

Series G R-Frame

800-2500A, 240-690V

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Note:

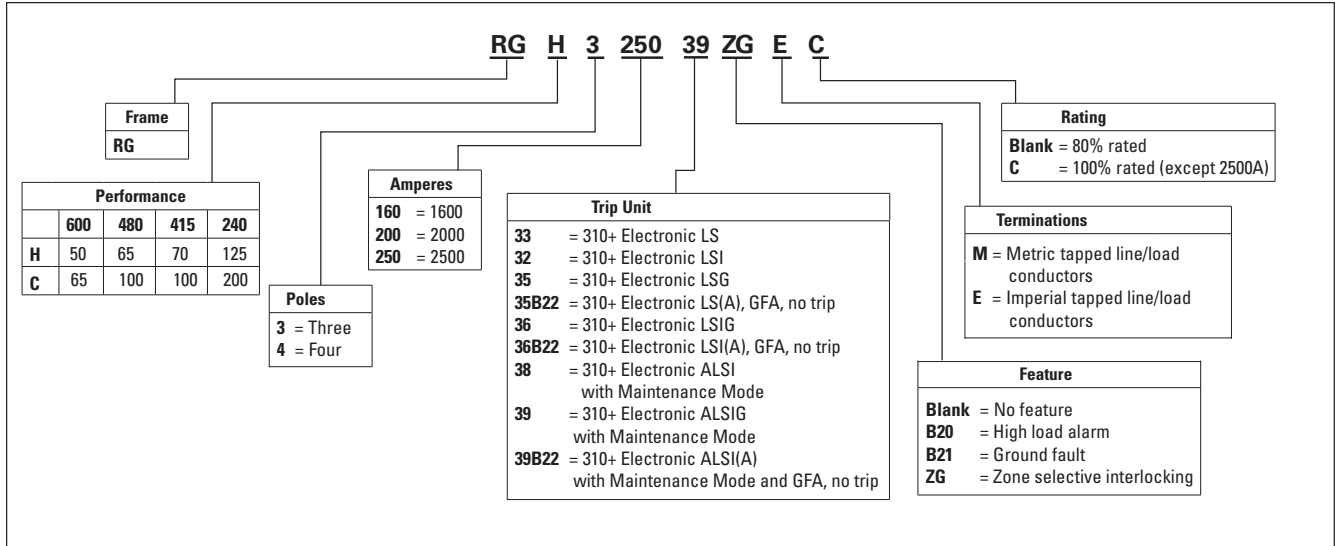
The following curves meet the requirements of UL, CSA, IEC, CCC and CE.
The following circuit breakers are derived from Eaton, Westinghouse, or Cutler-Hammer history.

Time Current Curves are engineering reference document for application and coordination purposes only.

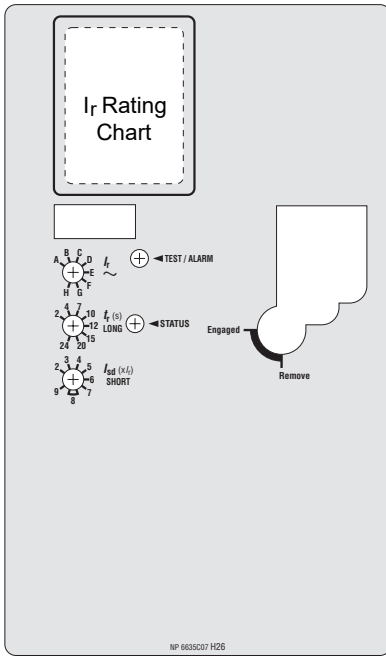
Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

