion of records
Fault finding	<p>May includes:</p> <ul style="list-style-type: none"> • fault finding with aural, visual and functional assessments (including damage, corrosion, wear, refrigeration leakage) • reading and interpreting manufacturer/component supplier information

Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> • regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
Statutory/regulatory authorities	May include but are not limited to: <ul style="list-style-type: none"> • Federal and State authorities administering acts • regulations and codes of practice
Communications	May include but are not limited to: <ul style="list-style-type: none"> • verbal and visual instructions and fault reporting and may include: <ul style="list-style-type: none"> ➤ site specific instructions, ➤ written instructions, ➤ plans or instructions related to job/task, ➤ telephones and pagers

Evidence Guide	
Critical Aspects of Competence	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of the application, purpose and operation • interpreting the test results • completing overhaul of the system and associated
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • identification of the application, purpose and operation • identification of component parts to include physical, fluid, gases and heat generation • identification of wear evaluation methods • types and layout of service/repair manuals • damage that may occur to electronic control units by the use of poor work practices • measuring and testing procedures • nature and characteristics of refrigerant • component repair/overhauling procedures • enterprise quality procedures • work organization and planning procedures
Underpinning Skills	Demonstrate skills to: <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey

	<p>information and concepts to customers</p> <ul style="list-style-type: none"> • apply planning and organizing skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimize reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the overhaul of air conditioning systems, including the use of measuring equipment, computerized technology, specialist tooling and communication devices and the reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Repair Manual Transmissions
Unit Code	AGR MEM3 04 0714
Unit Descriptor	This unit covers the competence required to carry out removal, repair and replacement of manual transmissions.

Elements	Performance Criteria
1. Prepare to undertake testing of manual transmission	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information as workshop manuals and specifications and tooling are sourced such, as required.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical and/or calibration requirements for testing of manual transmissions are sourced.</p> <p>1.7 Tools, equipment and materials requirements are identified and made ready for use prior to the start of work.</p> <p>1.8 Warnings are observed in relation to working with manual transmissions.</p>
2. Test manual transmission and analyse results	<p>2.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.2 Methods for tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.3 Road/site test is conducted for abnormalities/faults.</p> <p>2.4 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.5 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.6 Report is processed in accordance with workplace procedures.</p>
3. Prepare to repair manual transmissions	<p>3.1 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Procedures and information are identified and sourced.</p> <p>3.3 Technical requirements for repair are identified and support tools, equipment and materials are identified and prepared.</p>

4. Carry out repairs	<p>4.1 Emergency procedures are identified and followed as per organization's guideline.</p> <p>4.2 Methods for repairs are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>4.3 Adjustments are made during repairs in accordance with manufacturer/component supplier specifications.</p>
5. Prepare vehicle/equipment for use or storage	<p>5.1 Repair schedule documentation is completed.</p> <p>5.2 Road/site test is conducted to ensure transmission operation is to manufacturer/component supplier specifications.</p> <p>5.3 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.4 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.5 Vehicle/equipment is cleaned for use or storage to workplace expectations.</p> <p>5.6 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>5.7 Job card is processed in accordance with workplace procedures.</p>

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • completing preparatory activity in a systematic manner • interpreting testing results • identification of application, purpose and operation • application of full repair sequence as per the Range Statement to a manual transmission relative to the qualification being sought • conducting repairs in accordance with workplace and manufacturer/component supplier requirements • completing repair of transmissions and associated components within workplace timeframes • vehicle/transmission presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • dangers of working with transmissions • the identification of application, purpose and operation • types and layout of service/repair manuals (hard copy and

	<p>electronic)</p> <ul style="list-style-type: none"> • diagnostic procedures • repair procedures • enterprise quality procedures • work organization and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organizing skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimize reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology, including the use of measuring equipment, computerized technology and communication devices and the documenting/recording of results
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Inspect, Test and Repair Automatic and Hydrostatic Transmissions
Unit Code	AGR MEM3 05 0714
Unit Descriptor	This unit covers the competence required to carry out the inspection, testing and repair of automatic and semi-automatic transmissions and associated components.

Elements	Performance Criteria
1. Prepare to inspect and test transmission	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.3 OHS requirements including Federal requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Method options for faults identification are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.5 Technical and/or calibration requirements are sourced for testing of transmissions.</p> <p>1.6 Procedures and information are sourced such as workshop manuals and specifications and tools, equipment and materials.</p> <p>1.7 Warnings are observed in relation to working with semi automatic, automatic transmissions.</p>
2. Inspect and test the transmission and analyse results	<p>2.1 Methods for system faults inspection are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>2.2 Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.3 Road/site test is conducted to identify transmission operational abnormalities.</p> <p>2.4 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.5 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.6 Report is processed in accordance with workplace procedures.</p>
3. Prepare to remove and repair transmission	<p>3.1 OHS requirements, including federal requirements and personal protection needs are observed throughout the work.</p> <p>3.2 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with</p>

	<p>workplace guidelines.</p> <p>3.3 Procedures and information are identified and sourced.</p> <p>3.4 Technical and tool requirements for removal and replacement are identified and support equipment is identified and prepared.</p>
4. Carry out removal and repair	<p>4.1 Repair methods and sequence for removal and repair are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>4.2 Adjustments are made during the removal and repair in accordance with manufacturer specifications and quality requirements.</p> <p>4.3 Emergency procedures are identified and followed as per organization's guideline.</p>
5. Prepare vehicle/equipment for use or storage	<p>5.1 Removal and replacement schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>5.6 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
Specific requirements	<p>Specific requirements:</p> <ul style="list-style-type: none"> • manual transmissions, front and/or rear wheel drive configurations • transmission must be of multiple speed constant mesh or synchromesh design <p>Other variables may include:</p> <ul style="list-style-type: none"> • belt drive transmission • power take off assemblies • multiple forward and reverse gears • multi countershaft • synchronized and non-synchronized gear selection • metal and non-metal gears • electrical/pneumatic control • transverse/longitudinal mounting • helical, double helical and spur gears • transfer case
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches

	<ul style="list-style-type: none"> • safe work procedures related to repair, removal and replacement of manual transmissions and/or associated components • regulatory/legislative requirements pertaining to automotive industry, including International design Rules • engineer's design specifications and instructions • organization work specifications and requirements • instructions issued by authorized enterprise or external persons • International standards
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Method	<p>include:</p> <ul style="list-style-type: none"> • road testing, test under operating conditions • visual, aural and functional assessment (including: fluid leakage, gear selection, wear, damage, corrosion)
Faults	include noisy operation, jumping out of gear, external oil leaks, loss of drive
Tooling and equipment	<p>May include:</p> <ul style="list-style-type: none"> • hand tools, meters • gauges and load testing devices
Materials	<p>may include:</p> <ul style="list-style-type: none"> • fluids, spare parts and cleaning materials
Safe operating procedures	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
Methods for repairs	<p>are to include:</p> <ul style="list-style-type: none"> • isolation of fault(s) • dismantling • inspection and evaluation • replacement of component parts • assembly and completion of operational tests and records
Emergency procedures	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> • waste management

	<ul style="list-style-type: none"> • noise • dust and clean-up management
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Evidence Guide	
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Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • completing preparatory activity in a systematic manner • interpreting testing results • identification of application, purpose and operation • conducting repairs in accordance with workplace and manufacturer requirements • completing repair of transmissions and associated components within workplace timeframes • vehicle/transmission presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • dangers of working with transmissions • the identification of application, purpose and operation • types and layout of service/repair manuals • diagnostic procedures • repair procedures • enterprise quality procedures • work organization and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organizing skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimize reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology, including the use of measuring equipment, computerized technology and communication devices and the documenting/recording of results

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Inspect, Service and/or Repair Clutch Assemblies and Associated Parts
Unit Code	AGR MEM3 06 0714
Unit Descriptor	This unit covers the competence required to carry out the service and/or repair of clutch assemblies and associated components. The unit includes identification and confirmation of work requirement, preparation for work, testing of clutch assemblies, analysis of results, repairs or service to clutch assemblies and completion of work finalisation processes, including clean-up and documentation. This unit of competence applies to: Heavy vehicles and outdoor equipment

Elements	Performance Criteria
1. Prepare to undertake servicing and repair of clutch assemblies	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including Federal requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications and tooling, equipment and materials are sourced.</p> <p>1.5 Faults identification method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical and/or adjustment requirements are sourced for inspection, servicing and repair of clutch assemblies.</p> <p>1.7 Warnings are observed in relation to working with clutch assemblies.</p>
2. Test clutch and assembly systems	<p>2.1 Methods for system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.4 Report is forwarded to persons for action in accordance with workplace procedures.</p>
3. Carry out service and/or repair	<p>3.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>3.2 Methods and sequence for service and/or repair are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p>

	<p>3.3 Adjustments are made during the service in accordance with manufacturer/component supplier specifications.</p> <p>3.4 Emergency procedures are identified and followed as per organization's guideline.</p>
4. Prepare vehicle/ equipment for use or storage	<p>5.1 Service schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>5.6 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
Specific requirements	<p>May include:</p> <ul style="list-style-type: none"> clutch assemblies, including single or multi-plate, wet and dry construction, standard and heavy duty types actuating mechanisms, including mechanical, hydraulic and pneumatic assisted
Information sources	<p>may include:</p> <ul style="list-style-type: none"> verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches safe work procedures related to the service and/or repair of clutch assemblies and associated components regulatory/legislative requirements pertaining to automotive industry, including International design Rules engineer's design specifications and instructions organization work specifications and requirements Instructions issued by authorized enterprise or external persons International standards
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> protective clothing and equipment use of tooling and equipment workplace environment and safety handling of material use of fire fighting equipment enterprise first aid hazard control and hazardous materials and substances
Personal Protective Equipment	<p>Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices</p>

Tooling and equipment	May include: <ul style="list-style-type: none"> • hand tooling, meters, gauges and load testing devices
Materials	May include: <ul style="list-style-type: none"> • lubricants, spare parts and cleaning materials
Faults	May include: <ul style="list-style-type: none"> • slipping clutch • clutch not fully releasing
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➢ vehicular movement ➢ toxic substances ➢ electrical safety ➢ equipment movement and operation ➢ manual and mechanical lifting and shifting ➢ working in proximity to others and site visitors
Methods and sequence	May include but are not limited to: <ul style="list-style-type: none"> • isolation of fault(s), • dismantling, • inspection and evaluation, • replacement of components parts, • assembly and completion of operational tests and records
Servicing	include lubrication, adjustments and operational tests, visual inspection and records
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Variables	may include: <ul style="list-style-type: none"> • centrifugal, semi-centrifugal, dog, one-way, cone, over centre, slip, and two-stage construction • steering clutches
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> • regulations including International standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide

Critical Aspects of Competence	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of application, purpose and operating principles • conducting inspection, servicing and operational testing in accordance with workplace and manufacturer/ component supplier specifications • application of full repair sequence as per the Range Statement to a clutch assembly relative to the qualification being sought • interpreting test results
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	<ul style="list-style-type: none"> • completing service and repair of the clutch assembly and associated components within workplace timeframes • vehicle/equipment presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • dangers of working with wheeled and track equipment • the identification of application, purpose and operation • identification of component parts to include physical, fluid, gases and heat generation • types and layout of service/repair manuals • clutch testing procedures • clutch servicing procedures • clutch repair procedures • work organization and planning processes
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, • interpret and apply manufacturer procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use workplace technology related to the service and/or repair of clutch assemblies and associated components,
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Repair and Install Hydraulic Systems
Unit Code	AGR MEM3 07 0714
Unit Descriptor	This unit covers the competence required to carry out installation and repairs of hydraulic systems to manufacturer/component supplier, customer and workplace requirements. The unit includes identification and confirmation of work requirement, preparation for work, testing and analysis of systems repairing installation of hydraulic systems, and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to repair and install hydraulic systems	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Procedures and information such as workshop manuals and specifications, and tooling, equipment and materials are sourced, identified and prepared.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical requirements are sourced for testing, repairing and installing hydraulic systems.</p> <p>1.7 Warnings are observed in relation to working with hydraulic systems.</p>
2. Carry out repair and installation	<p>2.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.2 Emergency procedures are identified and followed as per organization's guideline.</p> <p>2.3 Methods for repair and installation are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>2.4 Adjustments are made during the repair and installation in accordance with manufacturer specifications.</p> <p>2.5 Report is processed in accordance with workplace procedures.</p> <p>2.6 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>
3. Prepare farm machineries and equipments hydraulic system	<p>3.1 Repair and installation documentation is completed.</p> <p>3.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p>

for use	<p>3.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>3.4 Farm machineries and equipments system are cleaned for use or storage to workplace expectations.</p> <p>3.5 Job card is processed in accordance with workplace procedures.</p>
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Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the installation of hydraulic systems • regulatory/legislative requirements pertaining to automotive industry, including International design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Tooling and equipment	<p>May include:</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges, • hydraulic load testing devices and hydraulic schematic diagrams
Materials	<p>May include:</p> <ul style="list-style-type: none"> • spare parts, hydraulic fluids and cleaning materials
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires

	<ul style="list-style-type: none"> • enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, • dust and clean-up management
Other system components	<p>May include:</p> <ul style="list-style-type: none"> • disc pads, master cylinders, brake shoes, brake calipers, • brake hoses, brake actuators and mechanical devices • the installation of linear or rotary actuators, conductors and control valves, power cylinders, hoses and couplings

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of application, purpose and operating principles • interpreting installation diagrams • conducting installation in accordance with workplace and manufacturer/component supplier requirements • completing installation of hydraulic systems and associated components within workplace timeframes • farm machineries and equipment hydraulic system presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with hydraulic equipment • operating principles of hydraulic systems and components and their relationship to each other, including actuators, conductors, pressure flow, and direction control systems • types and layout of service/repair manuals (hard copy and electronic) • hydraulic system operating procedures • installation procedures • enterprise quality procedures • work organization and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting

	<p>out priorities and monitoring own performance</p> <ul style="list-style-type: none"> • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the installation of hydraulic systems, including the use of specialist tooling, measuring equipment, computerized technology and communication devices and the documenting/recording of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Repair and Install Pneumatic Systems/Components
Unit Code	AGR MEM3 08 0714
Unit Descriptor	This unit covers the competence required to assemble, repair, install and test pneumatic systems and components. The unit includes identification and confirmation of work requirement, preparation for work, assembly and installation of pneumatic systems/components, testing and analysis of outcomes and completion of work finalisation processes, including clean-up and documentation. Work involved includes farm machinery pneumatic systems, including those involved in the Tractors, Combine harvesters, and heavy vehicle industry.

Elements	Performance Criteria
1. Prepare to disassemble repair and install pneumatic systems/ components	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and personal protection needs are observed throughout the work.</p> <p>1.3 Procedures and information such as workshop manuals and specifications, and tooling, equipment and materials are sourced.</p> <p>1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.5 Technical and testing requirements for pneumatic systems are sourced and support equipment is identified and prepared.</p> <p>1.6 Support tooling and equipment are selected and prepared for use.</p> <p>1.7 Warnings are observed in relation to working with pneumatic systems.</p>
2. Assemble, repair and install pneumatic systems/ components	<p>2.1 Methods for assembly, repairing and installation are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p> <p>2.2 Adjustments are made during the assembly, repair and installation in accordance with manufacturer/component supplier specifications.</p> <p>2.3 Documentation of observations is completed.</p>
3. Conduct and analyse pneumatic system tests	<p>3.1 Methods for tests are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>3.2 Test results are compared with manufacturer/component supplier specifications.</p> <p>3.3 Air braking test results are compared with manufacturer specifications to indicate compliance or non-compliance.</p> <p>3.4 Final adjustments are made to achieve compliance with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p>

	<p>3.5 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>3.6 Report is forwarded to persons for action in accordance with workplace procedures.</p>
4. Prepare vehicle/ pneumatic system for use or storage	<p>4.1 Assembly, repair and installation schedule documentations are completed.</p> <p>4.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>4.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>4.4 Vehicle/pneumatic systems are cleaned for use or storage to workplace expectations.</p> <p>4.5 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal protection needs	May include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the assembly and installation of pneumatic system/components • regulatory/legislative requirements pertaining to automotive industry, including Ethiopian Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • Ethiopian/international Standards
Tooling and equipment	<p>May include;</p> <ul style="list-style-type: none"> • hand tooling, meters, gauges and load and pressure testing devices
Materials	<p>May include:</p> <ul style="list-style-type: none"> • spare parts, lubricants, fluids and cleaning materials
Component	may include compressors, actuators, pressure lines, receivers and valves

Safe operating procedures	are to include, but are not limited to operational risk assessment and treatments associated with: <ul style="list-style-type: none"> • vehicular movement • toxic substances • electrical safety • equipment movement and operation • manual and mechanical lifting and shifting • working in proximity to others and site visitors
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • to emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management, noise, dust and clean-up management
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> • regulations including Ethiopian Standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge competence in: <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques, appropriate to the circumstances • completing preparatory activity in a systematic manner • conducting assembly, repair and installation of a range of pneumatic components in accordance with manufacturer/component supplier and workplace requirements • interpreting test results • completing work within workplace timeframes • vehicle/pneumatic system presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • types, characteristics, uses and limitations of common pneumatic systems • operating principles of pneumatic systems and their relationship to each other • dangers of working with pneumatic systems • types and layout of service/repair manuals (hard copy and electronic) • techniques for interpretation of schematic diagrams relevant to pneumatic systems • techniques for reading and interpreting engineering drawings • pneumatic systems test procedures • pneumatic systems assembly, repair and installation procedures

	<ul style="list-style-type: none"> • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome • use workplace technology related to the assembly and installation of pneumatic systems/components, including the use of diagnostic and specialised tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration/ with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Repair Engines and Associated Engine System Components
Unit Code	AGR MEM3 09 0714
Unit Descriptor	This unit covers the competence required to carry out repair of an engine, and associated engine components on compression ignition engines. The unit includes identification and confirmation of work requirement, preparation for work, inspection of systems and analysis of results, repair and replacement of systems and components including competence required to carry out repairs to emission control systems and completion of work finalisation processes, including clean-up, report writing and documentation.

Elements	Performance Criteria
1. Prepare to undertake repair of engines	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including Federal state requirements and personal protection needs are observed throughout the work.</p> <p>1.4 National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks. Effects of vehicle emission on the environment are explained and understood.</p> <p>1.5 Procedures and information are identified and prepared such as workshop manuals and specifications, and tools, equipment and materials.</p> <p>1.6 Repair method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.7 Technical and/or calibration requirements are sourced for engine systems repair.</p> <p>1.8 Warnings in relation to working with engines and associated systems are observed.</p>
2. Conduct engine systems tests and analyse results	<p>2.1 Methods for engine systems tests and faults identification are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.3 Engine is started and run up to operating temperature and checked for leaks, abnormal noises and pressures.</p> <p>2.4 Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.5 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.6 Report is forwarded to persons for action in accordance with</p>

	workplace procedures.
3. Carry out repair	<p>3.1 Methods and sequence for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.2 Adjustments are made during the repair in accordance with manufacturer/component supplier specifications.</p>
4. Repair and replace emission control systems and/or associated components	<p>4.1 Correct information is accessed and interpreted from manufacturer specifications.</p> <p>4.2 Testing equipment is selected.</p> <p>4.3 Tests are performed and results analysed in accordance with manufacturer/component supplier specifications.</p> <p>4.4 Emission control system repair and replacement are carried out according to industry regulations/guidelines, OHS legislation, legislation and enterprise procedures/policies.</p> <p>4.5 Emission control systems repair/replacement is completed without causing damage to any component or system.</p> <p>4.6 Repair and replacement of emission control systems are carried out in accordance with industry regulations/guidelines, OHS legislation, legislation and enterprise procedures/policies.</p> <p>4.7 Emergency procedures are identified and followed as per organization's guideline.</p> <p>4.8 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>
5. Prepare Machine/ equipment for use or storage	<p>5.1 Repair schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Vehicle/equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
Specific requirements	<p>May include:</p> <ul style="list-style-type: none"> • sensing and control systems, including: <ul style="list-style-type: none"> ➢ carbon canisters, ➢ mechanical devices, ➢ catalytic converters, ➢ electronic sensors, ➢ EGR values
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches

	<ul style="list-style-type: none"> • safe work procedures related to repairing engines and associated components • regulatory/legislative requirements pertaining to automotive industry, including International design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines Engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • International standards
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal protection needs	Is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Tooling and equipment	<p>May include:</p> <ul style="list-style-type: none"> • hand tools, power tool • lifting and jacking equipment • specialist tooling and lubricant dispensing equipment
Materials	<p>May include:</p> <ul style="list-style-type: none"> • spare parts, consumables • lubricants and cleaning materials
Repair methods	<p>May include:</p> <ul style="list-style-type: none"> • identification of component wear/damage, fluid leakage, removal, dismantling, reassembly, refitting, adjusting and testing • road testing or dynamometer testing, exhaust gas testing • visual, aural and functional assessments (including: damage, corrosion, air leaks, wear, testing of electrical circuits) • measurements • electronic system tests
Faults	<p>May include:</p> <ul style="list-style-type: none"> • rough running, poor performance, excessive fuel consumption and overheating
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation

Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> waste management, noise, dust and clean-up management
Quality requirements	May include but are not limited to: <ul style="list-style-type: none"> regulations, including International standards, internal company quality policy and standards and enterprise operations and procedures
Engines	May include: <ul style="list-style-type: none"> four stroke compression ignition engines for Farm Machinery vehicle, equipment, and mobile plant compression ignition engines for heavy vehicle, agricultural equipment, and mobile plant

Evidence Guide	
Critical Aspects of Compete Underpinning Knowledge and Attitudes	Must demonstrate skills and knowledge in: <ul style="list-style-type: none"> observing safety procedures and requirements communicating effectively with others involved in or affected by the work selecting methods and techniques appropriate to the circumstances completing preparatory activity in a systematic manner identification of application, purpose and operation application of full repair sequence as per the Range Statement to an emission control system relative to the qualification being sought interpreting test results dismantling, evaluating, assembling, adjustment, measuring and testing repairing a range of engines and associated components to workplace requirements and specifications repairing of engine and associated components completed within workplace guidelines and timeframes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> OHS regulations/requirements, equipment, material and personal safety requirements National Environmental Protection Measures for Diesel Vehicles as applicable to tasks legislation and penalties identification of motor vehicle emissions and their effects on the environment the identification of application, purpose and operation the identification of component parts to include physical, fluid, gases and heat generation the principles of emission control and reduction of HC, NOX, CO, CO₂, particulates and smog types and layout of service/repair manuals (hard copy and electronic) types of emission systems and components the interpretation of technical information, graphic symbols and diagrams engine construction and operation relevant to application types and layout of service/repair manuals engine/component repair procedures

	<ul style="list-style-type: none"> • engine removal and replacement procedures • measuring and testing procedures • equipment/component safety requirements • work organisation and planning processes • enterprise quality processes
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use workplace technology, including the use of measuring equipment, computerized technology and communication devices and the documenting/recording of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Farm Implements/Equipment Maintenance
Unit Code	AGR MEM3 10 0714
Unit descriptor	This unit covers the competence required to carry out the inspection, service and repair of crop planting, seed drilling spraying and spreading equipment. That equipment refers to specialised equipment involved in crop planting, seeding, spraying and spreading. It does not cover generalised equipment and systems which form the platform or the towing vehicle. The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, servicing and repair of equipment and completion of work finalisation processes, including clean-up and documentation.

