

15.5kV E-Rated

Medium voltage fuses for feeder circuit, switchgear and transformer protection



Description:

- The Bussmann® series of E-Rated, current-limiting, medium voltage fuses are for feeder circuit, switchgear and transformer protection.

Features and benefits:

- Current-limiting E-Rated medium voltage fuses are defined by their melting time-current characteristic that permit their electrical interchangeability with other fuses of the same E Rating.
- E-Rated fuses must have a defined current response time specified by ANSI C37.46. E-Rated fuse of 100 amps and below must melt in 300 seconds at an RMS current within the range of 200% to 240% of the fuse's nameplate current rating. E-Rated fuses greater than 100 amps must melt in 600 seconds at an RMS current within the range of 220% to 264% of the fuse's nameplate current rating.
- E-Rated fuses are physically dimensioned for easy installation in existing hardware.
- Current-limiting fuses provide positive interruption even on low fault currents. The fuse limits the magnitude of electromechanical stresses in the protected apparatus.
- Constructions available in ferrule, bolt-on and clip-lock, and specialty mount fuses for AMPGARD™ motor starters
- Outdoor rating available on select catalog numbers (requires installation in a suitable enclosure).
- Open fuse indicator easily integrates into automation schemes and speeds troubleshooting by providing a positive visual indication of fuse operation.
- 50/60Hz operating frequency for worldwide application.
- Mountings are available in disconnect and non-disconnect versions with porcelain or glass polyester insulators.
- Live parts and end fittings available.

Typical applications:

- Medium voltage transformer primary protection
- Medium voltage feeder circuit protection
- Medium voltage switches
- Medium voltage metal-enclosed switchgear



Powering Business Worldwide

E-Rated medium voltage ferrule fuses

Catalog symbols:

- General purpose
 - 15CLE-_E-D (long construction, 10-25A)
 - 15CLE-_E (long construction, 15-300A)
 - 15HLE-_E (short construction, 10-250A)
 - 15LHLE-_E (intermediate construction, 65-300A)
- Full range (per ANSI C37.40)
 - MV155F_

Ratings*:

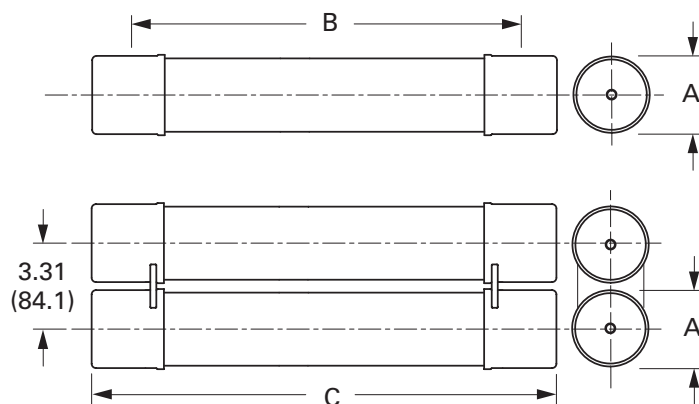
- Volts — 15.5kV
- Amps — 10 to 300A
- Interrupting ratings — 31.5 to 63kA RMS Sym.

* See catalog number tables for voltages, ampacities and interrupting ratings by catalog number.

Agency information:

- E-Rated fuses meet the performance characteristics of ANSI C37.46
- UL® Listed, Guide JEEG, File E240398. See catalog numbers.

Dimensions (see catalog number tables for values)



Recommended fuseclips and holders:

						Catalog number			
						Mounting (including live parts, end fittings)**		Live parts (including end fittings)	End fittings (disconnect only)
Amp rating	Fuse mounting type*	Voltage BIL (kV)	Diameter	Clip center	Length	Porcelain insulator	Glass-polyester insulator		
CLE									
15E-25E Single barrel	Non-disconnect	95	2 (51)	20 (508)	21.5 (546)	15CLE-PNM-C	15CLE-GNM-C	CLE-NL-C	—
		110				15CLE-HPNM-C	—	CLE-NL-C	—
	Disconnect†	95				15CLE-PDM-C	15CLE-GDM-C	CLE-DL-C	CLE-DF-C
		110				15CLE-HPDM-C	—	CLE-DL-C	CLE-DF-C
10E-D-25E-D 30E-150E Single barrel	Non-disconnect	95	3 (76)	20 (508)	23.9 (607)	15CLE-PNM-D	15CLE-GNM-D	CLE-NL-D	—
		110				15CLE-HPM-D	—	CLE-NL-D	—
	Disconnect†	95				15CLE-PDM-D	15CLE-GNM-D	CLE-DL-D	CLE-DF-D
		110				15CLE-HPDM-D	—	CLE-DL-D	CLE-DF-D
175E-300E Double barrel	Non-disconnect	110	3 (76)	20 (508)	23.9 (607)	15CLE-PNM-E	—	CLE-NL-E	—
	Disconnect†	110				15CLE-PDM-E	—	CLE-DL-E	CLE-DF-E
HLE									
10E-125E Single barrel	Non-disconnect	95	3 (76)	15 (381)	18.9 (480)	15HLE-PNM-D	15HLE-GNM-D	CLE-NL-D	—
	Disconnect†	95				15HLE-PDM-D	15HLE-GDM-D	CLE-DL-D	CLE-DF-D
150E-250E Double barrel	Non-disconnect	95	3 (76)	15 (381)	18.9 (480)	15HLE-PNM-E	—	CLE-NL-E	—
	Disconnect†	95				15HLE-PDM-E	—	CLE-DL-E	CLE-DF-E
LHLE									
65E-150E Single barrel	Non-disconnect	—	3 (76)	18 (457)	20.53 (521)	Not available	Not available	CLE-NL-D	—
	Disconnect†	—				Not available	Not available	CLE-DL-D	CLE-DF-D
175E-300E Double barrel	Non-disconnect	—	3 (76)	18 (457)	20.53 (521)	Not available	Not available	CLE-NL-E	—
	Disconnect†	—				Not available	Not available	CLE-DL-E	CLE-DF-E

* See page 10 for illustrations and dimensions

** End fittings supplied only when required.

† Disconnect mountings provide a means for fuse extraction only. Do not use a disconnect mounting for load switching or fuse removal while energized.

CLE, HLE and LHLE type general purpose fuses

Amp rating	Dimensions - in (mm)			Interrupting rating kA (RMS Sym.)	Number of barrels	Installation location	Catalog number
	Length A	Diameter B	Clip centers C				
CLE Long construction							
10	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-10E-D
15	21.5 (546)	2 (51)	20 (508)	31.5	1	Indoor	15CLE-15E*
15	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-15E-D
20	21.5 (546)	2 (51)	20 (508)	31.5	1	Indoor	15CLE-20E*
20	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-20E-D
25	21.5 (546)	2 (51)	20 (508)	31.5	1	Indoor	15CLE-25E*
25	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-25E-D
30	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-30E
40	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-40E†
50	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-50E†
65	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-65E†
80	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-80E†
100	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-100E†
125	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-125E†
150	23.9 (607)	3 (76)	20 (508)	63	1	Indoor/outdoor	15CLE-150E†
175	23.9 (607)	3 (76)	20 (508)	63	2	Indoor/outdoor	15CLE-175E†
200	23.9 (607)	3 (76)	20 (508)	63	2	Indoor/outdoor	15CLE-200E†
250	23.9 (607)	3 (76)	20 (508)	63	2	Indoor/outdoor	15CLE-250E†
300	23.9 (607)	3 (76)	20 (508)	63	2	Indoor/outdoor	15CLE-300E†
HLE Short construction							
10	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-10E
15	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-15E
20	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-20E
25	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-25E
30	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-30E
40	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-40E†
50	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-50E†
65	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-65E†
80	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-80E†
100	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-100E†
125	18.9 (480)	3 (76)	15 (381)	63	1	Indoor/outdoor	15HLE-125E†
150	18.9 (480)	3 (76)	15 (381)	63	2	Indoor/outdoor	15HLE-150E†
175	18.9 (480)	3 (76)	15 (381)	63	2	Indoor/outdoor	15HLE-175E†
200	18.9 (480)	3 (76)	15 (381)	63	2	Indoor/outdoor	15HLE-200E†
250	18.9 (480)	3 (76)	15 (381)	63	2	Indoor/outdoor	15HLE-250E†
LHLE							
65	20.5 (521)	3 (76)	18 (457)	50	1	Indoor/outdoor	15LHLE-65E
80	20.5 (521)	3 (76)	18 (457)	50	1	Indoor/outdoor	15LHLE-80E
100	20.5 (521)	3 (76)	18 (457)	50	1	Indoor/outdoor	15LHLE-100E
125	20.5 (521)	3 (76)	18 (457)	50	1	Indoor/outdoor	15LHLE-125E
150	20.5 (521)	3 (76)	18 (457)	50	1	Indoor/outdoor	15LHLE-150E
175	20.5 (521)	3 (76)	18 (457)	50	2	Indoor/outdoor	15LHLE-175E
200	20.5 (521)	3 (76)	18 (457)	50	2	Indoor/outdoor	15LHLE-200E
250	20.5 (521)	3 (76)	18 (457)	50	2	Indoor/outdoor	15LHLE-250E
300	20.5 (521)	3 (76)	18 (457)	50	2	Indoor/outdoor	15LHLE-300E

* Fuses conform to dimensional standards established by Westinghouse.

† UL Listed, Guide JEEG, File E240398.

MV155F_ full range

Amp rating	Dimensions - in (mm)			Interrupting rating kA (RMS Sym.)	Number of barrels	Installation location	Catalog number
	Length A	Diameter B	Clip centers C				
5	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX5E
7	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX7E
10	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX10E
10	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX10E
15	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX15E
15	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX15E
20	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX20E
20	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX20E
25	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX25E
25	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX25E
30	18.7 (475)	2 (51)	15 (381)	50	1	Indoor	MV155F1CBX30E
30	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX30E
40	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX40E
50	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX50E
65	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX65E
65	21.7 (551)	3 (76)	18 (457)	50	1	Indoor	MV155F1DCX65E
80	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX80E
80	21.7 (551)	3 (76)	18 (457)	50	1	Indoor	MV155F1DCX80E
100	18.7 (475)	3 (76)	15 (381)	50	1	Indoor	MV155F1DBX100E
100	21.7 (551)	3 (76)	18 (457)	50	1	Indoor	MV155F1DCX100E
125	18.7 (475)	3 (76)	15 (381)	50	2	Indoor	MV155F2DBX125E
125	21.7 (551)	3 (76)	18 (457)	50	2	Indoor	MV155F2DCX125E
150	18.7 (475)	3 (76)	15 (381)	50	2	Indoor	MV155F2DBX150E
150	21.7 (551)	3 (76)	18 (457)	50	2	Indoor	MV155F2DCX150E
175	18.7 (475)	3 (76)	15 (381)	50	2	Indoor	MV155F2DBX175E
175	21.7 (551)	3 (76)	18 (457)	50	2	Indoor	MV155F2DCX175E
200	18.7 (475)	3 (76)	15 (381)	50	2	Indoor	MV155F2DBX200E
200	21.7 (551)	3 (76)	18 (457)	50	2	Indoor	MV155F2DCX200E

Recommended MV155 fuseclips:

Description	Fuse diameter - in (mm)	Figure	Clip dimensions - in (mm)							Catalog number
			A	B	C	D	E	F	G	
Enclosed fuseclip	2 (51)	1	3.75 (95)	1.98 (50)	2.01 (51)	1.19 (30)	4.54 (115)	1.51 (38)	0.4 (10)	A3354710*
Enclosed fuseclip	3 (76)	1	4.14 (105)	2.45 (62)	3.01 (76)	1.19 (30)	5.64 (143)	1.51 (38)	0.4 (10)	A3354730*
Open fuseclip	3 (76)	2	See dimensions drawing							1A0065
Spring loaded open fuse-clip	3 (76)	3	See dimensions drawing							9078A67G04

*For single barrel applications only. Not sold in pairs.

