

FINAL VERSION

VERSION FINALE



**High-voltage switchgear and controlgear –
Part 101: Synthetic testing**

**Appareillage à haute tension –
Partie 101: Essais synthétiques**

CONTENTS

FOREWORD	7
INTRODUCTION to the Amendment	9
1 Scope	10
2 Normative references	10
3 Terms and definitions	10
4 Synthetic testing techniques and methods for short-circuit breaking tests	12
4.1 Basic principles and general requirements for synthetic breaking test methods	12
4.1.1 General	12
4.1.2 High-current interval	13
4.1.3 Interaction interval	13
4.1.4 High-voltage interval	13
4.2 Synthetic test circuits and related specific requirements for breaking tests	14
4.2.1 Current injection methods	14
4.2.2 Voltage injection method	15
4.2.3 Duplicate circuit method (transformer or Skeats circuit)	16
4.2.4 Other synthetic test methods	16
4.3 Three-phase synthetic test methods	16
5 Synthetic testing techniques and methods for short-circuit making tests	19
5.1 Basic principles and general requirements for synthetic making test methods	19
5.1.1 General	19
5.1.2 High-voltage interval	20
5.1.3 Pre-arcing interval	20
5.1.4 Latching interval and fully closed position	20
5.2 Synthetic test circuit and related specific requirements for making tests	20
5.2.1 General	20
5.2.2 Test circuit	20
5.2.3 Specific requirements	20
6 Type tests	21
Annex A (informative) Current distortion	46
Annex B (informative) Current injection methods	62
Annex C (informative) Voltage injection methods	66
Annex D (informative) Skeats or duplicate transformer circuit	69
Annex E (normative) Information to be given and results to be recorded for synthetic tests	72
Annex F (normative) Synthetic test methods for circuit-breakers with opening resistors	73
Annex G (informative) Synthetic methods for capacitive-current switching	81
Annex H (informative) Step-by-step method to prolong arcing	91
Annex I (normative) Correction of di/dt and TRV for test duty T100a	93
Annex J (informative) Three-phase synthetic test circuits	105
Annex K (normative) Test procedure using a three-phase current circuit and one voltage circuit	112
Annex L (normative) Splitting of test duties in test series taking into account the associated TRV for each pole-to-clear	135
Annex M (normative) Tolerances on test quantities for type tests	156

Annex N (informative) Examples of test circuits for metal-enclosed and dead tank circuit-breakers	160
Annex O (informative) Combination of current injection and voltage injection methods.....	169
Bibliography.....	172
Figure 1 – Interrupting process – Basic time intervals	36
Figure 2 – Examples of evaluation of initial recovery voltage	37
Figure 3 – Equivalent surge impedance of the voltage circuit for the current injection method	38
Figure 4 – Making process – Basic time intervals.....	39
Figure 5 – Example of synthetic making circuit for single-phase tests	40
Figure 6 – Example of synthetic making circuit for out-of-phase	41
Figure 7 – Example of synthetic make circuit for three-phase tests ($k_{pp} = 1,5$).....	42
Figure 8 – Evaluation of recovery voltage during synthetic capacitive current switching testing	43
Figure 9 – Comparison of arcing time settings during three-phase direct tests (left) and three-phase synthetic tests (right) for T100a with $k_{pp} = 1,5$	44
Figure 10 – Comparison of arcing time settings during three-phase direct tests (left) and three-phase synthetic tests (right) for T100a with $k_{pp} = 1,3$	45
Figure A.1 – Direct circuit, simplified diagram	53
Figure A.2 – Prospective short-circuit current.....	53
Figure A.3 – Distortion current	53
Figure A.4 – Distortion current	54
Figure A.5 – Simplified circuit diagram.....	55
Figure A.6 – Current and arc voltage characteristics for symmetrical current	56
Figure A.7 – Current and arc voltage characteristics for asymmetrical current	57
Figure A.8 – Reduction of amplitude and duration of final current loop of arcing	58
Figure A.9 – Reduction of amplitude and duration of final current loop of arcing	59
Figure A.10 – Reduction of amplitude and duration of final current loop of arcing	60
Figure A.11 – Reduction of amplitude and duration of final current loop of arcing	61
Figure B.1 – Typical current injection circuit with voltage circuit in parallel with the test circuit-breaker.....	63
Figure B.2 – Injection timing for current injection scheme with circuit B.1.....	64
Figure B.3 – Examples of the determination of the interval of significant change of arc voltage from the oscillograms	65
Figure C.1 – Typical voltage injection circuit diagram with voltage circuit in parallel with the auxiliary circuit-breaker (simplified diagram)	67
Figure C.2 – TRV waveshapes in a voltage injection circuit with the voltage circuit in parallel with the auxiliary circuit-breaker	68
Figure D.1 – Transformer or Skeats circuit.....	70
Figure D.2 – Triggered transformer or Skeats circuit.....	71
Figure F.1 – Test circuit to verify thermal re-ignition behaviour of the main interrupter.....	77
Figure F.2 – Test circuit to verify dielectric re-ignition behaviour of the main interrupter.....	78
Figure F.3 – Test circuit on the resistor interrupter.....	79
Figure F.4 – Example of test circuit for capacitive current switching tests on the main interrupter	80

