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RESISTANCE WELDING EQUIPMENT—
SINGLE PHASE A.C. TRANSFORMER TYPE

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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Australian Electrical and Electronic Manufacturers Association Limited

Australian Welding Institute

Commonwealth Aircraft Corporation Limited

Confederation of Australian Industry

Electricity Supply Association of Australia

Metal Trades Industry Association of Australia

Railways of Australia Committee

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RESISTANCE WELDING EQUIPMENT—
SINGLE PHASE A.C. TRANSFORMER TYPE

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PREFACE

This standard was prepared by the Association's Committee on Electric Welding Plant to supersede AS C356, Resistance Welding, Part I—1964, Transformers and Electrical Performance, and Part II—1966, Stationary Type Spot and Projection Welding Equipment.

This standard amalgamates both parts of AS C356.

It is not the intention of the Association to prepare separate standards for other types of resistance welding machines because they are regarded as special purpose equipment, being custom built for one-off orders. Similarly there is no intention to deal with electrodes for spot welding machines or with seam welder wheel blanks.

This standard designates the standard size of the welding machines, together with corresponding kVA rating, short-circuit current, throat dimensions, platen size and slot dimensions. Requirements for methods of actuation, operating speeds, electrode operation, water cooling, and mechanical and electrical features are also given.

In the preparation of this standard, reference was made to the relevant documents issued by the International Organization for Standardization and the Resistance Welding Manufacturers Association of America. Acknowledgement is made of the assistance received from these sources.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
RESISTANCE WELDING EQUIPMENT SINGLE PHASE A.C. TRANSFORMER TYPE

SECTION 1. GENERAL

1.1 SCOPE. This standard specifies the essential electrical and mechanical requirements for standard sizes of stationary, single-phase a.c. transformer type spot, projection, combination spot-projection portable and gun-type resistance welding equipment.

It includes a series of tests for assessing electrical performance of resistance welding equipment, which also provides a reasonable method for comparing equipment of different manufacture.

It does not apply to control transformers and to equipment used for the sequential methods of operation, control, or timing of resistance welding equipment.

NOTE: It is envisaged that transformers of the type specified herein will be incorporated in resistance welding equipment such as—

(a) portable and gun-type welding equipment;
(b) resistance heating machines;
(c) resistance upsetting machines;
(d) spot welding machines;
(e) projection welding machines;
(f) combination spot and projection welding machines;
(g) seam welding machines; and
(h) butt/flash butt welding machines.

1.2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1939	Classification of Degrees of Protection Provided by Enclosures for Electrical Equipment
AS 2768	Electrical Insulating Materials—Evaluation and Classification Based on Thermal Endurance
AS 3000	SAA Wiring Rules
AS 3100	SAA Approval and Test Specifications for Definition and General Requirements for Electrical Material and Equipment
AS Z5	Glossary of Metal Welding Terms and Definitions*

1.3 DEFINITIONS. For the purpose of this standard, the definitions given in AS Z5 and the following apply.

1.3.1 Arm—a member projecting from a resistance welding machine, which carries current, or supports a conductor carrying current, to an electrode holder or platen and which is required to transmit or support the welding force.

1.3.2 Duty cycle—the ratio of the total welding time to 1 min in any 1 min period, expressed as a percentage.

1.3.3 Electrode force—the force transmitted by the electrodes to the workpieces.

1.3.4 Electrode holder—a device to hold an electrode and to convey current to it.

1.3.5 Electrode, resistance welding—a replaceable portion of a resistance welding machine which transmits current, and usually applies pressure directly to the workpiece.

1.3.6 Integrating period—the sum of the load and no-load periods during which the equipment is operated for a particular application.

1.3.7 Maximum primary current (maximum momentary input-current)—the primary current passed, expressed in amperes, when rated supply voltage and frequency are applied and the secondary of the equipment is short-circuited.

1.3.8 Platen—the part of a resistance welding machine on which welding dies or bolsters can be mounted and which conveys force and welding current to them.

1.3.9 Platen spacing—the distance between surfaces of the upper and lower platens.

1.3.10 Press-type spot and/or projection welding machine—a resistance welding machine fitted with a top head arranged to move an electrode in a straight line by means of manual, hydraulic, pneumatic or motor operation.

1.3.11 Projection welding—resistance welding in which the localizing of force and current to make the weld or welds is obtained by the use of a projection or projections raised on one or more of the faying surfaces. The projections collapse during welding.

1.3.12 Rated primary current—that current calculated by multiplying the standard kVA rating by 1000 and dividing by the rated supply voltage.

1.3.13 Rated secondary current—that current calculated by multiplying the standard kVA rating by 1000 and dividing by the maximum open-circuit secondary voltage.

1.3.14 Rated supply frequency—the frequency in hertz at which the equipment is designed to operate.

1.3.15 Rated supply voltage—the voltage at which the equipment is designed to operate.

1.3.16 Resistance welding—welding in which pressure is applied between contiguous surfaces of the workpiece, and the weld is produced by the heat obtained from the resistance through the workpiece to the flow of the current in a circuit of which the workpiece forms a part.

* In course of revision.