Australian Standard®

Resistance welding equipment—Single-phase a.c. transformer type

[Title allocated by Defence Cataloguing Authority: RESISTANCE WELDING MACHINES, SINGLE PHASE—TRANSPORMER TYPE (NSC 3432)]

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The following interests are represented on Committee EL/19:

Confederation of Australian Industry
Railways of Australia Committee
Welding Technology Institute of Australia

Additional interests participating in preparation of Standard:

Designers and manufacturers of resistance welding equipment
Motor-car manufacturers

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electrical Welding Plant to supersede AS 2799—1985. It incorporates substantial material from International Standard ISO 669:1981, *Rating of resistance welding equipment*, and includes a practical method of determining the rating of resistance welding equipment.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard defines and specifies the characteristics of single-phase resistance welding equipment. It includes the information required on the equipment nameplate and specifies the test methods to be used to verify the compliance of the equipment with the requirements of this Standard.

NOTE: Appendix A gives information on thermal time constants.

It is applicable to single-phase resistance welding equipment, including all types of complete portable equipment, for use under the following conditions:

(a) *Altitude* The altitude shall not exceed 1000 m.

(b) *Cooling medium temperature* For water-cooled equipment, the temperature of the cooling water shall not exceed 30°C at the inlet of the equipment and, in the case of air-cooled equipment, none of the following limits shall be exceeded:

(i) Maximum ambient air temperature: 40°C.

(ii) Daily average ambient air temperature: 30°C.

(iii) Yearly average ambient air temperature: 20°C.

(c) *Cooling water pressure* The pressure of the cooling water shall not be less than that which is necessary to supply the rated flow of cooling water.

This Standard does not apply to transformers sold separately or to capacitor discharge or rectifier equipment.

For a given voltage and frequency the characteristics of the equipment are calculated, constructed and tested, as a function of the following operational modes:

(i) Intermittent operation at a duty cycle (see Clause 1.3.4) of 50%, the values of current and power being termed nominal or rated.

(ii) Continuous operation, the values of current and power being termed continuous.

All voltages and currents shall be expressed as r.m.s. values.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

Standards

AS
2812 Welding, brazing and cutting of metals—Glossary of terms

3000 SAA Wiring Rules

Approval and test specifications

AS
3100 General requirements for electrical equipment

IEC
Publication 85 Thermal evaluation and classification of electrical insulation

1.3 DEFINITIONS For the purpose of this Standard, the definitions given in AS 2812 and those below apply.

1.3.1 Continuous output current (I_{scon})—the output current corresponding to 100% duty cycle, the relationship with the nominal output current at 50% duty cycle being given by the equation:

$$I_{scon} = \frac{I_m}{\sqrt{2}}$$

1.3.2 Continuous power (P_{con})—the power corresponding to 100% duty cycle, the relationship with the nominal power at 50% duty cycle being given by the equation:

$$P_{con} = \frac{P_n}{\sqrt{2}}$$

1.3.3 Duty—a schedule of the loads on an apparatus or equipment, taking into account their respective duration and sequence.