Figure 1

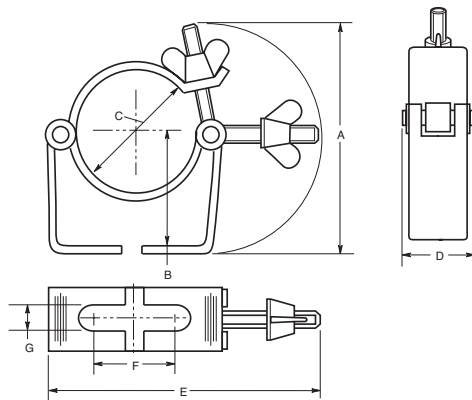


Figure 2

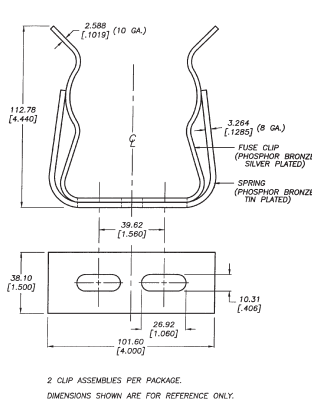
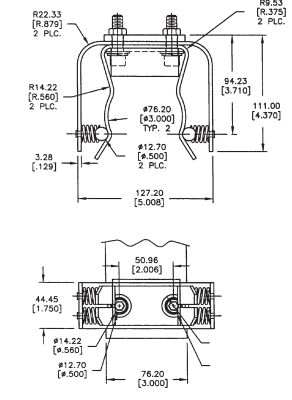
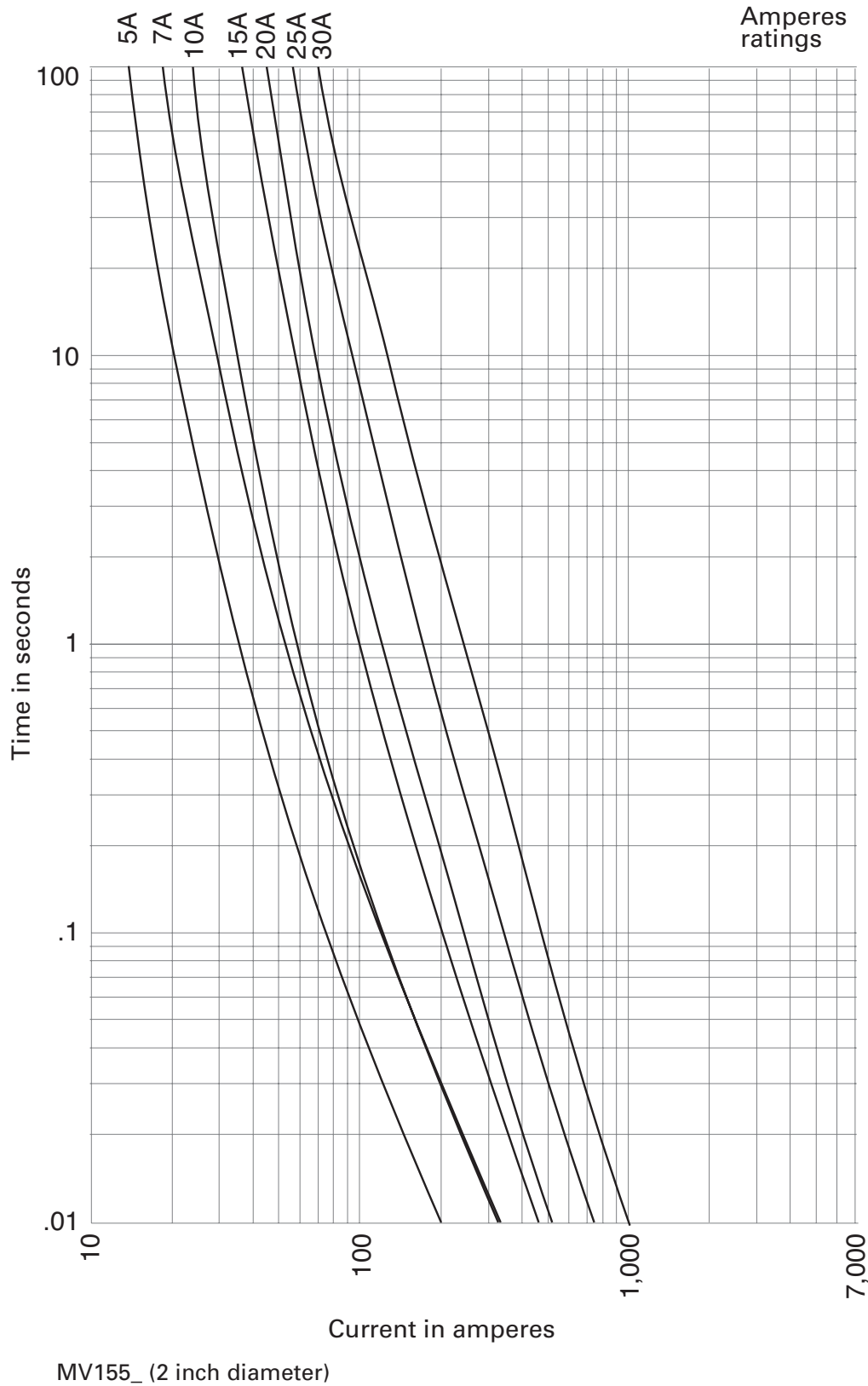


