



**NATIONAL COMPETENCY STANDARDS  
FOR  
FARM MACHINERY TECHNICIAN  
(NC2, NC3)**

**Department of Occupational Standards  
Ministry of Labour and Human Resources  
Thimphu, Bhutan.**

**(Year - 2014)**



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## FOREWORD

The Department of Occupational Standards of the Ministry of Labour and Human Resources is pleased to present the National Competency Standards (NCSs) for Farm Machinery Technician. The standards represent the fruits of hard work and invaluable experiences gained by the department since its establishment in the latter half of 2003. The main aim of developing NCS is to set up a well-defined nationally recognized Vocational Qualification System that will help set a benchmark for the Technical Vocational Education and Training (TVET) System in our country aligned to international best practices.

NCS is one of the base pillars in the Bhutan Vocational Qualification Framework (BVQF) and is the first step in its implementation. The NCS are developed and revised to ensure that employees or vocational graduates possess and acquire the desired competencies required by industries and employers. In order to ensure this close match in supply and demand of competencies, NCS have been developed and revised in close consultation and partnership with industry experts and validated by the Technical Advisory Committees of the concerned economic sectors.

A vocational education and training system based on NCS shall ensure that delivered training is of a high quality and relevant to the needs of the labour market. As a result, future TVET graduates will be better equipped to meet the need and expectations of industries and employers. This positive impact on the employability of TVET graduates will enhance the reputation of vocational education and training and make it attractive to school leavers.

I gratefully acknowledge collaboration and the valuable contributions made by experts from industries during the consultation and validation processes of the standards. I look forward for continued engagement and participation of the industry and employers in the development of a quality assured demand driven TVET system and to build competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

Director  
Department of Occupational Standards  
Ministry of Labour and Human Resources

## INTRODUCTION

### A. National Competency Standards (NCS)

The National Competency Standards specify the skill, knowledge and attitudes applied to a particular occupation. Standards also specify the standards or criteria of performance of a competent worker and the various contexts in which work may take place. Standards provide explicit advice to assessors regarding the skill and knowledge to be demonstrated by candidates seeking formal recognition either following training or through work experience.

#### **Purpose of National Competency Standards**

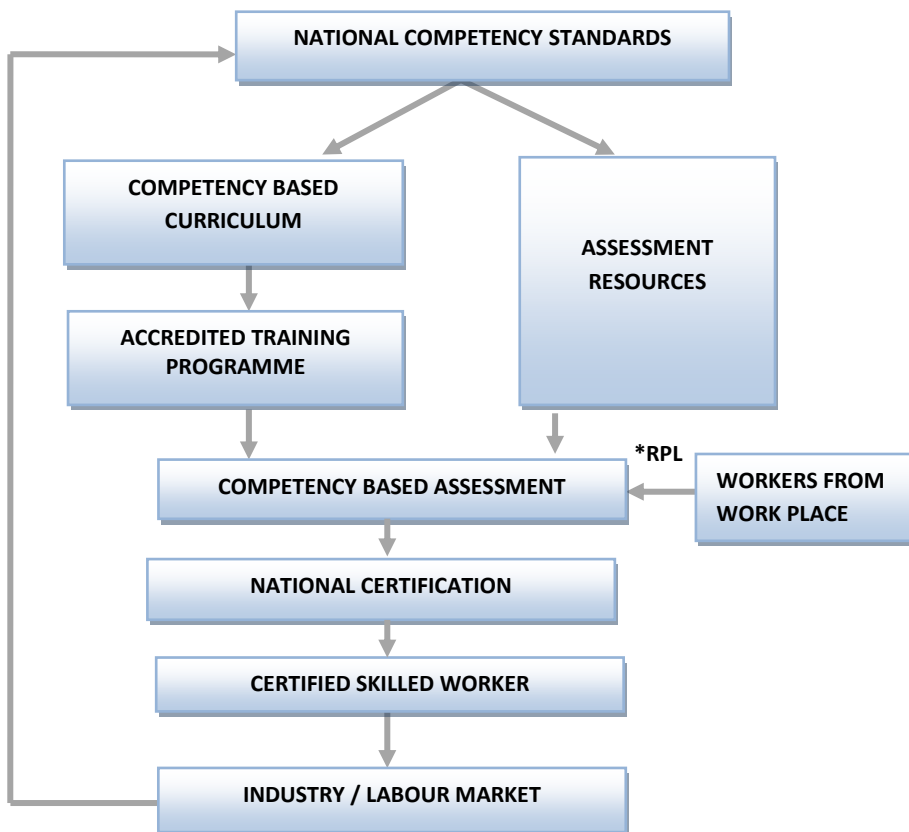
National Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the competencies to be included in curriculum.
- Providing specifications to assessment resource developers about the competencies within an occupation to be demonstrated by candidates.
- Providing advice to industry/employers about job functions, which in turn can be used for the development of job descriptions, performance appraisal systems and work flow analysis.

