



Australian Government

UEEIC0019 Diagnose and rectify faults in servo drive systems

Release: 1

UEEIC0019 Diagnose and rectify faults in servo drive systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to diagnose and rectify faults in system controlling servo drive systems.

It includes applying safe working practices; interpreting technical data; applying knowledge of servo/stepper drives operating parameters to logical fault-finding processes; implementing fault rectification, safety and functional testing; and reporting work activities and outcomes.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEEIC0020 Fault find and repair analogue circuits and components in electronic control systems

UEEIC0042 Solve problems in single phase electronic power control circuits

UEEIC0040 Solve problems in polyphase electronic power control circuits

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to diagnose and rectify servo drive system faults

- 1.1** WHS/OHS processes and workplace procedures for a given work area are identified, obtained and applied
- 1.2** Hazards are identified, WHS/OHS risks assessed, and control measures and workplace procedures are implemented in preparation for work
- 1.3** Safety hazards that have not previously been identified are documented and risk control measures devised and implemented in consultation with relevant person/s
- 1.4** Scope of fault/s is determined from fault report/s, relevant documentation and in consultation with relevant person/s
- 1.5** Relevant person/s is consulted to ensure work is coordinated effectively with others involved on the worksite
- 1.6** Tools, equipment and testing devices needed to diagnose faults are obtained in accordance with workplace procedures and checked for correct operation and safety

2 Diagnose and rectify servo drive system fault/s

- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 2.2** Need to inspect, test or measure live work is determined and conducted in accordance with WHS/OHS requirements and workplace procedures, as required
- 2.3** Circuits/machines/plant are inspected, checked and isolated, as required, in accordance with WHS/OHS requirements and workplace procedures
- 2.4** Logical diagnostic methods/techniques are applied to diagnose servo/stepper drive control system faults employing measurements and estimations of system

- operating parameters referenced to system operational requirements
- 2.5 Fault scenarios are tested and confirmed as being the source of system problems in accordance with workplace procedures
 - 2.6 Cause of the fault/s is identified and relevant person/s identified to rectify the fault/s, as required, outside the scope of the servo/stepper drive control system
 - 2.7 Faults in the control components of the system are rectified in accordance with servo drive control system operation standard
 - 2.8 System is inspected and tested to verify that the system operates as intended and to specified requirements
 - 2.9 Decisions for dealing with unplanned situations are determined from discussions with relevant person/s, job specifications and requirements
 - 2.10 Methods for dealing with unplanned situations are selected on the basis of safety and specified work outcomes
 - 2.11 Diagnosis and rectification activities are carried out efficiently, without unnecessary waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 3 Complete and report fault diagnosis and rectification activities**
- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
 - 3.2 Worksite is made safe in accordance with workplace safety procedures
 - 3.3 Rectification of faults is documented in accordance with workplace procedures
 - 3.4 Relevant person/s is notified in accordance with workplace procedures that the system fault/s has been rectified

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Diagnosing and rectifying faults in servo drive systems must include at least two of the following:

- faults in a servo/stepper drive control system

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI147A Diagnose and rectify faults in servo drive systems.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0019 Diagnose and rectify faults in servo drive systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying problem-solving techniques
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using of risk control measures
- applying sustainable energy principles and practices
- completing and reporting fault diagnosis and rectification activities
- diagnosing and rectifying faults in servo drive systems
- applying logical diagnostic methods
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- documenting fault rectification activities and outcomes in accordance with workplace procedures
- identifying faults and determining components needed to rectify them
- inspecting, testing and verifying that the system operates correctly
- rectifying faults in in servo drive system controls
- using fault scenarios to test the source of system faults
- preparing to diagnose and rectify faults.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- causes of hunting in servo drive systems
- common faults, symptoms and causes in servo drive systems
- difference between an open loop and a closed loop system
- differences in operation between types of servo mechanism systems

- inspection, testing and alignment of a servo mechanism system
- programming and configuration of a programmable logic controller (PLC) driven servo system
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- servo mechanism systems
- servo mechanism terminology and concepts.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities, equipment currently used in industry
- resources that reflect current industry practices in relation to diagnosing and rectifying faults in servo drive systems.
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>