Element	Performance Criteria
1. Prepare to inspect and service equipment	<p>1.1 Nature and scope of work specific requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout work.</p> <p>1.4 Procedures and information such as workshop manuals, specifications and tools, equipment and materials are identified and prepared.</p> <p>1.5 Method options are analysed and those most appropriate to the circumstances are selected.</p> <p>1.6 Technical and/or calibration requirements are sourced for inspecting and servicing crop planting, seed drilling spraying and spreading equipment.</p> <p>1.7 Warnings are observed in relation to working with crop planting, seed drilling spraying and spreading equipment.</p>
2. Conduct inspection and analyse results	<p>2.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>2.2 Methods for inspection are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.3 Inspection results are compared with manufacturer specifications to indicate compliance or non-compliance.</p> <p>2.4 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.5 Report is processed in accordance with workplace procedures.</p>
3. Service and repair crop	<p>3.1 OHS requirements, including individual regulatory requirements and personal protection needs are observed</p>

planting, seed drilling ,spraying and spreading equipment	<p>throughout the work.</p> <p>3.2 Emergency procedures are identified and followed as per organization's guideline.</p> <p>3.3 Procedures and information are identified and sourced.</p> <p>3.4 Technical and tool, equipment and materials requirements for service and repair are identified and support equipment is identified and prepared.</p> <p>3.5 Methods for service and repair are implemented in accordance with workplace procedures and manufacturer/ component supplier specifications.</p> <p>3.6 Adjustments are made during the service and repair in accordance with manufacturer/component supplier specifications.</p>
4. Prepare equipment for operation	<p>4.1 Variable operating parameters are identified from manufacturer/component supplier specifications and analysis of proposed working environment and conditions.</p> <p>4.2 Equipment variables, including management systems settings, controls and monitoring systems are established and prepared for proposed operations.</p> <p>4.3 Equipment and systems are run and final adjustments are made to achieve and maintain operating parameters.</p> <p>4.4 Regulatory requirements, including equipment safety and environmental compliance are applied and satisfied.</p> <p>4.5 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p>
5. Prepare equipment for use or storage	<p>5.1 Service/repairs schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
Information sources	<p>may include:</p> <ul style="list-style-type: none"> • Verbal or written and graphical instructions, signage, work schedules/plans/specifications, material safety data sheets, diagrams or sketches • Safe work procedures related to the inspection and servicing of seeding, crop planting, spraying and spreading with their associated components • Regulatory/legislative requirements pertaining to the farm machinery industry, including International design rules

	<ul style="list-style-type: none"> • Engineer's design specifications and instructions • Organisation work specifications and requirements • Instructions issued by authorised enterprise or external persons • International standards
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> • hand tooling • diagnostic and monitoring systems • meters, gauges, load testing devices • pulling and pushing devices
Materials	<p>Materials may include:</p> <ul style="list-style-type: none"> • spare parts, lubricants • fluids and cleaning materials
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement, ➤ hazardous substances, ➤ electrical safety, ➤ equipment movement and operation, ➤ manual lifting and shifting, working in proximity to others and site visitors
Methods	<p>are to include:</p> <ul style="list-style-type: none"> • visual, aural and functional assessments, including damage, corrosion, wear and electrical
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • operating safely in the event of fires • enterprise first aid requirements and site evacuation
Environmental requirements	<p>are to include but are not limited to:</p> <ul style="list-style-type: none"> • waste management, noise, • dust and clean-up management
Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures
System components	<p>for inspection may include but not limited to:</p> <ul style="list-style-type: none"> • Seeding, crop planting • spraying and spreading mechanism with their components

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of: <ul style="list-style-type: none"> ➤ observing safety procedures and requirements ➤ communicating effectively with others involved in or affected by the work ➤ selecting methods and techniques appropriate to the circumstances ➤ completing preparatory activity in a systematic manner • completing a minimum of four full cycles requiring inspection, servicing, repair and preparing of seeding, crop planting, spraying and spreading equipment for operations, ensuring: <ul style="list-style-type: none"> ➤ accurate interpretation of inspection results ➤ completion of inspection, service and repair in accordance with workplace and manufacturer/ component supplier
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with seeding, crop planting, spraying and their relationships to each other • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and servicing of steering systems and associated components, including the use of electronic measuring equipment, computerised technology and communication devices and the

	reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Monitor Implementation of Work Plan/Activities
Unit Code	AGR MEM3 11 0714
Unit Descriptor	This unit covers competence required to oversee and monitor the quality of work operations within an enterprise. This unit may be carried out by team leaders or supervisors.

Elements	Performance Criteria
1. Monitor and improve workplace operations	<p>1.1 Efficiency and service levels are monitored on an ongoing basis.</p> <p>1.2 Operations in the workplace have been supported overall enterprise goals and quality assurance initiatives.</p> <p>1.3 Quality problems and issues are promptly identified and adjustments made accordingly.</p> <p>1.4 Procedures and systems are changed in consultation with colleagues to improve efficiency and effectiveness.</p> <p>1.5 Colleagues are consulted about ways to improve efficiency and service levels.</p>
2. Plan and organise workflow	<p>2.1 Current workload of colleagues is accurately assessed.</p> <p>2.2 Work is scheduled in a manner which enhances efficiency and customer service quality.</p> <p>2.3 Work is delegated to appropriate people in accordance with principles of delegation.</p> <p>2.4 Workflow is assessed against agreed objectives and timelines and colleagues are assisted in prioritisation of workload.</p> <p>2.5 Input regarding staffing needs is provided to appropriate management.</p>
3. Maintain workplace records	<p>3.1 Workplace records are accurately completed and submitted within required timeframes.</p> <p>3.2 Where appropriate, completion of records is delegated and monitored prior to submission.</p>
4. Solve problems and make decisions	<p>4.1 Workplace problems are promptly identified and considered from an operational and customer service perspective.</p> <p>4.2 Short term action is initiated to resolve the immediate problem where appropriate.</p> <p>4.3 Problems are analysed for any long term impact and potential solutions assessed and actioned in consultation with relevant colleagues.</p> <p>4.4 Where problem is raised by a team member, they are encouraged to participate in solving the problem.</p> <p>4.5 Follow up action is taken to monitor the effectiveness of solutions in the workplace.</p>

Variables	Range
Problems	May include but not limited to: <ul style="list-style-type: none"> • difficult customer service situations • equipment breakdown/technical failure • delays and time difficulties • competence
Workplace records	May include but is not limited to: <ul style="list-style-type: none"> • staff records and regular performance reports

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • ability to effectively monitor and respond to a range of common operational and service issues in the workplace • the role of staff involved in workplace monitoring • quality assurance, principles of workflow planning, delegation and problem solving
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • roles and responsibilities in monitoring work operations • overview of leadership and management responsibilities • principles of work planning and principles of delegation • typical work organization methods appropriate to the sector • quality assurance principles and time management • problem solving and decision making processes • industrial and/or legislative issues which affect short term work organization as appropriate to industry sector
Underpinning Skills	Demonstrate skills to: <ul style="list-style-type: none"> • monitor and improve workplace operations • plan and organize workflow • maintain workplace records
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Apply Quality Control
Unit Code	AGR MEM3 12 0714
Unit Descriptor	This unit covers the knowledge, attitudes and skills required in applying quality control in the workplace.

Elements	Performance Criteria
1. Implement quality standards	<p>1.1 Agreed quality standard and procedures are acquired and confirmed.</p> <p>1.2 Standard procedures are introduced to organizational staff/personnel.</p> <p>1.3 Quality standard and procedures documents are provided to employees in accordance with the organization policy.</p> <p>1.4 Standard procedures are revised / updated when necessary.</p>
2. Assess quality of service delivered	<p>2.1 Services delivered are quality checked against organization quality standards and specifications.</p> <p>2.2 Service delivered are evaluated using the appropriate evaluation quality parameters and in accordance with organization standards.</p> <p>2.3 Causes of any identified faults are identified and corrective actions taken in accordance with organization policies and procedures.</p>
3. Record information	<p>3.1 Basic information on the quality performance is recorded in accordance with organization procedures.</p> <p>3.2 Records of work quality are maintained according to the requirements of the organization.</p>
4. Study causes of quality deviations	<p>4.1 Causes of deviations from final outputs or services are investigated and reported in accordance with organization procedures.</p> <p>4.2 Suitable preventive action is recommended based on organization quality standards and identified causes of deviation from specified quality standards of final service or output.</p>
5. Complete documentation	<p>5.1 Information on quality and other indicators of service performance is recorded.</p> <p>5.2 All service processes and outcomes are recorded.</p>

Variable	Range
Quality check	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Check against design / specifications • Visual inspection and Physical inspection
Quality standards	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Materials • Components • Process

	<ul style="list-style-type: none"> • Procedures
Quality parameters	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Standard Design / Specifications • Material Specification

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • Check completed work continuously against organization standard • Identify and isolate faulty or poor service • Check service delivered against organization standards • Identify and apply corrective actions on the causes of identified faults or error • Record basic information regarding quality performance • Investigate causes of deviations of services against standard • Recommend suitable preventive actions
Underpinning Knowledge	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Relevant quality standards, policies and procedures • Characteristics of services • Safety environment aspects of service processes • Evaluation techniques and quality checking procedures • Workplace procedures and reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • interpret work instructions, specifications and standards appropriate to the required work or service • carry out relevant performance evaluation • maintain accurate work records • meet work specifications and requirements • communicate effectively within defined workplace procedures
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Lead Workplace Communication
Unit Code	AGR MEM3 13 0714
Unit Descriptor	This unit covers the knowledge, attitudes and skills needed to lead in the dissemination and discussion of information and issues in the workplace.

Elements	Performance Criteria
1. Communicate information about workplace processes	1.1 Appropriate communication method is selected 1.2 Multiple operations involving several topics areas are communicated accordingly 1.3 Questions are used to gain extra information 1.4 Correct sources of information are identified 1.5 Information is selected and organized correctly 1.6 Verbal and written reporting is undertaken when required 1.7 Communication skills are maintained in all situations
2. Lead workplace discussion	2.1 Response to workplace issues are sought 2.2 Response to workplace issues are provided immediately 2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety 2.4 Goals/objectives and action plan undertaken in the workplace are communicated.
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate staff/personnel 3.4 Communication problems and issues are raised as they arise

Variable	Range
Methods of communication	May include but not limited to: <ul style="list-style-type: none"> • Non-verbal gestures • Verbal • Face to face • Two-way radio • Speaking to groups • Using telephone • Written • Using Internet • Cell phone

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Dealt with a range of communication/information at one time • Make constructive contributions in workplace issues • Seek workplace issues effectively • Respond to workplace issues promptly • Present information clearly and effectively written form • Use appropriate sources of information • Ask appropriate questions • Provide accurate information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Organization requirements for written and electronic communication methods • Effective verbal communication methods
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Organize information • Understand and convey intended meaning • Participate in variety of workplace discussions • Comply with organization requirements for the use of written and electronic communication methods
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Lead Small Teams
Unit Code	AGR MEM3 14 0714
Unit Descriptor	This unit covers the skills, knowledge and attitudes required to determine individual and team development needs and facilitate the development of the work group.

Elements	Performance Criteria
1. Provide team leadership	<p>1.1 Learning and development needs are systematically identified and implemented in line with organizational requirements</p> <p>1.2 Learning plan is collaboratively developed and implemented to meet individual and group training and developmental needs</p> <p>1.3 Individuals are encouraged to self-evaluate performance and areas identified for improvement</p> <p>1.4 Feedback on performance of team members is collected from relevant sources and compared with established team learning process</p>
2. Foster individual and organizational growth	<p>2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competence standards</p> <p>2.2 Learning delivery methods are made appropriate to the learning goals, the learning style of participants and availability of equipment and resources</p> <p>2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies</p> <p>2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements</p>
3. Monitor and evaluate workplace learning	<p>3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements</p> <p>3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support</p> <p>3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning</p> <p>3.4 Records and reports of competence are maintained within organizational requirement</p>
4. Develop team commitment and cooperation	<p>4.1 Open communication processes are used by team to obtain and share information</p> <p>4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities</p> <p>4.3 Mutual concern and camaraderie are developed in the</p>

	team
5. Facilitate accomplishment of organizational goals	<p>5.1 Team members are made actively participatory in team activities and communication processes</p> <p>5.2 Individual and joint responsibility has been developed teams members for their actions</p> <p>5.3 Collaborative efforts are sustained to attain organizational goals</p>

Variable	Range
Learning and development needs	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Coaching, mentoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance appraisals • Workplace skills assessment • Recognition of prior learning
Organizational requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Formal/informal performance appraisals • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • On the job coaching or mentoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and Involvement in professional networks • Conference/seminar attendance and induction

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate learning plans to improve the effectiveness of

	<p>learning</p> <ul style="list-style-type: none"> • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • coaching and mentoring principles • how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • how to facilitate team development and improvement • methods and techniques for eliciting and interpreting feedback • methods for identifying and prioritizing personal development opportunities and options • career paths and competence standards in the industry
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • read and understand a variety of texts, prepare general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • receive feedback and report, maintain effective relationships and conflict management • organize required resources and equipment to meet learning needs • provide support to colleagues • organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation skills to conduct small group training sessions • relate to people from a range of social, cultural, physical and mental backgrounds
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Improve Business Practice
Unit Code	AGR MEM3 15 0714
Unit Descriptor	This unit covers the skills, knowledge and attitudes required in promoting, improving and growing business operations.

Elements	Performance Criteria
1. Diagnose the business	<p>1.1 Data required for diagnosis is determined and acquired.</p> <p>1.2 Competitive advantage of the business is determined from the data.</p> <p>1.3 SWOT analysis of the data is undertaken.</p>
2. Benchmark the business	<p>2.1 Sources of relevant benchmarking data are identified.</p> <p>2.2 Key indicators are selected for benchmarking in consultation with key stakeholders.</p> <p>2.3 Like indicators of own practice are compared with benchmark indicators.</p> <p>2.4 Areas are identified for improvement.</p>
3. Develop plans to improve business performance	<p>3.1 A consolidated list of required improvements is developed.</p> <p>3.2 Cost-benefit ratios are determined for required improvements.</p> <p>3.3 Work flow changes resulting from proposed improvements are determined.</p> <p>3.4 Proposed improvements are ranked according to agreed criteria.</p> <p>3.5 An action plan is developed and agreed to implement the top ranked improvements.</p> <p>3.6 Organizational structures are checked to ensure they are suitable.</p>
4. Develop marketing and promotional plans	<p>4.1 The practice vision statement is reviewed.</p> <p>4.2 Practice objectives are developed/ reviewed.</p> <p>4.3 Target markets are identified/ refined.</p> <p>4.4 Market research data is obtained.</p> <p>4.5 Competitor analysis is obtained.</p> <p>4.6 Market position is developed/ reviewed.</p> <p>4.7 Practice brand is developed.</p> <p>4.8 Benefits of practice/practice products/services are identified.</p> <p>4.9 Promotion tools are selected/ developed.</p>
5. Develop business growth plans	<p>5.1 Plans are developed to increase yield per existing client.</p> <p>5.2 Plans are developed to add new clients.</p> <p>5.3 Proposed plans are ranked according to agreed criteria.</p>

	<p>5.4 An action plan is developed and agreed to implement the top ranked plans.</p> <p>5.5 Practice work practices are reviewed to ensure they support growth plans.</p>
6. Implement and monitor plans	<p>6.1 Implementation plan is developed in consultation with all relevant stakeholders.</p> <p>6.2 Indicators of success of the plan are agreed.</p> <p>6.3 Implementation is monitored against agreed indicators.</p> <p>6.4 Implementation is adjusted as required.</p>

Variable	Range
Data required	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • organization capability • appropriate business structure • level of client service which can be provided • internal policies, procedures and practices • staff levels, capabilities and structure • market, market definition • market changes/market segmentation • market consolidation/fragmentation • revenue • level of commercial activity • expected revenue levels, short and long term • revenue growth rate • break even data • pricing policy • revenue assumptions • business environment • economic conditions • social factors • demographic factors • technological impacts • political/legislative/regulative impacts • competitors, competitor pricing and response to pricing • competitor marketing/branding • competitor products
Competitive advantage	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • services/products • fees • location • timeframe
SWOT analysis	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • internal strengths such as staff capability, recognized quality • internal weaknesses such as poor morale, under-capitalization, poor technology • external opportunities such as changing market and economic conditions • external threats such as industry fee structures, strategic

	<ul style="list-style-type: none"> • alliances, competitor marketing
Key indicators	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • salary cost and staffing • personnel productivity (particularly of principals) • profitability • fee structure • client base • size staff/principal • overhead/overhead control
Organizational structures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Legal structure (partnership, Limited Liability Company, etc.) • organizational structure/hierarchy • reward schemes
Objectives should be 'SMART'	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • S: Specific • M: Measurable • A: Achievable • R: Realistic • T: Time defined
Market research data	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • data about existing clients • data about possible new clients • data from internal sources • data from external sources such as: <ul style="list-style-type: none"> ➤ trade associations/journals ➤ Yellow Pages small business surveys ➤ libraries ➤ Internet ➤ Chamber of Commerce ➤ client surveys ➤ industry reports ➤ secondary market research • primary market research such as: <ul style="list-style-type: none"> ➤ telephone surveys ➤ personal interviews ➤ mail surveys
Competitor analysis	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • competitor offerings • competitor promotion strategies and activities • competitor profile in the market place
Market position	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • product • the good or service provided • product mix • the core product - what is bought • the tangible product - what is perceived • the augmented product - total package of consumer • features/benefits • product differentiation from competitive products • new/changed products • Price and pricing strategies (cost plus, supply/demand, ability

	<p>to pay, etc.)</p> <ul style="list-style-type: none"> • Pricing objectives (profit, market penetration, etc.) • cost components • market position • distribution strategies • marketing channels • promotion • promotional strategies • target audience • communication • promotion budget
Practice brand	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • practice image • practice logo/letter head/signage • phone answering protocol • facility decor • slogans • templates for communication/invoicing • style guide • writing style • AIDA (Attention, Interest, Desire, Action)
Benefits	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • features as perceived by the client • benefits as perceived by the client
Promotion tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • networking and referrals • seminars • advertising • press releases • publicity and sponsorship • brochures • newsletters (print and/or electronic) • websites • direct mail • telemarketing/cold calling
Yield per existing client	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • raising charge out rates/fees • packaging fees • reduce discounts • sell more services to existing clients

Evidence Guide

Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • ability to identify the key indicators of business performance • ability to identify the key market data for the business • knowledge of a wide range of available information sources • ability to acquire information not readily available within a business • ability to analyze data and determine areas of improvement • ability to negotiate required improvements to ensure implementation
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	<ul style="list-style-type: none"> • ability to evaluate systems against practice requirements and form recommendations and/or make recommendations • ability to assess the accuracy and relevance of information
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • data analysis • communication skills • computer skills to manipulate data and present information • negotiation skills • problem solving • planning skills • marketing principles • ability to acquire and interpret relevant data • current product and marketing mix • use of market intelligence • development and implementation strategies of promotion and growth plans
Underpinning Skills	<p>Demonstrates skill in:</p> <ul style="list-style-type: none"> • data analysis and manipulation • ability to acquire and interpret required data, current practice systems and structures and sources of relevant benchmarking data • applying methods of selecting relevant key benchmarking indicators • communication skills • working and consulting with others when developing plans for the business • planning skills, negotiation skills and problem solving • using computers to manipulate, present and distribute information
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard: Farm Machinery and Equipment Maintenance Level III	
Unit Title	Prevent and Eliminate MUDA
Unit Code	AGR MEM3 16 0714
Unit Descriptor	This unit of competence covers the knowledge, skills and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her their workplace. It covers responsibility for the day-to-day operation of the work and ensures Kaizen elements are continuously improved and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	<p>1.1 Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2 Job specifications are read and interpreted following working manual.</p> <p>1.3 OHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.</p> <p>1.4 Appropriate material is selected for work.</p> <p>1.5 Safety equipment and tools are identified and checked for safe and effective operation.</p>
2. Identify MUDA.	<p>2.1 Plan of MUDA identification is prepared and implemented.</p> <p>2.2 Causes and effects of MUDA are discussed.</p> <p>2.3 Tools and techniques are used to draw and analyze current situation of the work place.</p> <p>2.4 Wastes/MUDA are identified and measured based on relevant procedures.</p> <p>2.5 Identified and measured wastes are reported to relevant personnel.</p>
3. Eliminate wastes/MUDA.	<p>3. 1. Plan of MUDA elimination is prepared and implemented.</p> <p>3. 2. Necessary attitude and the ten basic principles for improvement are adopted to eliminate waste/MUDA.</p> <p>3. 3. Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS.</p> <p>3. 4. Wastes/MUDA are reduced and eliminated in accordance with OHS and organizational requirements.</p> <p>3. 5. Improvements gained by elimination of waste/MUDA are reported to relevant bodies.</p>
4. Prevent occurrence of wastes/MUDA.	<p>4.1 Plan of MUDA prevention is prepared and implemented.</p> <p>4.2 Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement are discussed and prepared.</p> <p>4.3 Occurrences of wastes/MUDA are prevented by using visual</p>