## B. Bhutan Vocational Qualifications Framework (BVQF)

Bhutan Vocational Qualifications Framework is an agreed system of Assessing, Certifying and Monitoring nationally recognized qualifications for all learning in the TVET sector against national competency standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

### Components of the Bhutan Vocational Qualifications Framework (BVQF)



\* RPL = Recognition of Prior Learning

## BVQF Levels

The Bhutan Vocational Qualifications Framework has three levels classified based on the competency of the skilled workers. The three levels are:

- National Certificate Level 3 (NC 3)
- National Certificate Level 2 (NC 2)
- National Certificate Level 1 (NC 1)

## BVQF Level Descriptors

The qualification levels are decided based on level descriptors. The detail of the qualification level descriptor is as follows:

### National Certificate Level 1 (Semi Skilled)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"><li>• Are narrow in range.</li><li>• Are established and familiar.</li><li>• Offer a clear choice of routine responses.</li><li>• Involve some prioritizing of tasks from known solutions.</li></ul>	<ul style="list-style-type: none"><li>• Basic operational knowledge and skill.</li><li>• Utilization of basic available information.</li><li>• Known solutions to familiar problems.</li><li>• Little generation of new ideas.</li></ul>	<ul style="list-style-type: none"><li>• In directed activity.</li><li>• Under general supervision and quality control.</li><li>• With some responsibility for quantity and quality.</li><li>• With no responsibility for guiding others.</li></ul>

## National Certificate Level 2 (Craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Require a range of well-developed skills.</li> <li>• Offer a significant choice of procedures requiring prioritization.</li> <li>• Are employed within a range of familiar context.</li> </ul>	<ul style="list-style-type: none"> <li>• Some relevant theoretical knowledge.</li> <li>• Interpretation of available information.</li> <li>• Discretion and judgments.</li> <li>• A range of known responses to familiar problems</li> </ul>	<ul style="list-style-type: none"> <li>• In directed activity with some autonomy.</li> <li>• Under general supervision and quality checking.</li> <li>• With significant responsibility for the quantity and quality of output.</li> <li>• With some possible responsibility for the output of others.</li> </ul>

## National Certificate Level 3 (Master craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Requires a wide range of technical or scholastic skills.</li> <li>• Offer a considerable choice of procedures requiring prioritization to achieve optimum outcomes.</li> <li>• Are employed in a variety of familiar and unfamiliar contexts.</li> </ul>	<ul style="list-style-type: none"> <li>• A broad knowledge base which incorporates some theoretical concepts.</li> <li>• Analytical interpretation of information.</li> <li>• Informed judgment.</li> <li>• A range of sometimes innovative responses to concrete but often unfamiliar problems.</li> </ul>	<ul style="list-style-type: none"> <li>• In self-directed activity.</li> <li>• Under broad guidance and evaluation.</li> <li>• With complete responsibility for quantity and quality of output.</li> <li>• With possible responsibility for the output of others.</li> </ul>



## **PURPOSE**

This suite of two qualifications is designed for people interested in a career as a Farm Machinery Technician.

The first of the two qualifications is the National Certificate Level 2 in Farm Machinery Technician. The Level 2 qualification recognizes the skills and knowledge required for people working as a skilled Farm Machinery Technician in the workplace.

The qualification comprises of seven units of Competency Standards that cover the essential knowledge and skills required of Farm Machinery Technician in servicing steering system, brake system, clutch system, fuel system, basic electrical components, engines and transmission system in farm machineries.

The National Certificate Level 2 in Farm Machinery Technician prepares people for entry into further qualifications and is a prerequisite for entry into the National Certificate Level 3.

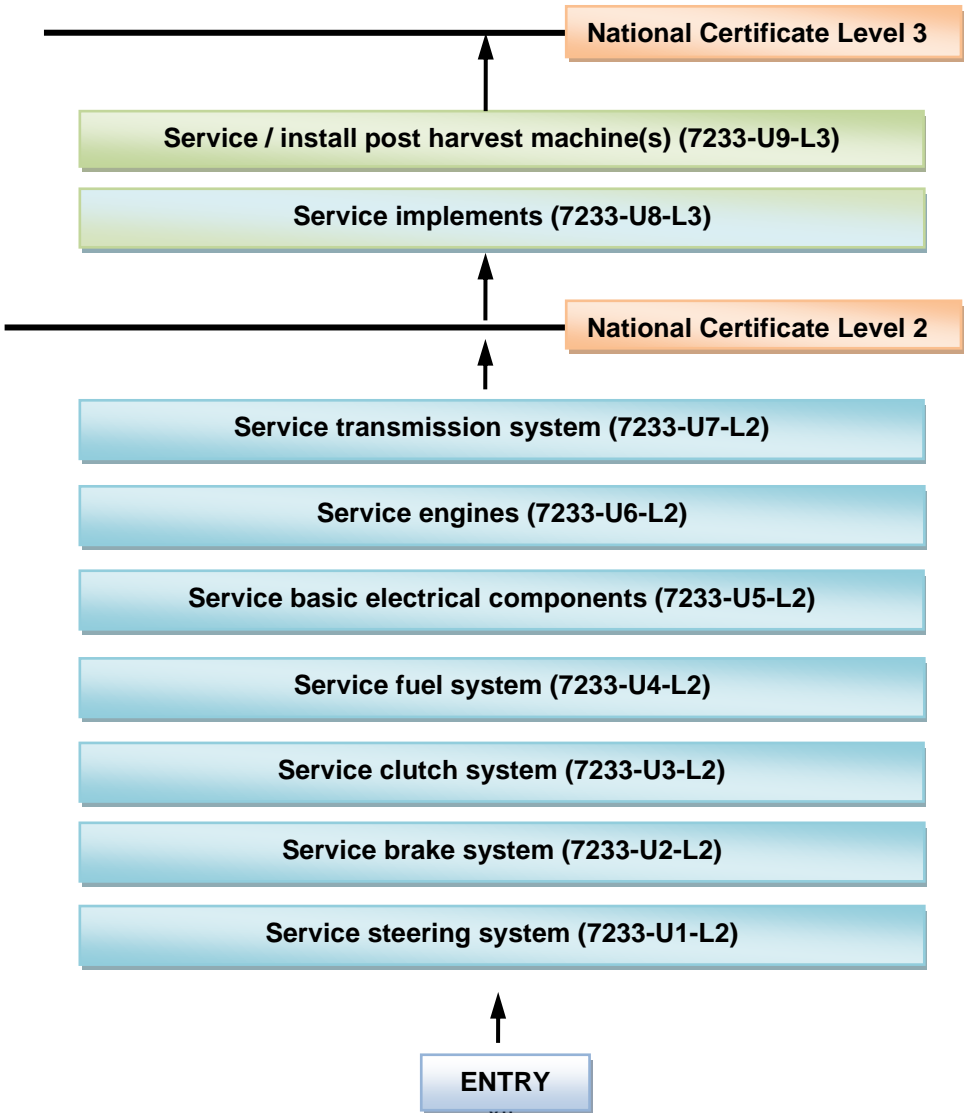
The National Certificate Level 3 Farm Machinery Technician is currently the final achievement in this qualification pathway. Candidates wishing to be admitted into training should hold the National Certificate Level 2 in Farm Machinery Technician.

