



ELECTRICAL WORKERS REGISTRATION BOARD

PRACTISING LICENCE REFRESHER COURSE PRESCRIPTION

ELECTRICAL SERVICE TECHNICIAN “LEVEL B”

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Introduction

The Electrical Workers Registration Board has developed an electrical service technician level “B” practising licence refresher course (the electrical service technician “B” refresher course) which training providers can use either as their tuition course, or as a guide for alternative tuition courses to satisfy the prerequisite tuition requirements for the issue of Board electrical service technician “B” practising licences.

The tuition course is expected to be completed within three hours and it should be noted that the course does not include basic first aid and cardio-pulmonary resuscitation which is required to be completed as a prerequisite to electrical service technician level “B” practicing licence issue.

The electrical service technician “B” refresher course does not include references to basic first aid and cardio-pulmonary resuscitation as it is considered that these subjects are more than adequately covered in publications produced by other organisations.

With the exception of the basic first aid and cardio-pulmonary resuscitation aspects, the electrical service technician level “B” refresher course satisfies the requirements of Schedule 5 to the Electricity Regulations 1997.

General

It is considered that the Board needs to have requirements for the refresher courses that:

- reduce as far as possible the cost of compliance to industry, and
- are readily available to industry, and
- have integrity and be appropriate for the licence categories, and
- are subject to regular audit, and
- provide an assurance to the public that persons who are issued with practising licences on the basis of completing the course are competent to safely carry out prescribed electrical work to a level that satisfies the regulatory requirements.

Training providers must ensure that all amendments to the Electricity Regulations 1997 and the standard specifications that are cited in this document are incorporated into the electrical service technician “B” refresher course.

Electrical service technician “B” refresher course content

The electrical service technician “B” refresher course covers the following subjects:

- testing for safety; and
- the requirements relating to the supervision of trainees both from a supervisor and trainee perspective; and
- earthing requirements; and
- the operation and operational testing of residual current devices; and
- prospective short circuit current levels; and
- hazard identification; and
- testing and certification; and
- an appreciation of the types of accidents that have been reported within the previous twelve months; and
- safe working practices; and
- issues highlighted by the Board in ELECTRON newsletter.

Duration of course

As stated in the introduction section the electrical service technician “B” refresher course is expected to be completed within three hours and this excludes basic first aid and cardio pulmonary resuscitation required by Schedule 5 to the Electricity Regulations 1997.

Course presenters

The Board requires persons wishing to offer the electrical service technician “B” refresher course to be accredited by the Board on an annual basis. This will require potential tuition course presenters to present their credentials for Board accreditation on an annual basis.

The Board would then only publish the names of accredited presenters in its publicity material and on its website.

Auditing of tuition courses and presenters

The Board has an effective auditing programme in place to ensure that the Board's statutory function to ensure competency is satisfied, as well as satisfying the Board's role in ensuring public safety.

Levels of knowledge

Please note that the letters A, B or C alongside subject material represent the level of knowledge the Board expects electrical service technician "B" refresher course candidates to obtain from the refresher course.

The levels of knowledge are:

- (A) Thorough knowledge
- (B) Good knowledge
- (C) General knowledge

Specific refresher course content

Inspection and testing for safety

- (A) All electrical service technician "B" refresher course candidates are required to have a thorough knowledge of testing as listed in section 6 of AS/NZS 3000 applicable to the work of an electrical service technician (level "B") and section 2 of AS/NZS 3760 including:
1. The inspection and tests to be performed to ensure electrical installations and electrical equipment are safe are identified and methods of measurement described, and
 2. Where appropriate, the minimum and maximum values applicable to the testing. This includes:
 - Visual inspections/tests; and
 - Continuity of the earthing system; and
 - Insulation resistance; and
 - Polarity; and

- Correct circuit connections in relation to “disconnect/reconnect” and
- Operation of RCDs; and
- Fault-loop impedance; and
- Frequency of inspection and testing of electrical equipment.

All electrical service technician “B” refresher course candidates are required to have a thorough knowledge of:

3. The testing as listed in section 2 of AS/NZS 3760; and
4. How to correctly identify the instrument(s) to measure:

- Voltage
- Current
- Resistance
- Insulation resistance
- Earthing continuity, and

3. How to connect testing equipment in a circuit to obtain meaningful results, for example:

- Connect a voltmeter across the circuit or component.
- Connect an ammeter in series with the circuit or component
- Use of a clip-on ammeter as an alternative to using an ammeter.
- Connect an insulation resistance tester between open circuited conductors and from each conductor and earth.
- Connect an ohmmeter to form a closed series circuit with its associated dc power source, zeroing calibration where necessary; and

4. How an ohmmeter, if of the analogue type, must be calibrated (zeroed) with its power source before use. Explain how this is carried out and why it is necessary; and

5. The likely results of using test instruments connected in circuits incorrectly or, where a multimeter is used, switched to incorrect functions or inappropriate ranges; and

6. The need for correct instrument polarity when working with moving coil analogue type meters on direct current circuits; and

7. How to identify the appropriate instrument for testing electrical equipment for:

- Circuit continuity
- Insulation resistance
- Polarity
- Protective earthing continuity
- Effectiveness of controls and safety facilities; and

8. The methods of carrying out tests listed in 7 above and state minimum and maximum results (where appropriate) that are considered satisfactory; and

9. The various conditions, indications and defects that can be found by visual inspection of electrical equipment being checked for compliance with regulatory requirements and for general electrical and mechanical safety; and

10. Understand the necessary safety procedures when using instruments to test energised circuits, for example:

- Test, Prove, Test method.
- Do not energise a circuit until appropriate instrument connections have been completed.
- Maintain adequate insulation and clearances between instrument clips, probes or leads.
- Avoid personal contact with either live conductors or earth when using instruments on live circuits.