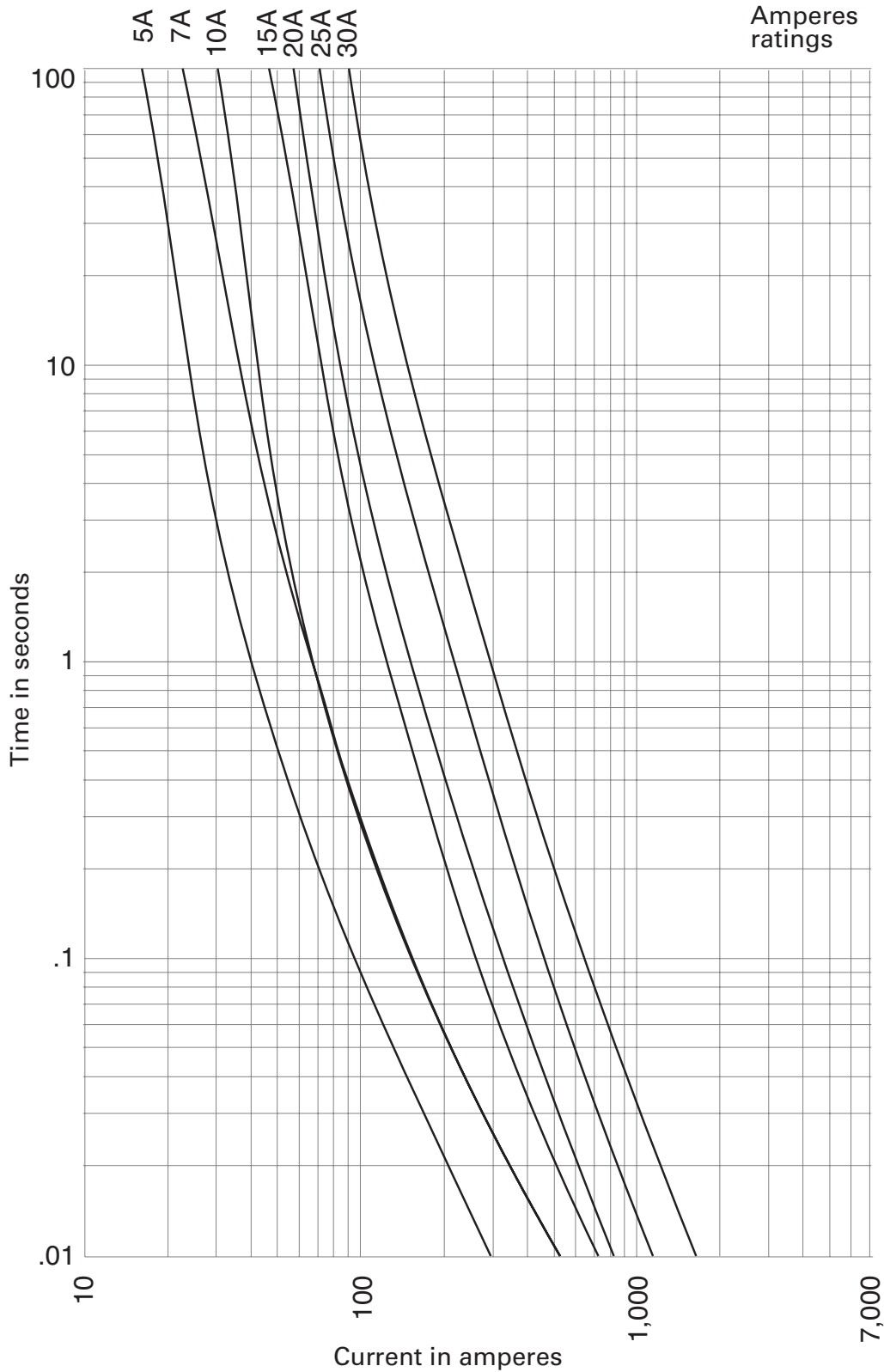
Figure 3



15.5kV Time-current curves — minimum melt for MV155 2 inch diameter fuses

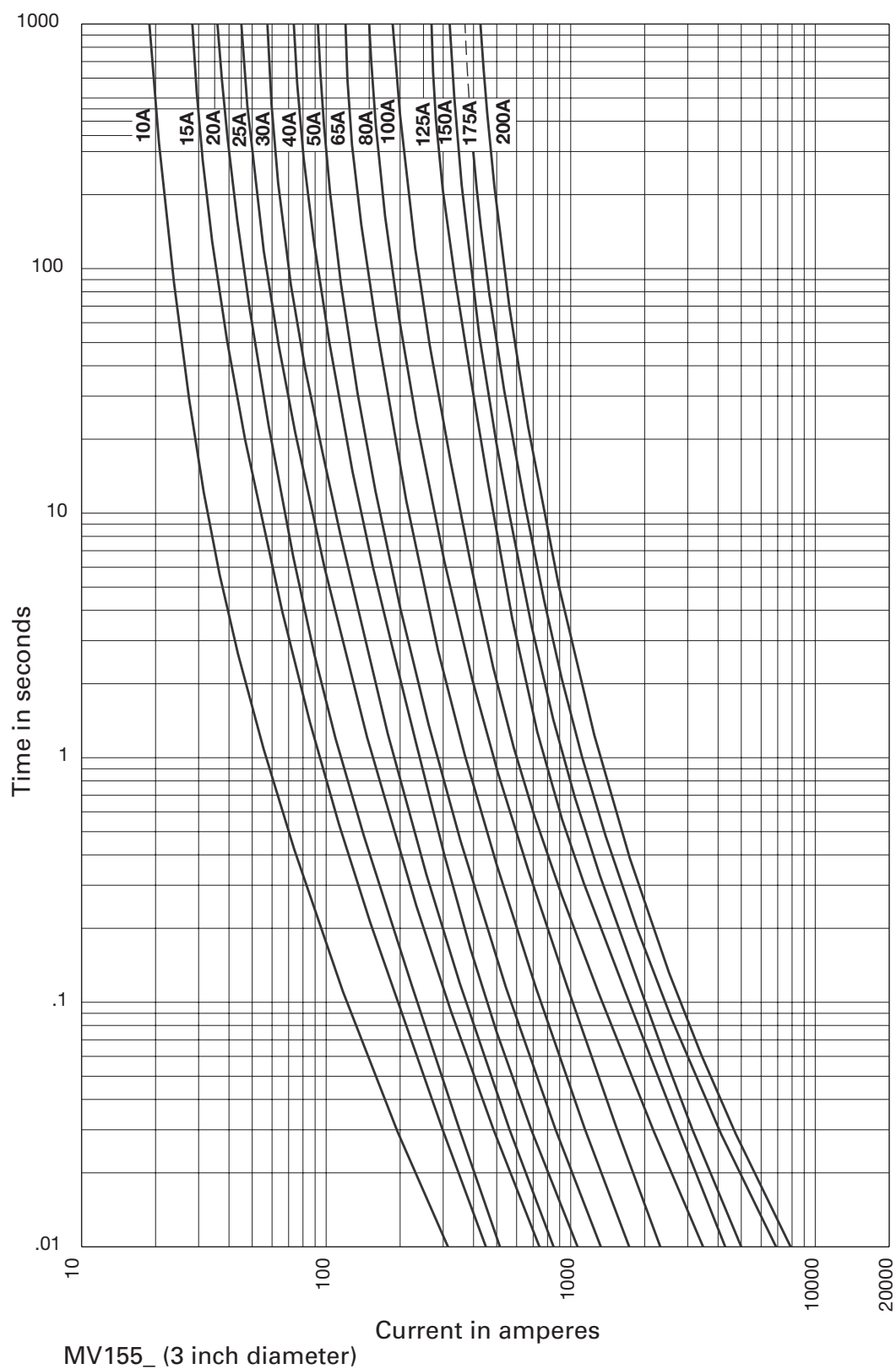


15.5kV time-current curves — total clear for MV155_ 2 inch diameter fuses

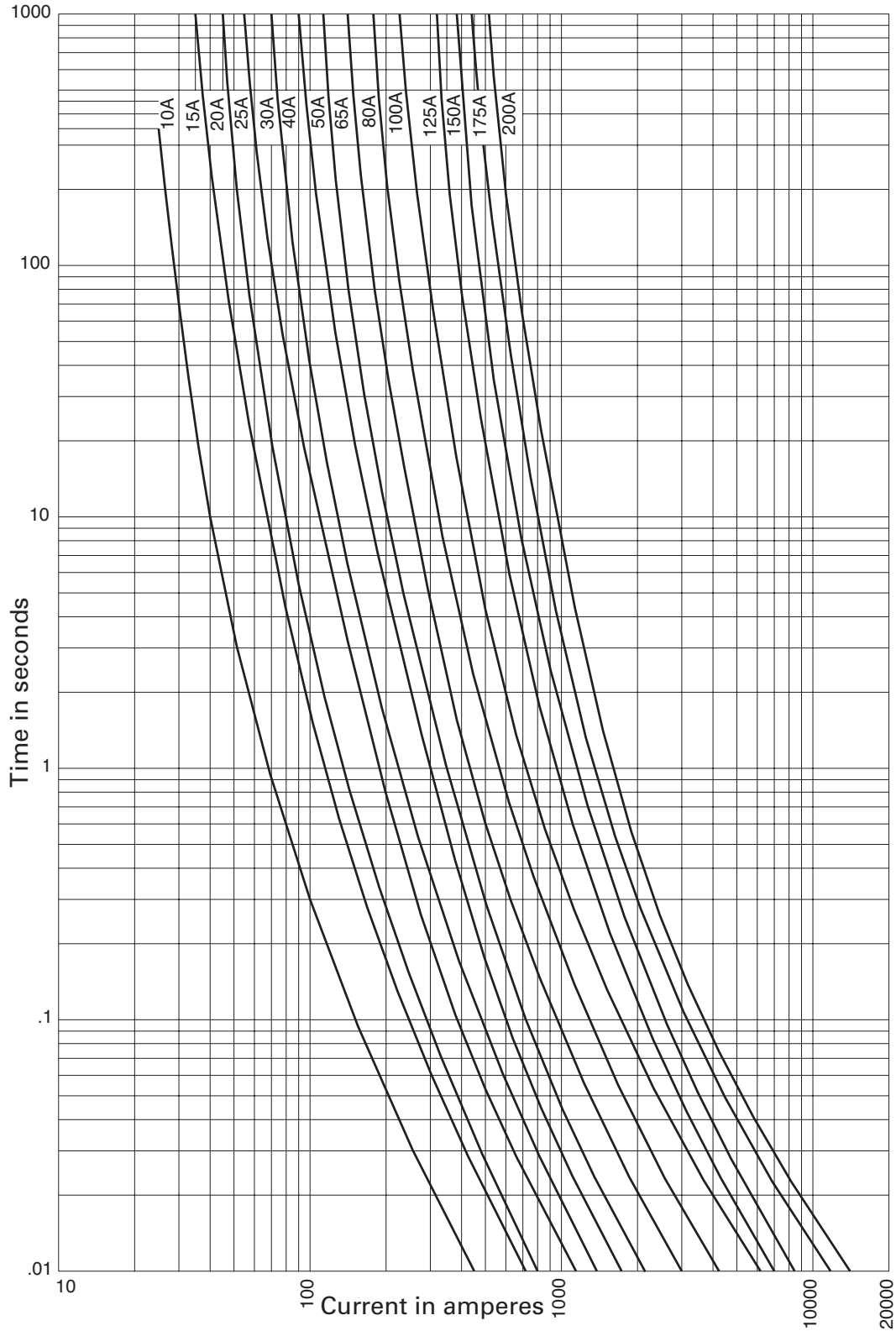


MV155_ (2 inch diameter)

15.5kV time-current curves — minimum melt for MV155_ 3 inch diameter fuses

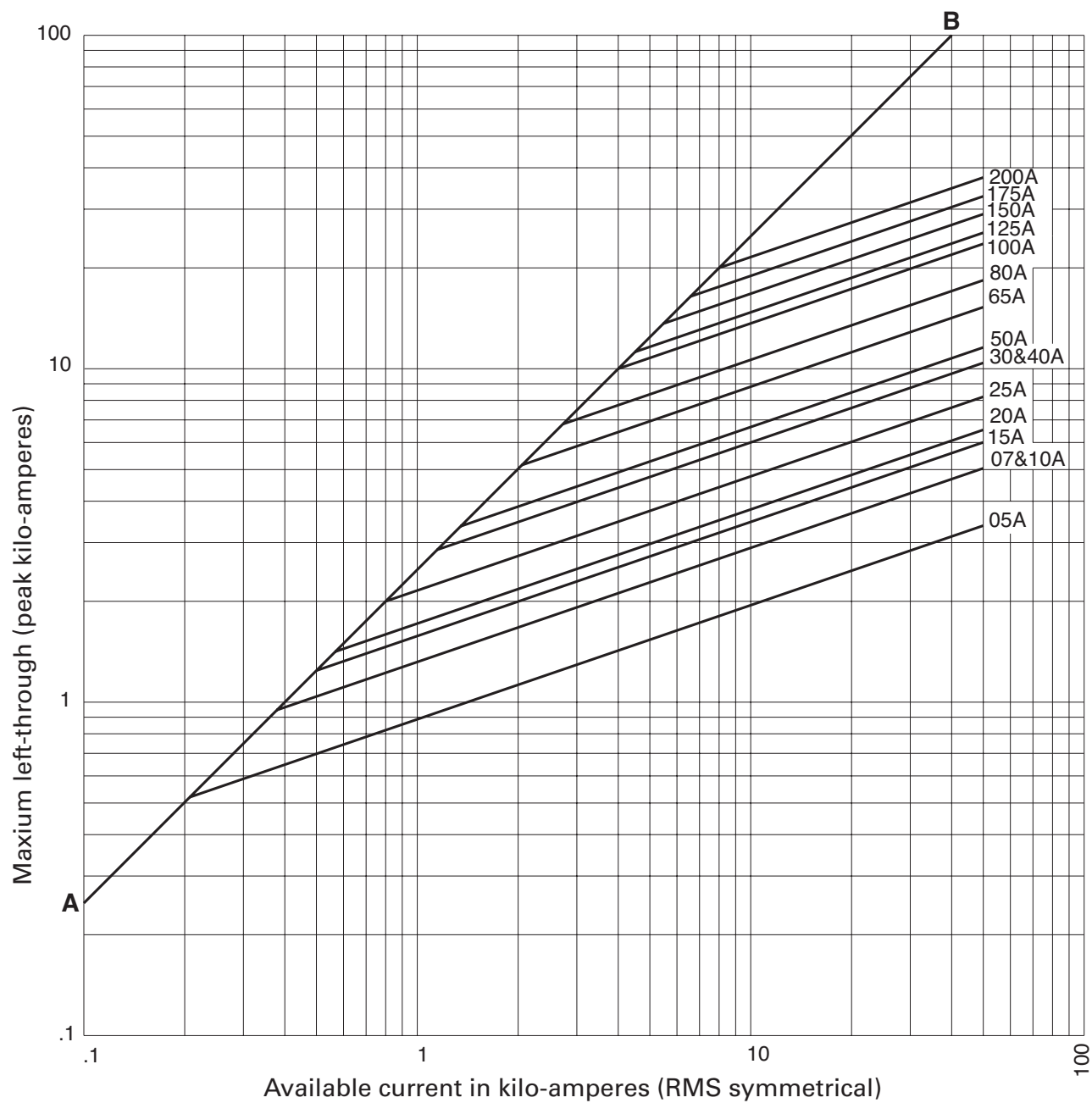


15.5kV time-current curves — total clear for MV155_ 3 inch diameter fuses



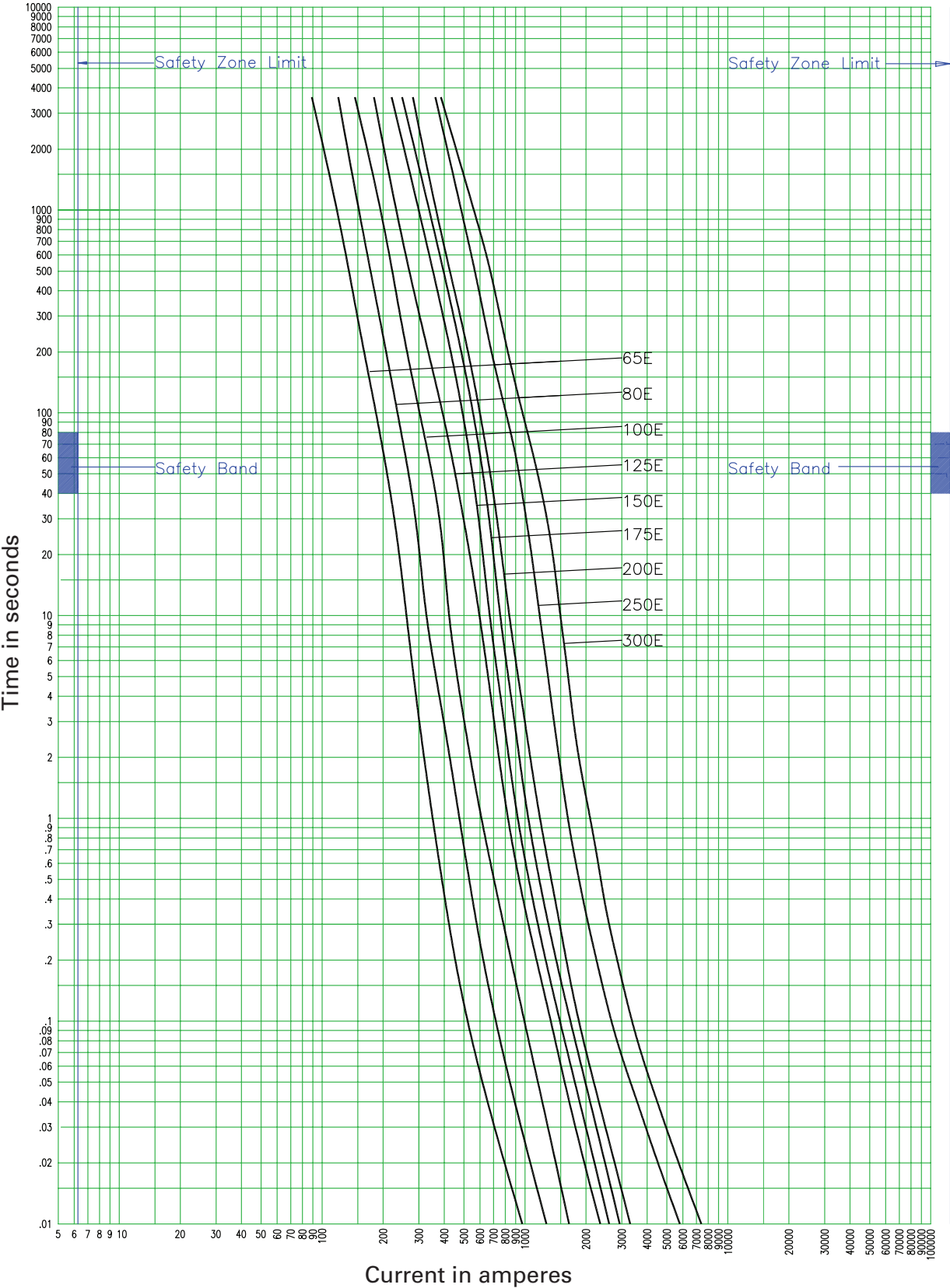
MV155_ (3 inch diameter)