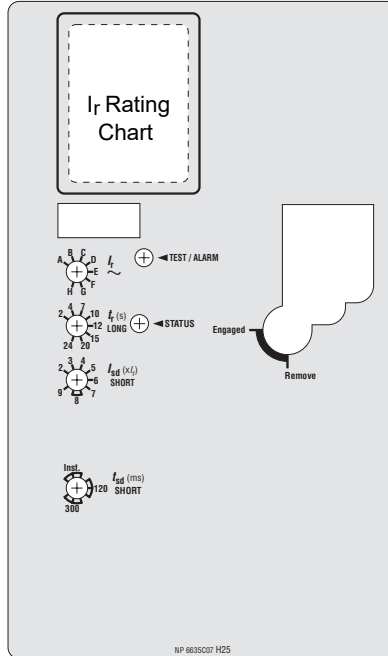
Table 1. RG Circuit Breaker/Frame



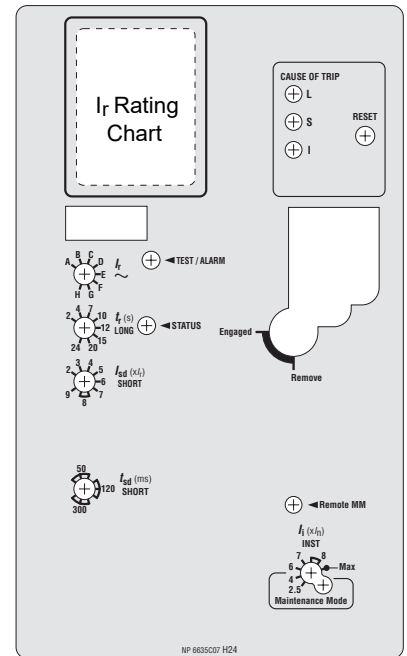
LS



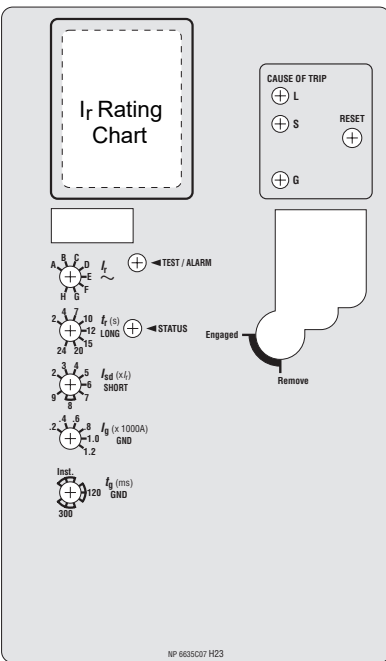
LSI



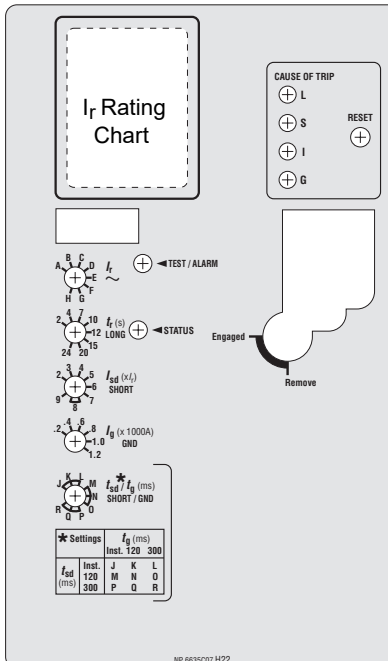
ALSI (With Maintenance Mode)



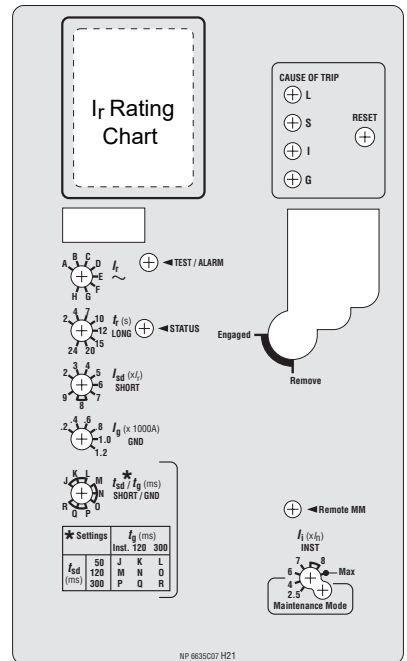
LSG



LSIG



ALSIG (With Maintenance Mode)



