MAINTAIN HYDRAULIC SYSTEMS

UNIT CODE: ENG/OS/AME/4/CR/04/4/A

UNIT DESCRIPTION
Learners will develop the theoretical and hands-on knowledge of operating principles of hydraulic systems, components of hydraulic systems, evaluating performance of hydraulic systems, as well as the service and calibration of hydraulic systems.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the **key outcomes** which make up workplace function (to be stated in active voice).	**PERFORMANCE CRITERIA** These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice). **NOTE: *Bold and italicized terms are elaborated in the Range***
1. Demonstrate understanding of agricultural hydraulic systems	1.1 Identify ***hydraulic systems*** 1.2 Describe the working principles of hydraulic systems 1.3 Compare hydraulic systems by type 1.4 Identify ***hydraulic systems components*** 1.5 Interpret schematic representations of hydraulic systems
2. Perform trouble shooting of hydraulic systems	2.1 Select appropriate ***tools and equipment*** 2.2 Apply appropriate safety protocols to evaluation of hydraulic systems 2.3 Identify common malfunctions of hydraulic systems 2.4 Test for malfunction and performance of hydraulic systems
3. Perform service and maintenance of hydraulic systems	3.1 Perform service and maintenance procedures on ***hydraulic system circuits*** 3.2 Generate service and maintenance reports on hydraulic systems to industry standards
4. Calibrate hydraulic systems	4.1 Identify appropriate ***tools and equipment*** for calibration 4.2 Perform adjustments on hydraulic systems according to factory specifications 4.3 Perform calibration of hydraulic systems

5. Optimize the operations of the hydraulic systems	5.1 Apply appropriate safety protocols to evaluation of hydraulic systems 5.2 Perform tests on hydraulic system circuits 5.3 Analyze results of tests of hydraulic system circuits 5.4 Field-test the operation of hydraulic systems

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

VARIABLE	**RANGE** (include but not limited to)
1. Hydraulic systems	• Open center • Closed center
2. Hydraulic system components	Pumps, rock-shafts/three-point hitch, cylinders, motors, actuators, fluids, controllers, wiring harnesses, valves
3. Tools and Equipment	• Hand Tools • Power Tools • Measuring, Testing and Diagnostic Equipment • Shop Equipment • Specialty Tools and Equipment • Hoisting, Lifting and Staging Equipment • Welding and Cutting Equipment Personal Protective Equipment and Safety Equipment
4. Hydraulic system circuits	• High pressure • Low pressure • Control • Lubrication

REQUIRED SKILLS AND KNOWLEDGE

Required Skills

The individual needs to demonstrate the following skills:

- Interpretation skills
- Report writing
- Analytical skills
- Safety skills
- Measuring skills

Required Knowledge

This section describes the knowledge required for this unit of competency.

The individual needs to demonstrate knowledge of:

1. Safe working practices and procedures
2. Identification of farm machinery and implement
3. Use and care of farm tools
4. Basic maintenance and servicing of farm machinery and implements
5. Grades of oils and lubricants
6. Methods and units of measurements

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrate operating principles of hydraulic systems 1.2 Identify components of hydraulic systems 1.3 Demonstrate hydraulic system performance and evaluation procedures 1.4 Perform service procedures on hydraulic systems 1.5 Perform complete calibration on hydraulic systems
2. Resource Implications	The following resources must be provided: 2.1 A functional workshop with basic hydraulic and hydrostatic tools, equipment, materials and supplies. 2.2 References and manuals including working drawing 2.3 Personal protective equipment
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral 3.3 Written 3.4 Third party report
4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.

5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

MAINTAIN AGRICULTURAL PNEUMATIC SYSTEMS

UNIT CODE: ENG/OS/AME/4/CR/05/4/A

UNIT DESCRIPTION

Learners will display knowledge of agricultural pneumatic systems, diagnose malfunction of agricultural pneumatic systems, perform service and maintenance of agricultural pneumatic systems, perform adjustments to agricultural pneumatic systems and optimize the operations of the agricultural pneumatic systems.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the **key outcomes** which make up workplace function (to be stated in active voice).	**PERFORMANCE CRITERIA** These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice). **NOTE: *Bold and italicized terms are elaborated in the Range***
1. Demonstrate knowledge of agricultural pneumatic systems	1.1 Select appropriate ***PPE*** for specific contexts 1.2 Identify characteristics of a safe work environment in specific context 1.3 Identify pneumatic systems 1.4 Identify components of pneumatic system components 1.5 Interpret schematic representation of pneumatic system components
2. Diagnose malfunction of agricultural pneumatic systems	2.1 Verify power supply to the pneumatic system 2.2 Perform sensory inspection on pneumatic systems 2.3 Perform pre-operation check on pneumatic system 2.4 Detect indicators of malfunction in pneumatic system 2.5 Diagnose cause of malfunction in pneumatic system
3. Perform service and maintenance of agricultural pneumatic systems	3.1. Perform maintenance operations on agricultural pneumatic systems 3.2. Perform routine service on agricultural pneumatic systems in accordance with specified standards