



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline

Engineering Standard - NSW

Category

Electrical

Title

Requirements for Work Using Cranes and Plant

Reference Number

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Document Control

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The technical content of this document has been approved by the relevant ARTC engineering authority and has also been endorsed by the ARTC Safety Committee.

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About This Standard

The working of cranes and plant near overhead lines, whether exposed or insulated, or near other exposed electrical equipment, is regulated by the Construction Safety Regulation 133A.

As a Network Operator, ARTC and its contractors are able to utilize an exemption certificate issued by WorkCover. This exemption permits approach to closer distances when additional controls are put in place.

Document History

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List of Amendments –

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1.1	11/03/2005	Disclaimer	Minor editorial change

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1. Safe Working Distances

Special electrical Safe Working Distances apply to cranes and plant and these are set out in Table 1. These distances are generally larger than the normal electrical Safe Working Distances for personnel and must be applied in accordance with the conditions described in sections 2, 3, and 4.

If the crane or plant is operated in accordance with exemption certificate 5099 then the electrical Safe Working Distance required to exposed electrical equipment is reduced to that shown in Column D, E, F, or G of Table 1 as appropriate.

A summary of the requirements of exemption certificate 5099 is set out in section 4.

MINIMUM APPROACH DISTANCES OF CRANES AND PLANT TO LIVE ELECTRICAL APPARATUS

A	B	C	D	E	F	G
	MINIMUM APPROACH DISTANCE IN METRES					
NOMINAL VOLTAGE	PACKED UP FOR TRAVELLING	WORKING UNDER REGULATION 133 A	WORKING UNDER EXEMPTION 5099 USING AN OBSERVER OR LIMITING DEVICE		WORKING UNDER EXEMPTION 5099 WITHOUT AN OBSERVER	
			ELECTRICAL WORK	NON-ELECTRICAL WORK	ELECTRICAL WORK	NON-ELECTRICAL WORK
Up to 650V	1.1	3.0	0.5	1.0	1.0	No reduction from requirement of Regulation 133A - Refer Column C
1500V dc only **	1.0	3.0	0.7	1.0	1.4	
Above 650V but not exceeding 11kV **	2.3	3.0	0.7	1.2	1.4	
Above 11 kV but not exceeding 66kV	2.3	3.0	1.0	1.5	2.0	
Above 66kV but not exceeding 132kV	2.3	3.0	1.5	2.0	3.0	
Above 132kV but not exceeding 220kV	3.6	6.0	2.5	3.0	5.0	
Above 220kV but not exceeding 330kV	3.6	6.0	3.0	3.5	6.0	
Above 330kV	4.6	8.0	4.0	4.5	8.0	

Table 1

** 1500V dc is treated as a separate case.

WARNING:

Table 1 does not imply that it is always safe to work up to these distances of exposed electrical equipment. An additional distance should be added if indicated by the terrain, prevailing weather or functional behaviour of the appliance.

2. Where Approach is not Closer than Prescribed Safe Working Distances

2.1. General

Clauses 2.2 and 2.3 are a summary of the requirements of Regulation 133A. For further details refer to the full text of the Regulation.

2.2. Working to Regulation 133A without exemption certificate

When working without any exemption, Regulation 133A under the Construction Safety Act requires that no part of any crane or plant be permitted to come within the electrical Safe Working Distances in Column C of Table 1 from exposed electrical equipment.

2.3. Measures To Be Taken

If it is reasonably foreseeable that the crane or plant may approach to the prescribed Safe Working Distance of exposed electrical equipment, appropriate measures must be taken to prevent any part of the crane or plant coming within that distance, and a person other than the driver or operator of the crane or plant must:

- observe the position of the crane or plant in relation to the exposed equipment, and
- warn the driver of the crane or plant of the proximity of the crane or plant to the exposed equipment in sufficient time to enable the driver to prevent the crane or plant coming near the exposed equipment.

