

GUIDANCE NOTES FOR ELECTRICAL INSPECTORS March 2010



When is it necessary or required to install a current limiting device (circuit breaker) to protect the consumers mains?

Clause 2.5.1.1 of AS/NZS 3000:2007 requires the consumers mains to be protected against over current in the following method:

1. Short-circuit protection and overload protection at the origin; or
2. Short-circuit protection at the origin and overload protection at the switchboard; or
3. Short circuit protection need not be provided where the consumers mains are installed with additional mechanical protection and overload protection is provided at the switchboard.

1 Short circuit and overload protection at the origin.

The service fuse provided by the distributor in supplies up to 100 amps will only provide short-circuit protection not overload protection.

For consumers mains greater than 100 amps overload protection would only be provided when the protection at the origin is fixed (not adjustable) and is rated current at capacity of the consumers mains conductors and arranged that the overload protection cannot be increased.

2 & 3 Short-circuit protection at the origin and overload protection at the switchboard or where no short circuit and overload protection at the switchboard where additional mechanical protection is provided as per Clause 3.9.7.1.2 of AS/NZS 3000:2007 for the consumers mains.

Installations connected from 1st July 2008 (when AS/NZS 3000:2007 became mandatory) states that if the sum of the current capacity of the circuit breakers is greater than the current carrying capacity of the consumers mains conductors the consumers mains must be overload protected with an appropriate size circuit breaker.

This also applies to existing installations where the consumers mains and/or switchboards are replaced.

For existing installations where additional load is connected such as a split system air-conditioning unit the circuit breaker to protect the consumers mains conductors will only be required if the maximum demand of the installation and added load exceeds the current carrying capacity of the consumers mains.

SOLAR INSTALLATIONS.

Isolation of dc supply at the photovoltaic arrays.

The DC solar supply requires an appropriately rated DC isolator at the commencement of the DC circuit this requirement complies with clause 1.5.2 and 7.3.4.1 of AS/NZS 3000:2007 and Clause 5.5 of AS 4777.1. It is important to have this isolating device installed so emergency services can isolate supply under emergency conditions.

Solar main switch –plug in circuit breakers.

Clause 5.3.3 of AS/NZS 4777.1 requires the main switch for the solar supply to be a lockable switch. Where solar energy systems are being installed and the installation has semi enclosed rewirable fuses the installation of a **plug in circuit breaker will not meet the requirements.**

Solar main switch –domestic installations with multiple main switches.

In domestic installation where the protection devices for each final subcircuit is a main switch and a additional main switch for the solar energy systems is being installed the switchboard is required to be altered to comply with Clause 2.3.3.2 of AS/NZS 3000:2007 where only one main switch is allowed per supply and to conform with the connection method show in the AS/NZS 4777 series.

PREMISES WITH CONSUMER ELECTRICITY GENERATION SYSTEMS.

In premises where electrical generation systems are installed or connected **additional** signage is installed stating

Warning

**This premise contains an electricity generation system.
The isolation switch is located < location>**

OR

Warning

**This premise contains an electricity generation systems.
The wind generation isolation switch is located <location>
The solar isolation switch is located <location>**

This sign must be placed at fire indicator panel, main switchboard and all switchboards that will be energised by that consumers generating system.

The sign must be clear, durable and permanent and white lettering no smaller than 5mm on a dark green background to comply with AS 1319 emergency information signs. This sign does not replace the requirements AS/NZS 4777 or the electricity distributor's signage requirements.

LIFTS IN PRIVATE RESIDENCES.

A lift installed within a SINGLE private residence installed in accordance with AS/NZS 1735.18 need not comply with the requirements of Clause 7. 2. of AS/NZS 3000:2007.

PRESCRIBED ELECTRICAL INSTALLATION WORK.

Regulation 238 of the Electricity Safety (Installations) Regulations 2009 has added safety services and equipment operating at extra low voltage installed in patient area as prescribed electrical installation work.

SAFETY SERVICES.

Circuit protective devices, switchgear, control-gear, wiring system and accessories (other than fire detection and alarm systems) installed to provide control and protection for passenger lifts, fire pumps and air handling systems intended to exhaust and control the spread of fire and smoke.

Inspection requirements for.

Lifts - from the point of supply to the lift switchboard.

Air handling systems that control the spread of fire and smoke - from the point of supply to the connection of the air handling systems control switchboard and all the associated wiring to equipment for control of fire and smoke.

Fire Pumps – the entire electrical installation from the point of supply to the motor connections including control circuits.

PATIENT AREAS.

PATIENT AREAS of hospitals, medical and dental practices, and dialyzing locations.

Inspection requirements for ELV installations.

Extra low voltage (ELV) control systems associated with other fixed medical equipment and illumination systems in patient areas, but **does not include telecommunications, data transfer and alarm or intercom systems operating at ELV.**

SUPPLY CAPACITY CONTROL DEVICE.

Regulation 232 of the Electricity Safety (Installations) Regulations 2009 prohibits an electricity supplier from requiring a person to install protective equipment between the point of supply and any main switches for safety services.

REPLACEMENT OF EXISTING SWITCHBOARDS.

A switchboard containing semi enclosed rewirable fuses may be replaced with a new circuit breaker switchboard in the existing position under the following conditions;

1. the switchboard location complies with the regulations that were in force when the switchboard was first installed this includes switchboards that were installed when the regulations had no height restrictions; and
2. no other electrical work is being carried out e.g. installation /rewiring of final sub-circuits or replacement of the consumers mains; and
3. the new switchboard complies with the RCD requirements stated in Clause of 2.6 and Amendment 1 of AS/NZS 3000:2007.

Note - switchboards installed in cupboards or similar storage areas shall comply with Clause 2.9.2.5 of AS/NZS 3000:2007.

REQUIREMENTS FOR FIXED WIRED AIR-CONDITIONING UNITS

All fixed wired air-conditioning units shall be installed to comply with the following requirements;

1. Have an isolating switch capable of being locked in the off position installed adjacent to or on the external compressor unit.

Exception – An isolating switch capable of being locked in the off position may be installed in the switchboard when the switchboard is dedicated to the air-conditioning equipment only; and

2. Be installed as per the manufactures installation instructions as required by AS/NZS 3000:2007 Clause 1.7.1(c); and
3. Only cables enclosed in flexible conduits are to be attached to the air- conditioning pipe work.

Note: The means of attachment must be permanent and secure, the use of pvc tape is not acceptable. Where the wiring enclosure and wiring support including pvc cable ties are subject to direct sunlight they must be UV protected.