15.5kV peak let-through for MV155_ 2 and 3 inch diameter fuses



MV155_ (2 and 3 inch diameter)

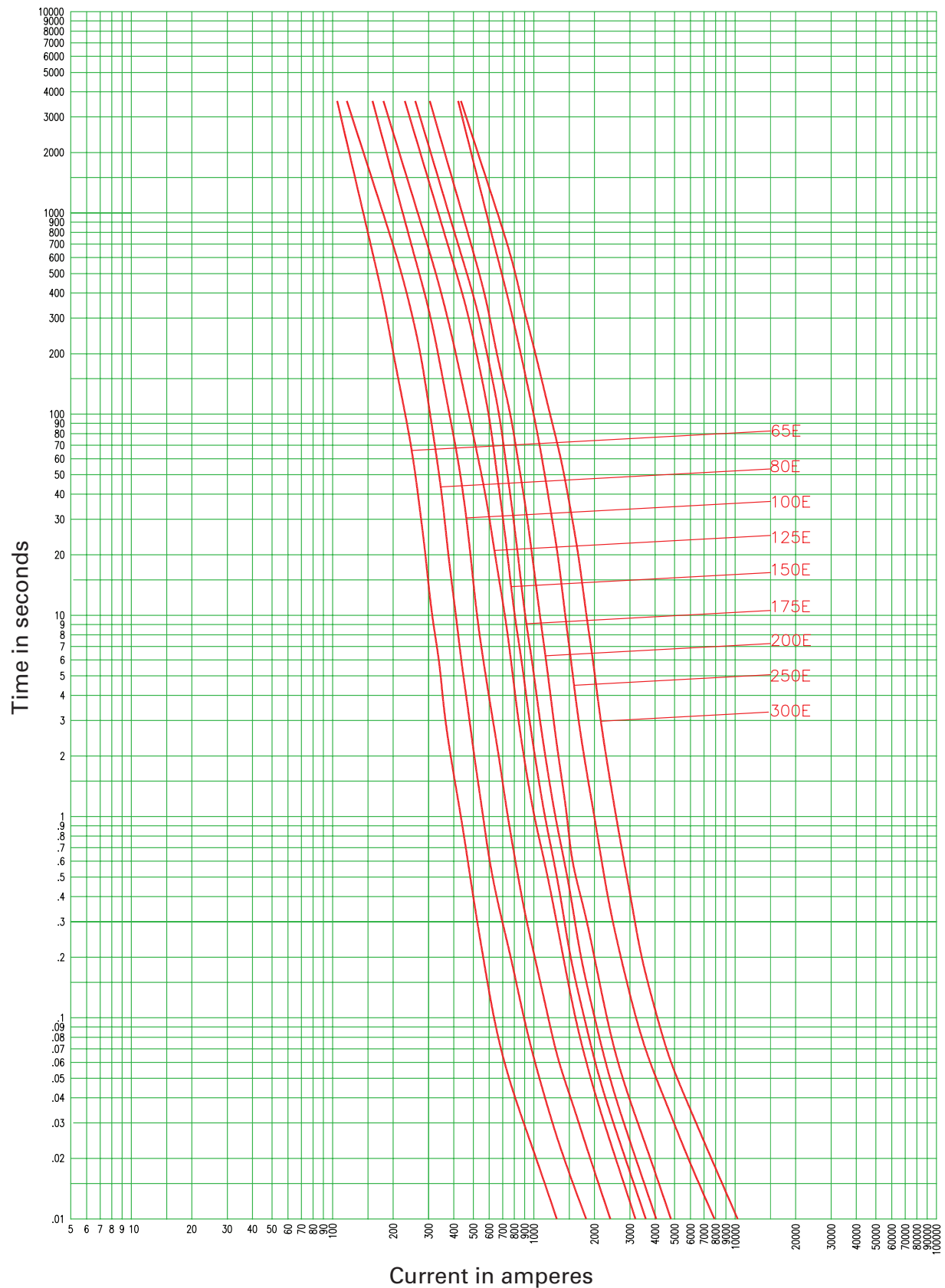
15.5kV time-current curves — minimum melt for 15LHLE_ 3 inch diameter fuses



15LHLE_ (3 inch diameter)

Curve TC66703203
April 2011

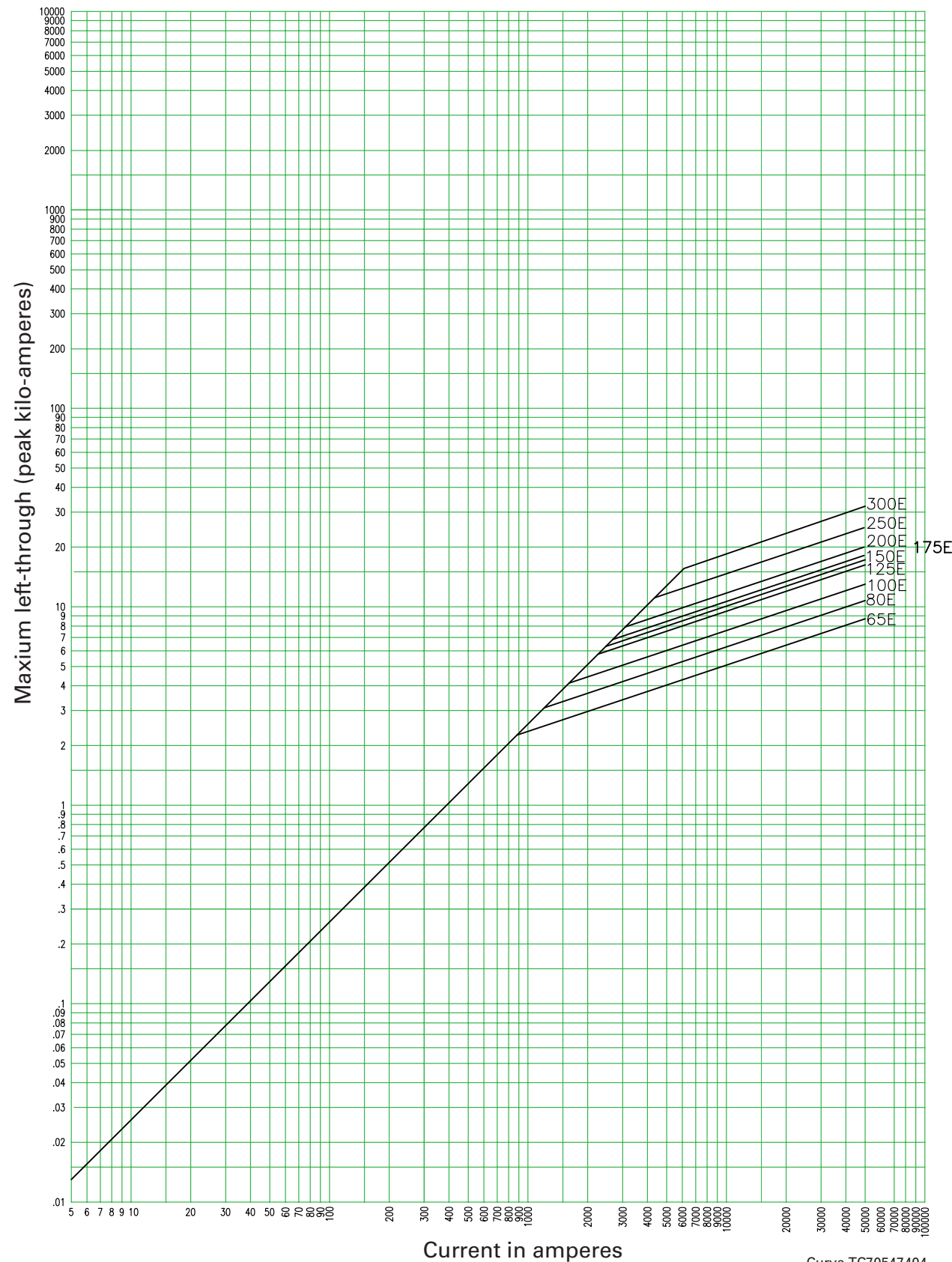
15.5kV time-current curves — total clear for 15LHLE_ 3 inch diameter fuses



15LHLE_ (3 inch diameter)

Curve TC66703303
April 2011

15.5kV peak let-through for 15LHLE_ 3 inch diameter fuses



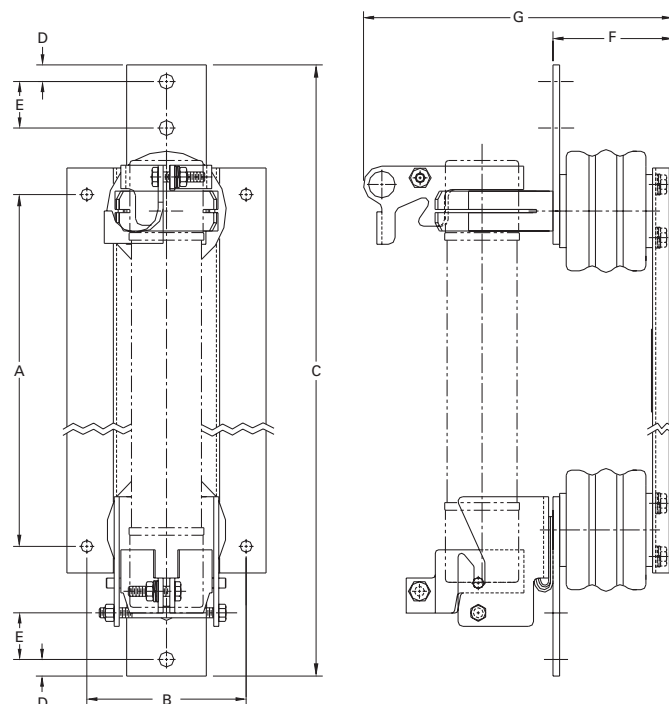
15LHLE_ (3 inch diameter)

