

Australian Standard™

**High-voltage switchgear and
controlgear
Part 100: High-voltage alternating-
current circuit-breakers
(IEC 62271-100, Ed. 1.1 (2003) MOD)**

This Australian Standard was prepared by Committee EL-007, Power Switchgear. It was approved on behalf of the Council of Standards Australia on 15 March 2005. This Standard was published on 27 May 2005.

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Originated as AS C89—1967.
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PREFACE

This Standard was prepared by the Standards Australia Committee EL-007, Power Switchgear to supersede AS 2006—1986.

The objective of this Standard is to provide requirements for a.c circuit breakers designed for indoor and outdoor service for operation on systems with frequencies up to 60 Hz and voltages higher than 1000 V.

This Standard is an adoption with national modifications and has been reproduced from IEC 62271-100, Ed. 1.1 (2003), *High-voltage switchgear and controlgear – Part 100: High-voltage alternating-current circuit-breakers*, and has been varied as indicated to take account of Australian conditions.

Variations to IEC 62271-100, Ed. 1.1 (2003) are indicated at the appropriate places throughout this standard. Strikethrough (~~example~~) identifies IEC text, tables and figures which, for the purposes of this Australian Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (example). Added figures are not themselves shaded, but are identified by a shaded border.

Common numbering of standards falling under the responsibility of EL-007

In accordance with the decision taken by the committee EL-007 a common numbering system will be established in order to align the numbering of Australian Standards falling under the responsibility of EL-007 with IEC standards. All high-voltage switchgear and controlgear Standards will, at their next revision (or as equivalent Standards become available in IEC), become parts of the AS 62271 (High-voltage switchgear and controlgear) series. The table below gives the relationship between future numbering and existing Standard numbers. Standards current at the time of publication of this Standard are marked with an asterick (*).

AS 62271 Series	High-voltage switchgear and controlgear	Old AS Number
1	Common specifications	*AS 2650
100*	High-voltage alternating current circuit-breakers	AS 2006
102*	Alternating current disconnectors and earthing switches	AS 1306
103	Switches for rated voltages above 1 kV and less than 52 kV	*AS/NZS 60265.1
104	Switches for rated voltages of 52 kV and above	*AS 60265.2
106	Alternating current contactors and contactor based motor-starters	*AS 2024
110	Inductive load switching	*AS 4372
200*	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	AS 2086
201	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV up to and including 38 kV	*AS 2264
202	High-voltage/low voltage prefabricated substations	*AS 61330
203*	Gas-insulated metal enclosed switchgear for rated voltages above 52 kV	AS 2263
301*	Dimensional standardization of terminals	AS 2395

AS 62271 Series	High-voltage switchgear and controlgear	Old AS Number
303	Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear	*AS 2791
304	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	*AS 4243

This Standard differs from the Standard it supersedes in the following major areas:

- (a) Representation of TRV (clause 4.102.2) items a), b) and c) of have been replaced.
- (b) Standard values of TRV related to the rated short-circuit breaking current (clause 4.102.3) in the second paragraph has been replaced.
- (c) Tables 1b and 1c have been updated and an additional table 1d has been added.
- (d) Table 2 has been replaced.
- (e) Transient recovery voltage (TRV) for breaking tests (the clause and its subclauses 6.104.5.1 through 6.104.5.5) have been replaced.
- (f) Table 14 has been replaced by tables 14a and 14b.
- (g) Basic short-circuit test-duties (subclauses 6.106.1 through 6.106.4) have been updated.
- (h) Table 16 ‘TRV parameters for single-phase and double earth fault test’ has been replaced.
- (i) Figures 10, 39, 41, 42 and 43 have been updated.
- (j) Appendices are now called Annexes in keeping with the latest style.
- (k) Annex ZA ‘Items subject to agreement between the manufacturer and user’ has been added.
- (l) References have been updated.

This Standard shall be read in conjunction with AS 2650, which is applicable unless otherwise specified in this Standard. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in AS 2650. Amendments to these clauses and subclauses are given under the same references whilst additional subclauses are numbered from 101.

Australian variations include calculations for a short-line fault test; and an Australian Annex ZA listing items to be agreed between the purchaser and the user.

As this Standard is reproduced from an International Standard, the following applies:

- (i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (ii) In the source text ‘this international standard’ should read ‘this Australian Standard’.
- (iii) A full point should be substituted for a comma when referring to a decimal marker.
- (iv) Any French text on figures should be ignored.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

CONTENTS

	<i>Page</i>
1 General.....	1
1.1 Scope.....	1
1.2 Normative references	2
2 Normal and special service conditions	3
3 Definitions.....	3
3.1 General terms	3
3.2 Assemblies.....	6
3.3 Parts of assemblies.....	6
3.4 Switching devices.....	6
3.5 Parts of circuit-breakers	8
3.6 Operation.....	10
3.7 Characteristic quantities.....	12
3.8 Index of definitions	18
4 Ratings	22
4.1 Rated voltage (U_r).....	22
4.2 Rated insulation level.....	22
4.3 Rated frequency (f_r)	23
4.4 Rated normal current (I_r) and temperature rise.....	23
4.5 Rated short-time withstand current (I_k).....	23
4.6 Rated peak withstand current (I_p).....	23
4.7 Rated duration of short circuit (t_k).....	23
4.8 Rated supply voltage of closing and opening devices and of auxiliary and control circuits (U_a).....	24
4.9 Rated supply frequency of closing and opening devices and auxiliary circuits.....	24
4.10 Rated pressures of compressed gas supply for insulation, operation and/or interruption	24
5 Design and construction.....	41
5.1 Requirements for liquids in circuit-breakers	41
5.2 Requirements for gases in circuit-breakers.....	41
5.3 Earthing of circuit-breakers	41
5.4 Auxiliary equipment.....	41
5.5 Dependent power closing	42
5.6 Stored energy closing.....	42
5.7 Independent manual operation	42
5.8 Operation of releases	42
5.9 Low- and high-pressure interlocking devices	43
5.10 Nameplates.....	43
5.11 Interlocking devices.....	45
5.12 Position indication	45
5.13 Degrees of protection by enclosures.....	45
5.14 Creepage distances	45
5.15 Gas and vacuum tightness	45
5.16 Liquid tightness.....	45
5.17 Flammability.....	45
5.18 Electromagnetic compatibility	45