*1600A/2000A Faceplates shown, 2500A Faceplates may differ

Figure 1. Digitrip 310+ Faceplates

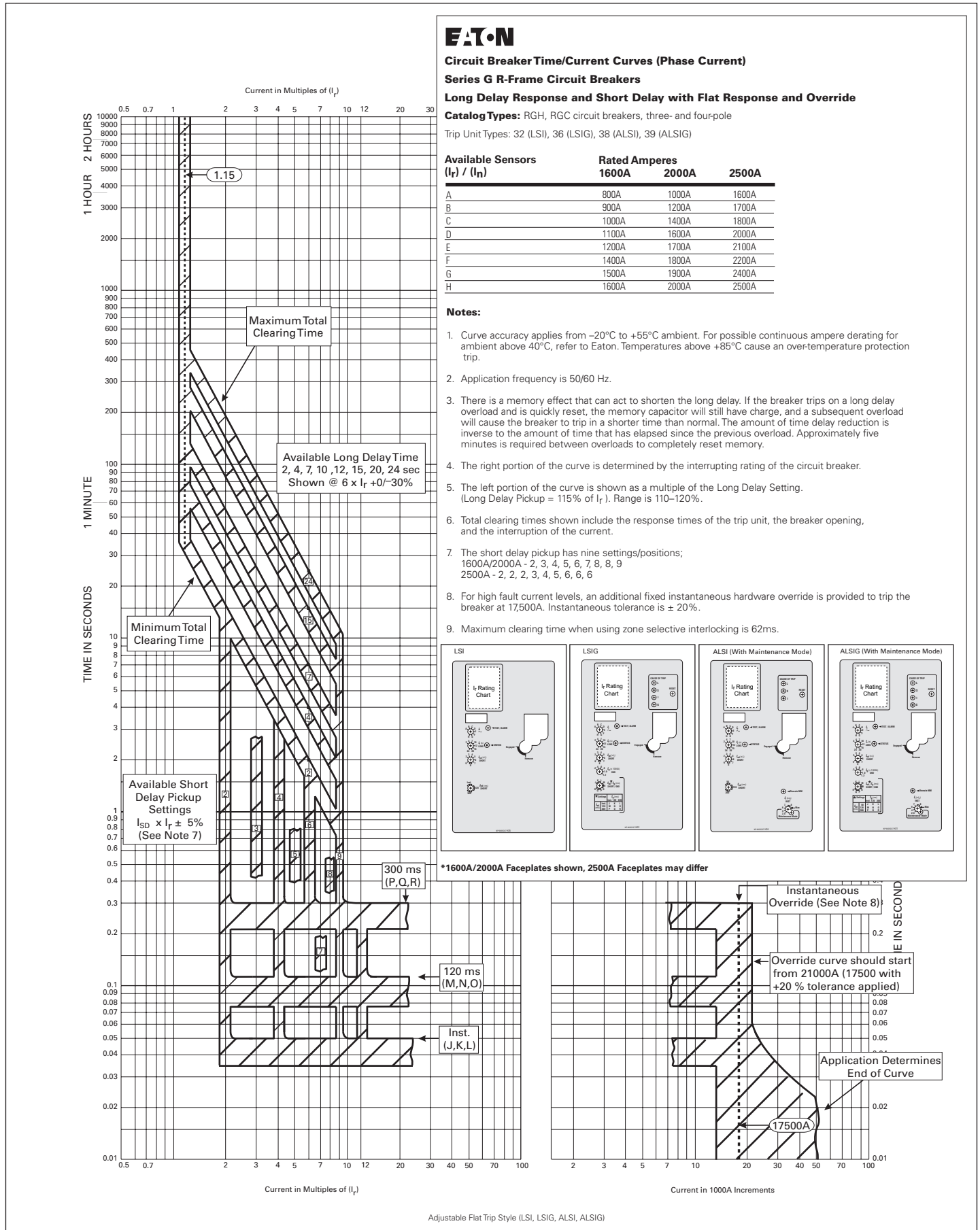


Figure 2. Digitrip 310+ Long Delay Response and Short Delay with Flat Response and Override Curve (LSI, LSIG, ALSI, ALSIG) - Curve Number TC01210020E, September 2017



Circuit Breaker Time/Current Curves (Phase Current)

Series G R-Frame Circuit Breakers

Long Delay Response and Short Delay with I²T Response Curve and Override

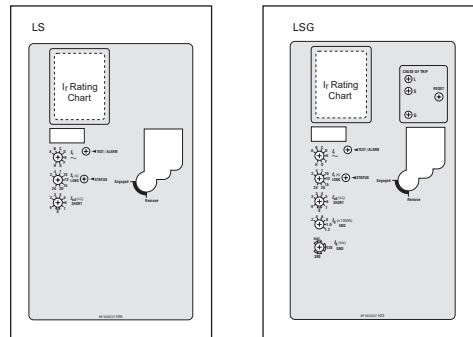
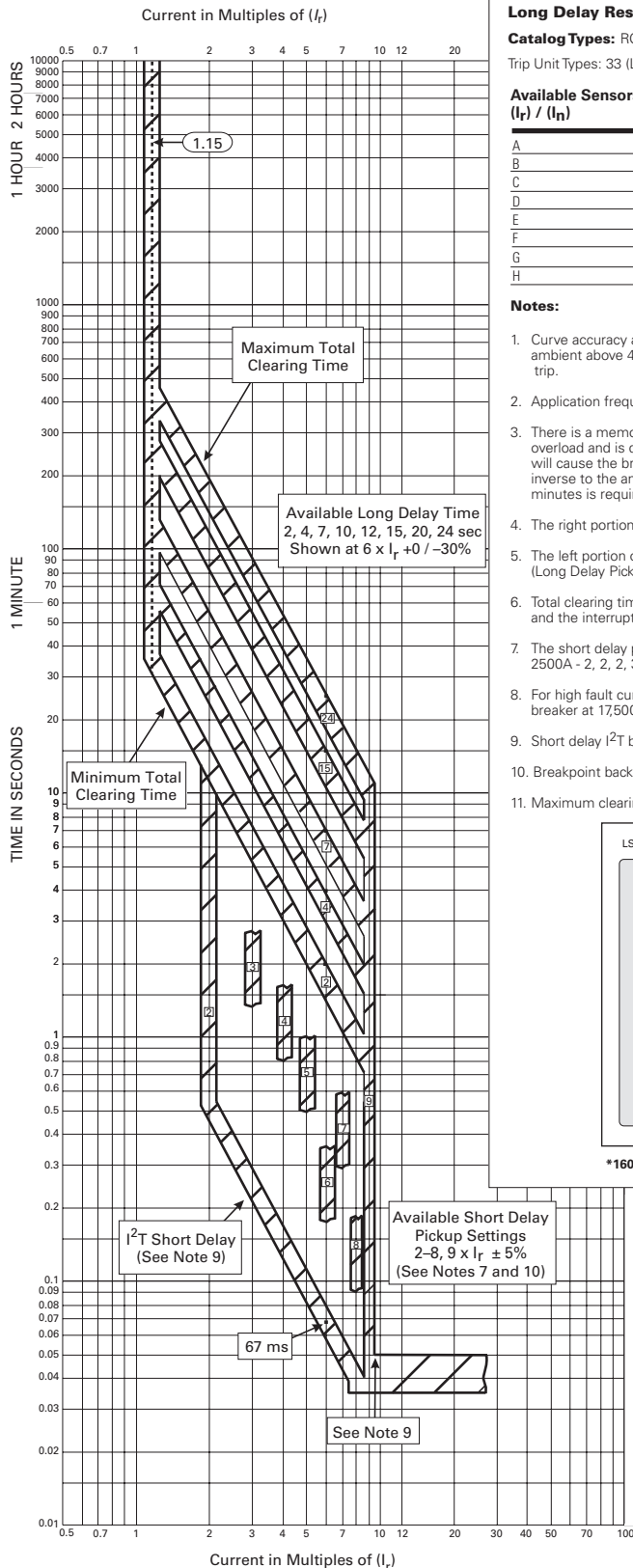
Catalog Types: RGH, RGC circuit breakers, three- and four-pole

Trip Unit Types: 33 (LS), 35 (LSG)

