IEEE Std C37.41™-2008
(Revision of
IEEE Std C37.41-2000)

Errata to IEEE Standard Design Tests for High-Voltage (>1000 V) Fuses, Fuse and Disconnecting Cutouts, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Fuse Links and Accessories Used with These Devices

Sponsor
Switchgear Committee
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Correction Sheet
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Summary of corrections:
Table 7 contains an error in the "Parameters" row in the row of numbers underneath "Test series." The corrected Table 7 appears on page 2 of this correction sheet.
Table 8 contains an error in the "Parameters" row in the row of numbers underneath "Test series." The corrected Table 8 appears on page 3 and page 4 of this correction sheet.

Table 7—Interrupting performance tests and test circuit parameters for single-voltage-rated distribution class fuse cutouts (except current-limiting fuses and open-link cutouts)

Parameters		Test series							
		1		2		3		4	5
Power-frequency recovery voltage		Rated maximum voltage: +5%, −0%							
TRV		See Table 9, column 1						See Table 9, column 3	See Footnote a
Prospective or test current—rms symmetrical		Rated interrupting current +5%, −0%:		From 70% to 80% rated interrupting current		From 20% to 30% rated interrupting current[b]		From 400 A to 500 A[c]	From 2.7 to 3.3 times fuse link rating[d]
X/*R* ratio (power factor)		See Table 10							From 1.3 to 0.75 (from 0.6 to 0.8)
Making angle related to voltage zero—degrees		1st test: from −5 to +15 2nd test: from 85 to 105 3rd test: from 130 to 150				From 85 to 105		Random timing	
Fuse link rating[e]		Min	Max	Min	Max	Min	Max	Min	Min
Number of tests required with above fuse link rating[f]		3	3	3	3	1	1	2	2
Number of tests required on each fuseholder and fuse support[f]		3	3	3	3	2		4	
Number of fuseholders to be tested[f]		1	1	1	1	1		1	
Number of fuse supports to be tested[f]		1	1	1	1	1		1	
Duration of power frequency recovery voltage after interruption	Dropout fuses	Not less than 0.5 s							
	Nondropout fuses	Not less than 0.5 s							

[a] The TRV for this test circuit shall be critically damped. Shunting the load reactance with a resistance having a value equal to approximately 40 times the value of the reactance is usually adequate to damp the circuit critically. However, if this value does not result in critical damping, then the resistance may be reduced to achieve critical damping. For testing convenience, an oscillatory TRV may be acceptable with the agreement of the manufacturer. Critical damping is obtained when

$$R = \frac{f_o}{2f_n} X$$

where

f_o is the natural frequency of the test circuit without damping
f_n is the power frequency
X is the reactance of the circuit at power frequency

[b] For cutouts with an interrupting rating of 2.8 kA or less, test series 3 need not be made.

[c] For cutouts rated at 200 A, test series 4 need not be made.

[d] If the test involves a melting time appreciably higher than 2 s, the current may be increased to obtain a melting time of approximately 2 s.

[e] "Min" and "max" represent the minimum and maximum rated currents of a homogeneous series; see 6.2.

[f] A fuse cutout support [fuse base] shall be capable, at a minimum, of the number of tests listed as "Number of tests required on each fuseholder and its fuse support." For test series 1, this represents three tests with the minimum fuse link rating using one fuseholder and support, and three tests with the maximum fuse link rating using another fuseholder and support. The same quantities would be used for test series 2, whereas for test series 3, one fuse holder and its support would be used for the two required tests. For test series 4 and 5, the same fuseholder and support is used for the four required tests. Only the manufacturer has the discretion to permit a fuseholder, or cutout support to be used for more than the specified number of individual tests.

After each test on a fuseholder that uses replaceable links, only the fuse link and the expendable cap, if used, may be replaced. Only the manufacturer has the discretion to use an expendable cap for more than one test if it is determined that the cap was not damaged during a previous test.

If the fuse element is an integral part of the fuseholder, then the number of fuseholders to be tested is the number listed for "Number of tests required on each fuseholder and fuse support."

The mounting brackets used for the cutout testing should be as specified in ANSI C37.42. Any deviation from this specification shall be noted in the test report for the device.