The Level 3 qualification recognizes the competencies required to work as a highly skilled Farm Machinery Technician. This qualification includes two units of Competency that covers the skills and knowledge required in servicing implements and servicing / installation of post harvest machine(s).

A diagram of the qualification pathway provided by these two National Certificates is as follows.

## PACKAGING OF QUALIFICATION FOR FARM MACHINERY TECHNICIAN

The National Competency Standards for the Farm machinery technician comprises of nine units of competencies. The packaging of qualification is as shown below:



## **CODING USED FOR NATIONAL COMPETENCY STANDARDS**

The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practises. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organisation (ILO).

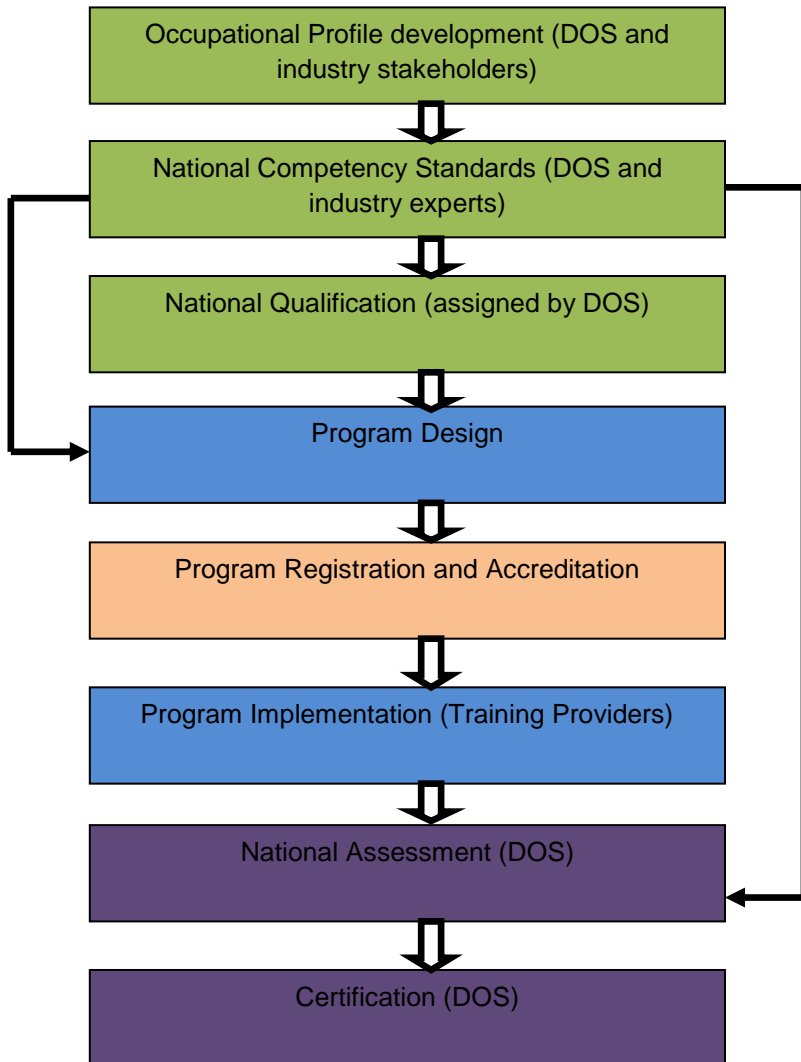
The coding of the national competency standards forms the basis of the identification code for the Vocational Education and Training Management Information System (VET – MIS) both in terms of economic sector identification and that of the individual standard.

Coding the individual units of competency standard is to identify the level in qualification packages to which it belongs.

While packaging, in order to follow a logical order, only competency standards related to each other and following a logical sequence in terms of training delivery, from the simple to the complex, are clustered into a qualification packages.

The ILO assigns the code 7233 to the occupation of Farm Machinery Mechanic. Therefore, in the Bhutan context, the occupation Farm Machinery Technician has been assigned the code 7233 in the National Coding System. The first unit is assigned the code U1, the first Unit of Competency Standard clustered into the first qualification is designated the code 7233-U1. Levels are assigned the code L and follow a logical progression from the National Certificate Level 1 (NC 1) to the National Certificate Level 3 (NC 3). Therefore the National Certificate Level 2 is assigned the code L2. The complete unit code will be 7233-U1-L2.