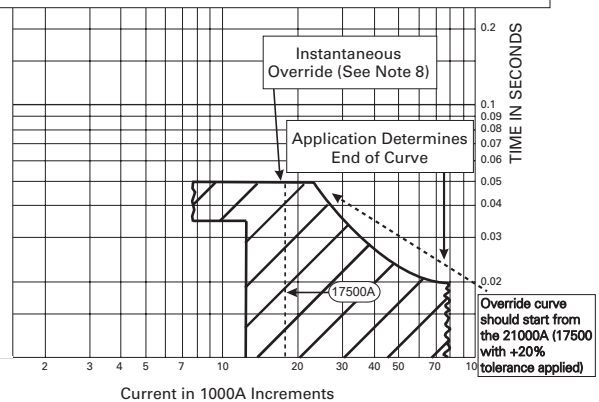
Available Sensors (I _r) / (I _n)	Rated Amperes		
	1600A	2000A	2500A
A	800A	1000A	1600A
B	900A	1200A	1700A
C	1000A	1400A	1800A
D	1100A	1600A	2000A
E	1200A	1700A	2100A
F	1400A	1800A	2200A
G	1500A	1900A	2400A
H	1600A	2000A	2500A

Notes:

1. Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Eaton. Temperatures above +85°C cause an over-temperature protection trip.
2. Application frequency is 50/60 Hz.
3. There is a memory effect that can act to shorten the long delay. If the breaker trips on a long delay overload and is quickly reset, the memory capacitor will still have charge, and a subsequent overload will cause the breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately five minutes is required between overloads to completely reset memory.
4. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
5. The left portion of the curve is shown as a multiple of the Long Delay Setting. (Long Delay Pickup = 115% of I_r). Range is 110-120%.
6. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
7. The short delay pickup has nine settings/positions; 1600A/2000A - 2, 3, 4, 5, 6, 7, 8, 9
2500A - 2, 2, 2, 3, 4, 5, 6, 6, 6
8. For high fault current levels, an additional fixed instantaneous hardware override is provided to trip the breaker at 17,500A. Instantaneous tolerance is ± 20%.
9. Short delay I²T band has a tolerance of ±15%.
10. Breakpoint back to FLAT response occurs at 8 x I_r for upper line of the I²T curve.
11. Maximum clearing time when using zone selective interlocking is 62ms.

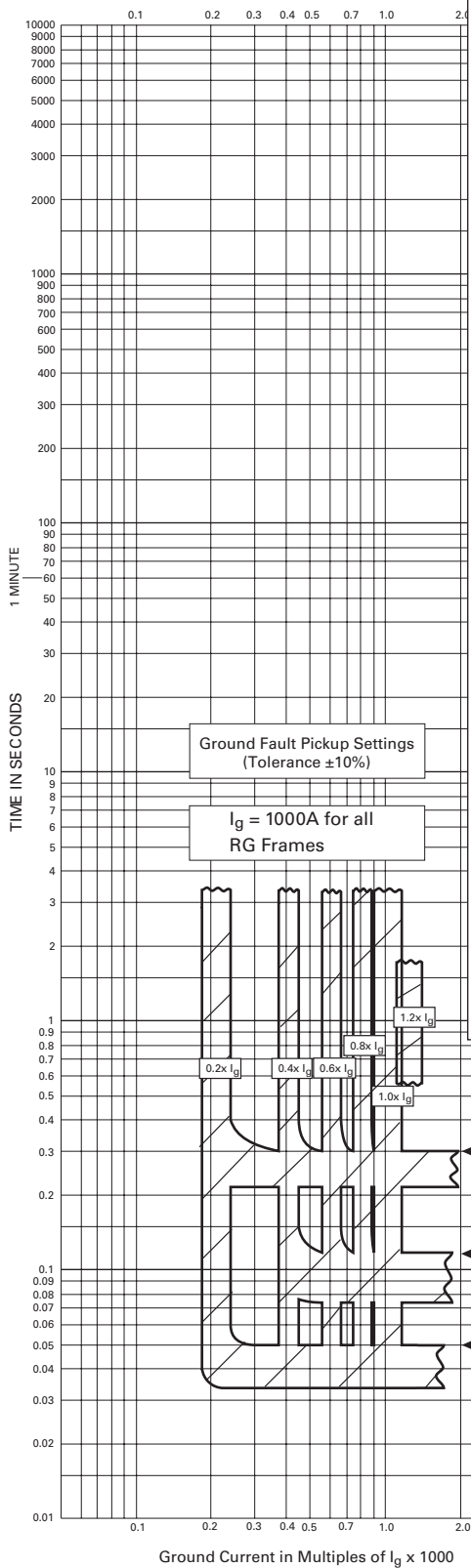


*1600A/2000A Faceplates shown, 2500A Faceplates may differ



I²T Trip Style (LS, LSG)

Figure 3. Digitrip 310+ Long Delay Response and Short delay with I²T Response Curve (LS, LSG) - Curve Number TC01210021E, September 2017



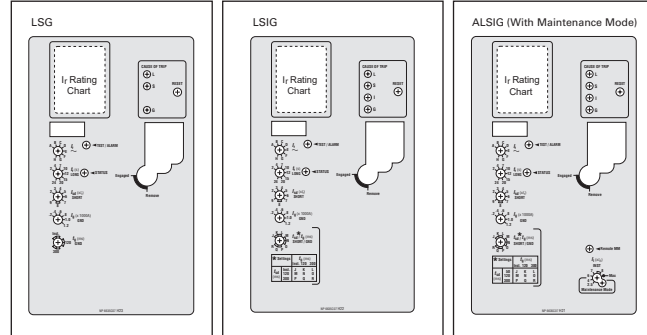
Circuit Breaker Time/Current Curves (Ground Current)

Series G R-Frame Circuit Breakers

Ground Fault Delay Response Curve

Catalog Types: RGH, RGC circuit breakers, three- and four-pole

Trip Unit Types: 35 (LSG), 36 (LSIG), 39 (ALSIG)



