

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



AMENDMENT 2  
AMENDEMENT 2

**High-voltage switchgear and controlgear –  
Part 102: Alternating current disconnectors and earthing switches**

**Appareillage à haute tension –  
Partie 102: Sectionneurs et sectionneurs de terre à courant alternatif**

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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

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## FOREWORD

This amendment has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

The text of this amendment is based on the following documents:

FDIS	Report on voting
17A/1029/FDIS	17A/1035/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this publication 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

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**Table 1 – Recommended contact zones for "fixed" contacts supported by flexible conductors**

Add the following new lines to the existing Table 1:

800	250	650	450	550
1 100	300	700	500	600
1 200	300	700	500	600

**Table 2 – Recommended contact zones for "fixed" contacts supported by rigid conductors**

Add the following new lines to the existing Table 2:

1 100	250	250	250
1 200	250	250	250

**Table 3 – Recommended static mechanical terminal loads**

Add the following new lines to the existing Table 3:

1 100 – 1 200	≤ 4 000	2 000	660	4 000	1 600	2 000
	> 4 000	2 500	1 000	5 000	2 000	

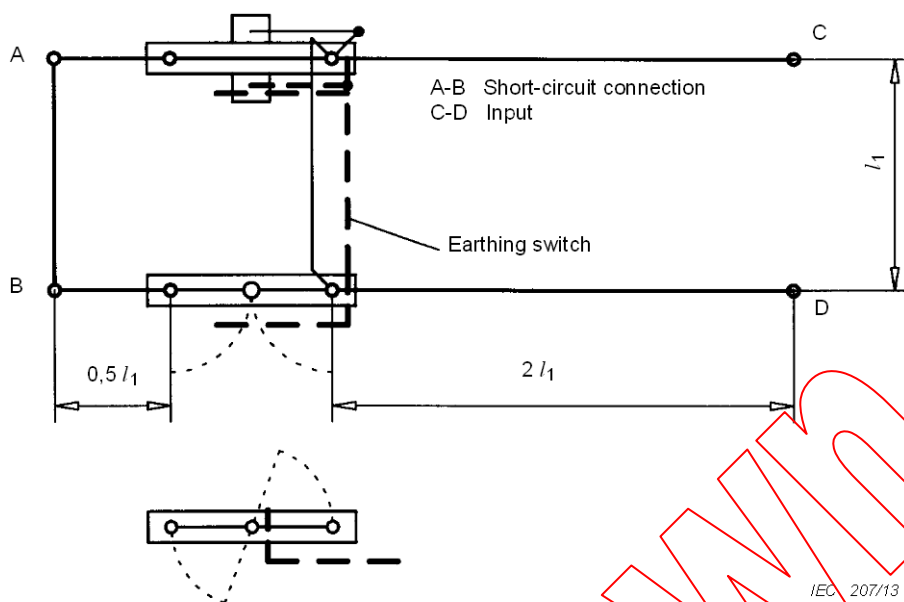
**Table 5 – Power frequency 1 min withstand voltages**

Add the following new lines to the existing Table 5:

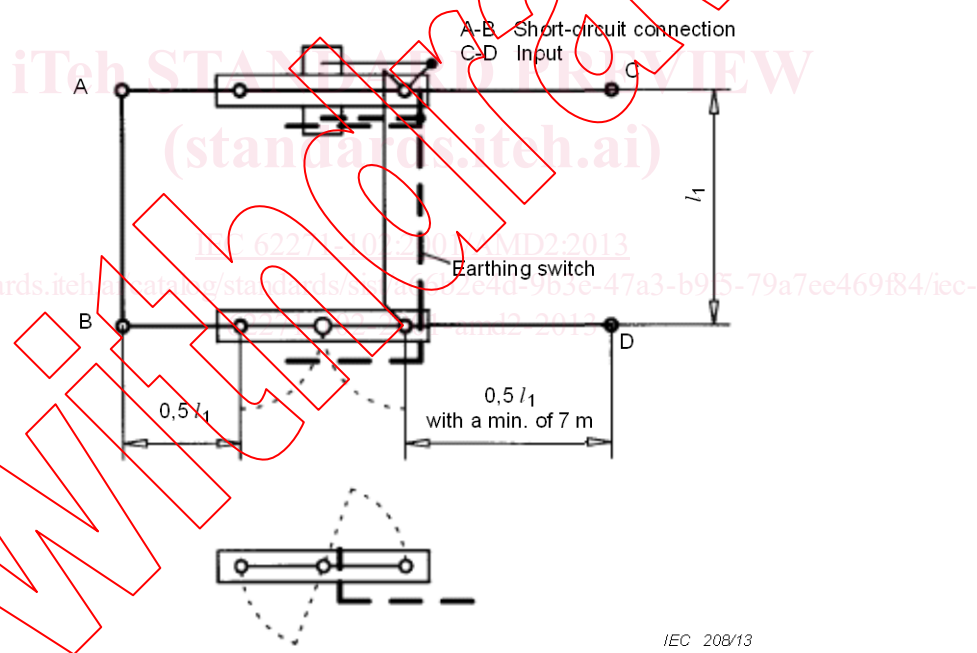
1 100	1 270	-
1 200	1 386	-

**Figure 4 – Single-phase test arrangement for disconnectors with a horizontal isolating distance and for earthing switches with rated voltage of 52 kV and above**

Replace the existing Figure 4 by the following new figure:



