AS 1966.1—1985

Australian Standard®

Electric arc welding power sources

Part 1: Transformer type

This Australian standard was prepared by Committee EL/19, Electric Welding Plant. It was approved on behalf of the Council of the Standards Association of Australia on 17 January 1985 and published on 10 May 1985.

The following interests are represented on Committee EL/19:

Australian Electrical and Electronic Manufacturers Association

Australian Welding Institute

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Electricity Supply Association of Australia

University of New South Wales

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PREFACE

This standard was prepared by the Association's Committee on Electrical Welding Plant to supersede in part AS 1966—1976, Electric Arc Welding Machines.

Being published concurrently with this standard is AS 1966.2, Electric Arc Welding Power Sources, Part 2—Rotary Type, which supersedes the remainder of AS 1966—1976.

This standard makes many changes to AS 1966—1976, the most significant of which concerns the requirements for rated load voltage (Clause 1.7.3) which have been expanded to include the three welding processes designated MMAW, GTAW and GMAW (see Table 1.1).

Where local conditions and practices have allowed, IEC and ISO requirements have been included.

CONTENTS

Page

APPENDICES

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
ELECTRIC ARC WELDING POWER SOURCES

PART 1—TRANSFORMER TYPE

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for the design, performance and rating of electric arc welding power sources (hereinafter referred to as 'welding power sources') with either—

(a) transformers—for alternating current welding; or

(b) transformer-rectifier units—for direct current, or alternating current/direct current, welding.

This standard does not include requirements for connected equipment such as welding leads, electrode holders and automatic wire feeders, etc.

1.2 APPLICATION. This standard applies to transformer welding power sources having an output of the drooping characteristic type (substantially constant current) and power sources of the flat characteristic type (substantially constant voltage).

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

AS 1042	Direct-acting Indicating Electrical Measuring Instruments and their Accessories
AS 1202	A.C. Motor Starters (Up to and Including 1000 V)
AS 1939	Classification of Degrees of Protection Provided by Enclosures for Electrical Equipment
AS 2374	Power Transformers
AS 2745	Electric Welding Safety
AS 3000	SAA Wiring Rules
AS 3100	Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment
AS 3195	Approval and Test Specification for Portable Electric Arc Welding Machines—Transformer Type
AS C320	Classification of Insulating Materials for Electrical Machinery and Apparatus on the Basis of Thermal Stability in Service
AS Z5	Glossary of Metal Welding Terms and Definitions*
BS 2709	Electrical Performance of Semiconductor Rectifiers (Metal Rectifiers)
IEC 76-2	Power Transformers Part 2—Temperature Rise

1.4 DEFINITIONS. For the purpose of this standard, the following definitions in addition to those listed in AS Z5, apply:

1.4.1 Automatic metal-arc welding—metal-arc welding in which the arc length and the travel of the electrodes or the workpieces are automatically controlled.

1.4.2 Constant current (CC) welding power source—a welding power source having drooping volt-ampere curves producing relatively constant welding current with a limited change in load voltage.

NOTE: A constant current power source is sometimes referred to as a variable voltage (VV) power source.

1.4.3 Constant voltage (CV) welding power source—a welding power source having an external static characteristic which is such that the slope is generally lower than 7 V/100 A. A welding power source with a rising characteristic up to 10 V/100 A is included.

1.4.4 Diversity factor—the factor by which the product of the number of operators and the rated welding current per operator is multiplied to give the rated output current of the welding power source for manual multiple-operator metal-arc welding.

1.4.5 Duty cycle—the ratio of the total arcing time to 5 min in any 5-minute period, expressed as a percentage.

1.4.6 Electric arc welding power source (transformer type)—an article of electrical equipment incorporating a double-wound transformer, including any stabilizing, regulating and indicating means, for transforming alternating current from normal supply voltage to either alternating current, rectified direct current, or combination alternating/direct current output suitable for arc welding purposes.

1.4.7 Flux cored arc welding (FCAW)—arc welding using a consumable continuous flux cored tubular electrode which provides the filler metal. Shielding is provided by the flux contained within the tubular electrode. Additional shielding may or may not be obtained from an externally supplied gas or gas mixture.

1.4.8 Gas metal-arc welding (GMAW)—an arc welding process wherein coalescence is produced by heating with an electric arc between a filler metal (consumable) electrode and the work where shielding is obtained from a gas, a gas mixture (which may contain an inert gas) or a mixture of a gas and a flux. (This process has sometimes been called MIG welding.)

1.4.9 Gas tungsten arc welding (GTAW)—an arc welding process which produces coalescence of metals

* In course of revision.