	<p>and auditory control methods.</p> <p>4.4 Waste-free workplace is created using 5W and 1H sheet.</p> <p>4.5 The completion of required operation is done in accordance with standard procedures and practices.</p> <p>4.6 The updating of standard procedures and practices is facilitated.</p> <p>4.7 The capability of the work team that aligns with the requirements of the procedure is ensured.</p>
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Variable	Range
OHS requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • dust masks / goggles • glove • working cloth • first aid • safety shoes
Tools and techniques	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Plant Layout • Process flow • Other Analysis tools • Do time study by work element • Measure Travel distance • Take a photo of workplace • Measure Total steps • Make list of items/products, who produces them and who uses them & those in warehouses, storages etc. • Focal points to Check and find out existing problems • 5S • Layout improvement • Brainstorming • Andon • U-line

	<ul style="list-style-type: none"> • In-lining • Unification • Multi-process handling & Multi-skilled operators • A.B. control (Two point control) • Cell production line • TPM (Total Productive Maintenance)
Relevant procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Make waste visible • Be conscious of the waste • Be accountable for the waste. • Measure the waste.
The ten basic principles for improvement	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Throw out all of your fixed ideas about how to do things. • Think of how the new method will work- not how it won. • Don't accept excuses. Totally deny the status quo. • Don't seek perfection. A 50 percent implementation rate is fine as long as it's done on the spot. • Correct mistakes the moment they are found. • Don't spend a lot of money on improvements. • Problems give you a chance to use your brain. • Ask "why?" At least five times until you find the ultimate cause. • Ten people's ideas are better than one person's. • Improvement knows no limits.
Visual and auditory control methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Red Tagging • Sign boards • Outlining • Andons • Kanban, etc.
5W and 1H	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Who • What • Where • When • Why • How

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • discuss why wastes occur in the workplace • discuss causes and effects of wastes/MUDA in the workplace • analyze the current situation of the workplace by using appropriate tools and techniques • identify, measure, eliminate and prevent occurrence of wastes by using appropriate tools and techniques • use 5W and 1H sheet to prevent

Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Targets of customers and manufacturer/service provider • Traditional and kaizen thinking of price setting • Kaizen thinking in relation to targets of manufacturer/service provider and customer • value • The three categories of operations • the 3“MU” • waste/MUDA • wastes occur in the workplace • The 7 types of MUDA • The Benefits of identifying and eliminating waste • Causes and effects of 7 MUDA • Procedures to identify MUDA • Necessary attitude and the ten basic principles for improvement • Procedures to eliminate MUDA • Prevention of wastes • Methods of waste prevention • Definition and purpose of standardization • Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement • Methods of visual and auditory control • TPM concept and its pillars. • Relevant Occupational Health and Safety (OHS) and environment requirements • Plan and report • Method of communication
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • draw & analyze current situation of the work place • use measurement apparatus (stop watch, tape, etc.) • calculate volume and area • use and follow checklists to identify, measure and eliminate wastes/MUDA • identify and measure wastes/MUDA in accordance with OHS and procedures • use tools and techniques to eliminate wastes/MUDA in accordance with OHS procedure • apply 5W and 1H sheet • update and use standard procedures for completion of required operation • work with others • read and interpret documents • observe situations • solve problems • communicate • gather evidence by using different means • report activities and results using report formats
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment,

	and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

NTQF Level IV

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Carryout Diagnosis of Complex System Faults
Unit Code	AGR MEM4 01 0714
Unit Descriptor	This unit covers the competence required to diagnose faults in systems integrating two or more automotive systems or incorporating three or more of mechanical, hydraulic, pneumatic, electrical or electronic media. The unit includes identification and confirmation of the work requirement, preparation for work, diagnosis and identification of the causes of faults, establishment of the repair requirements and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare for diagnostic procedure	<p>1.1 Nature and scope of the work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Technical and/or calibration requirements for testing and diagnosis are sourced and support tools, equipment and materials are identified and prepared.</p>
2. Analyse reported faults	<p>2.1 Information is gathered from all sources to provide a full overview of all faults and conditions under which they occur.</p> <p>2.2 Function and operation of the system are identified when operating correctly.</p> <p>2.3 Systematic fault-finding processes are used across relevant systems to determine the extent of the fault.</p> <p>2.4 Additional technical sources are consulted to assist with analysis, if necessary.</p> <p>2.5 Actual faults are distinguished from perceived faults.</p>
3. Identify causes of faults	<p>3.1 Diagnostic method, equipment and tests are selected to facilitate precise identification of complex system faults and causes.</p> <p>3.2 Tests are applied systematically and efficiently to gather precise data on system operation.</p> <p>3.3 Appropriate use is made of technical information to compare gathered data with specifications.</p> <p>3.4 Test results and gathered data are compared to system specifications and normal functions, and discrepancies are identified.</p> <p>3.5 Source/cause of fault is isolated and confirmed.</p>
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4. Establish repair requirements	<p>4.1 Viability of repair or replacement is assessed.</p> <p>4.2 Appropriate repair procedures are identified and prescribed to meet customer service requirements.</p> <p>4.3 Repair requirements are clearly and legibly documented and/or communicated to appropriate persons.</p> <p>4.4 Repairs involving equipment/skills not held in the workshop are sourced from specialist workshops.</p> <p>4.5 Customer is informed of the diagnosis and repair requirements.</p>
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Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of materials, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal Protective Equipment	is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> • testing equipment, meters, CRO, code readers, gauges, measuring equipment, gas analysers and sensors
Materials	may include cleaning materials
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to diagnosis of complex system faults • regulatory/legislative requirements pertaining to the automotive industry, including international design rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
Diagnostic methods	<p>are to include:</p> <ul style="list-style-type: none"> • questioning of customer • road testing • hydraulic testing (e.g. performance testing of power steering systems) • electrical testing (e.g. performance testing of engine starting systems) • electronic testing (e.g. electronic interface diagnostic equipment) • mechanical testing (e.g. compression testing on engines)

	<ul style="list-style-type: none"> • chemical testing (e.g. testing of cooling systems) • technical/service manuals • component/equipment service history • body measurements
Complex systems	<p>Is defined as one which integrates two or more automotive systems, or incorporates three or more of mechanical, hydraulic, pneumatic, electrical or electronic media. Examples include:</p> <ul style="list-style-type: none"> • hydraulically/ electronically controlled automatic transmissions, • anti-lock braking systems, • engine management systems integrating ignition, • fuel and transmission control systems <p>Workplace example:</p> <ul style="list-style-type: none"> • Customer reports intermittent shifting into top gear on an electronically controlled automatic transmission. The customer is asked a number of questions about the conditions in which the problem occurs (e.g. frequency of the problem, speed, road conditions). A road test is conducted, and the technician detects intermittent speedometer operation. After testing of electrical connections, components and sensors, the intermittent speedometer operation is confirmed to be the problem. Repair requirements are determined to be securing the connections on the speedometer wiring.
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement, ➤ toxic substances, ➤ electrical safety, ➤ equipment movement and operation, ➤ manual and mechanical lifting and shifting, ➤ working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, • extinguishing fires, • enterprise first aid requirements and site evacuation
Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide

Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • analysing faults in complex systems, identifying the cause(s) of faults and establishing repair requirements within an
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	established timeframe for faults incorporating at least three of the following single systems: mechanical, hydraulic, pneumatic and electrical/electronic
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • OHS regulations/requirements, equipment, material and personal safety requirements • function and operation of the appropriate complex automotive systems • symptom and cause differentiation • diagnostic procedures and problem-solving techniques • test procedures and test instrument application • documenting and reporting procedures • repair procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome • use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the diagnosis of complex system faults, including the use of measuring equipment, computerised technology and electronics, communication devices and reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Overhaul Engines and Associated Engine Components
Unit Code	AGR MEM4 02 0714
Unit Descriptor	This unit covers the competence required to overhaul engines and associated engine components. This unit covers required competence required to dismantle, inspect, evaluate and determine preferred repair action of engine components block and sub-assemblies as part of an engine reconditioning, testing and analysis of the system and overhauling process. The unit includes identification and confirmation of work requirement, preparation for work, dismantling of engines, repair, assembly and final checking of engines and completion of work finalisation processes, including clean-up, report writing and documentation. Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to carry out engine overhaul systems	<p>1.1 Nature and scope of work requirements are identified and confirmed.</p> <p>1.2 Workplace instructions are used to determine job requirements, including method, process and equipment.</p> <p>1.3 Information is accessed, procedures and methods are analysed, and appropriate tooling, equipment and materials options are selected for dismantling engines and sub-assemblies.</p> <p>1.4 Safe operating procedures, Occupational Health and Safety (OHS) and environmental requirements are observed throughout the work</p> <p>1.5 Procedures and information are sourced such as workshop manuals, specifications and tooling.</p> <p>1.6 National Environmental Protection Guidelines are sourced and observed throughout the work as applicable to tasks.</p> <p>1.7 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.8 Technical and tooling requirements for overhaul are identified and support equipment is identified and prepared.</p> <p>1.9 Engine is set up for dismantling using appropriate lifting equipment and avoiding fluid spillage.</p> <p>1.10 Engine block and sub-assemblies are cleaned in line with appropriate environmental constraints, and positions of auxiliary equipment are recorded.</p> <p>1.11 Warnings in relation to working with diesel fuels are observed.</p>
2. Test diesel fuel injection systems	<p>2.1 Methods for conducting diesel fuel system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.</p>

	<p>2.2 Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendations made.</p> <p>2.4 Report is forwarded to appropriate persons for action in accordance with workplace procedures.</p>
3. Dismantle engine block and sub-assemblies	<p>3.1 Correct information is accessed and interpreted from manufacturer or component supplier specifications.</p> <p>3.2 Covers and ancillary components are removed, cleaned and stored without causing damage to components or system according to workshop requirements.</p> <p>3.3 Engine blocks and sub-assemblies are dismantled and laid out in a logical order using approved methods, tools and equipment and without causing damage to components or system.</p> <p>3.4 Component parts are cleaned using appropriate cleaning agents for the type of material and kept in a logical order in preparation for evaluation.</p>
4. Finalise dismantle and evaluation processes	<p>4.1 Work performed is documented.</p> <p>4.2 Final inspection is made to ensure safety features are in place.</p> <p>4.3 Engine block and sub-assemblies are prepared for storage according to workplace requirements.</p> <p>4.4 Workplace documentation is processed according to workplace procedures.</p>
5. Determine repair procedures	<p>5.1 Correct information is accessed and interpreted from manufacturer and component supplier specifications.</p> <p>5.2 Engine block and sub-assembly components are inspected, measured and tested against manufacturer and component supplier specifications and tolerances.</p> <p>5.3 Inspection, measurement and testing are completed without causing damage to components or system.</p> <p>5.4 Engine block and sub-assembly components are evaluated against measurements, tests and inspections made.</p> <p>5.5 Repair requirements are identified and reported according to workplace policy and procedures.</p> <p>5.6 Workplace documentation is completed and dealt with in line with inspection, measurement and testing outcomes.</p>
6. Overhaul engine components	<p>6.1 Information is accessed and interpreted from manufacturer specifications and repair/reclaim methods.</p> <p>6.2 Overhaul of diesel fuel injection system components is carried out in accordance with manufacturer/component supplier specifications.</p>

	<p>6.3 Injection timing is performed/ adjusted.</p> <p>6.4 Diesel fuel injection system component overhaul is completed without causing damage to any component or system.</p> <p>6.5 Components are measured and compared against manufacturer/component supplier specifications and tolerances.</p> <p>6.6 Decisions are made as to serviceability and repair method of each component.</p> <p>6.7 Replacement parts are sourced.</p> <p>6.8 Rebuild or replacement of engine and/or engine components is carried out in accordance with manufacturer/component supplier specifications and tolerances.</p> <p>6.9 Overhaul activities are carried out according to industry regulations/guidelines, OHS legislation and enterprise procedures/policies.</p>
<p>7. Assemble engine and components</p>	<p>7.1 Engine is assembled by following manufacturer/component supplier procedures.</p> <p>7.2 Running clearances are measured against manufacturer specifications and necessary adjustments are made.</p> <p>7.3 Assembly of engine is completed within established industry guidelines and timeframes.</p> <p>7.4 Assembly is completed without causing damage to any component or system.</p>
<p>8. Check engine operation</p>	<p>8.1 Engine is securely mounted in preparation for starting.</p> <p>8.2 Engine fluid levels, including lubrication and coolant are checked.</p> <p>8.3 Gauges and warning devices are checked for operation prior to starting.</p> <p>8.4 Engine is started and checked for leaks and abnormal noises.</p>
<p>9. Prepare engine for delivery to customer or installation</p>	<p>9.1 Work schedule documentation is completed.</p> <p>9.2 Engine orifices are sealed against ingress of foreign matter.</p> <p>9.3 Work completion documentation is finalised and processed to appropriate persons.</p> <p>9.4 Final inspection is made to ensure protective features are in place.</p> <p>9.5 Vehicle fuel system and/or components are cleaned and/or stored to workplace expectations.</p> <p>9.6 Engine is cleaned to workplace expectations.</p> <p>9.7 Job card is processed in accordance with workplace procedures.</p>

Variable	Range		
Information	may include: <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the overhaul of engines • regulatory/legislative requirements pertaining to the automotive industry, including Ethiopian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines • engineer's design specifications and instructions • organisation work specifications and requirements 		
Tooling and equipment	May include but are not limited to: <ul style="list-style-type: none"> • hand tooling, power tooling • lifting and jacking equipment • specialist tooling • measuring equipment and tensioning equipment 		
Materials	may include: <ul style="list-style-type: none"> • engine oils • moving parts lubricants • replacement parts • gaskets, sealants and cleaning materials 		
Safe operating procedures	May include but are not limited to: <ul style="list-style-type: none"> • operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ toxic substances ➤ electrical safety ➤ equipment movement and operation ➤ manual and mechanical lifting and shifting ➤ working in proximity to others and site visitors 		
Occupational Health and Safety (OHS) requirements	Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include: <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances 		
Environmental requirements	May include but are not limited to: <ul style="list-style-type: none"> • waste management • noise, dust and clean-up management 		
Engine	May include but not limited to: <ul style="list-style-type: none"> • stroke compression ignition engines for, heavy vehicles, mobile plant • stroke compression ignition for heavy vehicles, mobile plant 		
Emergency procedures	May include but are not limited to: <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment • extinguishing fires • enterprise first aid requirements and site evacuation 		
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Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • regulations, including Ethiopian Standards, internal company quality policy and standards and enterprise operations and procedures
Overhaul methods and sequences	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Overhaul methods and sequences are to include: <ul style="list-style-type: none"> ➢ the complete dismantling of component parts, ➢ measuring and evaluation of wear, ➢ the replacement, repair, ➢ rebuilding or reconditioning of parts comparable to original parts, ➢ the assembly of parts, ➢ performance of functional testing of engine, ➢ injection pump, ➢ nozzle/bleeding and the completion of records

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • dismantling, evaluating, assembling, adjustment, measuring and testing engines in accordance with workplace and manufacturer/component supplier requirements • completing overhaul of diesel fuel system and associated components within workplace timeframes • completing overhaul of a range of engines and associated components within workplace guidelines and timeframes • engine presentation to customer in compliance with workplace requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • operating principles of diesel fuel systems and their relationship to each other • National Environment Protection Measure for Diesel Vehicles • types, characteristics and operating processes of engines • types and layout of service/repair manuals • engine overhaul procedures • dismantling, assembling and adjustment methods • measuring and testing procedures • relevant technical information • component safety requirements • relevant enterprise policies • manual handling techniques

Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to overhaul of engines, including use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and reporting/documenting of results
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Overhaul Power Train and Associated Components
Unit Code	AGR MEM4 03 0714
Unit Descriptor	This unit covers the competence required to carry out dismantle, repair and rebuild of power train (clutch, gearbox, differential, final drive, steering system, suspension system, breaking system) and associated components, Assemblies' identification and replacement or repair of worn and deteriorated parts, testing and adjustment. This unit covers the competence required to carry out an overhaul of steering system components, including mechanical and power assisted components, identification and confirmation of the work requirement, preparation for work, testing and analysis of results transmissions, the dismantling, assembling, inspection, adjusting, preparation for installation, and completion of work finalisation processes, including clean-up and documentation.

Elements	Performance Criteria
1. Prepare to undertake repair/service power train components/assemblies	<p>1.1 Nature and scope of the work requirements are identified and confirmed.</p> <p>1.2 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.3 Transmission faults are identified.</p> <p>1.4 Procedures and information are sourced such as workshop manuals, specifications and tooling.</p> <p>1.5 Overhaul method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>1.6 Technical and/or calibration requirements are identified and prepared for the testing.</p> <p>1.7 Clutch is repaired and final drive assemblies are sourced and tools, equipment and materials are supported.</p> <p>1.8 Warnings are observed in relation to working with gear, chain and tracked type assemblies.</p> <p>1.9 Warnings are observed in relation to working with stored energy as in emergency braking actuators.</p> <p>1.10 Dangers working are observed with brake dust and preventative measures.</p>
2. Test power train assemblies and analyse results	<p>2.1 Methods for the conduct of the system tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>2.2 Observations are noted during the test</p> <p>2.3 Results of test are analysed</p> <p>2.4 Documentation of observations is completed</p> <p>2.5 Results are compared with manufacturer/component supplier specifications to indicate compliance or non-</p>

	<p>compliance</p> <p>2.6 Results are documented with evidence and supporting information and recommendation(s) made</p> <p>2.7 Report is processed in accordance with workplace procedures</p>
3. Carry out repair and maintenance power train assemblies	<p>3.1 Methods for the conduct of the overhaul are implemented in accordance with workplace procedures and manufacturer/component supplier specifications</p> <p>3.2 All adjustments are made during the overhaul in accordance with manufacturer specifications</p> <p>3.3 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines</p> <p>3.4 Emergency procedures are identified and followed as per organization's guideline</p> <p>3.5 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines</p>
4. Conduct serviceability tests on components	<p>4.1 Methods for the conduct of the test are implemented in accordance with workplace procedures and manufacturer specifications.</p> <p>4.2 Observations on the performance of the component are noted during the test.</p> <p>4.3 A determination is made as to the serviceability of the component.</p> <p>4.4 Failed components are tagged for rework.</p> <p>4.5 Documentation of observations is completed.</p>
5. Repair power train (from clutch up to final drive)	<p>5.1 Information is accessed and interpreted from manufacturer/ component supplier specifications.</p> <p>5.2 Transmission lines/systems, steering systems and braking system components are dismantled, repaired and rebuilt using approved methods and equipment according to manufacturer specifications and tolerances relative to the vehicle/plant manufacturer/component supplier.</p> <p>5.3 Replacements to faulty steering systems are carried out in accordance with manufacturer/ component supplier specifications for methods, equipment and tolerances.</p> <p>5.4 All power train and associated components are repaired without causing damage to any component or system.</p> <p>5.5 Transmission parts are cleaned in readiness for evaluation</p> <p>5.6 Parts are checked for serviceability against manufacturer/ component supplier specifications</p> <p>5.7 Unserviceable parts are identified and a replacement parts list raised</p> <p>5.8 service and repairing activities are carried out according to</p>

	industry regulations/guidelines, OHS legislation, legislation and enterprise procedures/policies
6. Prepare vehicle/machine for use /installation or storage	<p>6.1 Over all schedule documentation is completed.</p> <p>6.2 Transmission is cleaned to enterprise requirements.</p> <p>6.3 Inspection is made to ensure safety features are in place.</p> <p>6.4 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>6.5 Final inspection is made to ensure work is to workplace expectations.</p> <p>6.6 Vehicle/machine components is cleaned and presented for use or stored to workplace expectations.</p> <p>6.7 Job card is processed in accordance with work done procedures.</p>

Variable	Range
OHS requirements	<p>Are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment, • use of tooling and equipment, • workplace environment and safety, • handling of materials, • use of fire fighting equipment, • enterprise first aid, • hazard control and hazardous materials and substances
Personal Protective Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
Information	<p>may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions • signage, work schedules/plans/specifications • work bulletins, memos, material safety data sheets • diagrams or sketches • safe work procedures related to the overhaul of final drive assemblies • regulatory/legislative requirements pertaining to the automotive industry, including Ethiopian Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tooling, • special tooling for disassembly • assembly and adjustment • measuring equipment

	<ul style="list-style-type: none"> • lifting equipment • cleaning equipment • testing equipment, including load device and pressure testers, tachometers, multi meters, meters, gauges and power tooling etc.
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • lubricants, spare parts and cleaning materials
Safe operating procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with: <ul style="list-style-type: none"> ➤ vehicular movement ➤ toxic substances ➤ electrical safety ➤ equipment movement and operation ➤ manual and mechanical lifting and shifting ➤ working in proximity to others and site visitors
Emergency procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Emergency procedures related to this unit are to include but are not limited to: <ul style="list-style-type: none"> ➤ emergency shutdown and stopping of equipment ➤ extinguishing fires ➤ enterprise first aid requirements and site evacuation
Environmental requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • waste management • noise, dust and clean-up management
Steering system components	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • light vehicles, heavy vehicles, including articulated, tracked and wheeled type vehicles and include mechanical steering boxes, power-assisted steering boxes and full power steering assemblies
Steering components	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • pumps, orbital valves, valves and actuator
Breaking system actuating mechanisms	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • fluid operated, • mechanically operated, • power assisted, • anti-lock brake systems, • computer systems
Breaking system components	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • disc pads, master cylinders • brake shoes, brake callipers • brake hoses, brake actuators • mechanical devices, and hydraulic and pneumatic valves
Quality requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • regulations, including Ethiopian Standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identification of the application, purpose and operation • application of the full repair maintenance sequence as per the range statement relative to the qualification being sought • presenting and interpreting the test results • conducting the overhaul in accordance with workplace and manufacturer/component supplier requirements • completing overhaul of transmission and associated components within workplace timeframes • presentation of vehicle/machine to customer in compliance with workplace requirements
Underpinning knowledge and attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with wheeled and tracked type vehicles and equipment • identification of the application, purpose and operation • identification of component parts to include physical, fluid, gases and heat generation • analytical knowledge of gear ratio • identification of wear evaluation methods • the principles of gearing as applied to the steering systems • steering systems overhaul procedures • health hazards working with brake dust • hydraulic principles • operating principles of heavy braking systems and their components, including air compressors • types and layout of service/repair manuals • manual transmission overhaul procedures • component repair and adjustment procedures • manual handling procedures • identification of wear evaluation methods • operating principles of constant mesh and/or planetary automatic transmissions • laws of single and compound planetary gearing • types and layout of service/repair manuals • clutch assembly test procedures • automatic transmission dismantling and assembling procedures • automatic transmission test procedures • final drive assembly test procedures • final drive assembly ,repair procedures • enterprise quality procedures