Figure F.5 – Example of test circuit for capacitive current switching tests on the resistor interrupter	80
Figure G.1 – Power frequency circuits in parallel	84
Figure G.2 – Current injection circuit.....	85
Figure G.3 – Power frequency current injection circuit	86
Figure G.4 – Current injection circuit, recovery voltage applied to both terminals of the circuit-breaker.....	87
Figure G.5 – Current injection circuit with decay compensation.....	88
Figure G.6 – LC oscillating circuit	89
Figure G.7 – Inrush making current test circuit.....	90
Figure H.1 – Example of a re-ignition circuit diagram for prolonging arc-duration	91
Figure H.2 – Example of waveforms obtained during a symmetrical test using the circuit in Figure H.1.....	92
Figure J.1 – Three-phase synthetic combined circuit.....	107
Figure J.2 – Waveshapes of currents, phase-to-ground and phase-to phase voltages during a three-phase synthetic test (T100s; $k_{pp} = 1,5$) performed according to the three-phase synthetic combined circuit	108
Figure J.3 – Three-phase synthetic circuit with injection in all phases for $k_{pp} = 1,5$	109
Figure J.4 – Waveshapes of currents and phase-to-ground voltages during a three-phase synthetic test (T100s; $k_{pp} = 1,5$) performed according to the three-phase synthetic circuit with injection in all phases	109
Figure J.5 – Three-phase synthetic circuit for terminal fault tests with $k_{pp} = 1,3$ (current injection method)	110
Figure J.6 – Waveshapes of currents, phase-to-ground and phase-to-phase voltages during a three-phase synthetic test (T100s; $k_{pp} = 1,3$) performed according to the three-phase synthetic circuit shown in Figure J.5	110
Figure J.7 – TRV voltages waveshapes of the test circuit described in Figure J.5	111
Figure K.1 – Example of a three-phase current circuit with single-phase synthetic injection	113
Figure K.2 – Representation of the testing conditions of Table K.1.....	115
Figure K.3 – Representation of the testing conditions of Table K.2.....	117
Figure K.4 – Representation of the testing conditions of Table K.3.....	119
Figure K.5 – Representation of the testing conditions of Table K.4.....	121
Figure K.6 – Representation of the testing conditions of Table K.5.....	124
Figure K.7 – Representation of the testing conditions of Table K.6.....	126
Figure K.8 – Representation of the testing conditions of Table K.7.....	128
Figure K.9 – Representation of the testing conditions of Table K.8.....	130
Figure L.1 – Example of graphical representation of the tests shown in Table L.6.....	141
Figure L.2 – Example of graphical representation of the tests shown in Tables L.7 and L.8	143
Figure N.1 – Example of a test circuit for unit testing (circuit-breaker with interaction due to gas circulation).....	161
Figure N.2 – Oscillogram corresponding to Figure N.1 – Example of the required TRVs to be applied between the terminals of the unit(s) under test and between the live parts and the insulated enclosure	162
Figure N.3 – Example of a synthetic test circuit for unit testing (if unit testing is allowed as per 6.102.4.2 of IEC 62271-100:2008/AMD1:2012)	163

