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# Australian Standard

## 3201.5 - 1977

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**APPROVAL AND TEST SPECIFICATION  
FOR ELECTROMEDICAL EQUIPMENT  
PART 5 - DENTAL AND  
MOBILE MEDICAL X-RAY  
MACHINES**

[Titles Allocated by Defence Cataloguing Authority: NSC 6525 - X-Ray Apparatus, Dental; X-Ray Apparatus (as modified) (Mobile for Medical Application)]

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**STANDARDS ASSOCIATION OF AUSTRALIA**  
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**THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:**

**Australasian Institute of Radiography  
Australian Dental Standards Laboratory  
Australian Dental Trade Association  
Australian Institute of Physics  
Australian Medical Association  
Australian Radiation Laboratory  
Australian Regional Group of the Hospital Physicists Association  
Australian X-ray Manufacturers Association  
Department of Construction  
Department of Defence  
Department of Public Works N.S.W.  
Royal Australasian College of Radiologists  
Statutory Electrical Approvals Authorities**

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## P R E F A C E

This standard was prepared by the Association's Committee on Electromedical Equipment. It was approved on behalf of the Council of the Standards Association of Australia on 13 December 1976, and was published on 1 March 1977.

It is one of a series of approval and test specifications issued by the Association under Part 2 of the SAA Wiring Rules. These specifications are accompanied by a general specification AS C100, Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment, and are intended to prescribe the safety requirements for materials and equipment used in electrical installations complying with Part 1 of the SAA Wiring Rules. General requirements for electromedical equipment which are additional to the requirements in AS C100 and other relevant approval and test specifications, are included in AS C200, Approval and Test Specification for Definitions and General Requirements for Electro-medical Equipment.

It should be noted that this specification only specifies safety requirements for dental and mobile X-ray machines which are additional or contrary to those in the abovementioned specifications or which, for clarity, have needed rewording from a general sense so as to apply specifically to dental and mobile X-ray machines. An exception is the testing clause where the complete range of tests has been listed so as to specify the correct sequence in which they should be performed. Collectively, the requirements in these specifications outline conditions which must be met in order to secure approval for the sale and use of dental and mobile X-ray machines in Australia. Only safety matters and conditions closely allied thereto are covered.

Attention is drawn to the additional requirements of Health Authorities in some States of Australia under the relevant Acts and Regulations operative in those States. There exist some specific requirements for audible back-up signals indicating X-ray tube energization; also requirements prohibiting operation at tube voltages below 60 kV (peak) or at short focal spot-skin distance (FSD).

Previous draft versions of this standard referred to machines operable at 50 kV(peak) or less with FSD as low as 10 cm; there is now no reference to such low tube voltages and a minimum FSD of 18 cm is specified.

Attention is also drawn to the filtration requirements, Table 1, Clause 3.2, based on requirements from U.S.A. which are present under major review; it is likely that this standard will need revision in this respect within 18 months of the date of issue.

This standard requires reference to the following Australian standards:

AS 1169 SAA Medical Agents and Gases Safety Code

AS 3191 Approval and Test Specification for Electric Flexible Cords



11 MAR 1977

- AS C100 Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment
- AS C112 Approval and Test Specification for Plugs and Plug Sockets
- AS C200 Approval and Test Specification for Definitions and General Requirements for Electro-medical Equipment
- AS 3003 SAA Code for Electrical Installations in Electromedical Treatment Areas

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# CONTENTS

	<i>Page</i>
<b>SECTION 1. SCOPE, DEFINITIONS AND APPLICATION</b>	
1.1 Scope .....	6
1.2 Definitions .....	6
1.3 Application .....	7
<b>SECTION 2. GENERAL REQUIREMENTS</b>	
2.1 Design and Construction .....	9
2.2 X-ray Tube Housings .....	10
2.3 High Voltage Generator .....	10
2.4 Controls .....	10
2.5 Capacitors .....	10
2.6 Means of Connection to Mains Supply .....	12
2.7 Provision of Earthing Stud .....	12
2.8 Marking .....	13
<b>SECTION 3. RADIATION PROTECTION REQUIREMENTS</b>	
3.1 X-ray Tube, Tube Housing and Tube Assembly .....	14
3.2 Filtration .....	14
3.3 Field Limitation .....	14
3.4 Light Beam Collimator .....	15
3.5 Mobile Equipment with Image Intensifiers .....	15
3.6 Capacitor-discharge Machines .....	16
<b>SECTION 4. TESTS</b>	
4.1 General .....	17
4.2 Leakage Radiation from Tube Assemblies (Including any Light Beam Collimators) .....	17
4.3 Leakage Radiation from Capacitor-discharge Machines ..	18
4.4 Drop Test for Hand-held Switches .....	18

## STANDARDS ASSOCIATION OF AUSTRALIA

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**Australian Standard**  
**Approval and Test Specification**  
**for**  
**ELECTROMEDICAL EQUIPMENT**

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**PART 5**  
**DENTAL AND MOBILE MEDICAL X-RAY MACHINES**

**SECTION 1. SCOPE, DEFINITIONS**  
**AND APPLICATION**

**1.1 SCOPE.** This specification applies to dental X-ray machines and mobile medical X-ray machines, as defined in Clause 1.2 below, which are designed for operation from low or medium voltage power supplies. It also applies, in so far as the requirements are appropriate, to ancillary equipment which may be connected to the above X-ray machines, e.g. mobile image intensifier, bucky diaphragms.

The specification does not apply to —

- (a) pantomograph units;
- (b) intra-oral X-ray sources;
- (c) cephalometric radiographic equipment;
- (d) X-ray machines used for therapy; and
- (e) radiation protection additional to that incorporated in an X-ray machine.

**1.2 DEFINITIONS.** For the purpose of this specification, the following definitions and the definitions in AS C200\*, except as varied herein, shall apply :

**1.2.1 Dental X-ray machine** — a complete X-ray machine designed for radiographic examinations of the teeth or the jaws and the use of which is confined to such examinations.

**1.2.2 Mobile medical X-ray machine** — a complete X-ray machine, designed for medical use, which can be conveniently moved, as a whole, from one part of a hospital or clinic to another.

**1.2.3 Exposure (symbol  $X$ )** — the quotient of  $\Delta Q$  by  $\Delta m$ , where  $\Delta Q$  is the sum of the electrical charges on all ions of one sign produced in air when all the negative electrons liberated by photons in a volume element of air whose

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\*AS C200, Approval and Test Specification for Definitions and General Requirements for Electro-medical Equipment (in course of revision).