## Implementation and Operational Procedures for National Competency Standards (MoLHR)



### Key:

MoLHR – Ministry of Labour and Human Resources  
DOS – Department of Occupational Standards

## **NATIONAL COMPETENCY STANDARDS FOR FARM MACHINERY TECHNICIAN**

**Validation date** : 12<sup>th</sup> September 2014.

**Endorsement date** : 15<sup>th</sup> September 2014.

**Date of Review** : 15<sup>th</sup> September 2017 (Max. 3 years).

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**FARM MACHINERY TECHNICIAN  
COMPETENCY STANDARDS  
FOR  
NATIONAL CERTIFICATE LEVEL 2 (NC 2)**

<b>UNIT TITLE</b>	<b>ELEMENTS OF COMPETENCE</b>
Service steering system	<ol style="list-style-type: none"> <li>1. Diagnose the faults.</li> <li>2. Repair the steering system.</li> </ol>
Service brake system	<ol style="list-style-type: none"> <li>1. Diagnose the brake problem.</li> <li>2. Repair and test the brake.</li> </ol>
Service clutch system	<ol style="list-style-type: none"> <li>1. Diagnose the faults.</li> <li>2. Repair and test the clutch system.</li> </ol>
Service fuel system	<ol style="list-style-type: none"> <li>1. Diagnose the faults.</li> <li>2. Repair the fuel system.</li> <li>3. Test the fuel system.</li> </ol>
Service basic electrical components	<ol style="list-style-type: none"> <li>1. Diagnose the faults.</li> <li>2. Repair and test electrical components.</li> </ol>
Service engines	<ol style="list-style-type: none"> <li>4. Diagnose the engine faults.</li> <li>5. Repair the engine.</li> <li>6. Test the engine.</li> </ol>
Service transmission system	<ol style="list-style-type: none"> <li>3. Diagnose the faults.</li> <li>4. Repair and test the transmission / hydraulic system.</li> </ol>

**UNIT TITLE** : **Service steering system.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery steering system and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U1-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use diagnostic equipment as per the job requirements. 1.2 Select and use personal protective equipment ( <b>PPE</b> ) as per the job requirements. 1.3 Refer the past history of machine / equipment as per the job requirements. 1.4 Troubleshoot / examine / inspect the steering system to identify the <b>faults</b> following standard procedures 1.5 Recommend remedial action as per the job requirements
2. Repair the steering system.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the steering system components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / analyze / adjust the defective <b>steering system components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the components as per the

	standard procedures.
2.6	Assemble the steering system components following standard procedures and manufacturer service manual / specification
2.7	Record details of repair if necessary as per the establishment procedures
2.8	Test the steering system performance following standards procedures and take necessary action as per the job requirements

RANGE STATEMENT	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Hydraulic press</li> </ul>	<ul style="list-style-type: none"> <li>• Wheel alignment equipment</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Spare parts</li> <li>• Rags</li> </ul>	<ul style="list-style-type: none"> <li>• Lubricants</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Wear and tear</li> <li>• Breakages</li> </ul>	<ul style="list-style-type: none"> <li>• Leakages</li> <li>• Mis-alignment</li> </ul>
<b>Steering system components may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Steering wheel</li> <li>• Shafts</li> <li>• Steering gear box</li> <li>• Pins</li> </ul>	<ul style="list-style-type: none"> <li>• Bearings</li> <li>• Linkages</li> <li>• Bush</li> <li>• Wheels</li> </ul>

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Troubleshoot / examine / inspect the steering system to identify the faults following standard procedures
- Repair / replace / analyze / adjust the defective steering system components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the steering system performance following standards procedures and take necessary action as per the job requirements

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Manufacturers manuals / specifications</li> <li>• Working principal of steering system and its components</li> <li>• Occupational health and safety</li> <li>• First aid procedures</li> <li>• Types of steering system</li> <li>• Environment act</li> <li>• Lubricants</li> <li>• Record keeping</li> <li>• House keeping</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manuals / specifications</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Safe use of tools and equipment</li> <li>• Communication</li> <li>• Negotiation</li> <li>• Teamwork</li> </ul>

**UNIT TITLE** : **Service brake system**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery brake system and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U2-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the brake problem	1.1 Select and use <b>personal protective equipment</b> (PPE) as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Examine / inspect the brake system to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
2. Repair and test the brake.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / adjust the defective <b>brake components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the brake components as per the standard procedures. 2.6 Assemble the brake components following standard procedures and manufacturer

	service manual / specification
2.7	Record details of repair if necessary as per the establishment procedures
2.8	Test the brake performance following standards procedures and take necessary action as per the job requirements.

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Safety glove</li> <li>• Safety helmet</li> <li>• Safety boot</li> <li>• Fire extinguisher</li> <li>• Uniform</li> </ul>	<ul style="list-style-type: none"> <li>• Safety goggle</li> <li>• Ear muff</li> <li>• Respiratory mask</li> <li>• Safety belt</li> </ul>
<b>Tools and equipment may include:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> </ul>	<ul style="list-style-type: none"> <li>• Jack</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Damages</li> <li>• Leakages</li> </ul>	<ul style="list-style-type: none"> <li>• Wear and tear</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Rags</li> <li>• Nuts and bolts</li> <li>• Fuel</li> <li>• Brake oil</li> </ul>	<ul style="list-style-type: none"> <li>• Grease</li> <li>• Gasket</li> <li>• Seal</li> </ul>
<b>Brake components may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Brake shoe</li> <li>• Master cylinder</li> <li>• Wheel cylinder</li> <li>• Brake paddle</li> </ul>	<ul style="list-style-type: none"> <li>• Brake drum / disk</li> <li>• Springs</li> <li>• Cables</li> </ul>

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written, oral / viva form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Examine / inspect the brakes to identify the faults following standard procedures
- Repair / replace / adjust the defective brake components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the brake performance following standards procedures and take necessary action as per the job requirements.