*1600A/2000A Faceplates shown, 2500A Faceplates may differ

SD / GF Delay Settings Table

* Settings		t_g (ms)		
		Inst.	120	300
t_{sd} (ms)	Inst.	J	K	L
	120	M	N	O
	300	P	Q	R

Ground fault delay response notes:

1. Curve accuracy applies from -20°C to $+55^\circ\text{C}$ ambient. For possible continuous ampere derating for ambient above 40°C , refer to Eaton. Temperatures above $+85^\circ\text{C}$ cause an over-temperature protection trip.
2. Application frequency is 50/60 Hz.
3. Trip units are suitable for functional field testing with test kit cat no: MTST230V.
4. For LD Response and SD with Flat Responses curve, see TC01210020E.
5. For LD Responses and SD with I^2T Response curve, see TC01210021E.
6. For testing information, please contact Eaton.

Figure 4. Ground Fault Delay Response Curve (LSG, LSIG, ALSIG) Curve Number TC01210022E, June 2012

EATON
Digitrip 310+ Circuit Breaker Time/Current Curves
Maintenance Mode/Instantaneous
Setting (1600A/2000A)

Notes:

1. The Maintenance Mode feature must be ENABLED for these curves to apply. The LED indicator is blue when in Maintenance Mode.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
4. Available pickup settings ($\times I_n$) (tolerance is $\pm 15\%$)
 1600A Frame: 2.5, 4, 6, 7, 8, 8, 11
 2000A Frame: 2.5, 4, 6, 7, 8, 8, 9
5. These curves are comprehensive for the complete family of Series G R-Frame electronic breakers, including all frame sizes, ratings, and constructions. The total clearing times shown are conservative and consider the maximum response times of the trip unit, the circuit breaker opening, and the interruption of the current in worst case conditions such as: maximum rated voltages, single-phase interruption, and minimum power factor. Faster clearing times are possible depending on the specific system conditions.

Contact Eaton for additional information.

Series G R-Frame Trip Unit Nameplates

ALSI (With Maintenance Mode)

ALSIG (With Maintenance Mode)

***1600A/2000A Faceplates shown, 2500A Faceplates may differ**

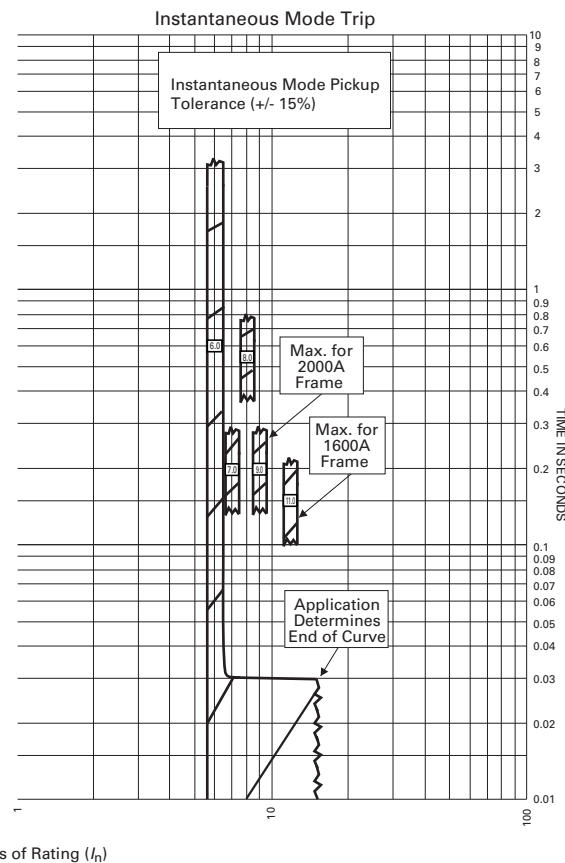
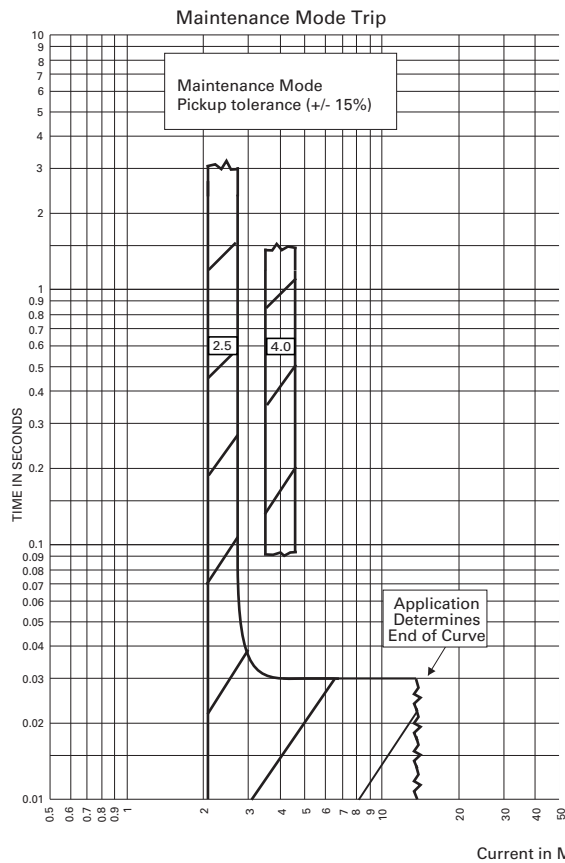


Figure 5. Maintenance Mode/Instantaneous Setting 1600A/2000A (ALSI, ALSIG) - Curve Number TC01210024E, September 2015