	<ul style="list-style-type: none"> • work organization and planning processes • manual handling procedures
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance • interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal • the capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome • use mathematical ideas and techniques to calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality check • use workplace technology related to the repair of dry and wet clutch and final drive assemblies, including the use of measuring equipment, computerized technology and communication devices and reporting/documenting of results.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Inspect, Service and Repair Harvesting Equipment
Unit Code	AGR MEM4 04 0714
Unit descriptor	This unit covers the competence required to carry out the inspection, service and repair of harvesting equipment. The unit includes identification and confirmation of work requirement, preparation for work, inspection and analysis of results, servicing and repair of equipment and completion of work finalisation processes, including clean-up and documentation. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

Elements	Performance Criteria
1. Prepare to inspect and service harvesting equipment	<p>1.1 Nature and scope of harvesting equipment repair requirements are identified and confirmed.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered.</p> <p>1.3 OHS requirements, including regulatory requirements and Personal Protective Equipment needs are observed throughout work.</p> <p>1.4 Procedures and information such as workshop manuals, specifications, and tooling, equipment and materials are sourced.</p> <p>1.5 Repair method options are analysed and those most appropriate to the circumstances are selected and prepared.</p> <p>1.6 Technical and/or calibration requirements are sourced for inspecting harvesting equipment and support equipment is identified and prepared.</p> <p>1.7 Warnings are observed in relation to working with harvesting equipment.</p>
2. Conduct inspection and analyse results	<p>2.1 Methods are implemented for inspection in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>2.2 Inspection results are compared with manufacturer specifications to indicate compliance or non-compliance.</p> <p>2.3 Results are documented with evidence and supporting information and recommendation(s) made.</p> <p>2.4 Report is processed in accordance with workplace procedures.</p>
3. Service and repair harvesting equipment	<p>3.1 Safe operating procedures are observed and noted during the use of tools/ equipment in accordance with workplace guidelines.</p> <p>3.2 Emergency procedures are identified and followed as per organization's guideline.</p>

	<p>3.3 Procedures and information are identified and sourced.</p> <p>3.4 Technical and tool requirements are identified and prepared for service and repair are identified and support equipment.</p> <p>3.5 Methods are implemented for service and repair in accordance with workplace procedures and manufacturer/component supplier specifications.</p> <p>3.6 Adjustments are made during the service and repair in accordance with manufacturer/component supplier specifications.</p>
4. Prepare equipment for operation	<p>4.1 Variable operating parameters are identified from manufacturer/system component supplier specifications and analysis of proposed working environment and conditions.</p> <p>4.2 Equipment variables, including management systems settings, controls and monitoring systems are established and prepared for proposed operations.</p> <p>4.3 Equipment and systems are tested and final adjustments are made to achieve and maintain operating parameters.</p> <p>4.4 Regulatory requirements including equipment safety and environmental compliance are applied and satisfied.</p>
5. Prepare equipment for use or storage	<p>5.1 Service/repairs schedule documentation is completed.</p> <p>5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.</p> <p>5.3 Final inspection is made to ensure work is to workplace expectations.</p> <p>5.4 Equipment is cleaned for use or storage to workplace expectations.</p> <p>5.5 Environmental requirements are observed and precautions implemented according to workplace and environmental protection regulation or guidelines.</p> <p>5.6 Job card is processed in accordance with workplace procedures.</p>

Variable	Range
Harvesting equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> specialised equipment involved in harvesting grain, sugar cane, cotton, rice, forage; It does not cover generalised equipment and systems which form the platform or the towing vehicle
Information sources	<p>may include:</p> <ul style="list-style-type: none"> verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches safe work procedures related to the inspection and servicing of harvesting equipments and associated components regulatory/legislative requirements pertaining to the farm machinery industry, including international design rules

	<ul style="list-style-type: none"> • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • international standards
OHS requirements	<p>Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include:</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tooling and equipment • workplace environment and safety • handling of material • use of fire fighting equipment • enterprise first aid • hazard control and hazardous materials and substances
Personal Protective Equipment	Is to include that prescribed under legislation/regulations/ codes of practice and workplace policies and practices
Tooling and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • hand tooling • diagnostic and monitoring systems • meters, gauges, load testing devices • pulling and pushing devices
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • spare parts, lubricants • fluids and cleaning materials
Methods	Are to include visual, aural and functional assessments, including damage, corrosion, wear and electrical
Safe operating procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • the conduct of operational risk assessment and treatments associated with vehicular movement, hazardous substances, electrical safety, equipment movement and operation, manual lifting and shifting, working in proximity to others and site visitors
Emergency procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • emergency shutdown and stopping of equipment, operating safely in the event of fires, enterprise first aid requirements and site evacuation
System component	<p>for inspection may include but not limited to:</p> <ul style="list-style-type: none"> • Cutting mechanism, feeding mechanism, threshing mechanism, and cleaning mechanism.
Environmental requirements	Are to include but are not limited to waste management, noise, dust and clean-up management
Quality requirements	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • regulations, including International Standards, internal company quality policy and standards and enterprise operations and procedures

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • transferring competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:
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	<ul style="list-style-type: none"> ➤ observing safety procedures and requirements ➤ communicating effectively with others involved in or affected by the work ➤ selecting methods and techniques appropriate to the circumstances ➤ completing preparatory activity in a systematic manner ➤ completing a minimum of four full cycles requiring inspection, servicing, repair and preparing of harvesting equipment for operations, ensuring: <ul style="list-style-type: none"> ➤ accurate interpretation of inspection results ➤ completion of inspection, service and repair in accordance with workplace and manufacturer/ component supplier
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • OHS and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with harvesting equipments • operating principles of mechanical and hydraulic systems and their relationship to each other • types and layout of service/repair manuals • inspection procedures • service procedures • enterprise quality procedures • work organisation and planning processes
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • apply and search interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures • apply analytical skills required for identification and analysis of technical information • apply questioning and active listening skills for example when obtaining information from customers • apply oral communication skills sufficient to convey information and concepts to customers • apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance • establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage • use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks • use workplace technology related to the inspection and servicing of steering systems and associated components, including the use of electronic measuring equipment, computerised technology and communication devices and the reporting/documenting of results

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Prepare a Vehicle Repair Quotation
Unit Code	AGR MEM4 05 0714
Unit Descriptor	<p>This unit of competency describes the skills and knowledge required to prepare a written vehicle repair quotation.</p> <p>This unit applies to individuals who are required to prepare vehicle repair quotations in the vehicle repair and vehicle loss assessing industries.</p>

Elements	Performance Criteria
1. Gather information	<p>1.1 The particular service required is clarified.</p> <p>1.2 Information sources are located.</p> <p>1.3 Any job cost estimation and calculation details are gathered.</p> <p>1.4 Labour unit cost projections are obtained.</p> <p>1.5 Enterprise quotation elements and procedures are identified.</p>
2. Estimate, cost and prepare vehicle repair quotation	<p>2.1 Required parts and materials are estimated and costed.</p> <p>2.2 Direct labour and subcontractor services are estimated and costed.</p> <p>2.3 Overheads and mark -up percentages are estimated and costed in accordance with enterprise procedures.</p> <p>2.4 Potential quotation variations are noted.</p> <p>2.5 A legible and accurate quotation is prepared using the enterprise approved format.</p> <p>2.6 Final costs, calculations and other details are verified with relevant enterprise person.</p>
3. Present quotation to customer	<p>3.1 Verbal and written report is presented to customer.</p> <p>3.2 Approval is gained to complete repairs from customer.</p> <p>3.3 Documentation and file quotation are completed as required by enterprise.</p>

Variable	Range
Information	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Motor Vehicle Insurance and Repair Industry Code of Conduct • verbal, written and graphical instructions • parts listing prices and catalogues • inventory systems • Material Safety Data Sheets (MSDS) • diagrams or sketches • safe work procedures for inspection of vehicles for saleable components • engineer's design specifications and instructions

	<ul style="list-style-type: none"> workplace specifications and requirements instructions issued by authorised enterprise or external persons current driver's license
Costing	<p>May include but not limited to:</p> <ul style="list-style-type: none"> rental and leasing costs utilities non-production resources depreciation of plant and equipment warehousing margins warehousing costs insurance and other costs incurred by doing business material/supply costs, including catalogues, contracts, standing agreements, market rates and warehousing margins
Enterprise procedures	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, equipment movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Quotation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> customer details vehicle details work to be performed details of costs, including labour legible and accurate documentation using the enterprise-approved format

Evidence Guide	
Critical Aspects of Competence	<p>Must consistently demonstrate knowledge and skills in:</p> <ul style="list-style-type: none"> observe safety procedures and requirements communicating effectively with others involved in or affected by the work select appropriate methods and techniques interpret proposals, specifications and instructions for the work obtain information relevant to the determination of costs calculate and cost accurately the quantities of parts and materials, the amount of labour and time required to complete the work and overheads for a range of vehicle repair quotes document the process and outcomes in accordance with enterprise practice
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of :</p> <ul style="list-style-type: none"> methods and processes for identifying, apportioning, summarising and validating total costs for work components of labour costs current assessing and quoting methodologies

	<ul style="list-style-type: none"> • commercial approaches to warehousing and physical distribution and costing • manufacturer and component supplier specifications and manuals, including costing catalogues • applicable legislation, regulations, standards and codes of practice, including Occupational Health and Safety (OHS), personal safety and environment, relevant to calculating vehicle repair • organizational policies and procedures, including quality requirements, reporting and recording procedures, related to calculating vehicle repair costs
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • technical skills to the level required to use the internet and other workplace technology related to preparing a vehicle repair quotation • communication skills to the level required to verify costs with others, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds, and of varying physical and mental abilities • literacy skills to the level required to undertake costing research and to document and report findings • numeracy skills to the level required to estimate and calculate labour, materials and on-costs and to validate work costs • problem-solving skills to the level required to anticipate costing problems and to avoid reworking, wastage, and planning and scheduling problem • team skills to the level required to work effectively and cooperatively with others to optimize workflow and productivity
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Implement Operational Plan
Unit Code	AGR MEM4 06 0714
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the operational plan by monitoring and adjusting operational performance, producing short term plans for the department/section, planning and acquiring resources and providing reports on performance as required. Managers at this level are actively engaged in planning activities to achieve the measurable, stated objectives of the team and the organisation. This key role is carried out to provide safe, efficient and effective products and services to customer satisfaction within the organisation's productivity and profitability plans.

Elements	Performance Criteria
1. Implement operational plan	<p>1.1 Details of resource requirements are collated, analysed and organized in consultation with relevant personnel, colleagues and specialist resource managers.</p> <p>1.2 Operational plans are implemented to contribute to the achievement of organisation's performance/business plan.</p> <p>1.3 Key Performance Indicators (KPIs) are identified and used to monitor operational performance.</p> <p>1.4 Contingency planning and consultation processes are undertaken.</p> <p>1.5 Assistance in the development and presentation of proposals is provided for resource requirements in line with operational planning processes.</p>
2. Implement resource acquisition	<p>2.1 Employees are recruited and inducted within organisation's policies, practices and procedures.</p> <p>2.2 Plans are implemented for acquisition of physical resources and services within organisation's policies, practices and procedures and in consultation with relevant personnel.</p>
3. Monitor operational performance	<p>3.1 Performance systems and processes are monitored to assess progress in achieving profit/productivity plans and targets.</p> <p>3.2 Budget and actual financial information are analysed and used to monitor profit/productivity performance.</p> <p>3.3 Unsatisfactory performance is identified and prompts action taken to rectify the situation according to organizational policies.</p> <p>3.4 Mentoring, coaching and supervision are provided to support individuals and teams to use resources effectively, economically and safely.</p> <p>3.5 Recommendations are presented for variation to operational plans to the designated persons/groups and</p>

	approval is gained. 3.6 Systems, procedures and records associated with performance are implemented in accordance with organisation's requirements.
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Variable	Range
Resource requirements	May include but not limited to: <ul style="list-style-type: none"> • goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, colleagues and specialist resource managers	May include but not limited to: <ul style="list-style-type: none"> • colleagues and specialist resource managers • managers • occupational health and safety committees and other people with specialist responsibilities • other employees • people from a wide range of social, cultural and ethnic backgrounds, and people with a range of physical and mental abilities • supervisors
Operational plans	May refer to: <ul style="list-style-type: none"> • organizational plans • tactical plans developed by the department or section to detail product and service performance
Key Performance Indicators (KPIS)	May refer to: <ul style="list-style-type: none"> • measures for monitoring or evaluating the efficiency or effectiveness of a system, and which may be used to demonstrate accountability and to identify areas for improvements
Contingency planning	May refer to: <ul style="list-style-type: none"> • contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-use • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Consultation processes	May refer to: <ul style="list-style-type: none"> • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to

	contribute to team and individual operational plans
Organisation's policies, practices and procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • organizational culture • Standard Operating Procedures • organizational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • undocumented practices in line with organizational operations
Performance systems and processes	<p>May refer to:</p> <ul style="list-style-type: none"> • informal systems used by frontline managers for the work team in the place of existing organisation-wide systems • formal processes within the organisation to measure performance, such as: <ul style="list-style-type: none"> ➢ feedback arrangements ➢ individual and teamwork plans ➢ KPIs ➢ specified work outcomes
Designated persons/groups	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • other affected work groups or teams and groups designated in workplace policies and procedures • those who have the authority to make decisions and/or recommendations about operations such as workplace supervisors, other managers
Systems, procedures and records	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • databases and other recording mechanisms for ensuring records are kept in accordance with organizational requirements • individual and team performance plans • organizational policies and procedures relative to performance

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • ability to monitor and adjust operational performance, produce short-term plans for the department or section, plan and acquire resources, and provide reports on performance as required • knowledge of principles and techniques associated with monitoring and implementing operations and procedures
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • principles and techniques associated with: <ul style="list-style-type: none"> ➢ contingency planning ➢ methods for monitoring and reporting on performance ➢ monitoring and implementing operations and procedures ➢ problem identification and methods of resolution ➢ relevant budgeting and financial analysis, interpretation and reporting requirements ➢ resource management systems at the tactical implementation level ➢ resource planning and acquisition ➢ tactical risk analysis including identification and reporting

	requirements
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • coaching and mentoring skills to provide support to colleagues • literacy skills to access and use workplace information, and to prepare reports • planning and organising skills to monitor performance and to sequence work of self and others to achieve planned outcomes
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Plan and Organize Work
Unit Code	AGR MEM4 07 0714
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	Performance Criteria
1. Set objectives	<p>1.1 Objectives are planned consistent with and linked to work activities in accordance with organizational aims.</p> <p>1.2 Objectives are stated as measurable targets with clear time frames.</p> <p>1.3 Support and commitment of team members are reflected in the objectives.</p> <p>1.4 Realistic and attainable objectives are identified.</p>
2. Plan and schedule work activities	<p>2.1 Tasks/work activities to be completed are identified and prioritized as directed.</p> <p>2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components.</p> <p>2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions.</p> <p>2.4 Resources are allocated as per requirements of the activity.</p> <p>2.5 Schedule of work activities is coordinated with personnel concerned.</p>
3. Implement work plans	<p>3.1 Work methods and practices are identified in consultation with personnel concerned.</p> <p>3.2 Work plans are implemented in accordance with set time frames, resources and standards.</p>
4. Monitor work activities	<p>4.1 Work activities are monitored and compared with set objectives.</p> <p>4.2 Work performance is monitored.</p> <p>4.3 Deviations from work activities are reported and recommendations coordinated with appropriate personnel and in accordance with set standards.</p> <p>4.4 Reporting requirements are complied with in accordance with recommended format.</p> <p>4.5 Timeliness of report is observed.</p> <p>4.6 Files are established and maintained in accordance with standard operating procedures.</p>

5. Review and evaluate work plans and activities	<p>5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information.</p> <p>5.2 Review is done based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback.</p> <p>5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities.</p> <p>5.4 Performance appraisal is conducted in accordance with organization rules and regulations.</p> <p>5.5 Performance appraisal report is prepared and documented regularly as per organization requirements.</p> <p>5.6 Recommendations are prepared and presented to appropriate personnel/authorities.</p> <p>5.7 Feedback mechanisms are implemented in line with organization policies.</p>
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Variable	Range
Objectives	May include but not limited to: <ul style="list-style-type: none"> • Specific • General
Resources	May include but not limited to: <ul style="list-style-type: none"> • Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	May include but not limited to: <ul style="list-style-type: none"> • Daily • Work-based • Contractual • Regular
Work methods and practices	May include but not limited to: <ul style="list-style-type: none"> • Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	May include but not limited to: <ul style="list-style-type: none"> • Daily work plans • Project plans • Program plans • Resource plans • Skills development plans • Management strategies and objectives
Standards	May include but not limited to: <ul style="list-style-type: none"> • Performance targets • Performance management and evaluation systems • Occupational standards • Employment contracts

	<ul style="list-style-type: none"> • Client contracts • Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards • Safety Standards
Appropriate personnel/ authorities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Appropriate personnel include: <ul style="list-style-type: none"> ➢ Management ➢ Line Staff
Feedback mechanisms	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey • Group discussion

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • set objectives • plan and schedule work activities • implement work plans • monitor work activities • review and evaluate work plans and activities
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities • organizations policies, strategic plans, guidelines related to the role of the work unit • team work and consultation strategies
Underpinning Skills	<p>Demonstrates skill to:</p> <ul style="list-style-type: none"> • plan • lead • organize • coordinate • communicate • inter-and intra-person/motivation skills • present
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Migrate to New Technology
Unit Code	AGR MEM4 08 0714
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded equipment is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment are used for solving organizational problems 2.4 Sources of information relating to new or upgraded equipment are accessed and used
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards. 3.2 Environmental considerations are determined from new or upgraded equipment. 3.3 Feedback is sought from users where appropriate.

Variables	Range
Environmental Considerations	May include but is not limited to: <ul style="list-style-type: none"> recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body
Feedback	May include but is not limited to: <ul style="list-style-type: none"> surveys, questionnaires, interviews and meetings

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) • Knowledge of vendor product directions • Ability to locate appropriate sources of information regarding metal manufacturing and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	Demonstrate skills of: <ul style="list-style-type: none"> • Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Establish Quality Standards
Unit Code	AGR MEM4 09 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	1.1 Market specifications are sourced and legislated requirements identified. 1.2 Quality specifications are developed and agreed 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes are developed to monitor the effectiveness of quality assurance procedures.
4. Implement quality assurance procedures	4.1 Responsibilities are allocated for carrying out procedures to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated safety procedures .
5. Monitor quality of work outcome	5.1 Quality requirements are identified 5.2 Inputs are inspected to confirm capability to meet quality requirements 5.3 Work is conducted to produce required outcomes 5.4 Work processes are monitored to confirm quality of output and/or service 5.5 Processes are adjusted to maintain outputs within

	specification.
6. Participate in maintaining and improving quality at work	<p>6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements</p> <p>6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements</p> <p>6.3 Corrective action is taken within level of responsibility to maintain quality standards</p> <p>6.4 Quality issues are raised with designated personnel</p>
7. Report problems that affect quality	<p>7.1 Potential or existing quality problems are recognized.</p> <p>7.2 Instances of variation in quality are identified from specifications or work instructions.</p> <p>7.3 Variation and potential problems are reported to supervisor/manager according to enterprise guidelines.</p>

Variable	Range
Sourced	May include but is not limited to: <ul style="list-style-type: none"> • End-users • Customers or stakeholders
Legislated requirements	May include but is not limited to: <ul style="list-style-type: none"> • Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures	May include but is not limited to: <ul style="list-style-type: none"> • Use of tools and equipment for fabrication/production/manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication works

Evidence Guide	
Critical Aspect of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Monitor quality of work • Establish quality specifications for product • Participate in maintaining and improving quality at work • Identify hazards and critical control points in the production of quality product • Assist in planning of quality assurance procedures • Report problems that affect quality • Implement quality assurance procedures
Underpinning Knowledge	Demonstrates knowledge of: <ul style="list-style-type: none"> • work and product quality specifications • quality policies and procedures • improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today

	<p>work activities</p> <ul style="list-style-type: none"> • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • monitor quality of work • establish quality specifications for product • participate in maintaining and improving quality at work • identify hazards and critical control points in the production of quality product • assist in planning of quality assurance procedures • report problems that affect quality • implement quality assurance procedures
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Develop Individuals and Team
Unit Code	AGR MEM4 10 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	<p>1.1 Learning and development needs are systematically identified and implemented in line with organizational requirements.</p> <p>1.2 Learning plan is collaboratively developed and implemented to meet individual and group training and developmental needs.</p> <p>1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement.</p> <p>1.4 Feedback on performance of team members is collected from relevant sources and compared with established team learning process.</p>
2. Foster individual and organizational growth	<p>2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of Competence standards.</p> <p>2.2 Learning delivery methods are made appropriate to the learning goals, the learning style of participants and availability of equipment and resources.</p> <p>2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies.</p> <p>2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.</p>
3. Monitor and evaluate workplace learning	<p>3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements.</p> <p>3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support.</p> <p>3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning.</p> <p>3.4 Records and reports of competence are maintained within organizational requirement.</p>
4. Develop team commitment and cooperation	<p>4.1 Open communication processes to obtain and share information is used by team.</p> <p>4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities.</p> <p>4.3 Mutual concern and camaraderie are developed in the team.</p>
5. Facilitate	5.1 Team members are made actively participatory in team

accomplishment of organizational goals	<p>activities and communication processes.</p> <p>5.2 Individual and joint responsibility is developed by teams members for their actions.</p> <p>5.3 Collaborative efforts are sustained to attain organizational goals.</p>
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Variable	Range
Learning and development needs	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • On the job coaching or monitoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate plans to improve the effectiveness of learning • prepare learning plans to match skill needs