The requirements relating to the supervision of trainees both from a supervisor and trainee perspective

(A) All electrical service technician “B” refresher course candidates are required to have a thorough knowledge of the requirements of the draft Code of Practice for the supervision of trainee electricians which was issued by the Electrical Workers Licensing Group in May 2006.

Please note that while the above mentioned draft Code of Practice is specific in its application to trainee electricians, for the purposes of the refresher course the draft Code’s principles apply to all trainees.

Earthing requirements

(A) All electrical service technician “B” refresher course candidates are required to have a thorough knowledge of the earthing requirements relating to fittings as listed in section 5 of AS/NZS 3000.

Operation and operational testing of residual current devices

(B) All electrical service technician “B” refresher course candidates are required to have a good knowledge of:

1. The purpose and uses of RCDs; and
2. The specific tests that are required by AS/NZS 3760 and the test instruments required to perform those tests; and
3. The methods of carrying out the tests required by AS/NZS 3760.

Prospective short circuit current levels

(B) All electrical service technician “B” refresher course candidates are required to have a good knowledge of prospective short circuit current levels and should be aware that there is considerable danger inherent in the wrong selection of equipment or improper installation of equipment due to high prospective short circuit current levels. The high levels of energy dissipated during faults involving high currents can extensively damage plant and can lead to injury for any person working nearby.

Training providers need to be able to provide electrical service technician “B” refresher course candidates with information on the dangers of prospective short circuit currents.

Hazard identification

(B) All electrical service technician “B” refresher course candidates are required to have a good working knowledge of the principles of risk management assessment.

The principles of risk assessment comprise of:

- identifying hazards; and
- assessing and prioritising the risks and then
- applying control measures.

How to Identify Hazards in the Workplace

The first step in identifying a hazard is to gather information. Fundamentally the following questions should be asked:

- Does the job look safe?
- What hazards could arise from this job?

After any hazards have been identified a decision must be made on which hazards are significant.

Significant hazards

Significant hazards are those that are the actual or potential cause, or source of:

- serious harm, including death; and
- harm, the severity of which depends on the frequency or extent of exposure; and
- harm not detected until after the exposure.

The purpose of prioritising the hazards is only for the order of addressing them.

All hazards must be considered, irrespective of the level of risk.

The combination of potential injury and level of exposure determines the level of risk.

Applying Control Measures

The application of control measures is the process of considering each hazard in turn and following the "hierarchy of controls" described below:

The steps to follow in the application of control measures are to:

- (a) Eliminate the hazard; and
- (b) Isolate the hazard from the worker - by distance or by time; and
- (c) Minimise the hazard - by use of personal protective equipment and training; and
- (d) Ensure workers are trained:
 - in working in the presence of the hazard
 - by using "standard work procedures "
 - to use personal protective equipment and
 - in the correct use and care of personal protective equipment.

The aim of this process is to eliminate or reduce the potential effects of hazards.

Testing and certification

(B) All electrical service technician "B" refresher course candidates are required to have a good working knowledge of:

1. The testing requirements of the Electricity Regulations 1997 and AS/NZS 3760; and
2. Testing and certification – General
 - (a) The definition of the term "testing"; and
 - (b) The Board's Electrical Safety Sticker system.

Accidents that have been reported within the previous twelve months

(C) All electrical service technician "B" refresher course candidates are required to have a general knowledge of the summary of reported electrical accidents produced by the Energy Safety Service.

Safe working practices

General

Many factors can enhance safety in the work place, amongst which sensible, considerate behaviour and good housekeeping rank high.

A knowledge of the right way of carrying out tasks and the use of appropriate protective tools and equipment are also important.

Behaviour

The keypoint of good behaviour is for work to be carried out with due consideration for a person's own safety and the safety of others at all times.

Good behaviour requires that a responsible attitude is taken towards work, and includes

- carrying out instructions properly; and
- asking if in doubt; and
- rectifying or reporting all unsafe conditions; and
- using appropriate tools and equipment correctly; and
- keeping any workplace clean and tidy; and
- not distracting others or indulging in horseplay; and
- wearing or using the protective clothing or equipment provided; and
- not starting machinery unless authorised; and
- obeying all safety rules and signs; and
- using only authorised tools and equipment; and
- not leaving tools on the floor or where they can fall on people below; and
- not wearing loose or torn clothing; and
- taking extra care when members of the public are present (they may not be as aware of hazards or as well protected against them as you are).

Housekeeping

A high standard of housekeeping is essential. Good housekeeping means:

- cleaning up at intervals during the day; and
- no accumulation of waste and rubbish in the workplace; and
- keeping the floor, aisles and passageways clear of obstructions; and
- keeping fire exits and equipment clear of stock; and
- storing tools and equipment in their correct place.

ELECTRON newsletter

(B) All electrical service technician “B” refresher course candidates are required to have a good knowledge of the disciplinary cases and other issues highlighted in ELECTRON newsletter.



N J J Sickels
Registrar