EATON
Digitrip 310+ Circuit Breaker Time/Current Curves
Maintenance Mode/Instantaneous Setting (2500A)

Notes:

1. The Maintenance Mode feature must be ENABLED for these curves to apply. The LED indicator is blue when in Maintenance Mode.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
4. Available pickup settings ($\times I_n$) (tolerance is $\pm 15\%$) 2.5, 4, 6, 6, 6, 7.
5. These curves are comprehensive for the complete family of Series G R-Frame electronic breakers, including all frame sizes, ratings, and constructions. The total clearing times shown are conservative and consider the maximum response times of the trip unit, the circuit breaker opening, and the interruption of the current in worst case conditions such as: maximum rated voltages, single-phase interruption, and minimum power factor. Faster clearing times are possible depending on the specic system conditions.

Contact Eaton for additional information.

Series G R-Frame Trip Unit Nameplates

ALSI (With Maintenance Mode)

ALSIG (With Maintenance Mode)

***1600A/2000A Faceplates shown, 2500A Faceplates may differ**

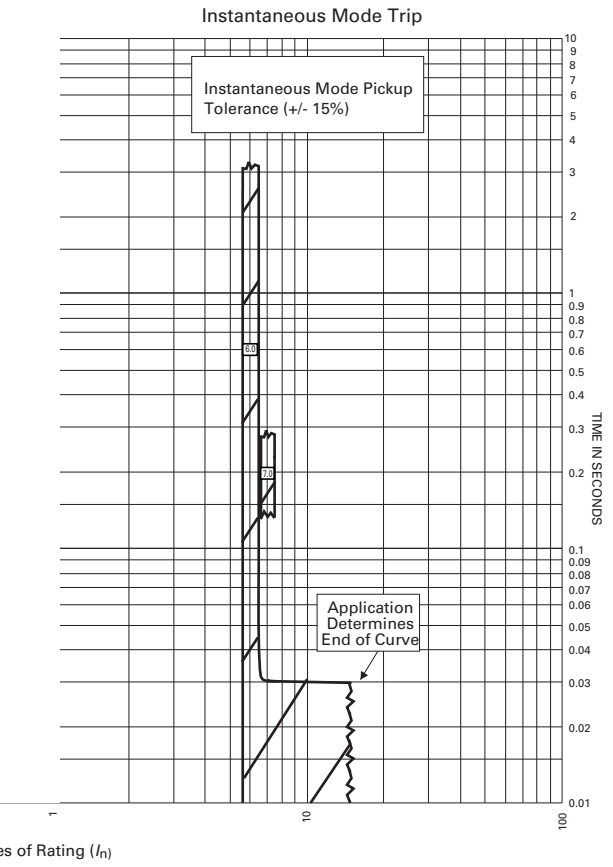
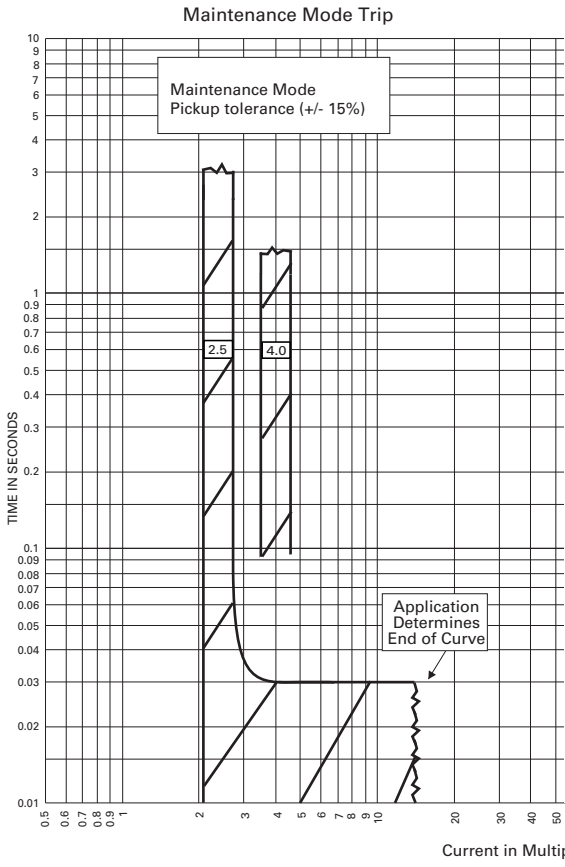
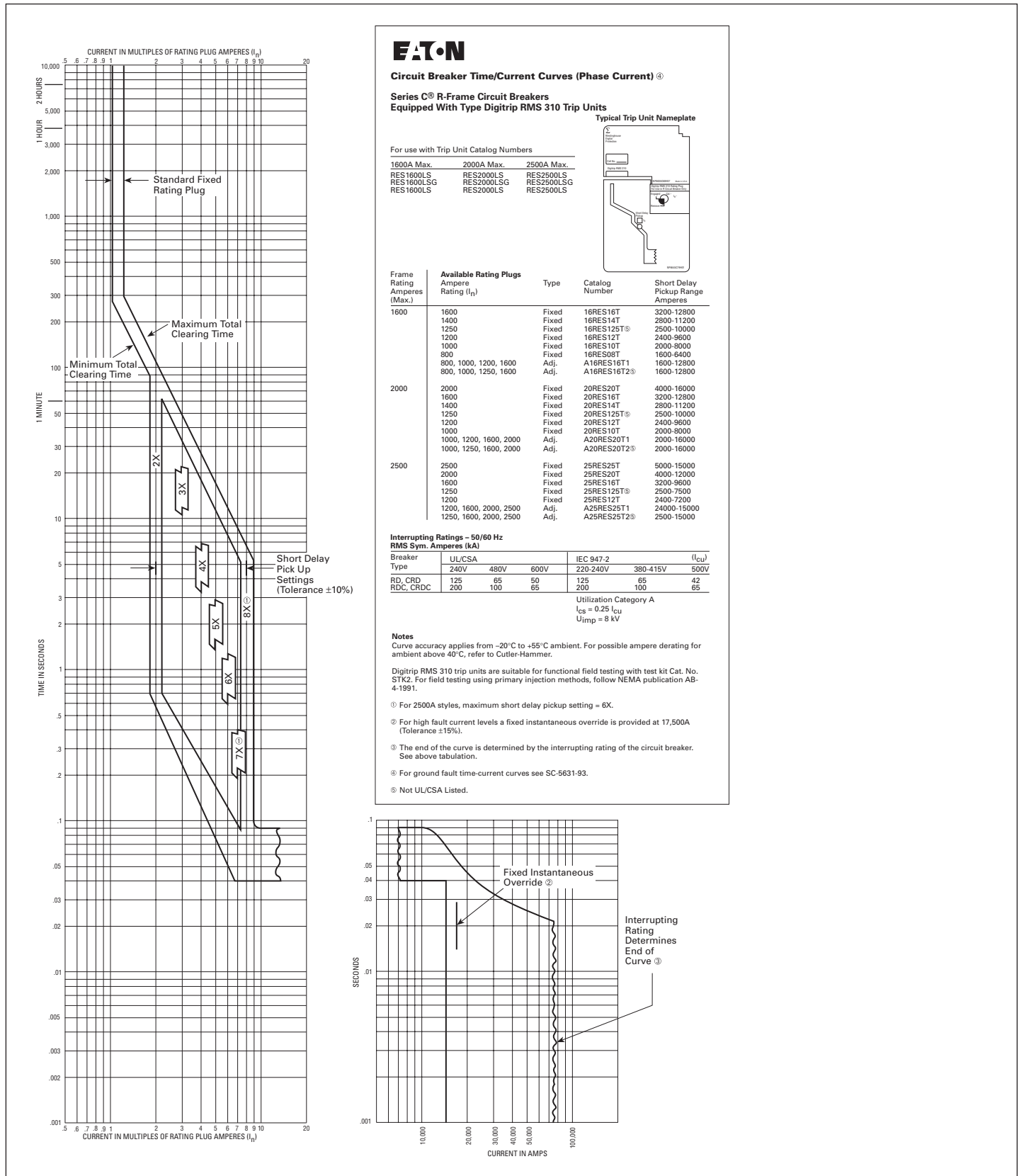