	<ul style="list-style-type: none"> • access and designate learning opportunities
Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • coaching and monitoring principles • understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • understanding how to facilitate team development and improvement • understanding methods and techniques to obtain and interpreting feedback • understanding methods for identifying and prioritizing personal development opportunities and options • knowledge of career paths and competence standards in the industry
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • read and understand a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communicate including receiving feedback and reporting, maintaining effective relationships and conflict management • plan and organize required resources and equipment to meet learning needs • coach and mentor skills to provide support to colleagues • report to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitate and conduct small group training sessions • relate to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Utilize Specialized Communication Skills
Unit Code	AGR MEM4 11 0714
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues.	<p>1.1 Specific communication needs of clients and colleagues are identified and met.</p> <p>1.2 Different approaches are used to meet communication needs of clients and colleagues.</p> <p>1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization.</p>
2. Contribute to the development of communication strategies	<p>2.1 Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required.</p> <p>2.2 Channels of communication are established and reviewed regularly.</p> <p>2.3 Coaching in effective communication is provided.</p> <p>2.4 Work related network and relationship are maintained as necessary.</p> <p>2.5 Negotiation and conflict resolution strategies are used where required.</p> <p>2.6 Communication with clients and colleagues is made appropriate to individual needs and organizational objectives.</p>
3. Represent the organization	<p>3.1 When participating in internal or external fora, presentation is made relevant, appropriately researched and presented in a manner to promote the organization.</p> <p>3.2 Presentation is made clear and sequential and delivered within a predetermined time.</p> <p>3.3 Appropriate media is utilized to enhance presentation.</p> <p>3.4 Differences in views are respected.</p> <p>3.5 Written communication is made consistent with organizational standards.</p> <p>3.6 Inquiries are responded in a manner consistent with organizational standard.</p>
4. Facilitate group discussion	<p>4.1 Mechanisms which enhance effective group interaction are defined and implemented.</p> <p>4.2 Strategies which encourage all group members to participate are used routinely.</p>

	<p>4.3 Objectives and agenda are routinely set and followed for meetings and discussions.</p> <p>4.4 Relevant information is provided to group to facilitate outcomes.</p> <p>4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties.</p> <p>4.6 Specific communication needs of individuals are identified and addressed.</p>
5. Conduct interview	<p>5.1 A range of appropriate communication strategies are employed in interview situations.</p> <p>5.2 Different types of interview are conducted in accordance with the organizational procedures.</p> <p>5.3 Records of interviews are made and maintained in accordance with organizational procedures.</p> <p>5.4 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated.</p>

Variable	Range
Strategies	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non verbal communication
Effective group interaction	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Interview situations	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation
Types of Interview	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Related to staff issues • Routine • Confidential • Evidential • Non-disclosure • Disclosure

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • effective communication skills with clients and work colleagues accessing service • adopt relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Values	Demonstrates knowledge of: <ul style="list-style-type: none"> • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	Demonstrates skills of: <ul style="list-style-type: none"> • full range of communication techniques including: <ul style="list-style-type: none"> ➢ active listening ➢ feedback ➢ interpretation ➢ role boundaries setting ➢ negotiation ➢ establishing empathy ➢ communication strategies • communicate to fulfil job roles as specified by the organization
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Manage and Maintain Small/Medium Business Operations
Unit Code	AGR MEM4 12 0714
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements are identified for a given time period by taking into consideration resources and constraints. 1.2 Work activities are prioritized based on business needs, requirements and deadlines. 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency.
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results. 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to business goals or timelines. 2.3 Problem solving techniques are applied to work situations to overcome difficulties and achieve positive outcomes.
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate time management strategies . 3.2 Input from internal and external sources is sought and used to develop and refine new ideas and approaches. 3.3 Business or inquiries is/are responded to promptly and effectively. 3.4 Information is presented in a format appropriate to the industry and audience.
4. Interpret financial information	4.1 Relevant documents and reports are identified. 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons. 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled. 4.4 Daily financial records and cash flow are maintained correctly and in accordance with legal and accounting requirements. 4.5 Invoices and payments are prepared and distributed in a timely manner and in accordance with legal requirements. 4.6 Outstanding accounts are collected or followed-up on.

5. Evaluate work performance	<p>5.1 Opportunities for improvements are monitored according to business demands.</p> <p>5.2 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements.</p> <p>5.3 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation.</p> <p>5.4 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions.</p>
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Variable	Range
Resources	May include but is not limited to: <ul style="list-style-type: none"> • staff • money • time • equipment • space
Business goals	May include but is not limited to: <ul style="list-style-type: none"> • sales targets • budgetary targets • team and individual goals • production targets • reporting deadlines
Problem solving techniques	May include but is not limited to: <ul style="list-style-type: none"> • gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies	May include but is not limited to: <ul style="list-style-type: none"> • prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary
Internal and external sources	May include but is not limited to: <ul style="list-style-type: none"> • staff and colleagues • management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants • professional associations
Resources	May include but is not limited to: <ul style="list-style-type: none"> • staff • money • time

	<ul style="list-style-type: none"> • equipment • space
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Evidence Guide	
Critical Aspects of Competence	<p>A person must be able to demonstrate:</p> <ul style="list-style-type: none"> • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Federal and Local Government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), equal employment opportunity, industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communicate using questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business document, reports and financial statements and projections • relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • solve problem and develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluate using assessment work and outcomes • observe for identifying appropriate people, resources and to monitor work
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level IV	
Unit Title	Apply Problem Solving Techniques and Tools
Unit Code	AGR MEM4 13 0714
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude required to apply scientific problem solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis.

Elements	Performance criteria
1. Identify and select theme/problem.	<p>1.1 Safety requirements are followed in accordance with safety plans and procedures.</p> <p>1.2 All possible problems related to the process /Kaizen elements are listed using statistical tools and techniques.</p> <p>1.3 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board.</p> <p>1.4 Problems are classified based on obviousness of cause and action.</p> <p>1.5 Critical factors like the number of customers affected, Potentials for bottlenecks, and number of complaints etc... is selected.</p> <p>1.6 Problems related to priorities of Kaizen Elements are given due emphasis and selected.</p>
2. Grasp current status and set goal.	<p>2.1 The extent of the problem is defined.</p> <p>2.2 Appropriate and achievable goal is set.</p>
3. Establish activity plan.	<p>3.1 The problem is confirmed.</p> <p>3.2 High priority problem is selected.</p> <p>3.3 The extent of the problem is defined.</p> <p>3.4 Activity plan is established as per 5W1H.</p>
4. Analyze causes of a problem.	<p>4.1 All possible causes of a problem are listed.</p> <p>4.2 Cause relationships are analyzed using 4M1E.</p> <p>4.3 Causes of the problems are identified.</p> <p>4.4 Root causes are selected.</p> <p>4.5 The root cause which is most directly related to the problem is selected.</p> <p>4.6 All possible ways are listed using creative idea generation to eliminate the most critical root cause.</p> <p>4.7 The suggested solutions are carefully tested and evaluated for potential complications.</p> <p>4.8 Detailed summaries of the action plan are prepared to implement the suggested solution.</p>

5. Examine countermeasure sand their implementation.	<p>5.1 Action plan is implemented by medium KPT members.</p> <p>5.2 Implementation is monitored according to the agreed procedure and activities are checked with preset plan.</p>
6. Assess effectiveness of the solution.	<p>6.1 Tangible and intangible results are identified.</p> <p>6.2 The results are verified over time.</p> <p>6.3 Tangible results are compared with targets using various types of diagram.</p>
7. Standardize and sustain operation.	<p>7.1 If the goal is achieved, the new procedures are standardized and made part of daily activities.</p> <p>7.2 All employees are trained on the new Standard Operating Procedures (SOPs).</p> <p>7.3 SOP is verified and followed by all employees.</p> <p>7.4 The next problem is selected to be tackled by the team.</p>

Variables	Range
Safety requirements	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • OHS requirements include legislation, material safety, managements system, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislations, relevant health regulation, manual handling procedure and organization insurance requirements
Statistical tools and techniques	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • 7 QC tools may include: <ul style="list-style-type: none"> ➢ Stratification ➢ Pareto Diagram ➢ Cause and Effect Diagram ➢ Check Sheet ➢ Control Chart/Graph ➢ Histogram ➢ Scatter Diagram • QC techniques may include: <ul style="list-style-type: none"> ➢ Brain storming ➢ Why analysis ➢ What if analysis ➢ 5W1H
Kaizen Elements	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Quality • Cost • Productivity • Delivery • Safety • Moral • Environment • Gender equality
5W1H	may include but not limited to:

	<ul style="list-style-type: none"> • Who: person in charge • Why: objective • What: item to be implemented • Where: location • When: time frame • How: method
4M1E	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Man • Machine • Method • Material and • Environment
Creative idea generation	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • 5S • 4M (machine, method, material and man) • 4P (Policy, procedures, People and Plant) • PDCA cycle • Basics of IE tools and techniques
Tangible and intangible results	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Tangible result may include: <ul style="list-style-type: none"> ➢ Quantifiable data • Intangible result may include: <ul style="list-style-type: none"> ➢ Qualitative data
Various types of diagram	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • Line graph • Bar graph • Pie-chart • Scatter diagram • Affinity diagram
Standard Operating Procedures (SOPs)	<p>may include but not limited to:</p> <ul style="list-style-type: none"> • The customer demand • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide

Critical Aspects of Assessment	<p>Demonstrates skills and knowledge competencies to:</p> <ul style="list-style-type: none"> • Apply all relevant procedures and regulatory requirements to ensure quality and productivity of an organization. • Detect non-conforming products/services in the work area • Apply effective problem solving approaches/strategies. • Implement and monitor improved practices and procedure • Apply statistical quality control tools and techniques.
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Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • Basic IE tools and techniques. • SOP • Quality requirements associated with the individual's job function and/or work area • Workplace procedures associated with the candidate's regular technical duties • Relevant health, safety and environment requirements • organizational structure of the enterprise • Lines of communication • Methods of making/recommending improvements. • Reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Apply problem solving techniques and tools • Apply statistical analysis tools • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Document and report information about quality, productivity and other kaizen elements. • Contribute effectively within a team to recognize and recommend improvements in quality, productivity and other kaizen elements. • Implement and monitor improved practices and procedures. • Organize and prioritize activities and items. • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats.
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

NTQF Level V

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Develop and Document Specifications and Procedures
Unit Code	AGR MEM5 01 0714
Unit Descriptor	This unit covers the competence to analyse requirements and to develop and document technical specifications and procedures providing concise and unambiguous direction and guidance for workplace activities. This unit covers the work involved in the research for and writing of specifications and procedures for the workplace. Work requires individuals to demonstrate conceptual ability, discretion, judgement and problem-solving skills.

Elements	Performance Criteria
1. Identify requirements	<p>1.1 Information required is identified and assembled for technical specifications and procedures.</p> <p>1.2 Specifications and procedures requirements and formats are established and confirmed, where necessary.</p> <p>1.3 Requirements for information entry, storage, output and quality of document production are identified in accordance with enterprise procedures.</p> <p>1.4 Specifications and procedures document are designed as appropriate for efficient entry of information and satisfies appearance and presentation requirements for the purpose of the document.</p> <p>1.5 Range of functions are incorporated in the document design reflects the nominated requirements.</p>
2. Prepare specifications	<p>2.1 Technical information for use in the specification is collected, tested and validated or confirmed before use.</p> <p>2.2 Authoritative sources and references are identified and used in the preparation and presentation of the specification.</p> <p>2.3 Specifications are written in a format to ensure requirements can be met.</p> <p>2.4 Specifications are written in a manner that is clear and understood in the workplace.</p> <p>2.5 Specification documentation satisfies enterprise and industry standards.</p>
3. Prepare technical procedures	<p>3.1 Activities and tasks are identified, analysed and documented.</p> <p>3.2 Activities and tasks are sequenced and logically grouped.</p> <p>3.3 Procedures are documented to enterprise and industry standards.</p>

Variable	Range
Information	<p>May include but not limited to:</p> <ul style="list-style-type: none"> workplace procedures relating to the use of tooling and equipment workplace procedures relating to reporting and

	<p>communication</p> <ul style="list-style-type: none"> • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to systems • Ethiopian design rules • vehicle industry regulations • vehicle industry publications related to emerging system technology and technology changes
Specifications	are technical criteria for an object, item, system or sub-system describing the components, materials, construction, circuitry and associated legal, regulatory or intellectual property issues
Procedures	contain detailed descriptions of the tasks, activities, sequences, materials, tooling, rules and safety requirements leading or guiding an individual through an authorised work practice
Functions	is undertaken in accordance with established enterprise procedures and practices may include requirements recommended by manufacturer
Workplace	and procedures may be used in established workshops or under external site conditions
Personal Protective Equipment	is to include that prescribed under legislation, regulations and enterprise policies and practices

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge competence in:</p> <ul style="list-style-type: none"> • locate, interpret and apply information • apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment • identify and itemise steps and stages in procedures • complete a significant operational procedure, incorporating safety obligations, and covering: <ul style="list-style-type: none"> ➤ a full analysis of the topic area ➤ a step-by-step operational procedure ➤ supporting documents to the procedure • complete or review and update a specification for a significant system or sub-system covering: <ul style="list-style-type: none"> ➤ system/sub-system description ➤ components ➤ materials ➤ construction ➤ circuitry ➤ related information sources ➤ legal, regulatory or intellectual property law requirements • modify products to cater for variations in workplace cultures and environment • work effectively with others
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • technical writing and presentation techniques • enterprise (or equivalent) technical procedure formats, content rules, preparation and management techniques

Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • collect, organise and understand technical information related to the specifications and procedures, testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to ensure the completeness, clarity and comprehension of the specifications and procedures by the target audience • plan and organise to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to incorporate measurements, calibration and test requirements into specifications and procedures • establish processes which anticipate and allow for risks, cater for both direct and indirect causes, avoid or minimise reworking and avoid wastage in the preparation and content of procedures • use the workplace technology related to document preparation, including calculators and measuring devices, computing systems and information management systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Analyse and Evaluate Electrical and Electronic Faults in Power Train
Unit Code	AGR MEM5 02 0714
Unit Descriptor	This unit covers the competence to analyse and evaluate electrical and electronic faults in power train in order to initiate action to sustain, vary or enhance performance. It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.

Elements	Performance Criteria
1. Identify and confirm the work requirement	<p>1.1 Work instructions and reports are used to determine the nature and objective of the failure analysis and evaluation process requirements.</p> <p>1.2 Workplace information sources are accessed and procedures strictly adhered to.</p> <p>1.3 Benchmark specifications are accessed and interpreted for correctly functioning electrical and electronic transmission/ driveline systems.</p> <p>1.4 OHS requirements, including regulatory requirements, equipment and system isolation procedure requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.5 Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.6 Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1 Evaluative criteria are developed/ adopted to meet the objective of the work.</p> <p>2.2 System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3 Analytical and evaluative methodology, including diagnostic process, sequence, and tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4 Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5 Tooling and materials required are identified, selected and prepared to support the diagnostic process for use.</p> <p>2.6 Electrical and electronic power train components are prepared for the diagnostic process, including park-up,</p>

	isolation and cleaning requirements.
3. Apply the analysis and evaluative methodology	<p>3.1 Selected analytical and diagnostic processes are followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2 Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3 Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4 Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5 Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6 Information and detail related to the analysis and evaluation are provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1 Options are identified for responding to the objective or need from further research of technical support information and procedures.</p> <p>4.2 A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3 Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1 Materials that can be reused are collected and stored.</p> <p>5.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3 Waste and scrap are removed following workplace procedures.</p> <p>5.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5 Unserviceable equipment is tagged and faults are identified in accordance with workplace.</p>

Variable	Range
Failure analysis and evaluation process	<p>The objective of the failure analysis and evaluation process may be:</p> <ul style="list-style-type: none"> to determine fault rectification measures, to effect variation in system characteristics and parameters to enhance system performance

Procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment • workplace procedures relating to reporting and communication • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to transmission/driveline systems • Ethiopian Design Rules • vehicle industry regulations • vehicle industry publications related to emerging power train technology and technology changes
OHS requirements	<p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • workplace environment and safety, safety equipment • enterprise first aid and first aid equipment • hazard and risk control and hazardous materials and substances electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • use of tooling and equipment, • handling of material, • use of fire fighting equipment, • road rules • safe driving policy
Isolation procedures	<p>are to be in the industry and enterprise standards and are to include the disarming of Supplementary Restraint Systems (SRS) by manufacturer/ component supplier specifications</p>
Personal Protective Equipment	<p>Is to include that prescribed under legislation, regulations and enterprise policies and practices.</p>
Evaluative criteria	<p>Sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures</p>
Tests	<p>to be conducted are to include:</p> <ul style="list-style-type: none"> • wiring and connector integrity • operation and specification of input and output devices • controlling electronic components and computers • data interpretation and readings related to direct • indirect and intermittent causes • system performance • air supply build-up time • prime mover and trailer application time • park brake application • brake fluid boiling point

	<ul style="list-style-type: none"> • rotor and drum wear • pad and lining thickness • brake pedal travel • handbrake mechanism travel, NVH • directional control, ABS operation and performance • sensor/actuator and wiring harness integrity • sampling (collection and processing) and monitoring/analysis of computer-based diagnostic systems <p>May also include:</p> <ul style="list-style-type: none"> • braking during cornering • brake roller testing • friction material wear rate • disc drum and rotor temperature
Testing equipment	<p>is to include:</p> <ul style="list-style-type: none"> • multi meters, • lab oscilloscopes, • data scanners, • test lights, • test LEDs • pulse generators • air gauges • multimeter and Tapple meter • brake timer and electronic stethoscope and manufacturer/component supplier testing equipment
Power Train	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • clutches, torque converters, • mechanical and automatic transmissions, • drive and power take-off shafts, and differentials; coverage is to include mechatronic modules and multi-class bus systems <p>Braking systems:</p> <ul style="list-style-type: none"> • foundation • ABS, ABS with traction control • air brakes (truck and trailer) • air brakes (multiple trailer) • compression braking, vehicle retardants • air over hydraulic systems • traction, stability • steering and suspension systems across the range of vehicle types • coverage is to include: <ul style="list-style-type: none"> ➢ electronic stability systems, ➢ vehicle dynamic control, ➢ closed loop electronic steering and multi-class bus systems
Power Train electrical and electronic failures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications. • air supply capacity, application and release times, brake

	<p>balance, brake drum wear, calibration/adjustment specifications, component damage, conductors - piping specifications, contamination, friction material abnormalities, leaks, pump-up times.</p> <ul style="list-style-type: none"> • caused by the influence of external systems which may or may not be faulty in their primary operations • input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications. • indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
Timing and balancing	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Brake timing and balancing are covered

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • interpret work order and locate and apply information • apply safety requirements, including the isolation of equipment and use of personal protective equipment • follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➤ minimise the risk of injury to self and others ➤ prevent damage and wastage of goods, equipment and products ➤ maintain required production output and product quality • complete failure analyses on a minimum of three different power trains with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure • analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different power trains • work effectively with others • modify activities to cater for variations in workplace context and environment • basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems
Underpinning Skills	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • general knowledge of: • farm machineries and equipments terminology and definitions <ul style="list-style-type: none"> ➤ the concepts, principles and processes involved in planning and implementing systems analysis and evaluation ➤ the types, functions and operations of power train ➤ the theory of diagnosis, including concept, design and planning ➤ the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within farm machineries and equipments power train

	<ul style="list-style-type: none"> components ➤ the methods and processes for documenting and reporting diagnostic findings and recommendations ➤ personal computer operation • detailed knowledge of: <ul style="list-style-type: none"> ➤ electrical theory and operation covering automotive digital computers, ➤ networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetic, inductance, discrete electronic components, logic families and radio frequency ➤ the types, functions, operations and limitations of diagnostic testing equipment
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, organise and understand technical information related to contemporary electrical and electronic transmission/driveline systems, monitoring and testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems input • plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results • establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage • use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Analyse and Evaluate Electrical and Electronic Faults in Electric over Hydraulic Systems
Unit Code	AGR MEM5 03 0714
Unit Descriptor	This unit covers the competence to analyse and evaluate electric over hydraulic systems in order to initiate action to sustain, vary or enhance performance. It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the performer to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.

Elements	Performance Criteria
1. Identify and confirm the work requirement	<p>1.1 Work instructions and reports are used to determine the nature and objective of the failure analysis and evaluation requirements.</p> <p>1.2 Benchmark specifications are accessed and interpreted for correctly functioning electric over hydraulic systems.</p> <p>1.3 OHS requirements including regulatory requirements, equipment and system isolation requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.4 Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5 Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1 Evaluative criteria are developed/ adopted to meet the objective of the work.</p> <p>2.2 System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3 Analytical and evaluative methodology including diagnostic process, sequence and tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4 Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5 Tooling and materials required are identified, selected and prepared for use to support the diagnostic process.</p> <p>2.6 Electric over hydraulic system components, including park-up, isolation procedures and cleaning requirements are prepared for the diagnostic process.</p>

<p>3. Apply the analysis and evaluative methodology</p>	<p>3.1 Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2 Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3 Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4 Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5 Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6 Information and detail related to the analysis and evaluation are provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
<p>4. Select response measure</p>	<p>4.1 Options are identified for responding to the objective or need from further research of technical support information and procedures.</p> <p>4.2 A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3 Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
<p>5. Restore the workplace</p>	<p>5.1 Materials that can be reused are collected and stored.</p> <p>5.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3 Waste and scrap are removed following workplace procedures.</p> <p>5.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5 Unserviceable equipment is tagged and faults are identified in accordance with workplace procedures.</p>

Variable	Range
Failure analysis and evaluation	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

Electric over hydraulic systems	<p>Electric over hydraulic systems are characterised as those using solenoids to control hydraulic flow and they may include integrated computer controlled systems. Examples are garbage compactors, crane rams, steering control, excavator bucket control, steering rudder control.</p> <p>May include:</p> <ul style="list-style-type: none"> • direct faults in input sensors, output actuators, wiring harness, computer systems, calibration/adjustment specifications, component specifications, component assembly, component damage and system modifications • indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations
OHS requirements	<p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • workplace environment and safety, safety equipment • enterprise first aid and first aid equipment • hazard and risk control and hazardous materials and substances electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • use of tooling and equipment, • handling of material, • use of fire fighting equipment, • road rules • safe driving policy
Personal Protective Equipment	Is to include that prescribed under legislation, regulations and enterprise policies and practices.
Evaluative criteria	Sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
Tests	<p>May include:</p> <ul style="list-style-type: none"> • wiring and connector integrity • operation and specification of input and output devices • controlling electronic components and computers • data interpretation and readings related to direct and indirect • intermittent causes
Testing equipment	<p>May include:</p> <ul style="list-style-type: none"> • analogue and digital multi meters • lab oscilloscopes • data scanners • test lights • test LEDs and pulse generators • other manufacturer/component supplier testing equipment
Isolation procedures	Are to be to industry and enterprise standards and are to include where appropriate the disarming of Supplementary Restraint Systems (SRS) by manufacturer/ component supplier

	specifications.
Information and procedures	<p>May include:</p> <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment, and reporting and communication • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to electric over hydraulic systems • Ethiopian Design Rules • vehicle industry regulations • vehicle industry publications related to emerging electric over hydraulic system technology and technology change

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • interpret work order and locate and apply information • apply safety requirements, including the isolation of equipment and use of personal protective equipment • follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➤ minimise the risk of injury to self and others ➤ prevent damage and wastage of goods, equipment and products ➤ maintain required production output and product quality • complete failure analyses on a minimum of three different electric over hydraulic systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure • analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different electric over hydraulic systems • work effectively with others • modify activities to cater for variations in workplace context and environment
Underpinning Skills	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems • general knowledge of : <ul style="list-style-type: none"> ➤ the concepts, principles and processes involved in planning and implementing systems analysis and evaluation ➤ the types, functions and operations of electric over hydraulic systems ➤ the theory of diagnosis, including concept, design and planning ➤ concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within mobile plant, heavy vehicle electric over hydraulic systems ➤ the methods and processes for documenting and reporting diagnostic findings and recommendations

	<ul style="list-style-type: none"> ➤ personal computer operations • detailed knowledge of : <ul style="list-style-type: none"> ➤ electrical theory and operation covering automotive digital computers, ➤ networked vehicles, ➤ voltage, current, resistance, power, ➤ capacitance, electrostatics, magnetic, inductance, ➤ discrete electronic components, ➤ logic families and radio frequency ➤ the types, functions, operations and limitations of diagnostic testing equipment
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, organise and understand technical information related to contemporary electric over hydraulic systems, monitoring and testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs • plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results • establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage • use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration withy Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Analyse and Evaluate Electrical and Electronic Faults in Engine Management Systems
Unit Code	AGR MEM5 04 0714
Unit Descriptor	This unit indicates the competence to analyse and evaluate electrical and electronic faults in engine systems management in order to initiate action to sustain, vary or enhance performance. It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the employee to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.