Figure N.4 – Oscillogram corresponding to Figure N.3 – Example of the required TRVs to be applied between the terminals of the unit(s) under test and between the live parts and the insulated enclosure	164
Figure N.5 – Example of a capacitive current injection circuit with enclosure of the circuit-breaker energized	165
Figure N.6 – Example of a capacitive synthetic circuit using two power-frequency sources and with the enclosure of the circuit-breaker energized	166
Figure N.7 – Example of a capacitive synthetic current injection circuit – Unit testing on half a pole of a circuit-breaker with two units per pole – Enclosure energized with d.c. voltage source	167
Figure N.9 – Example of a full pole test with voltage applied to both terminals and the metal enclosure	168
Figure O.1 – Example of combined current and voltage injection circuit with application of full test voltage to earth	170
Figure O.2 – Example of combined current and voltage injection circuit with separated application of test voltage	171
Table 1 – Test circuits for test duties T100s and T100a	17
Table 2 – Test parameters during three-phase interruption for test-duties T10, T30, T60 and T100s, $k_{pp} = 1,5$	18
Table 3 – Test parameters during three-phase interruption for test-duties T10, T30, T60 and T100s, $k_{pp} = 1,3$	18
Table 4 – Test parameters during three phase interruption for test-duties T10, T30, T60 and T100s, $k_{pp} = 1,2$	19
Table 5 – Synthetic test methods for test duties T10, T30, T60, T100s, T100a, SP, DEF, OP and SLF	34
Table 6 – Abbreviations used for operation during synthetic tests	22
Table I.1 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,3$ and $f_r = 50$ Hz	94
Table I.2 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,3$ and $f_r = 60$ Hz	95
Table I.3 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,5$ and $f_r = 50$ Hz	96
Table I.4 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,5$ and $f_r = 60$ Hz	96
Table I.5 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,2$ and $f_r = 50$ Hz	97
Table I.6 – Corrected TRV values for the first-pole-to-clear for $k_{pp} = 1,2$ and $f_r = 60$ Hz	97
Table I.7 – Percentage of d.c. component and di/dt at current zero for first-pole-to-clear for $f_r = 50$ Hz	98
Table I.8 – Percentage of d.c. component and di/dt at current zero for first-pole-to-clear for $f_r = 60$ Hz	99
Table K.1 – Demonstration of arcing times for $k_{pp} = 1,5$	114
Table K.2 – Alternative demonstration of arcing times for $k_{pp} = 1,5$	116
Table K.3 – Demonstration of arcing times for $k_{pp} = 1,3$	118
Table K.4 – Alternative demonstration of arcing times for $k_{pp} = 1,3$	120
Table K.5 – Demonstration of arcing times for $k_{pp} = 1,5$	123
Table K.6 – Alternative demonstration of arcing times for $k_{pp} = 1,5$	125
Table K.7 – Demonstration of arcing times for $k_{pp} = 1,3$	127
Table K.8 – Alternative demonstration of arcing times for $k_{pp} = 1,3$	129
Table K.9 – Procedure for combining $k_{pp} = 1,5$ and 1,3 during test-duties T10, T30, T60 and T100s(b)	132
Table K.10 – Procedure for combining $k_{pp} = 1,5$ and 1,3 during test-duty T100a	133