Figure 6. Maintenance Mode/Instantaneous Setting 2500A (ALSI, ALSIG) Curve Number TC01210023E, September 2015

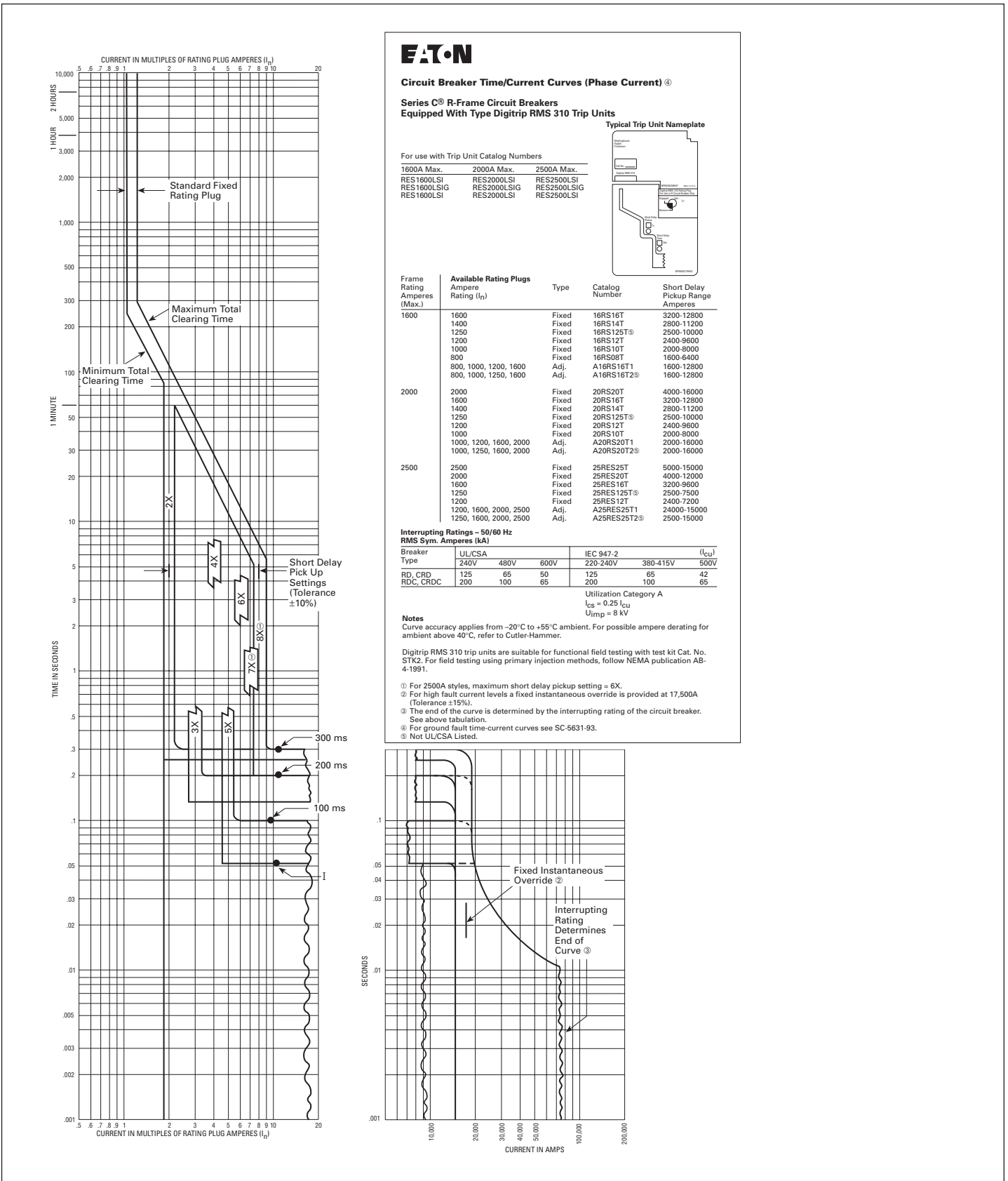
AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 310 Trip Units
Typical Instantaneous Time-Phase Current Characteristic Curve Based on I_n



AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 310 Trip Units
Typical Long Delay/Short Delay Time-Phase Current Characteristic Curve Based on I_n



AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 310 Trip Units
Typical Ground Fault/Protection Time/Current Characteristic Curve Based on I_n

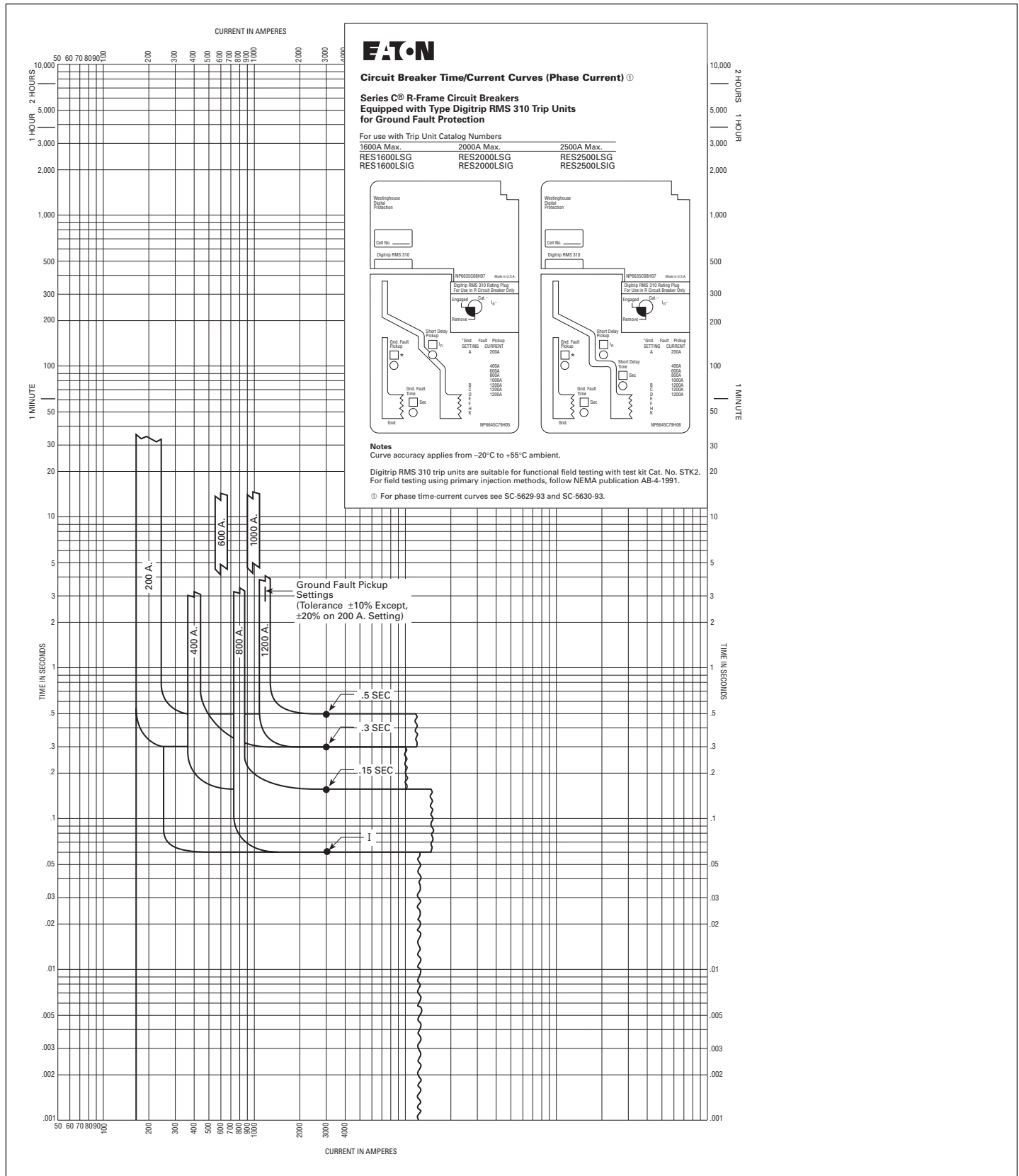


Figure 9. Typical Ground Fault/Protection Time/Current Characteristic Curve Based on I_n - Curve Number SC-5631-93, October 1997

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