

**1. Module details****Module name****Cable Jointing Assistant****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 36 – 40 hours.

**Module code**

NUE220

**Discipline code**

0703130

**2. Module purpose**

This module is designed to supply the knowledge and skills required by electricity supply industry workers to assist in jointing cables.

The experience gained is in the correct procedures and practices involved in preparing for and carrying out preparation and assistance in cable jointing.

Work site preparation, jointing tools, cable handling and sealing. Laying conduits, ducts and underground cables. Preparing materials and equipment for and assisting in underground cable jointing and repairs.

All procedures and practices comply with in accordance with electricity supply industry standards, Supply Authority regulations, relevant Australian standards and OH&S regulations.

**3. Prerequisites**

NUE207 Powerline Safety Procedures.  
NE175 Workshop Practice.

**4. Relationship to competency standards**

This module partly addresses Unit 2.12 of the E.S.I. National Competency Standards for Overhead Line Work and Cable Jointing and addresses Unit 2.3 of the Electrical Contracting Industry Award Standard (Volume 8).

**5. Content****Work site preparation**

safety and housekeeping  
preparation of adequate joint holes (general, precautions against unexpected rainfall)

**Cable preparation**

jointing tools  
general hand tools  
care and use of tools  
compression tools

**Liquified petroleum gas**

general  
safety with LPG equipment  
refilling LPG cylinders

Cable handling  
introduction  
direct laid cables  
duct laid cables  
solid laid cables  
supported in cleats or hangers  
corrosion protection  
minimum bending radius of cables

**Cable sealing**

shorting of cable cores  
cores of unterminated cables  
sealing of aluminium or lead sheathed cable: procedures  
aluminium sheathed cable - preparation  
lead sheathed cable - preparation  
wiping of tinned copper cap  
aluminium sheath cables - corrosion protection  
polymeric sheathed cables - sealing with mastic lined  
heatshrink caps  
buried sealed ends  
paper insulated cables-  
temporary heatshrink seals

**Oxygen - hydrogen gas**

“starting up” procedure  
“closing down” procedure  
maintenance  
hazards

**Jointing**

preparation

**Jointing Tapes**

**Moisture testing of paper insulated cable**

testing of paper insulation and  
insulating tapes  
testing of conductors

**Solders and fluxes**

solders  
fluxes  
types of solder used by jointers  
ladles

**Joint sleeve materials**

cylindrical joint sleeve  
end caps

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|  | <p><b>Earthing of lead or aluminium sheathed cables</b><br/>copper bangle<br/>bonding and earthing</p> <p><b>Termination of armour</b></p> <p><b>Erection of sealing ends</b></p> <p><b>Jointing compounds</b></p> <p><b>Types of compounds</b></p> <p><b>Preparation of compounds</b><br/>bituminous compound<br/>rosin/oil and jelly compounds<br/>epoxy resin<br/>polyurethane resin</p> <p><b>Filling of joint boxes and accessories</b></p> <p><b>Cooling time</b></p> <p><b>Topping-up and sealing down</b></p> <p><b>Applying bitumen</b></p> |
| <p><b>6. Assessment strategy</b></p>   |  |
| <p><b>Assessment methods</b></p>       | <p>Short answer questions (written, oral or graphic or computer based).<br/>Suitable practical exercises which assess the skills required of each learning outcome.</p>  |
| <p><b>Conditions of assessment</b></p> | <p>Theory room for written tests together with practical field observation.</p>  |

**7. Learning outcome details**

**Learning outcome 1**

Prepare and reinstate trenches and excavations.

**Assessment criteria**

- 1.1 Identify and interpret all technical drawings required to prepare for the excavation of trenches.
- 1.2 Identify trench safety regulations.
- 1.3 Explain gas detection procedure.
- 1.4 Trench/excavation is prepared and reinstated as per specifications.

**Learning outcome 2**

**Lay conduits and underground cables.**

**Assessment criteria**

- 2.1 Identify and interpret all technical drawings required to lay conduits and underground cables.
- 2.2 Identify methods of installing conduits and underground cables.
- 2.3 Identify the resources required, including personnel, plant, equipment, tools and transport required for the installation of conduits and underground cables.
- 2.4 Install conduits and draw wires to the required specifications.
- 2.5 Install underground cables as per specifications and prepare for reinstatement.

**Learning outcome 3**

**Identify requirements and demonstrate safe use of Liquefied Petroleum Gas (LPG) in a cable jointing environment.**

**Assessment criteria**

- 3.1 Identify general hazards and safety requirements associated with the use of LPG equipment in a cable jointing environment.
- 3.2 List the requirement of gas bottle testing.
- 3.3 Demonstrate safe use of LPG equipment in a cable jointing environment.

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| <b>Learning outcome 4</b>                          | <b>Prepare materials and equipment for jointing/repair of underground cables.</b>   |
| <b>Assessment criteria</b>                         | <p>4.1 Identify underground cables and components.</p> <p>4.2 Identify and prepare tools and equipment used for jointing underground cables.</p> <p>4.3 Prepare jointing tapes, solders, fluxes and jointing compounds.</p> <p>4.4 Prepare cables for jointing and end sealing.</p> <p>4.5 Identify “start up” and “shut down” procedure and safety requirements for use of oxygen and Hydrogen gases associated with welding of cable joints.</p> <p>4.6 Identify types and characteristics of various jointing compounds/resins and describe their application.</p> |
| <b>Learning outcome 5</b>                          | <b>Assist with the jointing/repair of underground cables.</b>   |
| <b>Assessment criteria</b>                         | <p>5.1 Operate, clean and maintain cable jointing tools and equipment.</p> <p>5.2 Prepare cable jointing compounds/resins and apply to completed joint.</p> <p>5.3 Assist with the completion of cable joints and end seals.</p>  |
| <b>8. Delivery of the module</b>                   |   |
| <b>Delivery strategy</b>                           | <p>Delivery strategies must be suitable for both theoretical and/or practical learning and module purpose.</p> <p>It is recommended that learning and assessment be facilitated in a holistic manner which may require a learning sequence other than indicated in the body of this module descriptor.</p>  |
| <b>Resource requirements</b>                       | <p>Enterprise construction manuals</p> <p>Relevant Australian standards</p> <p>Enterprise work manuals and standing instructions</p> <p>Relevant manufacturers’ equipment manuals</p>   |
| <b>Occupational health and safety requirements</b> | <p>Students should be made aware of Occupational Health and Safety issues in all situations and be expected to demonstrate safe working practices at all times. Electrical safety must be emphasised.</p>   |