a) Test arrangement for disconnectors rated 52 kV to 550 kV



b) Test arrangement for disconnectors rated above 550 kV

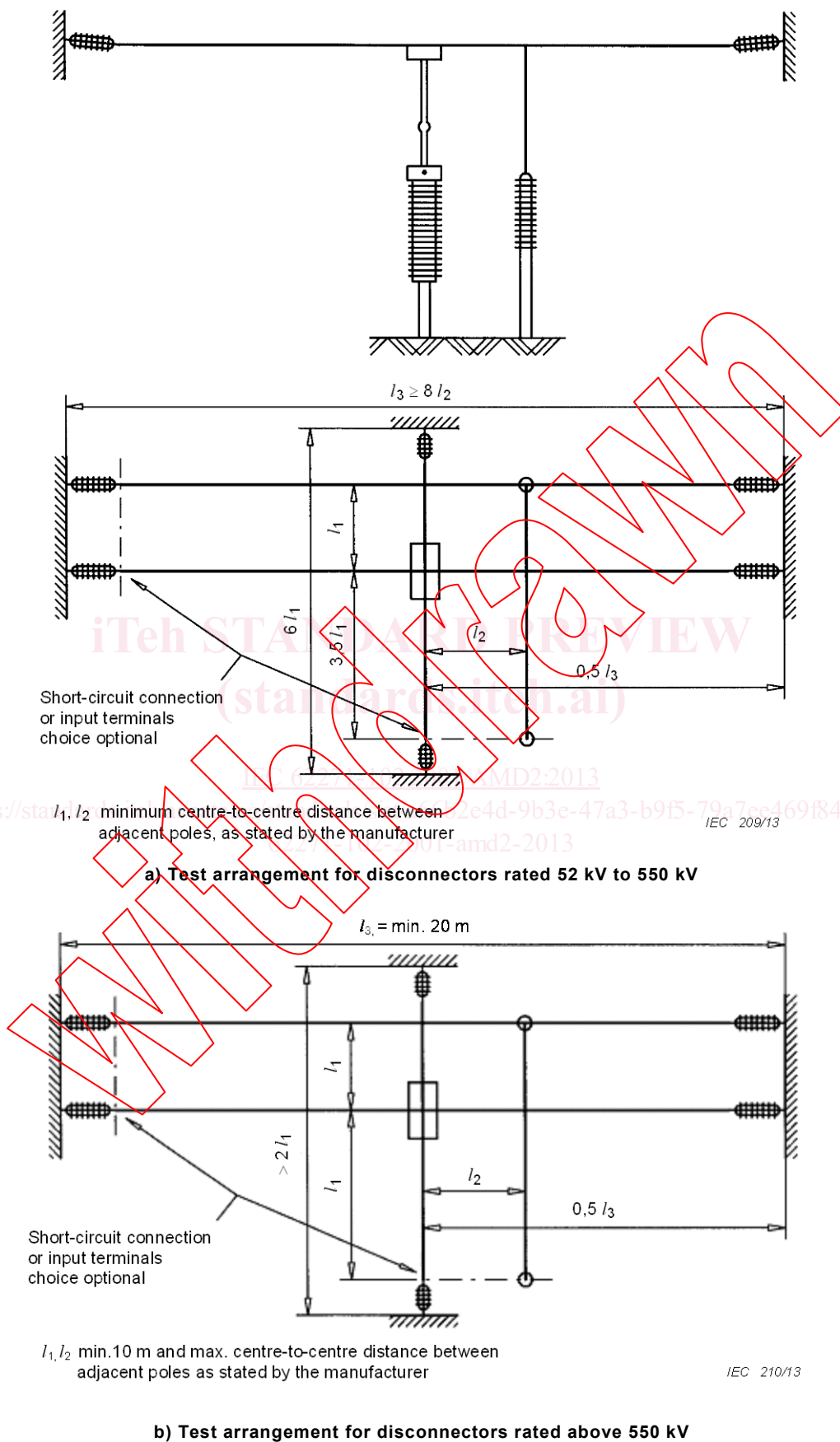
**Key**

$l_1$  minimum centre-to-centre distance between adjacent poles, as stated by the manufacturer

**Figure 4 – Single-phase test arrangement for disconnectors with a horizontal isolating distance and for earthing switches with rated voltage of 52 kV and above**

**Figure 5 – Single-phase test arrangement for divided support disconnectors (earthing switches) with a vertical isolating distance with rated voltages of 52 kV and above to be used with flexible conductors**

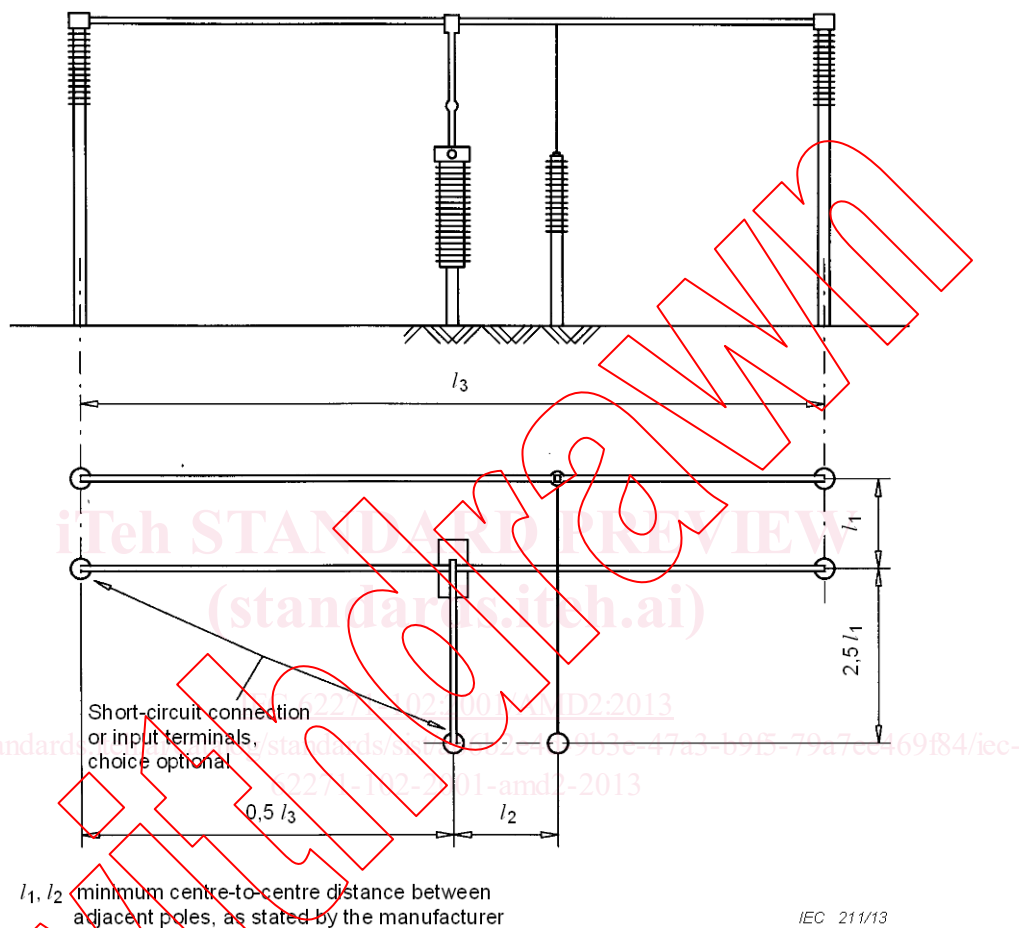
Replace the existing Figure 5 by the following new figure:



