

## Unit 306

# Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems (ELTK05)

**Level:** 3  
**Credit value:** 9  
**UAN:** J/602/2563

### Unit aim

This unit is designed to enable learners to understand and interpret the principles, practices and legislation associated with the termination and connection of conductors, cables and cords in electrotechnical systems. Its content is the knowledge needed by a learner to underpin the application of skills for terminating and connecting conductors, cables and cords in electrotechnical systems in accordance with statutory and non-statutory regulations/requirements.

### Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. understand the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations
2. understand the regulatory requirements and procedures for terminating and connecting conductors, cables and flexible cords in electrical wiring systems and equipment
3. understand the procedures and applications of different methods of terminating and connecting conductors, cables, and flexible cords in electrical wiring systems and equipment.

### Guided learning hours

It is recommended that **86** hours should be allocated for this unit, although patterns of delivery are likely to vary.

### Details of the relationship between the unit and relevant national standards

Learners achieving the outcomes of this unit will have demonstrated that they are competent in accordance with the National Occupational Standards (NOS) for the Electrotechnical Industry ELT7, 8, 9 and 23.

### Support of the unit by a sector or other appropriate body

This unit is endorsed by the SSC for Building Services Engineering, SummitSkills.

### Assessment

This unit will be assessed by an assignment (2357-306).

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### Outcome 1

Understand the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations

#### Assessment Criteria

The learner can:

1. state the implications of carrying out safe isolations to:
  - other personnel
  - customers/clients
  - public
  - building systems (loss of supply)
2. state the implications of not carrying out safe isolations to:
  - self
  - other personnel
  - customers/clients
  - public
  - building systems (presence of supply)
3. specify and undertake the correct procedure for completing safe isolation with regard to:
  - carrying out safe working practices
  - correct identification of circuit(s) to be isolated
  - identifying suitable points of isolation
  - selecting correct test and proving instruments in accordance with relevant industry guidance and standards
  - correct testing methods
  - selecting locking devices for securing isolation
  - correct warning notices
  - correct sequence for the safe-isolation of an electrical circuit and complete electrical installation.

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Outcome 2                    Understand the regulatory requirements and procedures for terminating and connecting conductors, cables and flexible cords in electrical wiring systems and equipment

### **Assessment Criteria**

The learner can:

1. identify and interpret appropriate **sources of relevant information** for the termination and connection of conductors, cables and flexible cords in electrical wiring systems and equipment
2. specify organisational procedures for reporting variations to the installation specification
3. describe methods and procedures appropriate to the installation environment to ensure the safe and effective termination and connection of conductors, cables and flexible cords in electrical **wiring systems and equipment**.

### **Range**

#### **Sources of relevant information:**

- Statutory documents
- Codes of practice
- British standards
- IEE wiring regulations
- Manufacturers' instructions
- Installation specifications

#### **Wiring systems and equipment:**

- Thermosetting insulated cables including flexes
- Single and multicore thermoplastic (PVC) and thermosetting insulated cables
- PVC/PVC flat profile cable
- MICC (with and without PVC sheath)
- SWA cables (PILC, XLPE, PVC)
- Armoured/braided flexible cables and cords
- Data cables
- Fibre optic cable
- Fire resistant cable

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## Outcome 3

Understand the procedures and applications of different methods of terminating and connecting conductors, cables, and flexible cords in electrical wiring systems and equipment

### Assessment Criteria

The learner can:

1. explain the advantages, limitations and applications of the following **connection methods**:
  - screw
  - crimped
  - soldered
  - non screw compression
2. describe the procedures for proving that terminations and connections are electrically and mechanically sound
3. explain the consequences of terminations not being electrically and mechanically sound in terms of:
  - high resistance joints
  - corrosion and erosion
4. specify the **Health and Safety requirements** appropriate to terminating and connecting conductors, cables and flexible cords in electrical wiring systems and equipment
5. interpret and apply the techniques and methods for the safe and effective termination and connection of:
  - thermosetting insulated cables including flexes
  - single and multicore thermoplastic (PVC) and thermosetting insulated cables
  - PVC/PVC flat profile cable
  - MICC (with and without PVC sheath)
  - SWA cables (PILC, XLPE, PVC)
  - armoured/braided flexible cables and cords
  - data cables
  - fibre optic cable
  - fire resistant cable.

### Range

#### Health and Safety requirements:

- Selection and use of tools
- PPE
- Risk assessment
- Reporting of unsafe situations
- Adherence to relevant statutory and non-statutory regulations

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Notes for guidance

**Practical support learning activity**

Given the safety-critical nature of this topic it is a requirement that learners will have their knowledge consolidated by the use of 'Practical Support Learning' activity in simulated conditions.