Curve TC70547404
April 2011

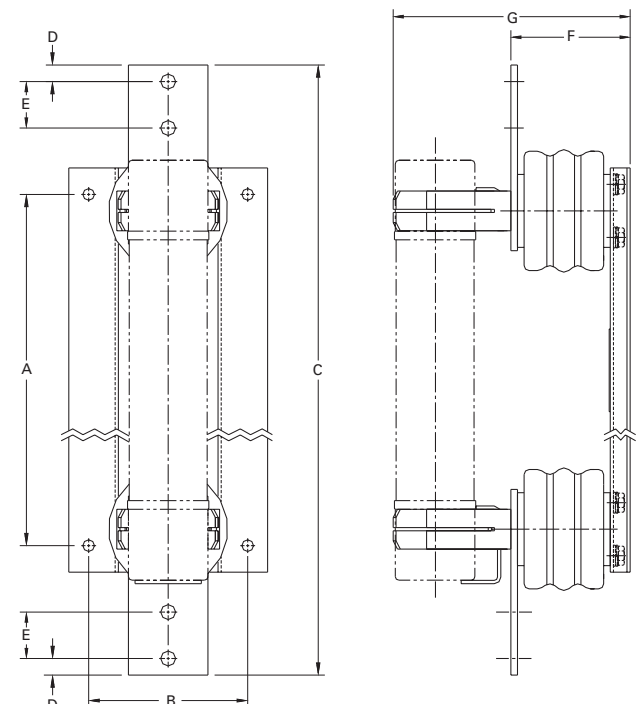
CLE and HLE type mountings - in (mm)

Catalog number	Hole centers		Overall length	Hole Inset	Hole centers	Contact height	Overall height	BIL kV
	A	B						
Disconnect single barrel†								
15CLE-GDM-C	21.24 (539.5)	6 (152.4)	34 (863.6)	0.75 (19.0)	1.75 (44.4)	7 (177.8)	12.25 (311.1)	95
15CLE-GDM-D	21.15 (537.2)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.22 (361.2)	95
15CLE-PDM-C	21.24 (539.5)	6 (152.4)	34 (863.6)	0.75 (19.0)	1.75 (44.4)	7 (177.8)	12.25 (311.1)	95
15CLE-PDM-D	21.15 (537.2)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.22 (361.2)	95
15CLE-HPDM-C	21.24 (539.5)	6 (152.4)	34 (863.6)	0.75 (19.0)	1.75 (44.4)	8.5 (215.9)	13.75 (349.2)	110
15CLE-HPDM-D	21.15 (537.2)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	8.5 (215.9)	15.72 (399.3)	110
15HLE-GDM-D	16.25 (412.8)	6 (152.4)	25 (647.7)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.22 (361.2)	95
15HLE-PDM-D	16.25 (412.8)	6 (152.4)	25 (647.7)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.22 (361.2)	95
Disconnect double barrel†								
15CLE-PDM-E	21.15 (537.2)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	8.5 (215.9)	19.28 (489.7)	95
15HLE-GDM-E	16.25 (412.8)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	17.78 (451.6)	95
15HLE-PDM-E	16.25 (412.8)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	17.78 (451.6)	95
Non-disconnect single barrel								
15CLE-GNM-C	21.25 (539.7)	6 (152.4)	30.5 (774.7)	0.75 (19.0)	1.75 (44.4)	7 (177.8)	9.75 (247.6)	95
15CLE-PNM-C	21.25 (539.7)	6 (152.4)	30.5 (774.7)	0.75 (19.0)	1.75 (44.4)	7 (177.8)	9.75 (247.6)	95
15CLE-HPNM-C	21.25 (539.7)	6 (152.4)	30.5 (774.7)	0.75 (19.0)	1.75 (44.4)	8.5 (215.9)	11.25 (285.7)	110
15CLE-GNM-D	21.15 (539.7)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	11.29 (286.7)	95
15CLE-PNM-D	21.15 (539.7)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	11.29 (286.7)	95
15CLE-HPNM-D	21.15 (539.7)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	8.5 (215.9)	12.79 (286.7)	110
15HLE-GNM-D	16.25 (412.7)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	11.29 (286.7)	95
15HLE-PNM-D	16.25 (412.7)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	11.29 (286.7)	95
Non-disconnect double barrel								
15CLE-PNM-E	21.15 (539.7)	6 (152.4)	31 (787.4)	0.62 (15.7)	1.75 (44.4)	8.5 (215.9)	14.98 (380.5)	95
15HLE-GNM-E	16.25 (412.7)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.98 (380.5)	95
15HLE-PNM-E	16.25 (412.7)	6 (152.4)	25 (635)	0.62 (15.7)	1.75 (44.4)	7 (177.8)	14.98 (380.5)	95

CLE and HLE type disconnect mounting†



CLE and HLE type non-disconnect mounting



† Disconnect mountings provide a means for fuse extraction only. Do not use a disconnect mounting for load switching or fuse removal while energized.

E-Rated medium voltage specialty mount fuses

Catalog symbols:

- 15BHLE_E (bolt-on version)
- 15HCL_E (clip-lock version)

Ratings*:

- Volts
 - 15.5kV
- Amps
 - 10 to 300A
- Interrupting ratings
 - 50 to 63kA RMS Sym

* See catalog number tables for voltages, ampacities and interrupting ratings by catalog number.

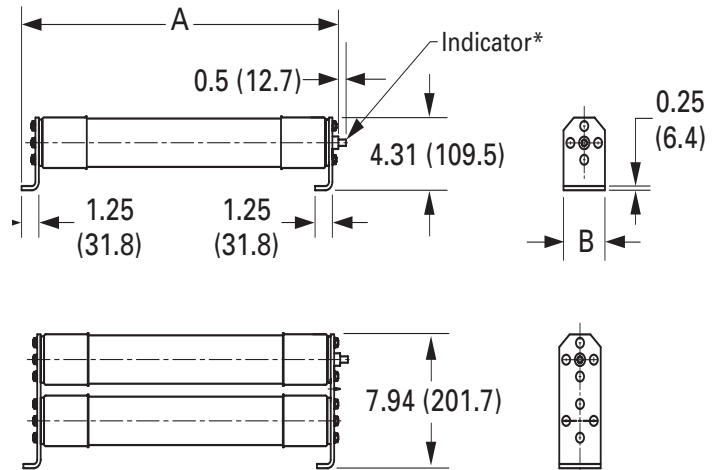
Agency information:

- E-Rated fuses meet the performance characteristics of ANSI C37.46

Recommended live parts for clip-lock fuses

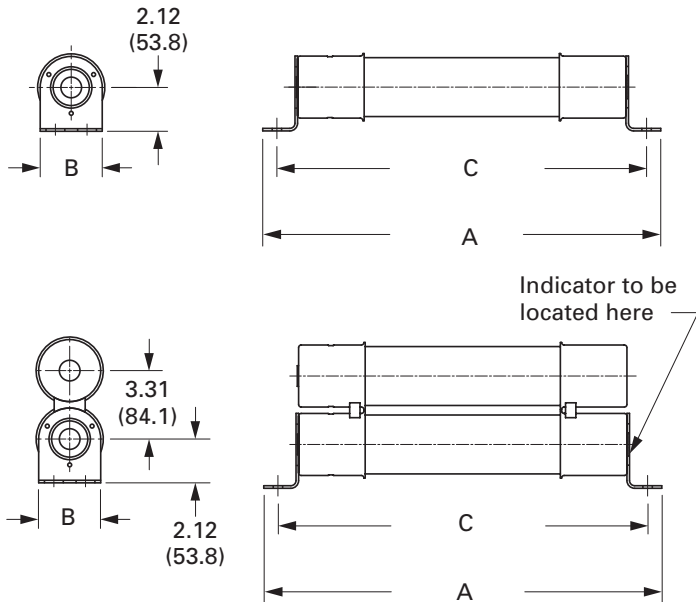
- Catalog number HCL-NL-1

HCL



Dimensions - in (mm)