<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Manufacturer repair manual / specification</li> <li>• Working principal of brake system</li> <li>• Grading of brake fluids</li> <li>• Record keeping and reporting.</li> <li>• Estimation and costing</li> <li>• Environment act</li> <li>• Workplace safety</li> <li>• Basic hydraulic principal</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manuals / specifications</li> <li>• Safe use of tools and equipment.</li> <li>• Communication</li> <li>• Teamwork</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Negotiation</li> </ul>

**UNIT TITLE** : **Service clutch system.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery clutch system and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U3-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Troubleshoot / examine / inspect the clutch system to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
2. Repair and test the clutch system.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the clutch system components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / adjust the defective <b>clutch system components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the clutch system components as per the standard procedures. 2.6 Assemble the clutch system components

	<p>following standard procedures and manufacturer service manual / specification</p> <p>2.7 Record details of repair if necessary as per the establishment procedures</p> <p>2.8 Test the clutch system performance following standards procedures and take necessary action as per the job requirements.</p>
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<b>RANGE STATEMENT</b>	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Electrician tool set</li> <li>• Tachometer</li> </ul>	<ul style="list-style-type: none"> <li>• Multi-meter</li> <li>• Test lamp</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Spare parts</li> <li>• Rags</li> <li>• Emery paper</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning oil</li> </ul>
<b>Tools and equipment may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Pulley puller</li> <li>• Hydraulic jack / press</li> </ul>	<ul style="list-style-type: none"> <li>• Chain pulley</li> <li>• C-clamp</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Leakages</li> <li>• Breakages</li> </ul>	<ul style="list-style-type: none"> <li>• Wear and tear</li> </ul>
<b>Clutch system components may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Clutch plate</li> <li>• Pressure plate</li> <li>• Clutch disc</li> <li>• Linkage</li> </ul>	<ul style="list-style-type: none"> <li>• Bearings</li> <li>• Springs</li> <li>• Clutch cables</li> <li>• Fork / lever</li> </ul>

## ASSESSMENT GUIDE

### **Form of assessment**

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### **Assessment context**

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### **Assessment condition**

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### **Critical aspects**

- Following Occupational health and safety regulations applicable at worksite.
- Troubleshoot / examine / inspect the clutch system to identify the faults following standard procedures
- Repair / replace / adjust the defective clutch system components if necessary as per the job requirements following manufacturer service manual / specification
- Test the clutch system performance following standards procedures and take necessary action as per the job requirements.

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Manufacturers repair manual and specifications</li> <li>• Record keeping</li> <li>• House keeping</li> <li>• First aid procedures</li> <li>• Occupational Health and Safety (OHS) Regulations</li> <li>• Working principal of clutch system and its components</li> <li>• Types of clutch system</li> <li>• Environment act</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manufacturers repair manual and specification</li> <li>• Use of tools and equipment</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Good housekeeping.</li> <li>• Communication</li> <li>• Teamwork</li> <li>• Interpersonal</li> </ul>

**UNIT TITLE** : **Service fuel system.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery fuel system and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U4-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use diagnostic equipment as per the job requirements. 1.2 Select and use <b>personal protective equipment (PPE)</b> as per the job requirements. 1.3 Refer the past history of machine / equipment as per the job requirements. 1.4 Examine / inspect the fuel system to identify the <b>faults</b> following standard procedures 1.5 Recommend remedial action as per the job requirements
2. Repair the fuel system.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / set the defective <b>fuel system and its components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Assemble the fuel system components following standard procedures and manufacturer service manual / specification

	2.6	Record details of repair if necessary as per the establishment procedures
3. Test the fuel system	3.1	Select necessary materials to test fuel system following standard procedures.
	3.2	Test the injector following standard procedures.
	3.3	Test the fuel system performance following standards procedures and take necessary action as per the job requirements.

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Safety glove</li> <li>• Safety helmet</li> <li>• Safety boot</li> <li>• Fire extinguisher</li> <li>• Uniform</li> </ul>	<ul style="list-style-type: none"> <li>• Safety goggle</li> <li>• Ear muff</li> <li>• Respiratory mask</li> <li>• Safety belt</li> </ul>
<b>Tools and equipment may include:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Injector nozzle testing equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Calibration equipment</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Leakage</li> <li>• Breakage</li> </ul>	<ul style="list-style-type: none"> <li>• Wear and tear</li> </ul>
<b>Materials may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Rags,</li> <li>• Fuel</li> </ul>	<ul style="list-style-type: none"> <li>• Seals,</li> <li>• Spare parts</li> </ul>
<b>Fuel system components may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Injector nozzle</li> <li>• Fuel injection pump</li> <li>• Feed pump</li> </ul>	<ul style="list-style-type: none"> <li>• Pipes</li> <li>• Fuel filters</li> <li>• Governor</li> </ul>

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Examine / inspect the fuel system to identify the faults following standard procedures
- Repair / replace / set the defective fuel system and its components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the fuel system performance following standards procedures and take necessary action as per the job requirements.