3. Where Approach is within the Prescribed Safe Working Distances

3.1. Permit Requirements

A Permit must be obtained when it is foreseeable that a crane or an item of plant will be required to, or might inadvertently, come within the prescribed safe working distances of exposed electrical equipment.

3.2. Persons to Sign Onto Permits

Where a Permit is required for the work, each crane or plant operator must sign onto the Permit.

In the case of a crane, each dogman and/or chaser must also sign onto the Permit.

3.3. Travelling

When correctly packed up for travelling, a crane or plant may approach to the distances in column B of Table 1 from exposed electrical equipment for the purpose of travelling under overhead lines.

When correctly packed up for travelling on rail, cranes or plant must be within the rolling stock gauge. Other electrical clearance provisions do not apply.

3.4. “On Rail” Plant

Where a plant item is:

- rail mounted, and
- does not include any component that can be positioned such that it would infringe the rolling stock gauge above the plant,

the electrical Safe Working Distance required to exposed electrical equipment above the plant is that clearance distance provided by the rolling stock gauge.

4. Exemption Certificate 5099

4.1. General

Exemption Certificate 5099 permits work to be carried out closer to exposed electrical equipment than the distances prescribed in Regulation 133A.

The following Clauses are a summary of the requirements of Exemption Certificate No 5099. For further details refer to the full text of the Exemption Certificate.

4.2. Application

The Exemption applies to work carried out by or on behalf of an organisation listed in Schedule 1 of the Exemption, when the work comprises:

Electrical work

Work on or connected with the construction, erection, maintenance, adjustment or dismantling of electrical installations, Railway Signalling Electric Systems, public lighting, electric substations, high voltage areas, switchyards, electrical transmission, distribution or railway traction systems and includes trimming of trees near electrical apparatus (Refer Column D of Table 1).

Non-electrical work

Work not directly connected with electrical systems or apparatus such as building work, landscaping, landfill work, excavations, road work and includes the construction, maintenance, adjustment or dismantling of railway track systems and drainage, sewerage and water supply systems (Refer Column E of Table 1).

4.3. Compliance

Any crane, load or plant which is at rest, travelling or in motion in accordance with the exemption certificate must comply with the conditions of the exemption certificate and in particular:-

- The owner of the crane or plant and the person having immediate control of the operation of the crane or plant, must ensure that the relevant provisions of the certificate are complied with and in any case must not hinder, obstruct or attempt to prevent the provisions of the certificate being complied with.
- The safety observer and the operator of the crane or plant must exercise due diligence to ensure that the relevant provisions of the certificate are complied with.
- A person or an organisation requesting or approving work under contract, by agreement or otherwise shall as far as is practicable ensure that the relevant provisions of the certificate are complied with and in any case shall not hinder, obstruct or attempt to prevent the provisions of the certificate being complied with.

4.4. Minimum Approach Distances of Cranes, Plant and Loads

- Except where effective insulation is provided in accordance with the certificate, and where required under Clause 3 of the certificate approval has been granted, cranes, loads, plant and component parts shall not approach closer to live electrical apparatus than the minimum approach distances appropriate to the voltage provided in Columns D or E of Table 1.
- A safety observer required under Clause 7 of the certificate must be appointed at any time the crane, plant or load is in motion and is likely to move within the distances provided in Column C, F or G of Table 1.
- A safety observer is no longer required after an effective limiting device has been set to prevent any component part of a crane, plant or load approaching closer than the minimum approach distances in Columns B, D or E of Table 1 provided that the limiting device is effective under stress conditions and the limiting device is inspected and tested at regular intervals.
- Where, by virtue of the design of the crane or plant, no component part of the crane or plant, or the load, can approach closer than the minimum approach distances in Columns B, D or E of Table 1, the crane or plant may be operated on the same basis as a crane or plant fitted with a limiting device.
- Clause 3 of the certificate provides for closer approach. This facility shall not be utilised unless a written waiver to this document is obtained.