BHLE

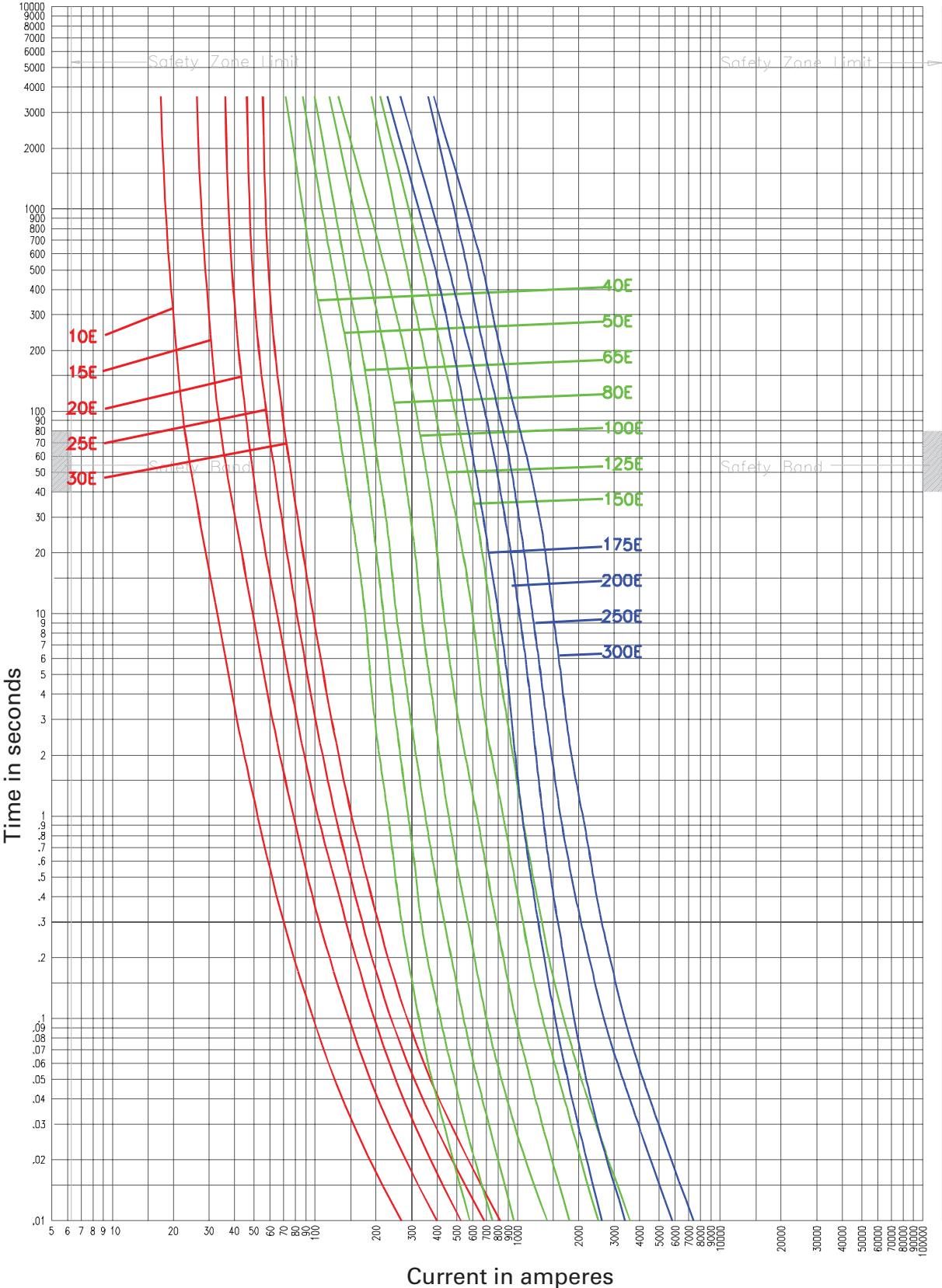


BHCL, BHLE and HCL Type fuses

Dimensions - in (mm)				Interrupting rating kA (RMS Sym.)	Number of barrels	Installation location	Catalog number
Amp rating	Length A	Diameter B	Hole centers C				
BHCL and BHLE bolt-on							
10	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-10E
15	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-15E
20	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-20E
25	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-25E
30	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-30E
40	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-40E†
50	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-50E†
65	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-65E†
80	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-80E†
100	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-100E†
125	22.2 (563)	3 (76)	20.9 (531)	63	1	Indoor/outdoor	15BHLE-125E†
150	22.2 (563)	3 (76)	20.9 (531)	63	2	Indoor/outdoor	15BHLE-150E†
175	22.2 (563)	3 (76)	20.9 (531)	63	2	Indoor/outdoor	15BHLE-175E†
200	22.2 (563)	3 (76)	20.9 (531)	63	2	Indoor/outdoor	15BHLE-200E†
250	22.2 (563)	3 (76)	20.9 (531)	63	2	Indoor/outdoor	15BHLE-250E†
300	25.1 (637)	3 (76)	23.7 (602)	50	2	Indoor	15BHCL-300E
400	25.1 (637)	3 (76)	23.7 (602)	50	3	Indoor	15BHCL-400E
HCL clip-lock							
10	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-10E
15	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-15E
20	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-20E
25	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-25E
30	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-30E
40	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-40E†
50	22.8 (579)	3 (76)	N/A	63	1	Indoor	15HCL-50E†
65	22.8 (579)	3 (76)	N/A	50	1	Indoor	15HCL-65E†
80	22.8 (579)	3 (76)	N/A	50	1	Indoor	15HCL-80E†
100	22.8 (579)	3 (76)	N/A	50	1	Indoor	15HCL-100E†
125	22.8 (579)	3 (76)	N/A	50	1	Indoor	15HCL-125E†
150	22.8 (579)	3 (76)	N/A	50	2	Indoor	15HCL-150E†
200	22.8 (579)	3 (76)	N/A	50	2	Indoor	15HCL-200E†
250	22.8 (579)	3 (76)	N/A	50	2	Indoor	15HCL-250E†
300	22.8 (579)	3 (76)	N/A	50	2	Indoor	15HCL-300E†

† UL Listed, Guide JEEG, File E240398.

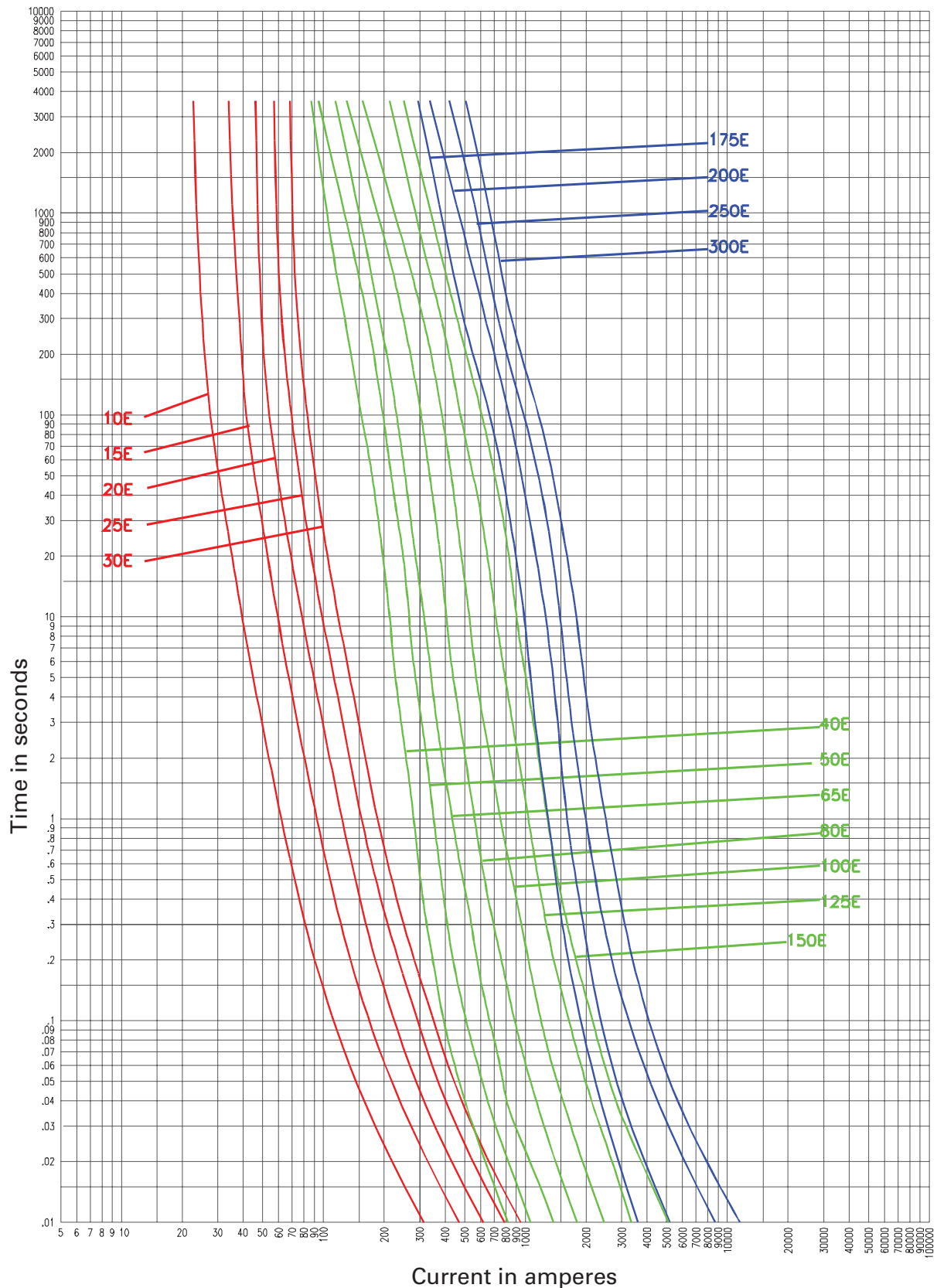
15.5kV time-current curves — minimum melt for 15CLE- _E and 15CLE- _D



15CLE- _

Curve 70548501 Curve 70546801 Curve 70547001
April 16, 1999 April 1999 April 1999
Reference # 563532 Reference # 705468 Reference # 705470