Elements	Performance Criteria
1. Identify and confirm the work requirement	<p>1.1 Work instructions and reports are used to determine the nature and objective of the failure analysis and evaluation process requirements.</p> <p>1.2 Benchmark specifications are accessed and interpreted for correctly functioning engine management systems.</p> <p>1.3 National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks.</p> <p>1.4 OHS requirements including regulatory requirements, equipment and system isolation requirements and Personal Protective Equipment needs are observed throughout the work.</p> <p>1.5 Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.6 Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1 Evaluative criteria are developed/ adopted to meet the objective of the work.</p> <p>2.2 System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3 Analytical and evaluative methodology including diagnostic process, sequence, tests and testing equipment is developed and/or identified and selected from the range of available options.</p> <p>2.4 Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5 Tooling and materials required are identified, selected and prepared for use to support the diagnostic process.</p> <p>2.6 Heavy vehicle engine and fuel system components,</p>

	<p>including park-up, isolation and cleaning requirements are prepared for the diagnostic process.</p> <p>2.7 Engine management system components, including park-up, isolation procedures and cleaning requirements are prepared for the diagnostic process.</p>
3. Apply the analysis and evaluative methodology	<p>3.1 Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2 Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3 Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4 Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5 Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6 Information and detail related to the analysis and evaluation are provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1 Options are identified for responding to the objective or need from further research of technical support information and procedures.</p> <p>4.2 A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3 Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1 Materials that can be reused are collected and stored.</p> <p>5.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3 Waste and scrap are removed following workplace procedures.</p> <p>5.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5 Unserviceable equipment is tagged and faults identified in accordance with workplace</p>

Variable	Range
Failure analysis and evaluation process	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

Engine management systems	<p>Are characterised as those using a digital computer to manage fuel, ignition, engine speed, performance and engine emissions and also other optional equipment systems.</p> <p>The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.</p>
OHS requirements	<p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • workplace environment and safety, safety equipment • enterprise first aid and first aid equipment • hazard and risk control and hazardous materials and substances electrical safety • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • use of tooling and equipment, • handling of material, • use of fire fighting equipment, • road rules • safe driving policy
Personal Protective Equipment	is to include that prescribed under legislation, regulations and enterprise policies and practices
Evaluative criteria	Sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures
Tests	<p>May include:</p> <ul style="list-style-type: none"> • engine compression, • valve adjustment and timing • exhaust gas analysis • fuel flow, fuel pressure, wiring and connector integrity • operation and specification of input and output devices • controlling electronic components and computers • data interpretation, and readings related to direct, indirect and intermittent causes • component wear analysis, compression • cylinder leakage, engine performance • exhaust gas sampling, flow, oil consumption, pressure • sample collection/ processing, specific gravity, temperature • vacuum, boost pressures
Testing equipment	<p>May include:</p> <ul style="list-style-type: none"> • four-gas exhaust gas analyser • compression gauge, feeler gauge • engine tune oscilloscope • analogue and digital analogue and digital multi meters • lab oscilloscopes, data scanners, test lights, test LED's • pulse generators, noid lamps, fuel pressure gauges

	<ul style="list-style-type: none"> • vacuum gauge • dynamometer and manufacturer/component supplier testing equipment • compression gauges • computerised diagnostic system • cooling system analyser, dynamometer, manometer • multimeter, pressure gauges, pyrometer, refractometer • temperature gauges, vacuum gauges • anemometer, barometer, hygrometer, specific gravity gauge
Isolation procedures	are to be to industry and enterprise standards and are to include the disarming of Supplementary Restraint Systems (SRS) by manufacturer/ component supplier specifications
Information and procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment • workplace procedures relating to reporting and communication • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to engine management systems • Ethiopian Design Rules • vehicle industry regulations • vehicle industry publications related to emerging engine management system technology and technology changes • National Environment Protection Measures for Diesel Vehicles as applicable to tasks
Electrical and electronic failures in engine management systems	<p>covered by this unit are to include:</p> <ul style="list-style-type: none"> • direct faults in input sensors • output actuators • wiring harness • computer systems • calibration/adjustment specifications • component specifications • component assembly • component damage and system modifications <p>Engine and fuel systems to be covered in this unit are to include:</p> <ul style="list-style-type: none"> • the engine • computer controlled management systems, • closed loop diesel engine management systems • related fuel • electrical • intake, exhaust, lubrication and cooling systems
Engine management system failures	<p>May include:</p> <ul style="list-style-type: none"> • indirect faults caused by the influence of external systems (electrical and electronic) which may or may not be faulty in their primary operations • engine management • engine performance (response, fuel consumption, power) • charging, contamination, damaged components, emissions • forced induction, fuel pressure/ supply, lighting leaks

	<ul style="list-style-type: none"> operating temperature, overheating, sensors, starting
Coverage	<p>is to include:</p> <ul style="list-style-type: none"> fuel cell technology/hydrogen on-line maintenance and remote diagnostics common rail diesel direct injection drive by wire multi-class bus systems and closed loop diesel engine management systems

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> interpret work order and locate and apply information apply safety requirements, including the isolation of equipment and use of personal protective equipment follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> minimise the risk of injury to self and others prevent damage and wastage of goods, equipment and products maintain required production output and product quality complete failure analyses on a minimum of three different engine management systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different engine management systems work effectively with others modify activities to cater for variations in workplace context and environment
Underpinning Knowledge and Attitude	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems general knowledge of: <ul style="list-style-type: none"> the concepts, principles and processes involved in planning and implementing systems analysis and evaluation the types, functions and operations of diesel, petrol, LPG and CNG engine system operation the types, functions and operations of engine management systems the theory of diagnosis, including concept, design and planning the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, and/or light marine engine management systems the methods and processes for documenting and reporting diagnostic findings and recommendations personal computer operation detailed knowledge of: <ul style="list-style-type: none"> electrical theory and operation covering automotive digital

	<p>computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetic, inductance, discrete electronic components, logic families, and radio frequency.</p> <ul style="list-style-type: none"> • mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems • detailed knowledge of the types, function, operations and limitations of heavy vehicle: <ul style="list-style-type: none"> ➤ fuel systems/components ➤ engine electrical systems/ components ➤ intake systems/components ➤ exhaust systems/components ➤ lubrication systems/ components ➤ cooling systems/components ➤ diagnostic testing equipment ➤ the types, functions, operations and limitations of diagnostic testing equipment • national environment protection measures for diesel vehicles as applicable to tasks 		
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, organise and understand technical information related to contemporary tracked, undercarriage and suspension systems, monitoring and testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs • plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage • use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results • establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage • use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices 		
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>		
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning 		
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting.</p>		
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Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Analyse and Evaluate Electrical and Electronic Faults in Safety Systems
Unit Code	AGR MEM5 05 0714
Unit Descriptor	<p>This unit covers the competence to analyse and evaluate electrical and electronic faults in Safety systems in order to initiate action to sustain, vary or enhance performance.</p> <p>It includes failure analysis covering the complex diagnosis of multi-system and intermittent faults as well as evaluation of performance achievements and variations. It also requires the candidate to identify, evaluate, select and document the most appropriate response to the stated objective of the analysis and evaluation process.</p>

Elements	Performance Criteria
1. Identify and confirm the work requirement	<p>1.1 Work instructions and reports are used to determine the nature and objective of the failure analysis and evaluation process requirements.</p> <p>1.2 Benchmark specifications are accessed and interpreted for correctly functioning monitoring/protection systems.</p> <p>1.3 OHS requirements including regulatory requirements, equipment and system isolation requirements and personal protection needs are observed throughout the work.</p> <p>1.4 Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5 Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1 Evaluative criteria are developed/ adopted to meet the objective of the work.</p> <p>2.2 System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3 Analytical and evaluative methodology including diagnostic process, sequence, and tests and testing equipment are developed and/or identified and selected from the range of available options.</p> <p>2.4 Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5 Tooling and materials required are identified, selected and prepared for use to support the diagnostic process.</p> <p>2.6 Safety system components are prepared for the diagnostic process, including park-up, isolation procedures and cleaning requirements.</p>

<p>3. Apply the analysis and evaluative methodology</p>	<p>3.1 Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p> <p>3.2 Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3 Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4 Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5 Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6 Information and detail related to the analysis and evaluation is provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
<p>4. Select response measure</p>	<p>4.1 Options are identified for responding to the objective or need from further research of technical support information and procedures.</p> <p>4.2 A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3 Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
<p>5. Restore the workplace</p>	<p>5.1 Materials that can be reused is collected and stored.</p> <p>5.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3 Waste and scrap are removed by following workplace procedures.</p> <p>5.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5 Unserviceable equipment is tagged and faults are identified in accordance with workplace.</p>

Variable	Range
Failure analysis and evaluation process	The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.
Monitoring/protection systems	Monitoring/protection systems are to: <ul style="list-style-type: none"> • cover display types, including: <ul style="list-style-type: none"> ➤ LCD, VFD, CRT, HUD, ➤ reconfigurable systems,

	<ul style="list-style-type: none"> ➤ electronic analogue display, ➤ on-board diagnostics, ➤ remote/wireless monitoring systems and multi-class bus systems • engine, transmission/ driveline • body, auxiliary systems • safety critical systems and shutdown
Personal protective needs	is to include that prescribed under legislation, regulations and enterprise policies and practices
Tests	<p>May include:</p> <ul style="list-style-type: none"> • wiring and connector integrity, • operation and specification of input and output devices, • controlling electronic components and computers, • data interpretation and readings related to direct, indirect and intermittent causes
Testing equipment	<p>May include:</p> <ul style="list-style-type: none"> • analogue and digital multi meters • lab oscilloscopes, data scanners • test lights and test LEDs • manufacturer / component supplier testing equipment and pulse generators
Safety systems	<p>May include:</p> <ul style="list-style-type: none"> • fire suppressing, work load detecting • tyre pressure control, speed/load limiting • traction control, seat belt pre-tensioning • roll over protection, object detection • navigation aids • intelligent transport systems • intelligent SRS systems, adaptive cruise control • multi-class Bus systems • active and passive collision avoidance, • infrared vision, lighting, windscreen wiper control • depth sounders, emergency distress systems • CB and marine radio • direct faults in input sensors • output actuators, wiring harness • computer systems, calibration/adjustment specifications • component specifications, component assembly • component damage and system modifications
Isolation procedures	are to be to industry and enterprise standards and are to include the disarming of Supplementary Restraint Systems (SRS) by manufacturer/ component supplier specifications
Information and procedures	<p>May include:</p> <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment and reporting and communication • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to automotive monitoring/protection systems • Ethiopian Design Rules

	<ul style="list-style-type: none"> • vehicle industry regulations • vehicle industry publications related to automotive monitoring/protection system technology and technology changes
Climate control systems	Are systems controlled by digital computer to maintain the in-cabin temperature selected by the operator, independent of the influence of external climatic? It includes air conditioning, heating, blending systems and multi-class bus systems

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • interpret work order and locate and apply information • apply safety requirements, including the isolation of equipment and use of personal protective equipment • follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➤ minimise the risk of injury to self and others ➤ prevent damage and wastage of goods, equipment and products ➤ maintain required production output and product quality • complete failure analyses on a minimum of three different automotive safety systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure • analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different automotive safety systems • work effectively with others modify activities to cater for variations in workplace context and environment
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • basic mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems • general knowledge of : <ul style="list-style-type: none"> ➤ the concepts, principles and processes involved in planning and implementing systems analysis and evaluation ➤ the theory of diagnosis, including concept, design and planning ➤ the types, functions and operations of monitoring/protection systems ➤ the concepts, types, functions, operations and limitations of electromechanical and electro-fluid sub-systems within light vehicle, mobile plant, heavy vehicle and light marine monitoring/protection systems ➤ the methods and processes for documenting and reporting diagnostic findings and recommendations ➤ personal computer operation • detailed knowledge of: <ul style="list-style-type: none"> ➤ electrical theory and operation covering automotive digital computers, networked vehicles, voltage, current, resistance, power, capacitance, electrostatics, magnetic, inductance, discrete electronic components, logic families, and radio frequency

	➤ the types, functions, operations and limitations of diagnostic testing equipment
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, organise and understand technical information related to contemporary monitoring/protection systems, monitoring and testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and vehicle information systems inputs • plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate and establish testing equipment and present analytical results • establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastages • use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Analyse and Evaluate Farm machineries and equipments Performance
Unit Code	AGR MEM5 06 0714
Unit Descriptor	This unit covers the competence to analyse and evaluate farm machineries and equipment in order to initiate action to sustain, vary or enhance performances.

Elements	Performance Criteria
1. Identify and confirm the work requirement	<p>1.1 Work instructions and reports are used to determine the nature and objective of the failure analysis and evaluation process requirements.</p> <p>1.2 Benchmark specifications are accessed and interpreted for correctly functioning farm machineries and equipments performance systems.</p> <p>1.3 WHS requirements are observed including regulatory requirements, equipment and system isolation requirements and personal protection needs throughout the work.</p> <p>1.4 Effects of systemic deficiencies/discrepancies or faults are identified and confirmed from indirect and/or direct evidence.</p> <p>1.5 Possible safety impacts of the work are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Prepare for analysis and evaluation	<p>2.1 Evaluative criteria are developed/ adopted to meet the objective of the work.</p> <p>2.2 System performance achievements and/or discrepancies are identified from an analysis of technical support information and available on-board diagnostic systems.</p> <p>2.3 Analytical and evaluative including diagnostic process, sequence and tests and testing equipment methodology are developed and/or identified and are selected from the range of available options.</p> <p>2.4 Testing equipment is obtained and prepared for application in accordance with regulatory, manufacturer/component supplier and enterprise requirements.</p> <p>2.5 Tooling and materials required are identified, selected and prepared for use to support the diagnostic process.</p> <p>2.6 Farm machineries and equipments performance system components are prepared for the diagnostic process, including park-up, isolation procedures and cleaning requirements.</p>
3. Apply the analysis and evaluative	<p>3.1 Selected analytical and diagnostic process is followed in accordance with specifications and directions and/or the locally authorised method.</p>

methodology	<p>3.2 Tests and testing equipment are applied in accordance with regulatory requirements and manufacturer/component supplier specifications.</p> <p>3.3 Analytical and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes, and documented.</p> <p>3.4 Analytical findings and results are evaluated against the agreed criteria.</p> <p>3.5 Valid conclusions are drawn from the available evidence and documented to enterprise requirements.</p> <p>3.6 Information and detail related to the analysis and evaluation are provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Select response measure	<p>4.1 Options for responding to the objective or need are identified from further research of technical support information and procedures.</p> <p>4.2 A response option is selected from an analysis of the options, prevailing circumstance, regulatory requirements and commercial policies.</p> <p>4.3 Selected response option is documented and reported in accordance with regulatory and enterprise requirements and practices.</p>
5. Restore the workplace	<p>5.1 Materials that can be reused are collected and stored.</p> <p>5.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>5.3 Waste and scrap are removed following workplace procedures.</p> <p>5.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p> <p>5.5 Unserviceable equipment is tagged and faults are identified in accordance with workplace.</p>

Variable	Range
Failure analysis and evaluation process	<p>May include:</p> <ul style="list-style-type: none"> • poor selection, incorrect fitting, overloading, overpowering) • propeller selection (size, pitch, material and application) • farm machineries and equipments faults • The objective of the failure analysis and evaluation process may be to determine fault rectification measures, to effect variation in system characteristics and parameters or to enhance system performance.

Farm machineries and equipments performance	Performance and control faults covered by this unit are to include indirect faults caused by the influence of external systems which may or may not be faulty in their primary operation.
Personal protection	is to include that prescribed under legislation, regulations and enterprise policies and practices
Evaluative criteria	Sometimes referred to as success factors, detail the criteria against which the achievement of the objectives of the analysis are to be judged. They are to include statistically based criteria and may include other measures.
Isolation procedures	are to be to industry and enterprise standards
Tests	to be conducted are to include engine performance and maximum speed, farm machineries and equipment performance and farm machineries and equipment integrity, fuel and oil consumption.
Testing equipment	is to include: <ul style="list-style-type: none"> • compression gauges • computer-based diagnostic system • straight edges, tape measure, tachometer • feeler gauges, analogue • digital multimeter, pressure gauges • stethoscope, temperature gauges • timing lights, torque gauges • verniers, hand and power tooling
Information and procedures	May include but not limited to: <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment • workplace procedures relating to reporting and communication • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to farm machineries and equipments installation guidelines • farm machineries and equipments industry legislation/regulations • farm machineries and equipments industry publications related to farm machineries and equipment system technology and technology changes
Unit context	May include but not limited to: <ul style="list-style-type: none"> • WHS requirements include legislation, vehicle industry regulations, safety management systems, hazardous materials and safe operating procedures. • work is carried out in accordance with legislative obligations, Ethiopian Design Rules, environmental legislation, health regulations, manual handling procedures and organisation insurance requirements • work requires individuals to demonstrate research, analytical, judgement and problem-solving skills in the diagnosis of

	faults
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Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • interpret work order and locate and apply information • apply safety requirements, including the isolation of equipment and use of personal protective equipment • follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➢ minimise the risk of injury to self and others ➢ prevent damage and wastage of materials, equipment and products ➢ maintain required production output and product quality • complete failure analyses on a minimum of three different farm machineries and equipment performance systems with real or simulated multi-system and intermittent faults and identify, evaluate, select and document the most appropriate rectification measure • analyse and validate or recommend variations to a minimum of two available repair/modification procedures for different farm machineries and equipment performance systems • document and report the diagnostic process and findings and recommended rectification for two of the above • work effectively with others • modify activities to cater for variations in workplace context and environment
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • farm machineries and equipment terminology and definitions • general knowledge of the concepts, principles and processes involved in planning and implementing systems analysis and evaluation • mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems • detailed knowledge of the types, function, operations and characteristics of farm machineries and equipment two-stroke, four-stroke and diesel engines • detailed knowledge of farm machineries and equipment installation techniques • detailed knowledge of implements selection techniques and procedures • detailed knowledge of farm machineries and equipment performance and design characteristics • general knowledge of the theory of diagnosis, including concept, design and planning • detailed knowledge of the types, functions and operations of diagnostic testing equipment • general knowledge of farm machineries and equipment digital computing systems

	<ul style="list-style-type: none"> • general knowledge of the methods and processes for documenting and reporting diagnostic findings and recommendations
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, organise and understand technical information related to contemporary farm machineries and equipment performance systems, monitoring and testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, commercial and farm machineries and equipment information systems inputs • plan and organise activities, including the planning of analytical processes, establishment of evaluative (success) criteria, preparation and layout of the worksite and the obtaining of testing equipment and materials to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate, adjust and establish testing equipment and present analytical results • establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage • use the workplace technology related to systems analysis and diagnosis, information research and management systems, testing equipment, maintenance equipment, tooling, calculators and measuring devices
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Develop Workplace Policy and Procedures for Environmental Sustainability
Unit Code	AGR MEM5 07 0714
Unit Descriptor	This competency covers the outcomes required to develop and implement a workplace sustainability policy, including the modification of the policy to suit changed circumstances. This competency applies to team leaders/supervisors/managers that are required to develop approaches to environmental sustainability within workplaces, including the development and implementation of policy. It includes communicating with relevant stakeholders, developing and monitoring sustainability policies, and reviewing and improving sustainability policies. This competency applies to all sectors of the manufacturing industry. It may also be applied to all sections of an organisation, including office, warehouse etc.