<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Manufacturers repair manual / specification</li> <li>• Working principal of fuel system and its components</li> <li>• First aid procedures</li> <li>• Estimation and costing</li> <li>• Record keeping</li> <li>• House keeping</li> <li>• Usage of tools and equipment</li> <li>• Environment act</li> <li>• Properties of fuel</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manufacturers manual and specification</li> <li>• Safe use of tools, equipment, and instruments</li> <li>• Communication</li> <li>• Teamwork</li> <li>• Problem solving / decision making</li> <li>• Planning</li> <li>• Interpersonal</li> <li>• Negotiation</li> </ul>

**UNIT TITLE** : **Service basic electrical components.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in basic farm machinery electrical components and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U5-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use personal protective equipment ( <b>PPE</b> ) as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Troubleshoot / examine / inspect the electrical components to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
2. Repair and test electrical components.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the electrical components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / analyze / adjust the defective <b>electrical components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the components where necessary as per the standard procedures. 2.6 Assemble the electrical components following

	standard procedures and manufacturer service manual / specification
2.7	Record details of repair if necessary as per the establishment procedures
2.8	Test the performance of electrical components following standards procedures and take necessary action as per the job requirements

<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Multimeter</li> </ul>	<ul style="list-style-type: none"> <li>• Wire stripper</li> <li>• Wire cutter</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Insulation Tape</li> <li>• Standard Wires</li> </ul>	<ul style="list-style-type: none"> <li>• Grease</li> <li>• Emery Paper</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Blown fuses</li> <li>• Blown bulbs</li> <li>• Melted wire</li> <li>• Loose connection</li> </ul>	<ul style="list-style-type: none"> <li>• Breakage</li> <li>• Short circuit</li> <li>• Wear and tear</li> <li>• Burnt terminals</li> </ul>
<b>Basic electrical components may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Battery</li> <li>• Fuses</li> <li>• Alternator</li> <li>• Self starter</li> <li>• Ignition switches</li> <li>• Ignition coils</li> </ul>	<ul style="list-style-type: none"> <li>• Wires</li> <li>• Lightings</li> <li>• Switches</li> <li>• Relays</li> <li>• Spark Plugs</li> <li>• Distributor</li> </ul>

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Troubleshoot / examine / inspect the electrical components to identify the faults following standard procedures
- Repair / replace / analyze / adjust the defective electrical components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the performance of electrical components following standards procedures and take necessary action as per the job requirements

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Manufacturers manuals / specifications</li> <li>• Basic working principal of electrical components</li> <li>• Basic electricity</li> <li>• Electrical components</li> <li>• Occupational health and safety</li> <li>• First aid procedures</li> <li>• Environment act</li> <li>• Lubricants</li> <li>• Record keeping</li> <li>• House keeping</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manuals / specifications</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Safe use of tools and equipment</li> <li>• Communication</li> <li>• Teamwork</li> </ul>

**UNIT TITLE** : **Service engine**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery engines and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U6-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the engine faults	1.1 Select and use diagnostic equipment as per the job requirements. 1.2 Select and use <b>personal protective equipment (PPE)</b> as per the job requirements. 1.3 Refer the past history of machine / equipment as per the job requirements. 1.4 Examine / inspect the engine to identify the <b>faults</b> following standard procedures 1.5 Recommend remedial action as per the job requirements
2. Repair the engine.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / adjust the defective <b>engine and its components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Repair / replace / adjust the defective <b>engine cooling system components</b> if necessary as per the job requirements following

	<p>manufacturer service manual / specification.</p> <p>2.6 Lubricate / clean the engine components as per the standard procedures.</p> <p>2.7 Assemble the engine components following standard procedures and manufacturer service manual / specification</p> <p>2.8 Record details of repair if necessary as per the establishment procedures.</p>
3. Test the engine	<p>3.1 Select necessary materials to test engine following standard procedures.</p> <p>3.2 Test the engine performance following standards procedures and take necessary action as per the job requirements.</p>

RANGE STATEMENT	
<p><b>Personal protective equipment may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Safety glove</li> <li>• Safety helmet</li> <li>• Safety boot</li> <li>• Fire extinguisher</li> <li>• Uniform</li> <li>• Safety goggle</li> <li>• Ear muff</li> <li>• Respiratory mask</li> <li>• Safety belt</li> </ul>	
<p><b>Tools and equipment may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Torque wrench</li> <li>• Chain block</li> <li>• Pulley</li> <li>• Trolley</li> </ul>	
<p><b>Materials may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Rags</li> <li>• Nuts and bolts</li> <li>• Fuel lubricants</li> <li>• Gasket</li> <li>• Seal</li> <li>• Coolant</li> </ul>	
<p><b>Faults may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Damages</li> <li>• Wear and tear</li> </ul>	

- Leakages

**Engine and its components may include but not limited to:**

- |                 |              |
|-----------------|--------------|
| • Cylinder head | • Gasket     |
| • Engine block  | • Valve      |
| • Piston        | • Crank case |

**Engine cooling system components may include but not limited to:**

- |              |              |
|--------------|--------------|
| • Radiator   | • Thermostat |
| • Water Pump | • Hose Pipes |
| • Belt       | • Fan        |
| • Reservoir  |              |

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Examine / inspect the engine to identify the faults following standard



procedures

- Repair / replace / adjust the defective engine components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the engine performance following standards procedures and take necessary action as per the job requirements.