Table L.1 – Test procedure for $k_{pp} = 1,5$ and $2,5$	136
Table L.2 – Test procedure for $k_{pp} = 1,3$ and $2,0$	137
Table L.3 – Simplified test procedure for $k_{pp} = 1,3$ and $2,0$	138
Table L.4 – Test procedure for $k_{pp} = 1,2$	139
Table L.5 – Simplified test procedure for $k_{pp} = 1,2$	139
Table L.6 – Test procedure for asymmetrical currents for $k_{pp} = 1,5$	140
Table L.7 – Test procedure for asymmetrical currents for $k_{pp} = 1,3$	142
Table L.8 – Test procedure for asymmetrical currents for $k_{pp} = 1,2$	144
Table L.9 – Procedure for combining $k_{pp} = 1,3$ and $1,5$ for test-duties T10, T30, T60 and T100s(b)	145
Table L.10 – Procedure for combining $k_{pp} = 2,0$ and $2,5$ for test-duties OP1 and OP2	146
Table L.11 – Procedure for combining $k_{pp} = 1,5$ and $1,3$ for test-duty T100a	147
Table L.12 – Required test parameters for different asymmetrical conditions in the case of $k_{pp} = 1,5$, $f_r = 50$ Hz	148
Table L.13 – Required test parameters for different asymmetrical conditions in the case of a $k_{pp} = 1,3$, $f_r = 50$ Hz	149
Table L.14 – Required test parameters for different asymmetrical conditions in the case of $k_{pp} = 1,2$, $f_r = 50$ Hz	150
Table L.15 – Required test parameters for different asymmetrical conditions in the case of $k_{pp} = 1,5$, $f_r = 60$ Hz (1 of 2)	151
Table L.16 – Required test parameters for different asymmetrical conditions in the case of $k_{pp} = 1,3$, $f_r = 60$ Hz (1 of 2)	153
Table L.17 – Required test parameters for different asymmetrical conditions in the case of $k_{pp} = 1,2$, $f_r = 60$ Hz	155
Table M.1 – Tolerances on test quantities for type tests	157

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 101: Synthetic testing

FOREWORD

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This Consolidated version of IEC 62271-101 bears the edition number 2.1. It consists of the second edition (2012-10) [documents 17A/1015/FDIS and 17A/1024/RVD] and its amendment 1 (2017-11) [documents 17A/1149/FDIS and 17A/1154/RVD]. The technical content is identical to the base edition and its amendment.

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

International Standard IEC 62271-101 has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This second edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the first edition:

- addition of the new rated voltages of 1 100 kV and 1 200 kV;
- revision of Annex F regarding circuit-breakers with opening resistors;
- alignment with the second edition of IEC 62271-100:2008 and its Amendment 1 (2012).

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This publication shall be read in conjunction with IEC 62271-100, published in 2008, to which it refers. The numbering of the subclauses of Clause 6 is the same as in IEC 62271-100. However, not all subclauses of IEC 62271-100 are addressed; merely those where synthetic testing has introduced changes.

A list of all the parts in the IEC 62271 series, under the general title *High-voltage switchgear and controlgear*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION to the Amendment

This amendment includes the following significant technical changes:

- the test procedure for test-duty T100a has been aligned with IEC 62271-100;
- Annexes A through D have been transferred to IEC 62271-306;
- Annex I has been revised and now includes Annex P of IEC 62271-100;
- Annexes K, L and N have been revised.

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 101: Synthetic testing

1 Scope

This part of IEC 62271 mainly applies to a.c. circuit-breakers within the scope of IEC 62271-100. It provides the general rules for testing a.c. circuit-breakers, for making and breaking capacities over the range of test duties described in 6.102 to 6.111 of IEC 62271-100:2008, by synthetic methods.

It has been proven that synthetic testing is an economical and technically correct way to test high-voltage a.c. circuit-breakers according to the requirements of IEC 62271-100 and that it is equivalent to direct testing.

The methods and techniques described are those in general use. The purpose of this standard is to establish criteria for synthetic testing and for the proper evaluation of results. Such criteria will establish the validity of the test method without imposing restraints on innovation of test circuitry.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62271-100:2008, *High-voltage switchgear and controlgear – Part 100: Alternating current circuit-breakers*

IEC 62271-100:2008/AMD1:2012

IEC 62271-100:2008/AMD2:2017

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62271-100, as well as the following, apply.

3.1

direct test

test in which the applied voltage, the current and the transient and power-frequency recovery voltages are all obtained from a circuit having a single-power source, which may be a power system or special alternators as used in short-circuit testing stations or a combination of both

3.2

synthetic test

test in which all of the current, or a major portion of it, is obtained from one source (current circuit), and in which the applied voltage and/or the recovery voltages (transient and power frequency) are obtained wholly or in part from one or more separate sources (voltage circuits)

3.3

test circuit-breaker

circuit-breaker under test

SEE: 6.102.3 of IEC 62271-100:2008.