Elements	Performance Criteria
1. Develop workplace sustainability policy	<p>1.1 Scope of sustainability policy is defined.</p> <p>1.2 Stakeholders as a key component are identified and consulted of the policy development process.</p> <p>1.3 Environmental sustainability strategies relevant to all stages of work covered by the policy are reviewed.</p> <p>1.4 Recommendations are made for policy options based on likely effectiveness, timeframes and cost.</p> <p>1.5 Policy that reflects the organisation's commitment to sustainability is developed as an integral part of the business planning and as a business opportunity.</p> <p>1.6 Appropriate methods of implementation are agreed.</p>
2. Communicate the policy	<p>2.1 The policy, including its expected outcome is promoted to key stakeholders.</p> <p>2.2 Those involved are informed in implementing the policy as to outcomes expected, activities to be undertaken and responsibilities assigned.</p>
3. Implement the policy	<p>3.1 Procedures are developed and communicated to help the implementation of policy.</p> <p>3.2 Strategies are implemented for continuous improvement in resource efficiency.</p> <p>3.3 Record systems are established for tracking continuous improvements in sustainability approaches and assign responsibilities.</p>
4. Review policy implementation	<p>4.1 Outcomes are recorded and feedback is provided to key personnel and stakeholders.</p>

	<p>4.2 Success or otherwise of policy is investigated.</p> <p>4.3 Records are monitored to identify trends that may require remedial action and use to promote continuous improvement of performance.</p> <p>4.4 Policy and or procedures are modified as required to ensure improvements are made.</p>
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Variable	Range
Scope of sustainability policy	<p>May include:</p> <ul style="list-style-type: none"> • The area/s of environmental sustainability to be targeted and whether social and economic sustainability will be incorporated • The parts of the enterprise to which it is to apply, including whether it is for the whole enterprise, one site, one work area or combinations of these • An investigation of the particular business and market context of the industry/ enterprise • Addressing sustainability initiatives through reference to standards, guidelines and approaches such as: <ul style="list-style-type: none"> ➢ ISO 14001 Environmental Management Systems ➢ Life Cycle Analyses ➢ Cradle to grave/cradle to cradle ➢ Global Reporting Initiative ➢ Ecological Footprint Assessment ➢ Triple Bottom Line reporting ➢ Product Stewardship.
Stakeholders	<p>include individuals and groups both inside and outside the organisation that have some direct interest in the enterprise's conduct, actions, products and services, including:</p> <ul style="list-style-type: none"> • employees at all levels of the organisation • customers • suppliers • regulators • other organisations
Strategies	<p>include:</p> <ul style="list-style-type: none"> • awareness raising among stakeholders • training of staff in principles and techniques of sustainability • promotional activities <p>include ongoing measuring, improving and monitoring such as:</p> <ul style="list-style-type: none"> • Plan, do, check, act cycles • Kaizen (continuous improvement) • Kaizen blitz (breakthrough improvement event) • Six sigma approaches <p>Environmental sustainability strategies include:</p> <ul style="list-style-type: none"> • reducing toxic material and hazardous chemical use • minimising resource use through changes in processes, facility design and management

	<ul style="list-style-type: none"> • supply chain and life cycle management approaches • sourcing renewable energy and low carbon footprint materials • reducing, re-using, recycling and waste reduction • product and process improvements • carbon offsets • reducing greenhouse gas and other emissions
Procedures	<ul style="list-style-type: none"> • are performed in accordance with procedures • include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge to:</p> <ul style="list-style-type: none"> • develop relevant policy and procedures that comply with the regulatory requirements and business plans • develop a workable implementation strategy • include measurable criteria for reviewing improvement
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • understanding of relevant policy development and implementation processes and practices • understanding of the principles, practices and available tools and techniques of sustainability management relevant to the particular industry context • best practice approaches relevant to own work area • equal employment opportunity, equity and diversity principles and occupational health and safety implications of policy/s being developed
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • developing and implementing systems and procedures to aid in the achievement of sustainability in the workplace • applying quality assurance systems relevant to own enterprise • accessing and applying other relevant enterprise policies, procedures and protocols • relevant industry competency • interpreting business/strategic plans <p>This unit requires the ability to:</p> <ul style="list-style-type: none"> • read and evaluate complex and formal documents such as policy and legislation • research, analyse and present information • prepare written reports requiring precision of expression and language and structures suited to the intended audience • adjust communication to suit different audiences • deal with different points of view and dissenting stakeholders

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Estimate and Calculate Costs to Repair, Maintain or Modify a Vehicle
Unit Code	AGR MEM5 08 0714
Unit Descriptor	This unit of competency describes the skills and knowledge required to estimate and calculate the costs to repair, maintain or modify a vehicle taking into account materials, labour and overhead costs. It requires the ability to estimate and calculate costs, analyse information, and report and document the costs.

Elements	Performance Criteria
1. Gather information	<p>1.1 The particular service is clarified as required.</p> <p>1.2 Details of the proposed service requirements are obtained and analysed.</p> <p>1.3 Labour unit cost projections are obtained.</p> <p>1.4 Logistic support contracts, supply agreements or equivalent are obtained and analysed.</p> <p>1.5 Details of any proposed warehousing and physical distribution systems and related cost factors are obtained.</p> <p>1.6 Information/documents ready for retrieval and application are documented and stored.</p>
2. Estimate materials and labour	<p>2.1 Cost of repair time is estimated.</p> <p>2.2 Labour requirements is estimated for direct services and related operations.</p> <p>2.3 Cost of subcontractor work is estimated.</p> <p>2.4 Type and cost of parts and materials are estimated according to industry and enterprise pricing standards.</p> <p>2.5 Final estimate is documented.</p>
3. Determine and calculate overheads	<p>3.1 Components contributing to overhead costs are determined.</p> <p>3.2 Overhead costs are calculated to be attributed to the work in accordance with commercial and enterprise procedures.</p>
4. Calculate costs	<p>4.1 Repair time is costed in accordance with enterprise procedures.</p> <p>4.2 Direct labour costs and subcontractor work are costed.</p> <p>4.3 Parts and materials are costed.</p> <p>4.4 Total job cost, including overheads and mark-up percentages are calculated in accordance with enterprise procedures.</p> <p>4.5 Total service cost is calculated.</p>

	<p>4.6 Potential quotation variations are noted.</p> <p>4.7 Cost calculations are recorded.</p>
5. Document and verify details	<p>5.1 Details of costs and charges are documented in accordance with enterprise procedures.</p> <p>5.2 Costs, calculations and other details are verified with relevant enterprise person.</p> <p>5.3 Details are documented and filed for future reference and in accordance with organizational policies and procedures.</p>

Variable	Range
Service requirements	<p>may include:</p> <ul style="list-style-type: none"> • specialised work • subcontracting • replacement parts • repair timeframe <p>are to be in accordance with applicable legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> • award and enterprise agreements • industrial relations • Ethiopian standards • Ethiopian Design Rules • confidentiality and privacy • OHS • the environment • equal opportunity • anti-discrimination • duty of care <p>are to be in accordance with applicable legislation and regulations, and organizational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • road rules • safe driving policy • waste management • noise • dust • clean-up management

Information/ documents	<p>may include:</p> <ul style="list-style-type: none"> • Motor Vehicle Insurance and Repair Industry Code of Conduct • verbal, written and graphical instructions • parts listing prices and catalogues • inventory systems • Material Safety Data Sheets (MSDS) • diagrams or sketches • safe work procedures for inspection of vehicles for saleable components • engineer's design specifications and instructions • workplace specifications and requirements • instructions issued by authorised enterprise or external persons • Ethiopian standards • current driver's licence
Overhead costs	<p>may include:</p> <ul style="list-style-type: none"> • rental and leasing costs • utilities • non-production resources • depreciation of plant and equipment • warehousing margins • warehousing costs • insurance and other costs incurred by doing business • material/supply costs, including catalogues, contracts, standing agreements, market rates and warehousing margins
Organizational policies and procedures	<p>may include:</p> <ul style="list-style-type: none"> • financial management • cost and apportioning overheads • labour employment costs, including awards and contracts • quality policies and procedures, including Ethiopian standards • OHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures

Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • observe safety procedures and requirements • communicate effectively with others involved in or affected by the work • select appropriate methods and techniques • interpret proposals, specifications and instructions for the work • obtain information relevant to the determination of costs • calculate and cost accurately the quantities of parts and materials, the amount of labour and time required to complete the work, and overheads for a range of vehicle repair, maintenance and modification quotes • document the process and outcomes in accordance with
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	enterprise practice
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • methods and processes for identifying, apportioning, summarising and validating total costs for work • components of labour costs • current assessing and quoting methodologies • commercial approaches to warehousing and physical distribution and costing • manufacturer and component supplier specifications and manuals, including costing catalogues • applicable legislation, regulations, standards and codes of practice, including Occupational Health and Safety (OHS), personal safety and environment, relevant to calculating vehicle repair, maintenance and modification costs • organizational policies and procedures, including quality requirements, reporting and recording procedures, related to calculating vehicle repair, maintenance and modification costs
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • technical skills to the level required to use internet and other workplace technology related to calculating work costs • communication skills to the level required to verify costs with others, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities • literacy skills to the level required to undertake costing research, and to document and report findings • numeracy skills to the level required to estimate and calculate labour, materials and on-costs and to validate work costs • problem-solving skills to the level required to anticipate costing problems and to avoid reworking, wastage, and planning and scheduling problems • team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Prepare and Evaluate Technical Reports
Unit Code	<u>AGR MEM5 09 0714</u>
Unit Descriptor	This unit covers the competence to identify and analyse requirements, to plan and conduct research, to evaluate information and findings, and to develop, document and present technical reports. A technical report is one that researches, analyses and reports on the specifications and/or effectiveness of existing or proposed technical systems, component, materials and/or processes.

Elements	Performance Criteria
1. Prepare for the reporting requirement	<p>1.1 Purpose or objective of the report is identified, clearly defined and confirmed with the customer or sponsor.</p> <p>1.2 Project timeframe and outline plan of the main activities are prepared and confirmed with key parties.</p> <p>1.3 Requirements for information entry, storage, output and quality of document production are identified in accordance with enterprise procedures.</p>
2. Plan the research effort	<p>2.1 Scope and nature of the information requirements are identified.</p> <p>2.2 All possible sources of the required information are researched and identified.</p> <p>2.3 A systematic research or information collection plan is designed to optimise the process.</p> <p>2.4 Resources are obtained and scheduled to service the research requirements.</p>
3. Conduct research	<p>3.1 Research is undertaken effectively in accordance with the plan.</p> <p>3.2 Experiments and tests to support the research effort are conducted in a manner which ensures the demonstrable integrity of the outcomes or findings.</p> <p>3.3 Research findings are logged, documented and stored to maintain traceability.</p> <p>3.4 Preliminary analysis is conducted to identify requirements for variations or additions to the research plan.</p>
4. Analyse the information	<p>4.1 Information is sorted, documented and prepared for the analytical process.</p> <p>4.2 Information and data are manipulated to enable reasonable comparisons and judgements.</p> <p>4.3 Clarification is sought by way of expert advice and opinion.</p> <p>4.4 Conclusions and findings reached are made logical based</p>

	on objective analysis of the available data.
5. Prepare and present the report	<p>5.1 The objectives, process, findings and further actions are clearly reported and defined.</p> <p>5.2 Addresses are reported and the stated objective and timeframe are satisfied.</p> <p>5.3 Associated presentation materials that of a standard and quality are reported for the intended audience.</p> <p>5.4 Reader comprehension of the report is aided by use of executive summaries and attachments.</p> <p>5.5 Protocols, conventions and legal requirements are applied related to acknowledgements and intellectual property.</p> <p>5.6 Information management requirements, including documenting and repository actions are satisfied in accordance with enterprise information and procedures.</p>

Variable	Range
Information and procedures	<p>May include but not limited:</p> <ul style="list-style-type: none"> • workplace procedures relating to reporting and communication • vehicle industry publications related to emerging system technology and technology changes • professional publications • automotive research collections and access facilities • manufacturer/component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to systems • Ethiopian Standards • Ethiopian Design Rules • vehicle industry regulations
Workplace environment	<p>may involve individual and team related activities</p> <ul style="list-style-type: none"> • Work may be carried out in a commercial, workshop, laboratory or research establishment
Personal protective equipment	is to include that prescribed under legislation, regulations and enterprise policies and practices

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • locate, interpret and apply information • apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment • identify and itemise steps and stages covering confirmation of objective, research planning and conduct and report preparation • complete a significant technical report covering:

	<ul style="list-style-type: none"> ➤ detailed research of the topic area ➤ a full analysis of the research outcomes ➤ conclusions and recommendations clearly supported by the facts ➤ satisfaction of legal, regulatory or intellectual property law requirements • modify activities to cater for variations in research findings • work effectively with others
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • technical writing and presentation techniques • enterprise (or equivalent) technical procedure formats, content rules, preparation and management techniques
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • research, collect, organise and understand technical information related to the subject area, developmental activities, testing processes, diagnostic methods and options and safety procedures • communicate ideas and information to ensure the completeness, clarity and comprehension of the technical report by the target audience • plan and organise the research and writing effort to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise research and writing • use mathematical ideas and techniques to incorporate calculation, measurements, calibration and test requirements into research and validation activities • establish processes which anticipate and allow for risks, cater for both direct and indirect causes, avoid or minimise reworking and avoid wastage in the research and report preparation activities • use the workplace technology related to document preparation, including computing systems and information management systems, calculators and measuring devices
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Develop and Apply Modifications
Unit Code	AGR MEM5 10 0714
Unit Descriptor	This unit covers the competence to develop, apply and validate significant modifications to existing systems in order to vary or enhance performance. This includes the preparation and application of specifications and processes complying with safety, legal and commercial obligations.

Elements	Performance Criteria
1. Identify and confirm the modification requirement	<p>1.1 OHS requirements, including regulatory requirements, equipment and system isolation procedures requirements and personal protection needs are observed throughout the work.</p> <p>1.2 Purpose and objectives of the modification are identified from an analysis of inputs to the modification method and processes and confirmed with the customer.</p> <p>1.3 Outline options for achieving the required purpose and objectives are identified, framed and presented to the customer prior to proceeding.</p> <p>1.4 Possible legal and safety impacts of the modification are considered and responded to in accordance with regulatory and enterprise obligations and practices.</p>
2. Develop and validate the modification specification	<p>2.1 Benchmark specifications for the existing systems are accessed and interpreted.</p> <p>2.2 Evaluation criteria to be used in the selection of the modification method and in the evaluation of the outcomes are identified and documented.</p> <p>2.3 Proposed modification method is selected following the identification, consideration and evaluation of the full range of available and options.</p> <p>2.4 Selected option, including material choices and processes are developed in detail and progressively validated against the established criteria.</p> <p>2.5 Modification specification is documented to industry and enterprise standards.</p>
3. Apply and test the modification specification	<p>3.1 Selected modification method and process are followed in accordance with the established specifications.</p> <p>3.2 Modification is completed using equipment, tooling and materials in accordance with accepted industry standards and practices.</p> <p>3.3 Tests and testing equipment are applied in accordance with regulatory requirements, manufacturer/component</p>

	<p>supplier specifications and modification specification.</p> <p>3.4 Test results and other diagnostic findings are verified, if necessary, by using reliable alternate or optional processes.</p> <p>3.5 Variations necessitated during the modification process or as a result of testing are incorporated into the modification specification.</p> <p>3.6 Information and detail related to the modification are documented and provided to the appropriate parties in accordance with regulatory and commercial obligations.</p>
4. Clean up work area and maintain equipment	<p>4.1 Materials that can be reused are collected and stored.</p> <p>4.2 Testing equipment and other support materials are cleaned, maintained and prepared ready for further use or stored in accordance with manufacturer/component supplier specifications and enterprise requirements.</p> <p>4.3 Waste and scrap are removed following workplace procedures.</p> <p>4.4 Unserviceable equipment is tagged and faults are identified in accordance with workplace information and procedures.</p> <p>4.5 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

Variable	Range
Isolation procedures	are to be to industry and enterprise standards
Personal protection needs	is to include that prescribed under legislation, regulations and enterprise policies and practices
Inputs to the modification method and processes	<p>May be obtained from:</p> <ul style="list-style-type: none"> customer requirements, manufacturer/ component supplier specifications, outcomes of diagnostic processes or from regulatory, licensing and intellectual property legislation, safety requirements and Ethiopian Design Rules
Modification	<p>Are to cover significant and non-routine modifications which may include:</p> <ul style="list-style-type: none"> adapt or modify the system(s) of farm machineries and equipments to a significantly changed capability adapt machineries and equipments systems for different working conditions, for example high altitude or underground mine modify or install a significant system(s) for a special purpose in machineries and equipments preparation for registration
Evaluation criteria	sometimes referred to as success factors, are to be established prior to a modification being undertaken and are to cover safety, functionality, survivability, maintainability, life cycle cost and aesthetics.

Tests and testing equipment	may include that appropriate to the modification being carried out but it should include computer-based diagnostic systems
Information and procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • workplace procedures relating to the use of tooling and equipment • workplace procedures relating to reporting and communication • manufacturer/ component supplier specifications and application procedures for testing equipment and materials • manufacturer/component supplier specifications, schematics and operational procedures related to mechanical systems modification • Ethiopian Design Rules • Vehicle industry regulations • vehicle industry publications related to emerging transmission system technology and technology changes

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate skills and knowledge in:</p> <ul style="list-style-type: none"> • interpret work order and locate and apply information • apply safety requirements, including the isolation of equipment and use of personal protective equipment • follow work instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➤ minimise the risk of injury to self and others ➤ prevent damage and wastage of goods, equipment and products ➤ maintain required production output and product quality • modify a significant mechanical system or sub-system including: <ul style="list-style-type: none"> ➤ the selection, development and documenting of success factors and evaluation criteria before undertaking the modification ➤ the selection, development and validation of the modification methodology, processes and specification ➤ the application of the modification specification (methodology and process), and ➤ the documenting and reporting of the outcomes • work effectively with others • modify activities to cater for variations in workplace context and environment
Underpinning Knowledge and Attitudes	<p>Must demonstrate knowledge of:</p> <ul style="list-style-type: none"> • electrical theory covering voltage, current, resistance, power, magnetic and inductance (including semi-conductors and electronic system applications) • mechanical theory covering the concepts and principles of mechanical, hydraulic and pneumatic systems • detailed knowledge of: <ul style="list-style-type: none"> ➤ the types, functions, operations and limitations of the

	<ul style="list-style-type: none"> ➤ main automotive industry mechanical systems ➤ the types, functions, operations and limitations of diagnostic testing equipment • general knowledge of: <ul style="list-style-type: none"> ➤ automotive digital computing systems ➤ the methods and processes for documenting and reporting modification specifications and outcomes
Underpinning Skills	<p>Must demonstrate skills to:</p> <ul style="list-style-type: none"> • collect, organise and understand legal and technical information related to contemporary mechanical systems modifications • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, reporting of work outcomes and completion of regulatory, • plan and organise activities, including the development and planning of modification processes, preparation and layout of the worksite and the obtaining of tooling, equipment, materials and testing equipment to avoid backtracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to complete measurements, calculate specifications, calibrate and establish testing equipment and evaluate modification results against pre-established criteria • establish modification methods and processes which anticipate and allow for risks and avoid or minimise reworking and avoid wastage • use the full range of workplace technology related to systems modification, including testing equipment, maintenance equipment, tooling, calculators and measuring devices and information management systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Manage Operational Plan
Unit Code	AGR MEM5 11 0714
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans. Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan. Therefore, people who manage the work of others and operate within the parameters of a broader strategic and/or business plan. The task of the manager at this level is to develop and implement an operational plan to ensure that the objectives and strategies outlined in the strategic and/or business plan are met by work teams. However in some larger organisations operational plans may be developed by a strategic planning unit.

Elements	Performance Criteria
1. Develop operational plan	<p>1.1 Resource requirements are researched, analysed and documented and an operational plan is developed in consultation with relevant personnel, colleagues and specialist resource managers.</p> <p>1.2 Consultation processes is developed and/or implemented as an integral part of the operational planning process.</p> <p>1.3 Details of the operational plan that include the development of key performance indicators are ensured to measure organizational performance.</p> <p>1.4 Contingency plans are development and implemented at appropriate stages of operational planning.</p> <p>1.5 The development and presentation of proposals for resource requirements are supported by a variety of information sources and specialist advice is sought as required.</p> <p>1.6 Approval for plan is obtained from relevant parties and ensures understanding among work teams involved.</p>
2. Plan and manage resource acquisition	<p>2.1 Strategies are developed and implemented to ensure that employees are recruited and/or inducted within the organisation's human resources management policies and practices.</p> <p>2.2 Strategies are developed and implemented to ensure that physical resources and services are acquired in accordance with the organisation's policies, practices and procedures.</p>

3. Monitor and review operational performance	<p>3.1 Performance systems and processes are developed, monitored and reviewed to assess progress in achieving profit and productivity plans and targets.</p> <p>3.2 Budget and actual financial information are analysed and interpreted to monitor and review profit and productivity performance.</p> <p>3.3 Areas of underperformance, recommend solutions are identified and prompt action is taken to rectify the situation.</p> <p>3.4 Systems are planned and implemented to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources.</p> <p>3.5 Recommendations are negotiated for variations to operational plans and approval is gained from designated persons/groups.</p> <p>3.6 Systems are developed and implemented to ensure that procedures and records associated with documenting performance are managed in accordance with organisational policies, practices and procedures.</p>
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Variable	Range
Resource requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, colleagues and specialist resource managers	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • employees at the same level or more senior managers • managers • occupational health and safety committee/s and other people with specialist responsibilities • supervisors • union or employee representatives
Consultation processes	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions
Operational plan	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • action plans • annual plans • management plans

	<ul style="list-style-type: none"> tactical plans
Key performance indicators	<p>May include but not limited to:</p> <ul style="list-style-type: none"> measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements
Contingency plans	<p>May include but not limited to:</p> <ul style="list-style-type: none"> contracting out or outsourcing human resources and other functions or tasks diversification of outcomes finding cheaper or lower quality raw materials and consumables increasing sales or production recycling and re-using rental, hire purchase or alternative means of procurement of required materials, equipment and stock restructuring of organisation to reduce labour costs risk identification, assessment and management processes seeking further funding strategies for reducing costs, wastage, stock or consumables succession planning
Designated persons/groups	<p>May include but not limited to:</p> <ul style="list-style-type: none"> groups designated in workplace policies and procedures managers or supervisors whose roles and responsibilities include decision making on operations other stakeholders such as Board members other work groups or teams whose work will be affected by recommendations for variations
Organisation's policies, practices and procedures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> organizational culture organizational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources Standard Operating Procedures undocumented practices in line with organizational operations

Evidence Guide

Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> development of an operational plan with details of how it will be implemented and monitored knowledge of models and methods for operational plans
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> models and methods for operational plants budgeting processes alternative approaches to improving resource usage and eliminating resource inefficiencies and waste

Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • literacy skills to access and use workplace information and to write a succinct and practical plan • technology skills to use software to produce and monitor the plan against performance indicators • planning and organizational skills • coaching skills to work with people with poor performance • numeracy skills to allocate and manage financial resources
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Manage Budgets and Financial Plans
Unit Code	AGR MEM5 12 0714
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to undertake financial management within a work team in an organisation. This includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances, and reviewing and evaluating effectiveness of financial management processes in line with the financial objectives of the work team and the organisation. This unit addresses the requirement for managers to ensure that financial resources are used effectively. This is done by ensuring access to budget/s and ongoing monitoring expenditure against the budget/s. The unit applies to managers working in small and large business environments and not for profit organisations.