15.5kV time-current curves — total clear for 15CLE-_E and 15CLE-_D



15CLE-_

Curve 70548601

April 16, 1999

Reference # 563533

Curve 70546901

April 1999

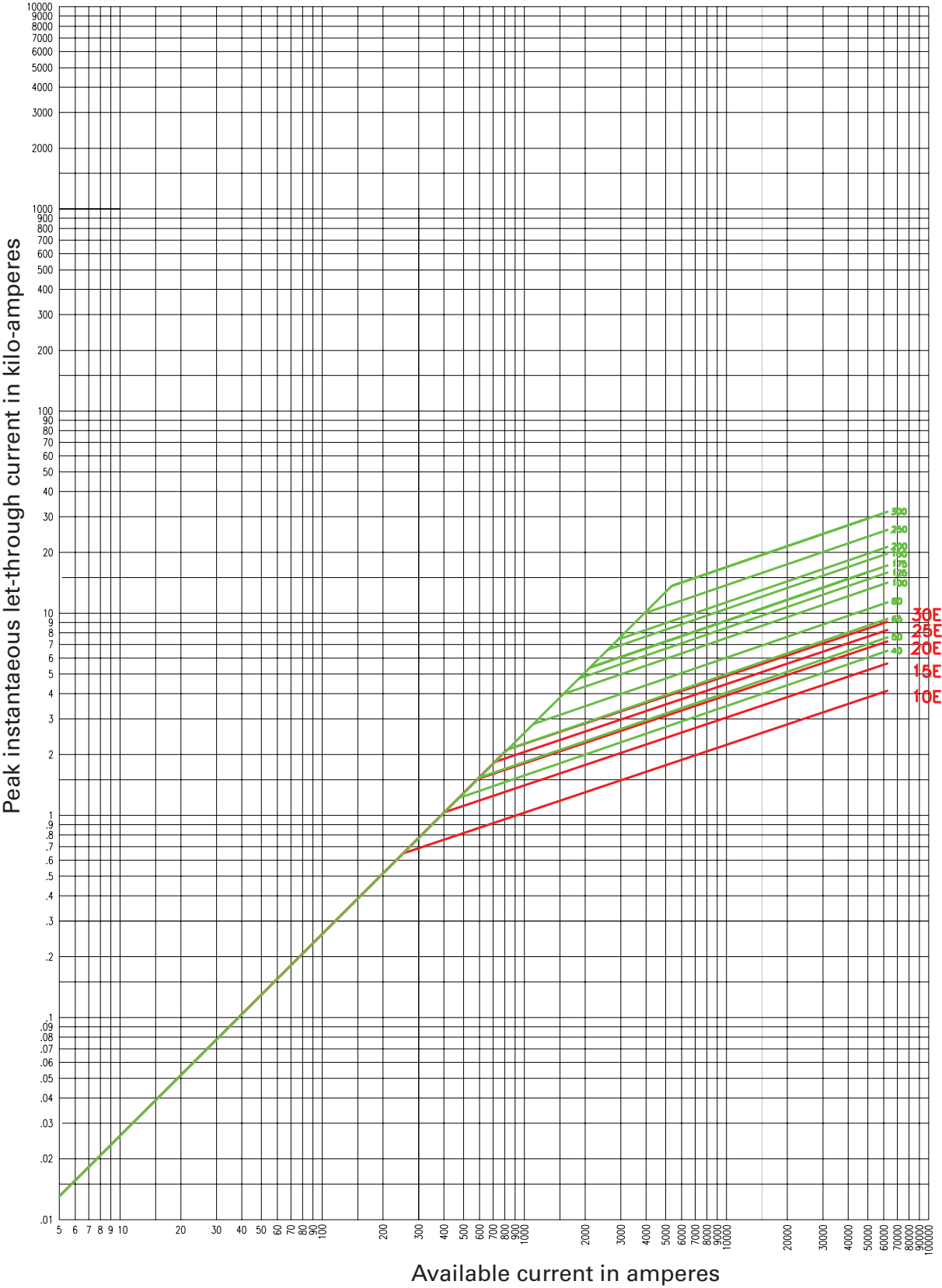
Reference # 705469

Curve 70547101

April 1999

Reference # 705471

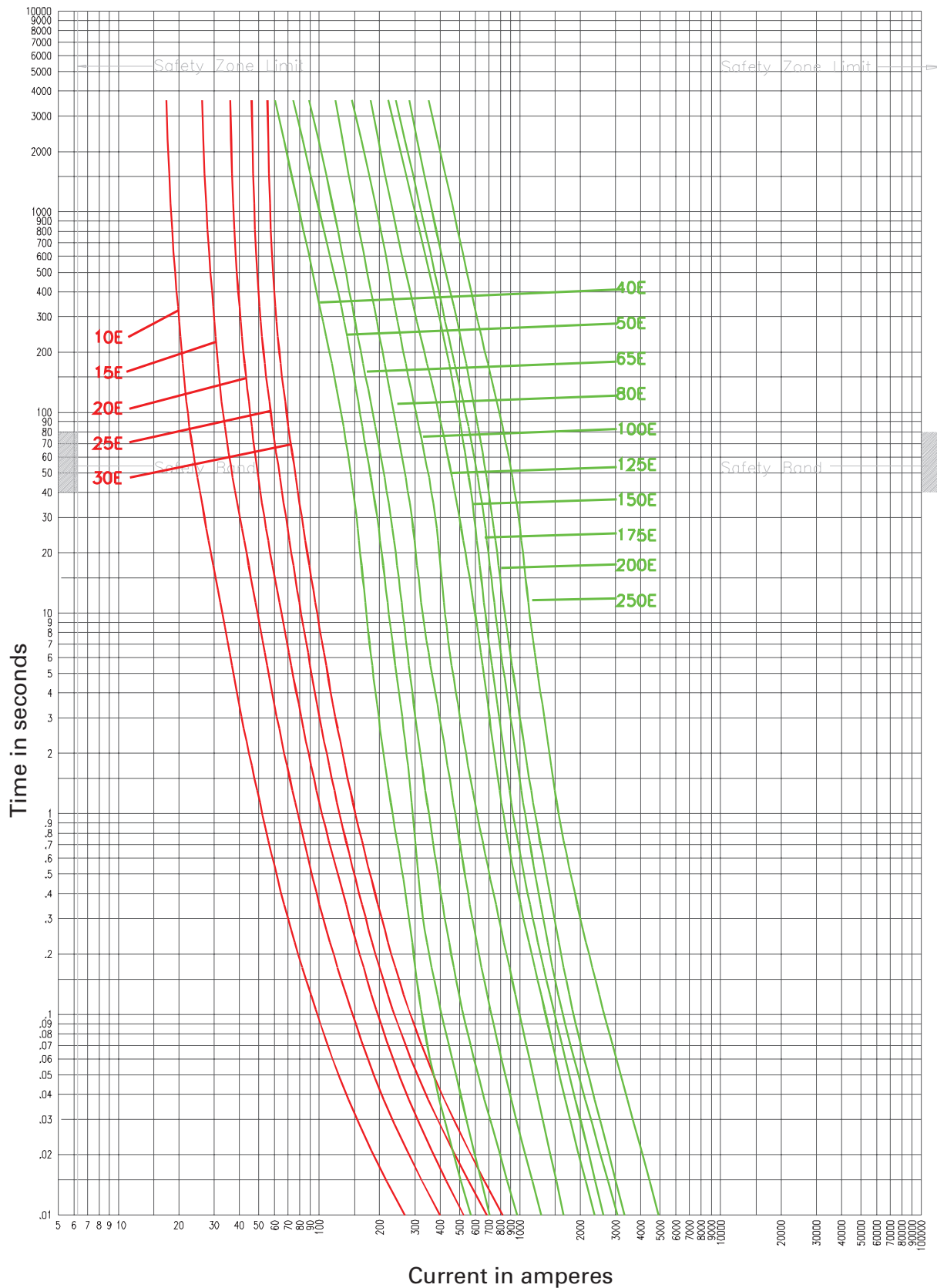
15.5kV peak let-through for 15CLE- _E and 15CLE- _D



15CLE- _

Curve 70548802 Curve 70547501
September 1999 September 1999
Reference # 705488 Reference # 705475

15.5kV time-current curves — minimum melt for 15HLE-_E and 15BHLE-_E



15HLE-_, 15BHLE-_

Curve 70548507

April 16, 1999

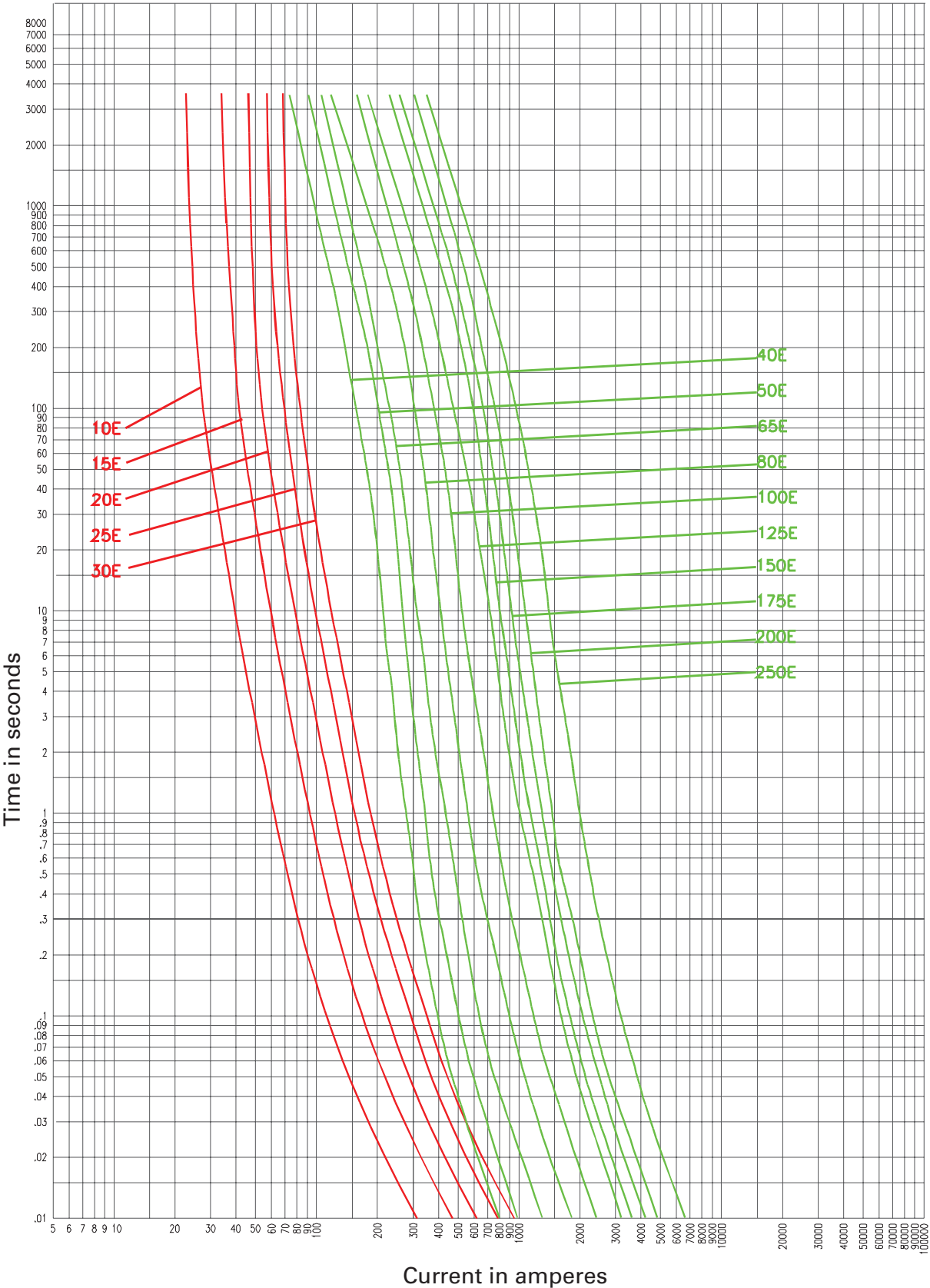
Reference # 563532

Curve 70546601

April 1999

Reference # 705466

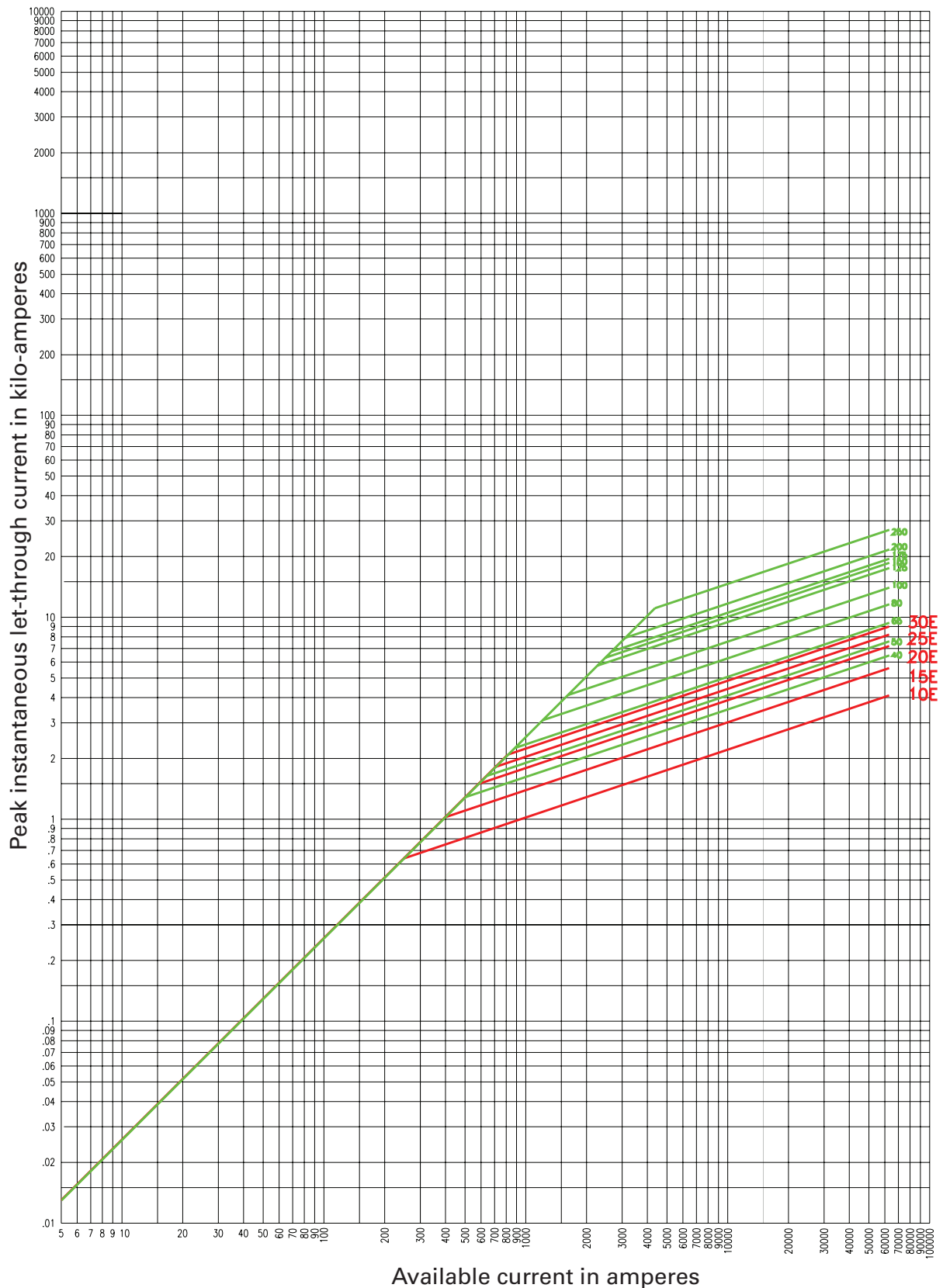
15.5kV time-current curves — total clear for 15HLE-_E and 15BHLE-_E



15HLE-_E, 15BHLE-_E

Curve 70548607 Curve 70546701
April 16, 1999 April 1999
Reference # 563533 Reference # 705467