**Figure 5 – Single-phase test arrangement for divided support disconnectors (earthing switches) with a vertical isolating distance with rated voltages of 52 kV and above to be used with flexible conductors**

**Figure 6 – Single-phase test arrangement for divided support disconnectors (earthing switches) with a vertical isolating distance with rated voltages of 52 kV and above to be used with rigid conductors**

Replace the existing Figure 6 by the following new figure:

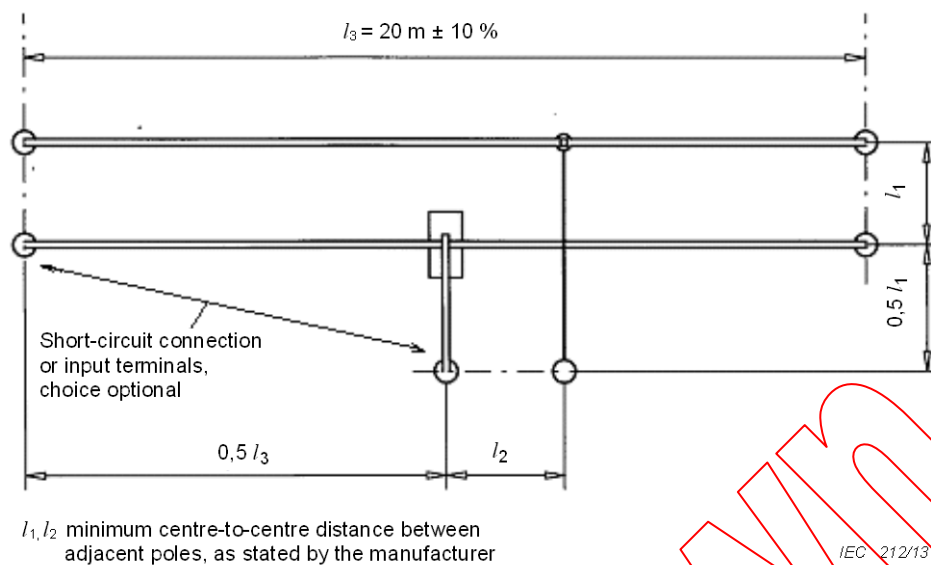


For  $U_r \leq 145 \text{ kV}$   $l_3 \geq 4l_1$

For  $U_r \geq 170 \text{ kV}$   $l_3 = 20 \text{ m} \pm 10 \%$

**a) Test arrangement for disconnectors rated 52 kV to 550 kV**





b) Test arrangement for disconnectors rated above 550 kV

**Figure 6 – Single-phase test arrangement for divided support disconnectors (earthing switches) with a vertical isolating distance with rated voltages of 52 kV and above to be used with rigid conductors**

#### B.4.106.1 Rated -transfer current

Replace the existing title of this subclause by the following new title:

#### B.4.106.1 Rated bus-transfer current

Renumber the existing note as NOTE 1.