Table 8—Interrupting performance tests and test circuit parameters for slant-voltage-rated (multiple-voltage-rated) distribution class fuse cutouts

Parameters		Test series									
		1		2		3		4	5	6[a]	
Power-frequency recovery voltage		Rated maximum voltage to the left of the slant +5%, −0%				Rated maximum voltage to the right of the slant +5%, −0%					
Transient recovery voltage (TRV)		See Table 9, column 1				See Table 9, column 2		See Table 9, column 4	See Note[b]	See Table 9, column 2	
Prospective or test current— rms symmetrical		Rated interrupting current +5%, −0%		From 70% to 80% rated interrupting current		From 20% to 30% rated interrupting current[c]		From 400 A to 500 A[d]	From 2.7 to 3.3 times fuse link rating[e]	Rated interrupting current +5%, −0%	
X/R ratio (power factor)		See Table 10							From 1.3 to 0.75 (from 0.6 to 0.8)	See Table 10	
Making angle related to voltage zero—degrees		1st test: from −5 to +15 2nd test: from 85 to 105 3rd test: from 130 to 150				From 85 to 105		Random timing		1st test: from −5 to +15 2nd test: from 85 to 105 3rd test: from 130 to 150	
Fuse link rating[f]		Min	Max	Min	Max	Min	Max	Min	Min	Min,[g]	Max,[g]
Number of tests required with above fuselink rating[h]		3	3	3	3	1	1	2	2	3	3
Number of tests required on each fuseholder and fuse support[h]		3	3	3	3	2		4		3	3
Number of fuseholders to be tested[h]		1	1	1	1	1		1		1	1
Number of fuse supports to be tested[h]		1	1	1	1	1		1		1	1
Duration of power-frequency recovery voltage after interruption	Dropout fuses	Not less than 0.5 s									
	Non-dropout fuses	Not less than 0.5 s									

[a] Test series 6 uses two identically rated cutouts in electrical series connection. Test-circuit ground must not be between the cutouts.

[b] The TRV for this test circuit shall be critically damped. Shunting the load reactance with a resistance having a value equal to approximately 40-times the value of the reactance is usually adequate to critically damp the circuit. However, if this value does not result in critical damping, the resistance may be reduced to achieve critical damping. For testing convenience, an oscillatory TRV may be acceptable with the agreement of the manufacturer. Critical damping is obtained when:

$$R = \frac{f_o}{2f_n} X$$

where

f_o is the natural frequency of the test circuit without damping
f_n is the power frequency
X is the reactance of the circuit at power frequency

[c] For cutouts with an interrupting rating of 2.8 kA or less, Test Series 3 need not be made.

[d] For cutouts rated 200 A, Test Series 4 need not be made.

[e] If the test involves a melting time appreciably higher than 2 s, the current may be increased to obtain a melting time of approximately 2 s.

[f] "Min" and "max" represent the minimum and maximum rated currents of a homogeneous series, see 6.2.

[g] Use same fuse link rating in both cutouts.

[h] A fuse cutout support [fuse base] shall be capable, at a minimum, of the number of tests listed as "Number of tests required on each fuseholder and its fuse support". For test series 1, this represents three tests with the minimum fuse link rating using one fuseholder and support, and three tests with the maximum fuse link rating using another fuseholder and support. The same quantities would be used for test series 2, while for test series 3, one fuse holder and its support would be used for the two required tests. For test series 4 and 5, the same fuseholder and support is used for the four required tests. Only the manufacturer has the discretion to permit a fuseholder, or cutout support, to be used for more than the specified number of individual tests.

After each test on a fuseholder that uses replaceable links, only the fuse link and the expendable cap, if used, may be replaced. Only the manufacturer has the discretion to use an expendable cap for more than one test, if it is determined that the cap was not damaged during a previous test.

If the fuse element is an integral part of the fuseholder, the number of fuseholders to be tested is the number listed for "Number of tests required on each fuseholder and fuse support."

The mounting brackets used for the cutout testing should be as specified in Std. C37.42. Any deviation from this specification shall be noted in the test report for the device.