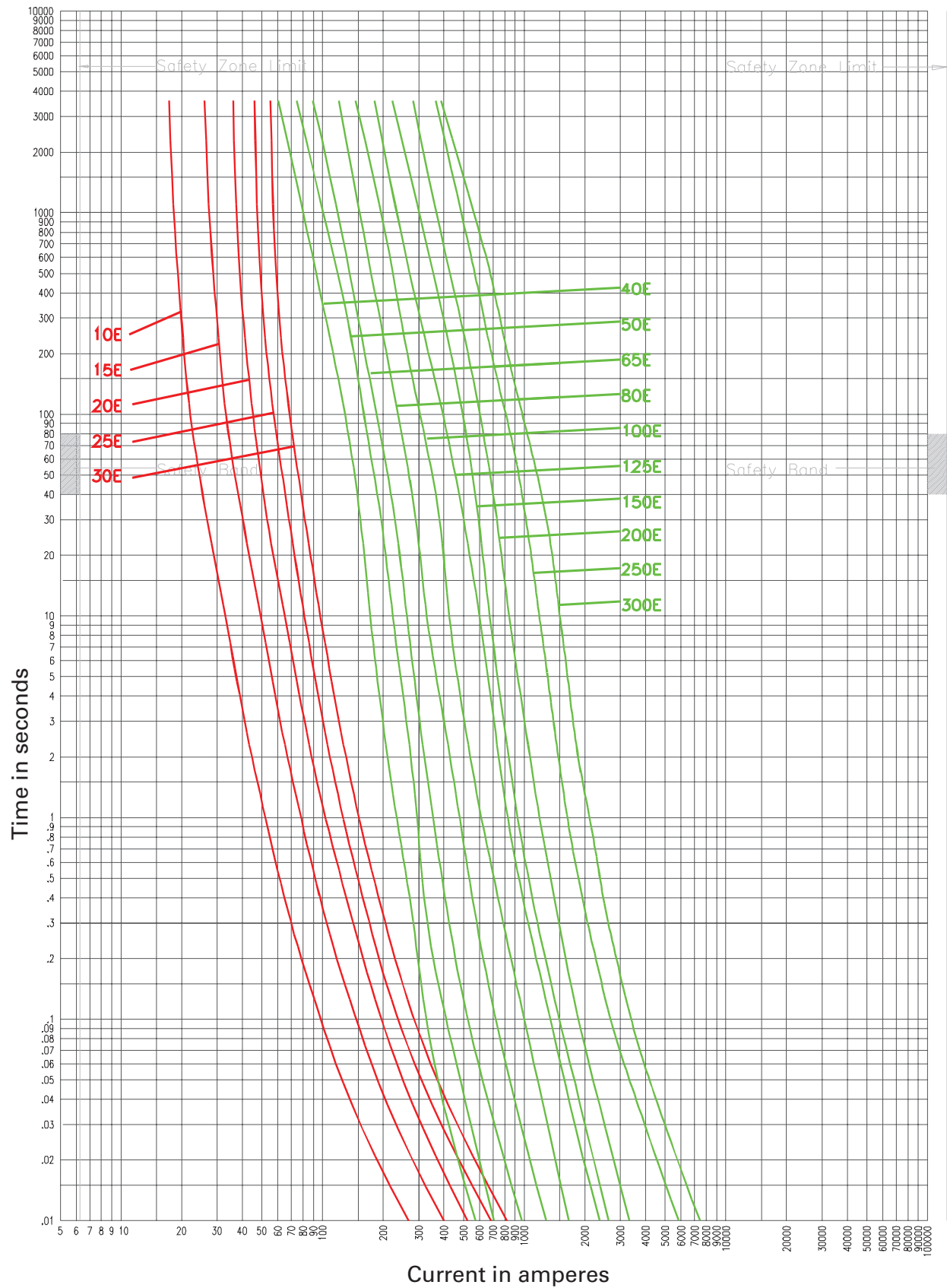
15.5kV peak let-through for 15HLE-_E and 15BHLE-_E



15HLE-_, 15BHLE-_

Curve 70548805 Curve 70547401
September 1999 September 1999
Reference # 705488 Reference # 705474

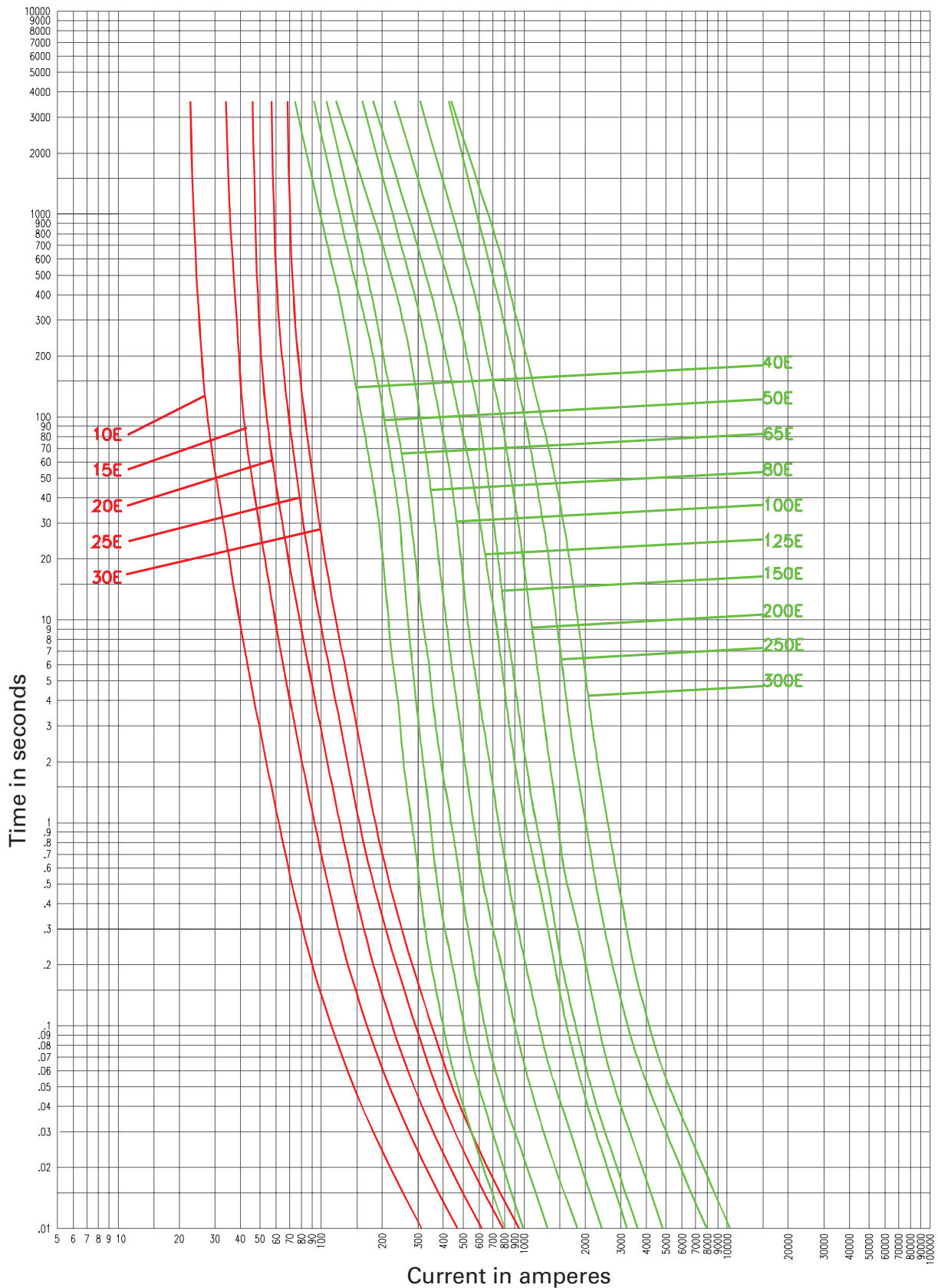
15.5kV time-current curves — minimum melt for 15HCL_E



15HCL_

Curve 70548503 Curve 66703201
January 2001 January 2001

15.5kV time-current curves — total clear for 15HCL-_E

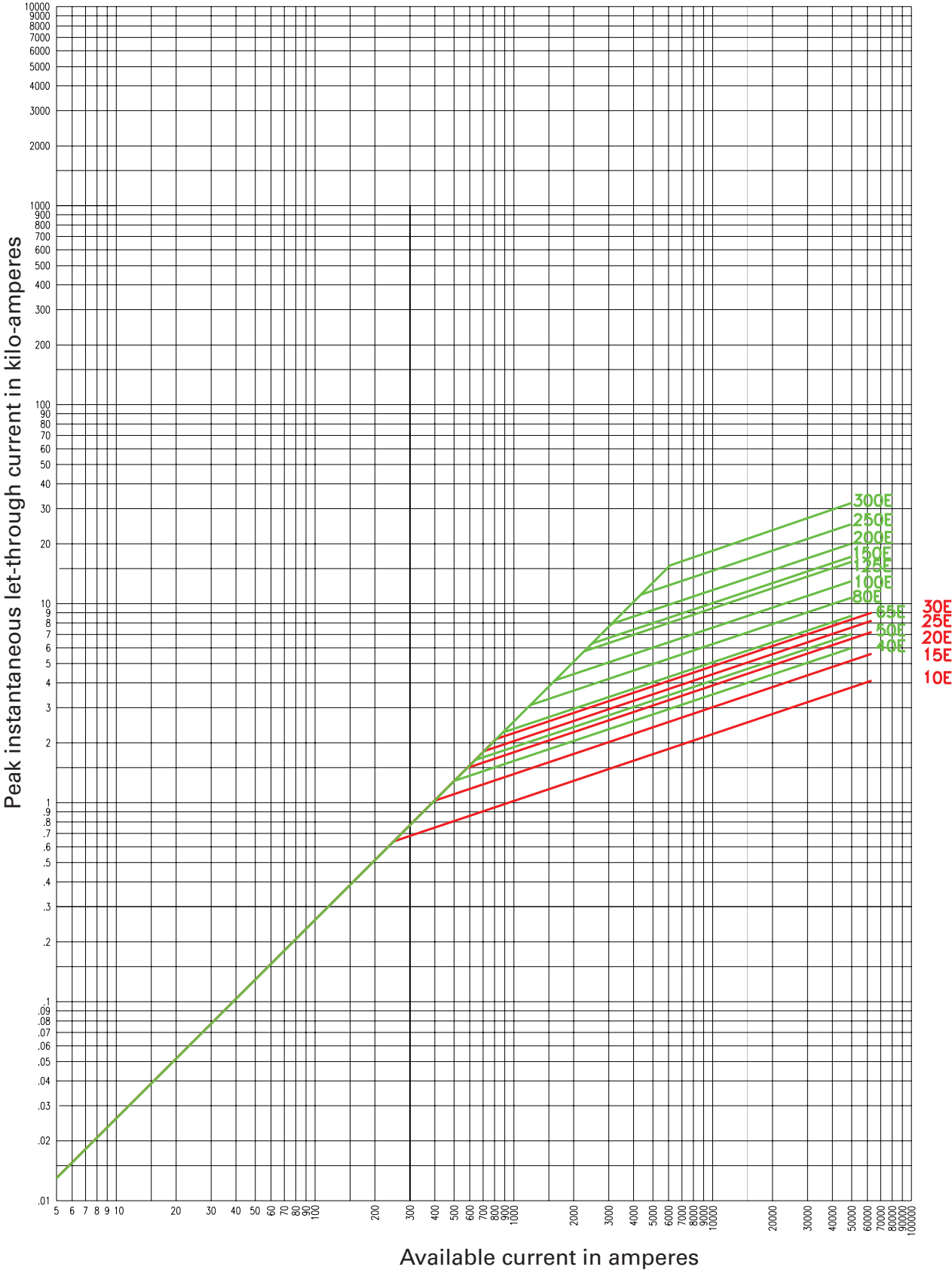


15HCL-_

Curve 70548603
January 2001

Curve 66703301
January 2001

15.5kV peak let-through for 15HCL_E



15HCL-__

Curve 70548803
Janaury 2001

Curve 70547402
Janaury 2001

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