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"><li>• Manufacturer repair manual / specification</li><li>• Working principal of engine, cooling and lubrication system</li><li>• Grading of lubricants</li><li>• Types of coolants</li><li>• Record keeping and reporting.</li><li>• Estimation and costing</li><li>• Environment act</li><li>• Workplace safety</li></ul>	<ul style="list-style-type: none"><li>• Interpretation of manuals / specifications</li><li>• Safe use of tools and equipment.</li><li>• Communication</li><li>• Teamwork</li><li>• Problem solving</li><li>• Decision making</li></ul>

**UNIT TITLE** : **Service transmission system.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in farm machinery transmission system and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U7-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use <b>personal protective equipment</b> (PPE) as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Examine / inspect the transmission system to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
2. Repair and test the transmission / hydraulic system.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the transmission system components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace the defective <b>transmission system / hydraulic components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the transmission system

	components as per the standard procedures.
2.6	Assemble the transmission system components following standard procedures and manufacturer service manual / specification
2.7	Record details of repair if necessary as per the establishment procedures
2.8	Participate in test drive to test the transmission system performance following standards procedures and take necessary action as per the job requirements

RANGE STATEMENT	
<b>Tools and equipment may include but limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Jack</li> </ul>	<ul style="list-style-type: none"> <li>• Chain pulley</li> <li>• Levers</li> </ul>
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Safety glove</li> <li>• Safety helmet</li> <li>• Safety boot / gum boot</li> <li>• Fire extinguisher</li> <li>• Uniform</li> </ul>	<ul style="list-style-type: none"> <li>• Safety goggle</li> <li>• Ear muff</li> <li>• Respiratory mask</li> <li>• Safety belt</li> </ul>
<b>Materials may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Rags</li> <li>• Spare parts</li> <li>• Gear oils</li> </ul>	<ul style="list-style-type: none"> <li>• Gear oils</li> </ul>
<b>Transmission/hydraulic system components may include but not limited:</b>	
<ul style="list-style-type: none"> <li>• Gear box</li> <li>• Shafts</li> <li>• Bearings</li> <li>• Forks</li> <li>• Hydraulic valve</li> </ul>	<ul style="list-style-type: none"> <li>• Gears</li> <li>• Levers</li> <li>• Oil seals</li> <li>• Hydraulic pump</li> <li>• Hydraulic pipes and filters</li> </ul>

- Cylinders

**Faults may include but not limited:**

- Leakages
- Damages
- Wear and tear

## **ASSESSMENT GUIDE**

### **Form of assessment**

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### **Assessment context**

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### **Assessment condition**

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### **Critical aspects**

- Following Occupational health and safety regulations applicable at worksite.
- Examine / inspect the transmission system to identify the faults following standard procedures
- Repair / replace the defective transmission /hydraulic system components if necessary as per the job requirements following manufacturer service manual / specification
- Test the transmission system performance following standards procedures and take necessary action as per the job requirements

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Working principle of transmission system</li> <li>• Working principal of transmission system</li> <li>• Types of gear</li> <li>• First aid procedures</li> <li>• Manufacturers repair manuals / specifications</li> <li>• Tools and equipments</li> <li>• Record keeping</li> <li>• House keeping</li> <li>• Environment act</li> <li>• Estimation and costing</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manufacturers manual / specifications</li> <li>• Safe use of tools, equipment, and instruments.</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Communication</li> <li>• Teamwork</li> </ul>

**FARM MACHINERY TECHNICIAN  
COMPETENCY STANDARDS  
FOR  
NATIONAL CERTIFICATE LEVEL 3 (NC 3)**

<b>UNIT TITLE</b>	<b>ELEMENTS OF COMPETENCE</b>
Service implements	<ol style="list-style-type: none"><li>1. Diagnose the faults.</li><li>2. Repair and test the implements.</li></ol>
Install / service post harvest machine(s)	<ol style="list-style-type: none"><li>1. Install the post harvest machines.</li><li>2. Diagnose the faults.</li><li>3. Repair and test the post harvest equipments.</li></ol>

**UNIT TITLE** : **Service implements.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in implements and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U8-L3**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the faults	1.1 Select and use personal protective equipment ( <b>PPE</b> ) as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Troubleshoot / examine / inspect the implements to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
2. Repair and test the implements.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements. 2.3 Dismantle the implements and its components following standard procedures in accordance with the manufacturer service manual / specification. 2.4 Repair / replace / analyze / adjust the defective <b>implements and its components</b> if necessary as per the job requirements following manufacturer service manual / specification. 2.5 Lubricate / clean the components as per the standard procedures. 2.6 Assemble the implements and its components

	following standard procedures and manufacturer service manual / specification
2.7	Record details of repair if necessary as per the establishment procedures
2.8	Test the performance of implements following standards procedures and take necessary action as per the job requirements

<b>RANGE STATEMENT</b>	
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand tool set</li> <li>• Welding machine</li> <li>• Grinding machine</li> </ul>	<ul style="list-style-type: none"> <li>• Jack</li> <li>• Drilling machine</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Spare parts</li> <li>• Rags</li> </ul>	<ul style="list-style-type: none"> <li>• Lubricants</li> </ul>
<b>Faults may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Wear and tear</li> <li>• Breakages</li> </ul>	<ul style="list-style-type: none"> <li>• Leakages</li> </ul>
<b>Implements may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Rotary tiller</li> <li>• Plough</li> <li>• Trailer</li> <li>• Harvester</li> <li>• Seeder</li> </ul>	<ul style="list-style-type: none"> <li>• Cultivator</li> <li>• Disc harrow</li> <li>• Ridger</li> <li>• Planter</li> <li>• Trencher</li> </ul>



## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.
- Troubleshoot / examine / inspect the implements to identify the faults following standard procedures
- Repair / replace / analyze / adjust the defective implements and its components if necessary as per the job requirements following manufacturer service manual / specification.
- Test the implement performance following standards procedures and take necessary action as per the job requirements

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Manufacturers manuals / specifications</li> <li>• Working principal of implements and its components</li> <li>• Occupational health and safety</li> <li>• First aid procedures</li> <li>• Types of implements</li> <li>• Environment act</li> <li>• Lubricants</li> <li>• Record keeping</li> <li>• House keeping</li> <li>• Basic welding and fabrication</li> <li>• Tools and workshop machines</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manuals / specifications</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Safe use of tools and equipment</li> <li>• Communication</li> <li>• Teamwork</li> <li>• Negotiation</li> </ul>

**UNIT TITLE** : **Install / service post harvest machines.**

**DESCRIPTOR** : This unit covers the competencies required to diagnose the faults in post harvest machines and to service in accordance with manufacturers' manual / specification ensuring safety at all times.

**CODE** : **7233-U9-L3**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Install the post harvest machines	1.1 Carryout feasibility of the location for the installation as per the job requirements. 1.2 Plan and layout foundations as per the job requirements. 1.3 Install the machines and its components ensuring alignment / dimensions as per the standard procedures. 1.4 Test the functioning of machine as per the job requirements.
2. Diagnose the faults	1.1 Select and use <b>personal protective equipment</b> (PPE) as per the job requirements. 1.2 Refer the past history of machine / equipment as per the job requirements. 1.3 Troubleshoot / examine / inspect the <b>post harvest equipments</b> to identify the <b>faults</b> following standard procedures 1.4 Recommend remedial action as per the job requirements
3. Repair and test the post harvest equipments.	2.1 Select and use <b>tools and equipment</b> as per the job requirements. 2.2 Select and use <b>materials</b> as per the job requirements.

	2.3	Dismantle the post harvest equipment following standard procedures in accordance with the manufacturer service manual / specification.
	2.4	Repair / replace / adjust the defective parts of post harvest equipment if necessary as per the job requirements following manufacturer service manual / specification.
	2.5	Lubricate / clean the post harvest equipments / parts as per the standard procedures.
	2.6	Assemble the post harvest equipments / parts following standard procedures and manufacturer service manual / specification
	2.7	Record details of repair if necessary as per the establishment procedures
	2.8	Test the performance of post harvest equipments following standards procedures and take necessary action as per the job requirements

## RANGE STATEMENT

### Tools and equipment may include but not limited to:

- Hand tool set
- Measuring tape
- Knife
- String / thread
- Spade
- Crow bar
- Spirit level

### Personal protective equipment may include but not limited to:

- Safety glove
- Safety helmet
- Safety boot / gum boot
- Fire extinguisher
- Uniform
- Safety goggle
- Ear muff
- Respiratory mask
- Safety belt

### Materials may include but not limited:

- Rags
- Seals

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Spare parts</li> <li>• Grease</li> <li>• Aggregates</li> <li>• Wires</li> <li>• Nails</li> <li>• Belts</li> </ul> | <ul style="list-style-type: none"> <li>• Cleaning materials</li> <li>• Cement</li> <li>• Sand</li> <li>• Planks</li> <li>• Nuts and bolts</li> </ul> |
|--|--|

**Post harvest machines may include but not limited:**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Rice mills</li> <li>• Flour mills</li> <li>• Oil mills</li> </ul> | <ul style="list-style-type: none"> <li>• Corn flake making machines</li> </ul> |
|--|--|

**Faults may include but not limited:**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Leakages</li> <li>• Damages</li> </ul> | <ul style="list-style-type: none"> <li>• Wear and tear</li> <li>• Mis-alignment</li> </ul> |
|---|--|

## ASSESSMENT GUIDE

### Form of assessment

- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through written form of assessment.

### Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### Assessment condition

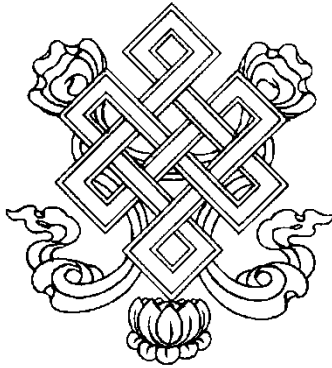
- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.

### Critical aspects

- Following Occupational health and safety regulations applicable at worksite.

- Examine / inspect the post harvest equipments / parts to identify the faults following standard procedures
- Repair / replace the defective parts of post harvest equipments / parts, if necessary as per the job requirements following manufacturer service manual / specification
- Test the performance of post harvest equipments following standards procedures and take necessary action as per the job requirements

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Working principle post harvest equipments</li> <li>• Types of post harvest equipments</li> <li>• First aid procedures</li> <li>• Manufacturers repair manuals / specifications</li> <li>• Tools and equipments</li> <li>• Record keeping</li> <li>• House keeping</li> <li>• Environment act</li> <li>• Estimation and costing</li> <li>• Occupational health and safety</li> <li>• Basic electricity</li> <li>• Types of prime movers</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretation of manufacturers manual / specifications</li> <li>• Safe use of tools, equipment, and instruments.</li> <li>• Problem solving</li> <li>• Decision making</li> <li>• Communication</li> <li>• Teamwork</li> </ul>



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