Elements	Performance Criteria
1. Plan financial management approaches	<p>1.1 Budget/financial plans are accessed for the work team.</p> <p>1.2 Budget/financial plans are clarified with relevant personnel within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible.</p> <p>1.3 Any changes required to be made to budget/ financial plans are negotiated with relevant personnel within the organisation.</p> <p>1.4 Contingency plans are prepared in the event that initial plans need to be varied.</p>
2. Implement financial management approaches	<p>2.1 Relevant details of the agreed budget/financial plans are disseminated to team members.</p> <p>2.2 Support is provided to ensure that team members can competently perform required roles associated with the management of finances.</p> <p>2.3 Resources and systems are determined and accessed to manage financial management processes within the work team.</p>
3. Monitor and control finances	<p>3.1 Processes are implemented to monitor actual expenditure and to control costs across the work team.</p> <p>3.2 Expenditure and costs on an agreed cyclical basis are monitored to identify cost variations and expenditure overruns.</p> <p>3.3 Contingency plans are implemented, monitored and modified as required to maintain financial objectives.</p> <p>3.4 Budget and expenditure are reported in accordance with</p>

	organizational protocols.
4. Review and evaluate financial management processes	<p>4.1 Data and information on the effectiveness of financial management processes are collected and collated for analysis within the work team.</p> <p>4.2 Data and information on the effectiveness of financial management processes are analysed within the work team and any improvements is identified, documented and recommended to existing processes.</p> <p>4.3 Agreed improvements are implemented and monitored in line with financial objectives of the work team and the organisation.</p>

Variable	Range
Budget/financial plans	<p>May include:</p> <ul style="list-style-type: none"> • cash flow projections • long-term budgets/plans • operational plans • short-term budgets/plans • spreadsheet-based financial projections • targets or key performance indicators for production, productivity, wastage, sales, income and expenditure
Relevant personnel	<p>May include:</p> <ul style="list-style-type: none"> • financial managers, accountants or financial controller • supervisors, other frontline managers
Contingency plans	<p>May include:</p> <ul style="list-style-type: none"> • contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, • wastage, stock or consumables • succession planning
Support	<p>May include:</p> <ul style="list-style-type: none"> • access to specialist advice • documentation of procedures • help desk or identified experts within the organisation • information briefings or sessions • intranet-based information

	<ul style="list-style-type: none"> • training including mentoring, coaching and shadowing
Required roles	<p>May include:</p> <ul style="list-style-type: none"> • arranging for use of corporate credit cards • banking • debt collection • ensuring security, accuracy and currency of financial operations • invoicing clients, customers and consumers • maintaining journals, ledgers and other record keeping systems • maintaining petty cash system • purchasing and procurement • wages and salaries payments and record keeping
Resources and systems	<p>May include:</p> <ul style="list-style-type: none"> • hardware and software • human, physical or financial resources • record keeping systems (electronic and paper-based) • specialist advice or support
Processes	<p>Include reporting of:</p> <ul style="list-style-type: none"> • assets • consumables • equipment • expenditure • income • stock • wastage
Reporting	<p>May include data from:</p> <ul style="list-style-type: none"> • bank statements • credit card statements • financial reports • invoices and receipts • ledgers and journals • logs • petty cash records • spreadsheet-based records

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • financial skills required to work with and interpret budgets, ageing summaries, cash flow, petty cash, GST, and profit and loss statements • knowledge of the record keeping requirements for the ATO and for auditing purposes
Underpinning knowledge and attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • basic accounting principles • organizational requirements related to financial management

	<ul style="list-style-type: none"> • relevant legislation and current requirements of the Ethiopian Taxation Office, including GST • requirements for organizational record keeping and auditing • principles and techniques involved in: <ul style="list-style-type: none"> ➤ budgeting ➤ cash flows ➤ electronic spreadsheets ➤ GST ➤ ledgers and financial statements • profit and loss statements
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • numeracy skills to read and understand a budget and to update a budget • technology skills to use software associated with financial record keeping
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Manage Project Quality
Unit Code	AGR MEM5 13 0714
Unit Descriptor	This unit specifies the outcomes required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects.

Elements	Performance Criteria
1. Determine quality requirements	<p>1.1 Quality objectives, standards and levels are determined, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and a quality management plan.</p> <p>1.2 Established quality management methods, techniques and tools are selected and used to determine preferred mix of quality, capability, cost and time.</p> <p>1.3 Quality criteria are identified, agreed with a higher project authority and communicated to stakeholders to ensure clarity of understanding and achievement of quality and overall project objectives.</p> <p>1.4 Agreed quality requirements are included in the project plan and implemented as basis for performance measurement.</p>
2. Implement quality assurance	<p>2.1 Results of project activities and product performance are measured and documented throughout the project life cycle to determine compliance with agreed quality standards.</p> <p>2.2 Causes of unsatisfactory results are identified, in consultation with the client, and appropriate actions are recommended to a higher project authority to enable continuous improvement in quality outcomes.</p> <p>2.3 Inspections of quality processes and quality control results are conducted to determine compliance of quality standards to overall quality objectives.</p> <p>2.4 A quality management system is maintained to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders.</p>
3. Implement project quality improvements	<p>3.1 Processes are reviewed and agreed changes implemented continually throughout the project life cycle to ensure continuous improvement to quality.</p> <p>3.2 Project outcomes are reviewed against performance criteria to determine the effectiveness of quality.</p>

	<p>management processes and procedures.</p> <p>3.3 Lessons learned and recommended improvements are identified, documented and passed to a higher project authority for application in future projects.</p>
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Variable	Range
Quality objectives	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • requirements from the client and other stakeholders • requirements from a higher project authority • negotiated trade-offs between cost, schedule and performance • those quality aspects which may impact on customer satisfaction
Quality management plan	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • established processes • authorizations and responsibilities for quality control • quality assurance • continuous improvement
Quality management methods, techniques and tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • brainstorming • benchmarking • charting processes • ranking candidates • defining control • undertaking benefit/cost analysis • processes that limit and/or indicate variation • control charts • flowcharts • histograms • pareto charts • scatter gram • run charts
Quality control	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • monitoring conformance with specifications • recommending ways to eliminate causes of unsatisfactory • performance of products or processes • monitoring of regular inspections by internal or external agents
Improvements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • formal practices, such as total quality management or continuous improvement • improvement by less formal processes which enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • lists of quality objectives, standards, levels and measurement criteria • records of inspections, recommended rectification actions and quality outcomes • management of quality management system and quality management plans • application of quality control, quality assurance and continuous improvement processes • records of quality reviews • lists of lessons learned and recommended improvements <p>Processes that could be used as evidence include:</p> <ul style="list-style-type: none"> • how quality requirements and outcomes were determined for projects • how quality tools were selected for use in projects • how team members were managed throughout projects with respect to quality within the project • how quality was managed throughout projects • how problems and issues with respect to quality and arising during projects were identified and addressed • how projects were reviewed with respect to quality management • how improvements to quality management of projects have been acted upon
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • the principles of project quality management and their application • acceptance of responsibilities for project quality management • use of quality management systems and standards • the place of quality management in the context of the project life cycle • appropriate project quality management methodologies; and their capabilities, limitations, applicability and contribution to project outcomes • attributes: <ul style="list-style-type: none"> ➤ analytical ➤ attention to detail ➤ able to maintain an overview ➤ communicative ➤ positive leadership
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities • project management • quality management • planning and organizing

	<ul style="list-style-type: none"> • communication and negotiation • problem-solving • leadership and personnel management • monitoring and review skills
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Facilitate and Capitalize on Change and Innovation
Unit Code	AGR MEM5 14 0714
Unit Descriptor	This unit specifies the outcomes required to plan and manage the introduction and facilitation of change; particular emphasis is on the development of creative and flexible approaches, and on managing emerging opportunities and challenges.

Elements	Performance Criteria
1. Participate in planning the introduction and facilitation of change	<p>1.1 Manager contribution is made effectively to the organization's planning processes to introduce and facilitate change.</p> <p>1.2 Plans are made to introduce change in consultation with appropriate stakeholders.</p> <p>1.3 Organization's objectives and plans are communicated effectively to introduce change to individuals and teams.</p>
2. Develop creative and flexible approaches and solutions	<p>2.1 Variety of approaches are identified and analyzed to manage workplace issues and problems.</p> <p>2.2 Risks are identified and assessed, and action initiated to manage these to achieve a recognized benefit or advantage to the organization.</p> <p>2.3 Workplace is managed in a way which promotes the development of innovative approaches and outcomes.</p> <p>2.4 Creative and responsive approaches to resource management are used to improve productivity and services, and/or reduce costs.</p>
3. Manage emerging challenges and opportunities	<p>3.1 Individuals and teams are supported to respond effectively and efficiently to changes in the organization's goals, plans and priorities.</p> <p>3.2 Coaching and mentoring are made to assist individuals and teams to develop competencies to handle change efficiently and effectively.</p> <p>3.3 Opportunities are identified and taken as appropriate to make adjustments and respond to the changing needs of customers and the organization.</p> <p>3.4 Information needs of individuals and teams are anticipated and facilitated as part of change implementation and management.</p> <p>3.5 Recommendations are identified, evaluated and negotiated for improving the methods and techniques to manage change with appropriate individuals and groups.</p>

Variables	Range
Manager	a person with frontline management roles and responsibilities, regardless of the title of their position
Appropriate stakeholders	May include but not limited to: <ul style="list-style-type: none"> • organization directors and other relevant managers • teams and individual employees who are both directly and indirectly involved in the proposed change • union/employee representatives or groups • OHS committees • other people with specialist responsibilities • external stakeholders where appropriate - such as clients, suppliers, industry associations, regulatory and licensing agencies
Risks	May include but not limited to: <ul style="list-style-type: none"> • any event, process or action that may result in goals and objectives of the organization not being met • any adverse impact on individuals or the organization • various risks identified in a risk management process
Information needs	May include but not limited to: <ul style="list-style-type: none"> • new and emerging workplace issues • implications for current work roles and practices including training and development • changes relative to workplace legislation, such as OHS, workplace data such as productivity, inputs/outputs and future projections • planning documents • reports • market trend data • scenario plans • customer/competitor data

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Planning the introduction and facilitation of change • Developing creative and flexible approaches and solutions • Managing emerging challenges and opportunities
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • Relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • the principles and techniques involved in: <ul style="list-style-type: none"> • change and innovation management • development of strategies and procedures to implement and facilitate change and innovation • use of risk management strategies: identifying hazards, • assessing risks and implementing risk control measures

	<ul style="list-style-type: none"> • problem identification and resolution • leadership and mentoring techniques • management of quality customer service delivery • consultation and communication techniques • record keeping and management methods • the sources of change and how they impact • factors which lead/cause resistance to change • approaches to managing workplace issues
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Communication skills • Planning work • Managing risk
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Establish and Conduct Business Relationships
Unit Code	AGR MEM5 15 0714
Unit Descriptor	This unit covers the skills, attitudes and knowledge required to manage business relationship with customers.

Elements	Performance Criteria
1. Establish contact with customer	<p>1.1 Welcoming customer environment is maintained.</p> <p>1.2 Customer is greeted warmly according to enterprise policies and procedures.</p> <p>1.3 Effective service environment is created through verbal and non-verbal presentation according to enterprise policies and procedures.</p> <p>1.4 Customer data is maintained to ensure database relevance and currency.</p> <p>1.5 Information on customers and service history is gathered for analysis.</p> <p>1.6 Opportunities are identified and taken up to maintain regular contact with customers.</p>
2. Clarify needs of customer	<p>2.1 Customer needs are determined through questioning and active listening.</p> <p>2.2 Customer needs are accurately assessed against the products/services of the enterprise.</p> <p>2.3 Customer details are documented clearly and accurately in required format.</p> <p>2.4 Negotiations are conducted in a business-like and professional manner.</p> <p>2.5 Benefits are maximized for all parties in the negotiation through use of established negotiation techniques and in the context of establishing long term relationships.</p> <p>2.6 The results of negotiations are communicated to appropriate colleagues and stakeholders within appropriate timeframes.</p>
3. Provide information and advice	<p>3.1 Features and benefits of products/services provided by the enterprise are described / recommended to meet customer needs.</p> <p>3.2 Information is provided to satisfy customer needs.</p> <p>3.3 Alternative sources of information/advice are discussed with the customer.</p>
4. Foster and maintain	<p>4.1 Information needed is pro-actively sought, reviewed and acted upon to maintain sound business relationships.</p>

business relationships	<p>4.2 Agreements are honored within the scope of individual responsibility.</p> <p>4.3 Adjustments to agreements are made in consultation with the customer and share information with appropriate colleagues.</p> <p>4.4 Relationships are nurtured through regular contact and use of effective interpersonal and communication styles.</p>
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Variables	Range
Opportunities to maintain regular contact with customers	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • informal social occasions • industry functions • association membership • co-operative promotions • program of regular telephone contact
Negotiation techniques	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • identification of goals, limits • clarification of needs of all parties • identifying points of agreement and points of difference • preparatory research of facts • active listening and questioning • non-verbal communication techniques • appropriate language • bargaining • developing options • confirming agreements • appropriate cultural behaviour

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • consistently applying enterprise policies and procedures and industry codes of practice in regard to customer service • providing a quality service environment by treating customers in a courteous and professional manner through all stages of the procedure • using effective questioning/active listening and observation skills to identify customer needs • communicating effectively with others involved in or affected by the work • maintaining relevant and current customer databases in accordance with enterprise policies and procedures • ability to build and maintain relationships to achieve successful business outcomes
Underpinning knowledge and attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Operational knowledge of enterprise policies and procedures in regard to: <ul style="list-style-type: none"> ➤ customer service

	<ul style="list-style-type: none"> ➤ dealing with difficult customers ➤ maintenance of customer databases ➤ allocated duties/responsibilities ➤ General knowledge of the range of enterprise merchandise and services, location of telephone extensions and departments/sections <ul style="list-style-type: none"> • Basic operational knowledge of legislation and statutory requirements, including consumer law, trade practices and fair trading legislation • Basic operational knowledge of industry/workplace codes of practice in relation to customer service • negotiation and communication techniques appropriate to negotiations that may be of significant commercial value
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • Use workplace technology related to use of customer database • Collect, organize and understand information related to collating and analysing customer information to identify needs • Communicate ideas and information • Plan and organize activities concerning information for database entries • Use mathematical ideas and techniques to plan database cells and size • Establish diagnostic processes which identify and recommend improvements to customer service
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Farm Machinery and Equipment Maintenance Level V	
Unit Title	Manage Continuous Improvement Process (Kaizen)
Unit Code	AGR MEM5 16 0714
Unit Descriptor	This unit describes the performance, outcomes, knowledge, attitude and skills required to sustain and develop an environment in which continuous improvement, innovation and learning are promoted, rewarded and managed.

Elements	Performance Criteria
1. Diagnose the current status.	1.1 Parameters used for study current situation is obtained. 1.2 Internal and external environment is analyzed. 1.3 Problems related to targeted environment is recognized and identified. 1.4 Problems regarding to current situation are analyzed. 1.5 Alternatives are generated. 1.6 Best alternatives are selected.
2. Design an effective continuous improvement process (kaizen).	2.1 The values, mission and goals of kaizen management system are clarified. 2.2 The kaizen management template and a visual management logo full of purpose and meaning are developed. 2.3 A clear action strategy (master and detailed plans) is defined. 2.4 The most effective and proven kaizen tools are chosen and applied. 2.5 A practical way is identified to involve all employees in Gemba activities (top, middle and bottom).
3. Develop change capability.	3. 1. Kaizen Promotion Team Structure is developed. 3. 2. The Kaizen Training Plan is defined and started. 3. 3. Supervisors' kaizen capability and habits are developed. 3. 4. Key people are developed in terms of Individual leadership capability .
4. Implement improved processes.	4.1 Sustainability/continuous improvement are promoted as an essential part of doing business. 4.2 Impacts of change and consequences are addressed for people, and transition plans implemented. 4.3 Objectives, time frames, measures and communication plans are ensured in place to manage implementation. 4.4 Contingency plans are implemented in the event of non-performance.

	<p>4.5 Failure is followed-up by prompt investigation and analysis of causes.</p> <p>4.6 Emerging challenges and opportunities are managed effectively.</p> <p>4.7 Continuous improvement systems and processes are evaluated regularly.</p> <p>4.8 Improvements are communicated to all relevant groups and individuals.</p> <p>4.9 Opportunities are explored for further development of value stream improvement processes.</p>
5. Establish direction and control.	<p>5.1 A system audit tool is defined and implemented.</p> <p>5.2 The kaizen management system is deployed across all company levels and functions.</p> <p>5.3 Results are checked and corrections made.</p> <p>5.4 Standard operating procedures are developed and maintained.</p> <p>5.5 The recruit, training and evaluation systems are improved and HR practices compensated.</p>

Range	Variables
Parameters	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Working condition • Resources may include: <ul style="list-style-type: none"> ➢ Human ➢ Material ➢ Machine • Kaizen elements
Kaizen management template	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Visual management board for: <ul style="list-style-type: none"> ➢ displaying characteristic figures, data and graphics ➢ depicting and controlling processes ➢ identifying and marking sources of risks, setting and standards ➢ displaying company's values and goals of kaizen
Kaizen tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • 5S (a visual workplace management) • 7 QC tools(Cause and Effect Diagram, Check Sheet , Pareto Diagram , Histogram, Scatter Diagram, Control Chart and Flow Chart) • Brainstorming • Basic Industrial Engineering (IE) tools such as time study, motion study, line balancing, work sampling • JIT(JUST IN TIME principles) • MUDA identification and elimination tools • Kanban

	<ul style="list-style-type: none"> • Poka-yoke • Takt- time
Gemba activities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Value-adding activities to satisfy the customer • Employee autonomous operations (participating in team to identify nonconformity, propose solutions and implement them autonomously)
Individual leadership capability	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Personal and interpersonal skills • Courage • Honour and integrity • Energy and drive • Strategic skills • Operating skills • Organizational positioning skills
Sustainability/continuous improvement	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Improvements made by following PDCA (Plan, Do, Check and Act) cycle for: <ul style="list-style-type: none"> ➢ Improvements in one's own work ➢ Saving in energy, material and other resources ➢ Improvements in the working environment ➢ Improvements in machines and processes ➢ Improvements in jigs and tools ➢ Improvement in office work ➢ Improvements in product quality ➢ Ideas for new products ➢ Customers services and customer relations
System audit tool	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • 5S audit • Patrol system • Kaizen board • 5M check lists • Key Performance Indicators (KPIs)
Standard operating procedure	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Administrative standards for: <ul style="list-style-type: none"> ➢ Managing the business ➢ Administration ➢ Personnel Guidelines ➢ Job Descriptions ➢ Guidelines for preparing cost information • Operation standards for: <ul style="list-style-type: none"> ➢ Describing the way a job is done. ➢ Help realising Quality, cost, delivery. ➢ Addressing the need to satisfy customers. ➢ Using the process that's the best. ➢ Producing work in the most cost effective manner. ➢ Assuring total quality for the customer.
HR practices	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Resources may include:

	<ul style="list-style-type: none"> ➤ Recruit and retain high quality people with innovative skills and a good track, record in innovation • HR development is used for: <ul style="list-style-type: none"> ➤ strategic capability and provide encouragement and facilities for enhancing innovating skills and enhancing the intellectual capital of the organization • Reward will: <ul style="list-style-type: none"> ➤ Provide financial incentives and rewards and recognition for successful innovation
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Evidence Guide	
Critical Aspects of Assessment	<p>Demonstrates skills and knowledge competencies to:</p> <ul style="list-style-type: none"> • Establish policy and cross-functional goals for kaizen • Deploy and implement goals as directed through policy deployment and cross-functional management. • Realize goals through deployment and audits. • Build systems, procedures, and structures conducive to kaizen. • Use kaizen in functional capabilities. • Introduce Kaizen as a corporate strategy • Provide support and direction between allocating resources • Establish, maintain and upgrade standards. • Make employees conscious through training programs. • Assist employees develop skills and tools for problem solving
Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Quality management and continuous improvement theories • creativity/innovation theories/concepts • competitive systems and practices tools, including: <ul style="list-style-type: none"> ➤ 5S ➤ JUST IN Time (JIT) ➤ mistake proofing ➤ process mapping ➤ establishing customer pull ➤ setting of KPIs/metrics ➤ SOP ➤ Kaizen elements/targets. ➤ identification and elimination of waste/MUDA ➤ continuous improvement processes including implementation, monitoring and evaluation strategies for a whole organization and its value stream ➤ Difference between breakthrough improvement and continuous improvement ➤ organizational goals, processes and structure ➤ approval processes within organization ➤ methods of determining the impact of a change ➤ customer perception of value ➤ Define, Measure, Analyze, Improve and Control (DMAIC) to sustain process

Underpinning Skills	<p>Demonstrates Skills to:</p> <ul style="list-style-type: none"> • Use leadership skills to foster a commitment to quality and openness to improvement. • Analyze training needs and implementing training programs • Prepare and maintain quality and audit documentation • Undertake self-directed problem solving and decision-making on issues of a broad and/or highly specialized nature and in highly varied and/or highly specialized contexts • Communicate at all levels in the organization and to audiences of different levels of literacy and numeracy • Analyze current state/situation of the organization. • Analyze individually and collectively the implementation of competitive systems and practices tools in the organization and determining strategies for improved implementation • Solve highly varied and highly specialized problems related to competitive systems and practices implementation and continuous improvement to root cause • Negotiate with stakeholders, where required, to obtain information required for implementation and refinement of continuous improvements, including management, unions, employees and members of the community. • Review relevant metrics, including all those measures which might be used to determine the performance of the improvement system, including: <ul style="list-style-type: none"> ➤ Key Performance Indicators (KPIs) for existing processes ➤ Quality statistics ➤ Delivery timing and quantity statistics ➤ Process/equipment reliability ('uptime')
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

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This occupational standard was developed on July 2014 in Ethiopia.

COMMENT TEMPLATE

The Federal TVET Agency values your feedback of the document.
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FARM MACHINERY AND EQUIPMENT MAINTENANCE

Level V

Farm Machinery and Equipment Maintenance



Level IV

Farm Machinery and Equipment Maintenance



Level III

Farm Machinery and Equipment Maintenance



Level II

Farm Machinery and Equipment Maintenance



Farm Machinery and Equipment Maintenance