6	Type tests	46
6.1	General	47
6.2	Dielectric tests	48
6.3	Radio interference voltage (r.i.v.) tests	50
6.4	Measurement of the resistance of the main circuit	50
6.5	Temperature-rise tests	51
6.6	Short-time withstand current and peak withstand current tests	51
6.7	Verification of the degree of protection	52
6.8	Tightness tests	52
6.9	Electromagnetic compatibility (EMC) tests	52
6.101	Mechanical and environmental tests	52
6.102	Miscellaneous provisions for making and breaking tests	62
6.103	Test circuits for short-circuit making and breaking tests	79
6.104	Short-circuit test quantities	81
6.105	Short-circuit test procedure	91
6.106	Basic short-circuit test-duties	93
6.107	Critical current tests	96
6.108	Single-phase and double-earth fault tests	97
6.109	Short-line fault tests	98
6.110	Out-of-phase making and breaking tests	102
6.111	Capacitive current switching tests	103
6.112	Special requirements for making and breaking tests on class E2 circuit-breakers	115
6.200	Dielectric dissipation factor	115
7	Routine tests	116
7.1	Dielectric test on the main circuit	116
7.2	Dielectric test on auxiliary and control circuits	116
7.3	Measurement of the resistance of the main circuit	116
7.4	Tightness test	116
7.5	Design and visual checks	116
7.200	Dielectric dissipation factor	118
7.201	Partial discharge test	118
8	Guide to the selection of circuit-breakers for service	118
9	Information to be given with enquiries, tenders and orders	126
10	Rules for transport, storage, installation, operation and maintenance	129
10.1	Conditions during transport, storage and installation	129
10.2	Installation	129
10.3	Operation	134
10.4	Maintenance	135
11	Safety	135
	Annex A (normative) Calculation of transient recovery voltages for short-line faults from rated characteristics	184
	Annex B (normative) Tolerances on test quantities during type tests	191
	Annex C (normative) Records and reports of type tests	198
	Annex D (normative) Determination of short-circuit power factor	201
	Annex E (normative) Method of drawing the envelope of the prospective transient recovery voltage of a circuit and determining the representative parameters	202

Annex F (normative) Methods of determining prospective transient recovery voltage waves.....	206
Annex G (normative) Rationale behind introduction of circuit-breakers class E2	222
Annex H (informative) Inrush currents of single and back-to-back capacitor banks	223
Annex I (informative) Explanatory notes	228
Annex J (informative) Test current and line length tolerances for short-line fault testing ..	242
Annex K (informative) List of symbols and abbreviations used in IEC 62271-100.....	244
Annex ZA (informative) Items subject to agreement between the manufacturer and user.....	250
Annex ZZ (normative) Variations to IEC 62271-100:2003 for application in Australia	252
Bibliography	253

STANDARDS AUSTRALIA

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Any table, figure or text of the international standard that is struck through is not part of this standard. Any Australian table, figure or text that is added is part of this standard and is identified by shading.

1 General**1.1 Scope**

This International Standard is applicable to a.c. circuit-breakers designed for indoor or outdoor installation and for operation at frequencies of 50 Hz and 60 Hz on systems having voltages above 1 000 V.

It is only applicable to three-pole circuit-breakers for use in three-phase systems and single-pole circuit-breakers for use in single-phase systems. Two-pole circuit-breakers for use in single-phase systems and application at frequencies lower than 50 Hz are subject to agreement between manufacturer and user.

This standard is also applicable to the operating devices of circuit-breakers and to their auxiliary equipment. However, a circuit-breaker with a closing mechanism for dependent manual operation is not covered by this standard, as a rated short-circuit making-current cannot be specified, and such dependent manual operation may be objectionable because of safety considerations.

This standard does not cover circuit-breakers intended for use on motive power units of electrical traction equipment; these are covered by IEC 60077 [4]¹⁾.

Generator circuit-breakers installed between generator and step-up transformer are not within the scope of this standard.

Switching of inductive loads is covered by IEC 61233.

Circuit-breakers with an intentional non-simultaneity between the poles, with the exception of circuit-breakers providing single-pole auto-reclosing, are not within the scope of this standard.

This standard does not cover self-tripping circuit-breakers with mechanical tripping devices or devices which cannot be made inoperative.

By-pass circuit-breakers installed in parallel with line series capacitors and their protective equipment are not within the scope of this standard, these are covered by IEC 60143-2 [6].

NOTE Tests to prove the performance under abnormal conditions should be subject to agreement between manufacturer and user. Such abnormal conditions are, for instance, cases where the voltage is higher than the rated voltage of the circuit-breaker, conditions which may occur due to sudden loss of load on long lines or cables.

¹⁾ Figures in square brackets refer to the bibliography.