Add, after the existing text of this subclause, the following new paragraph and new note:

For rated voltages of 1 100 kV and 1 200 kV the rated bus-transfer current for both air insulated and gas insulated disconnectors shall be 80 % of the rated normal current, without any upper limit.

NOTE 2 Rated bus-transfer currents greater than 80 % of the rated normal current may be assigned by the manufacturer.

**Table B.1 – Rated bus-transfer voltages for disconnectors**

Add the following new lines to the existing Table B.1:

1 100	750	130
1 200		

**Table C.1 – Standardized values of rated induced currents and voltages for earthing switches**

Add the following new lines to the existing Table C.1:

1 100	110	440	5	65	7,5	50	20	40
1 200	110	440	5	65	7,5	50	20	40

**Table C.2 – Standardized values of recovery voltages for electromagnetically induced current breaking tests**

Add the following new lines to the existing Table C.2:

1 100	5	11,3	750	65	145	2 400
1 200	5	11,3	750	65	145	2 400

**Table C.3 – Test circuit capacitances (C1 values) for electrostatically induced current making and breaking tests**

Add the following new lines to the existing Table C.3:

1 100	0,8	2,63
1 200	0,8	2,63

Add the following new line at the end of the existing Table C.3:

– 1 100 kV to 1 200 kV, 290 Ω.
--------------------------------

**Table F.2 – Specified bus-charging currents**

Add the following columns to the right of the existing Table F.2:

1 100	1 200
0,8	0,8

Add, after the existing Annex G introduced by Amendment 1, the following new Annex H:

## Annex H (normative)

### Specific requirements for resistor fitted disconnector in metal-enclosed gas insulated switchgear

#### H.1 General

##### H.1.1 Scope

This annex is applicable to resistor fitted disconnectors in metal-enclosed gas insulated switchgear (GIS). The maximum VFTO (very fast transient overvoltage) in GIS systems with a rated voltage of 800 kV and above may reach the insulation level of lightning impulse withstand voltage in certain cases during switching of disconnectors. The purpose of fitting a resistor is to mitigate the VFTO in such cases.

Three different types of resistor fitted disconnectors are given as examples in Figure H.1. The resistor can be positioned in parallel or in series to the switching gap. In the arc-commutation method the current is switched to the parallel resistor during an opening operation by commutation of the arc from the main contact to the resistor contact.

NOTE Typically resistors of values 200  $\Omega$  to 1 000  $\Omega$  are used. The overvoltage damping factor depends on the ratio of the resistance of the resistor and the system impedance.

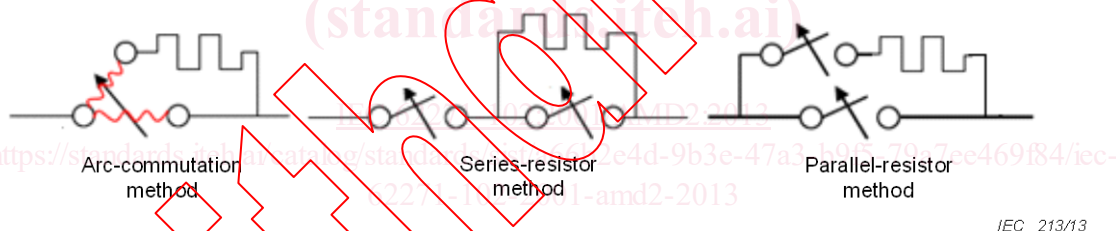


Figure H.1 – Examples of resistor fitted disconnectors

##### H.1.2 Normative references

Subclause 1.2 of this standard is applicable.

#### H.2 Normal and special service conditions

Clause 2 of this standard is applicable.

#### H.3 Definitions

Clause 3 of this standard is applicable with the following modification:

*Additional term and definition:*

##### 3.4.106

##### **resistor fitted disconnector**

disconnector fitted with resistor in series or in parallel to the switching contacts in order to mitigate the VFTO during both opening and closing operation in metal-enclosed gas-insulated switchgear