

AGRICULTURAL MACHINERY PNEUMATIC SYSTEMS

UNIT CODE: ENG/CU/AME/CR/05/4

Relationship to Occupational Standards

This unit addresses the unit of competency: Maintain Agricultural machinery Pneumatic Systems

Duration of the unit: 50 hours

Unit Description

This unit specifies the competencies required to demonstrate knowledge of agricultural pneumatic systems and diagnosis of malfunction of agricultural pneumatic systems.

It also involves performing service and maintenance of agricultural pneumatic systems and performing adjustments to agricultural pneumatic systems. It also involves optimizing the operations of the agricultural pneumatic systems.

Summary of Learning Outcomes:

1. Demonstrate knowledge of agricultural pneumatic systems
2. Diagnose malfunction of agricultural pneumatic systems
3. Perform service and maintenance of agricultural pneumatic systems
4. Perform adjustments to agricultural pneumatic systems
5. Optimize the operations of the agricultural pneumatic systems

Learning Outcomes, Content and Suggested Assessment Methods

| Learning outcome | Content | Suggested assessment methods |
|--|---|--|
| 1. Demonstrate knowledge of agricultural pneumatic systems | <ul style="list-style-type: none">• The observance of Kenyan regulations concerned with health, safety and the environment;• Disposal of faulty components• The use of personal protective equipment and clothing (PPE) | <ul style="list-style-type: none">• Practical exercises• Oral questioning• Learner portfolio of evidence |

| | | |
|--|---|--|
| | <p>used throughout work activities;</p> <ul style="list-style-type: none"> • Components of pneumatic system • Tools and equipment for servicing pneumatic system • Dismantling of pneumatic system. • Pneumatic <i>systems</i> are identified • Working principles of pneumatic systems are described • Pneumatic systems are compared • Pneumatic <i>system components</i> are identified • Schematic representations of pneumatic systems are interpreted • Use of technical data in servicing and repairing components. | |
| 2. Diagnose malfunction of agricultural pneumatic systems | <ul style="list-style-type: none"> • Select appropriate tools and equipment • Apply appropriate safety protocols to evaluation of pneumatic systems • Identify common malfunctions of pneumatic systems • Test for malfunction and performance of pneumatic systems • Principle of operation of the pump • Structure of the pump • Servicing and fitting of the pump • Precautions when handling pneumatic pump. • Flow controls and dividers | <ul style="list-style-type: none"> • Observation • Practical • Projects |
| 3. Perform service and maintenance of agricultural pneumatic systems | <ul style="list-style-type: none"> • Perform service and maintenance procedures on pneumatic system circuits | <ul style="list-style-type: none"> • Practical exercises • Oral questioning |

| | | |
|--|--|---|
| | <ul style="list-style-type: none"> • Generate service and maintenance reports on pneumatic systems to industry standards • Pneumatic reservoirs • Pneumatic filters • System and machine plumbing • Air dryers and lubricants • Principle of operation of the relief and unloading pressure control valves • Types and structure of valves • Fluid power actuators • Accumulators • High- and low-pressure pipes • Intensifiers | <ul style="list-style-type: none"> • Written tests • Learner portfolio of evidence. |
| 4. Perform adjustments to agricultural pneumatic systems | <ul style="list-style-type: none"> • Tools and equipment for testing • Perform adjustments on pneumatic systems according to factory specifications • Perform calibration of pneumatic systems | <ul style="list-style-type: none"> • Practical exercises • Oral questioning • Learner portfolio of evidence. • Observation |
| 5. Optimize the operations of the agricultural pneumatic systems | <ul style="list-style-type: none"> • Apply appropriate safety protocols to evaluation of pneumatic systems • Perform tests on pneumatic system circuits • Analyze results of tests of pneumatic system circuits • Field-test the operation of pneumatic systems | <ul style="list-style-type: none"> • Practical exercises • Oral questioning • Written tests • Learner portfolio of evidence |

Suggested Methods of Delivery

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised activities and projects in a workshop;

The delivery may also be supplemented and enhanced by the following, if the opportunity allows:

- Visiting lecturer/trainer from the workshop service and repair sector;

- Industrial visits

Recommended Resources

| |
|--|
| <p>Tools</p> <p>Comprehensive set of hand tools for the service and repair of agricultural equipment pneumatic systems</p> |
| <p>Equipment</p> <ul style="list-style-type: none"> ● Pneumatic systems Instructional models; ● A fully equipped agricultural equipment maintenance workshop; ● Fully functional tractor(s) and agricultural equipment and implements equipped with pneumatic systems ● Pneumatic system components and units; ● Vehicle lift/inspection pit; ● Specialist tools and diagnostic equipment appropriate for the different makes and types of agricultural equipment and implements that are being maintained; ● Internet access to manufacturers' technical information; ● Torque setting tools; ● Personal protective equipment (PPE) and suitable coverings to protect vehicles; ● Facilities for the disposal of waste oil and used parts; ● Customer database and systems for recording maintenance records. |
| <p>Materials and supplies</p> <ul style="list-style-type: none"> ● Digital instructional material including DVDs and CDs; ● Consumables for service and repair of pneumatic systems including; <ul style="list-style-type: none"> a) Oil seals and gaskets; b) Coolants; c) Cleaning materials; d) Hand cleaner; |

e) Dusters.

- Pneumatic and Hydraulic fluids
- Separate parts and components of several different pneumatic systems

Reference materials

- Manufacturers service manuals for the agricultural implements and machines that are being serviced;
- Appropriate agricultural mechanics engineering text books available on numerous websites

easytvvet.com