



**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167K**

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May 1994  
 Supersedes Application Data 29-167,  
 dated March 1993, and Application Data  
 29-167C, dated September 1991  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® K-Frame  
 Circuit Breakers

# Westinghouse AB DE-ION® Circuit Breakers

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- ① Use in conjunction with SC-5638-93, SC-5639-93, SC-5644-93, or SC-5645-93.
- ② Use in conjunction with SC-5640-93, SC-5641-93, SC-5646-93, or SC-5647-93.
- ③ Use in conjunction with SC-5642-93, SC-5643-93, SC-5648-93, or SC-5649-93.

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167K.

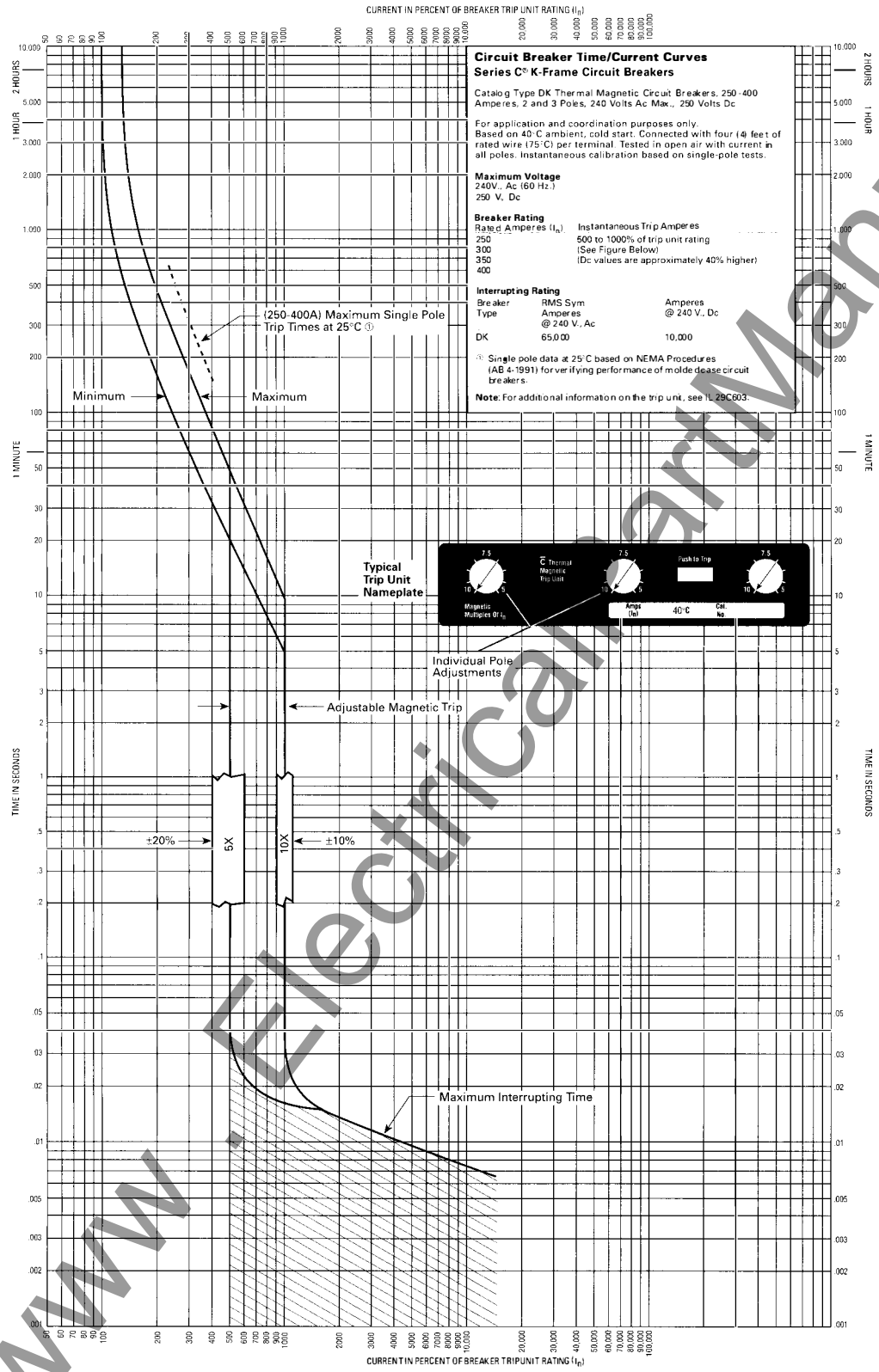
Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:

Cutler-Hammer  
 Westinghouse &  
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 Five Parkway Center  
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When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-4117-87B. **Requests for full sets of curves will not be honored.**

# AB DE-ION Circuit Breakers

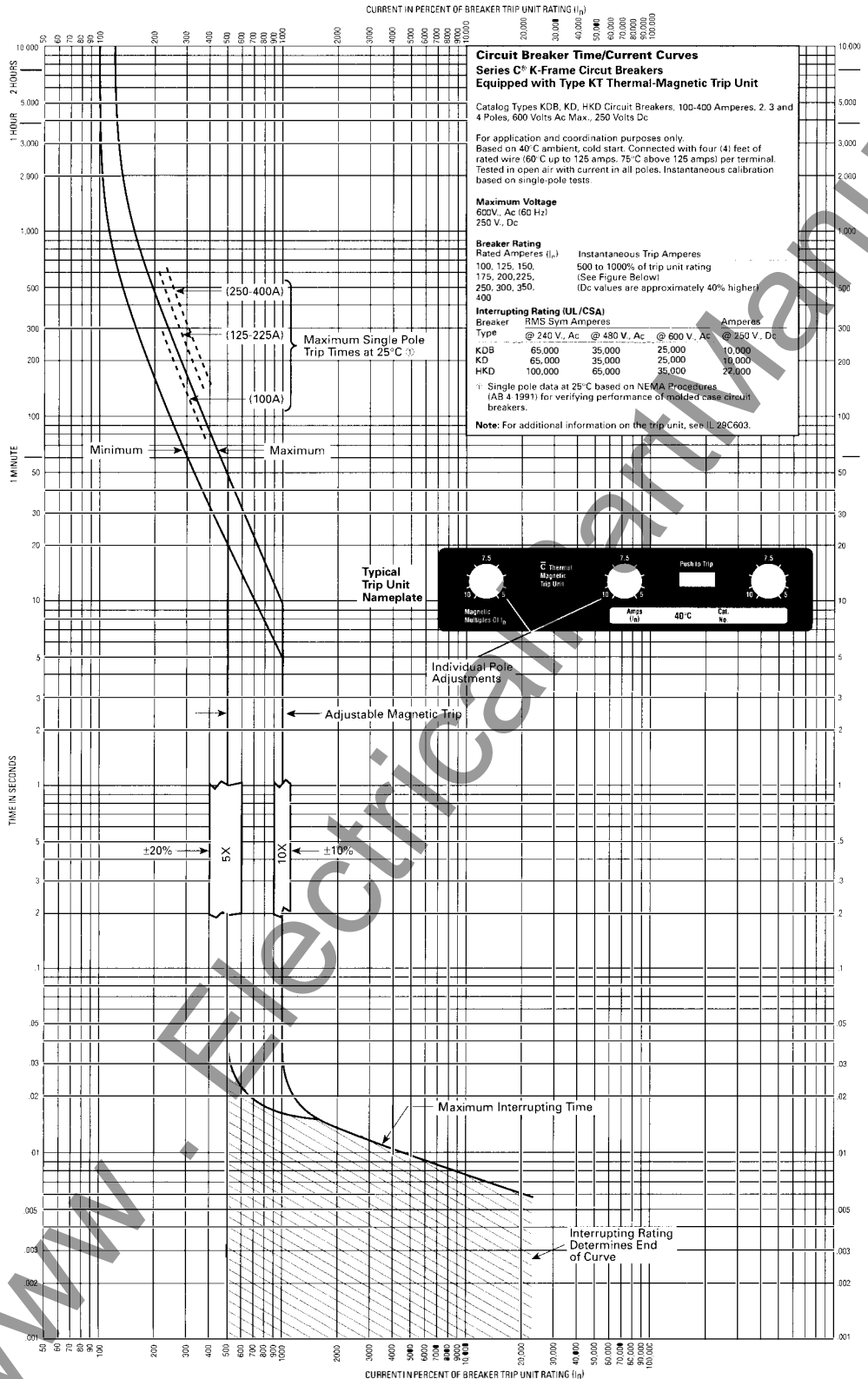
## Type DK





# AB DE-ION Circuit Breakers

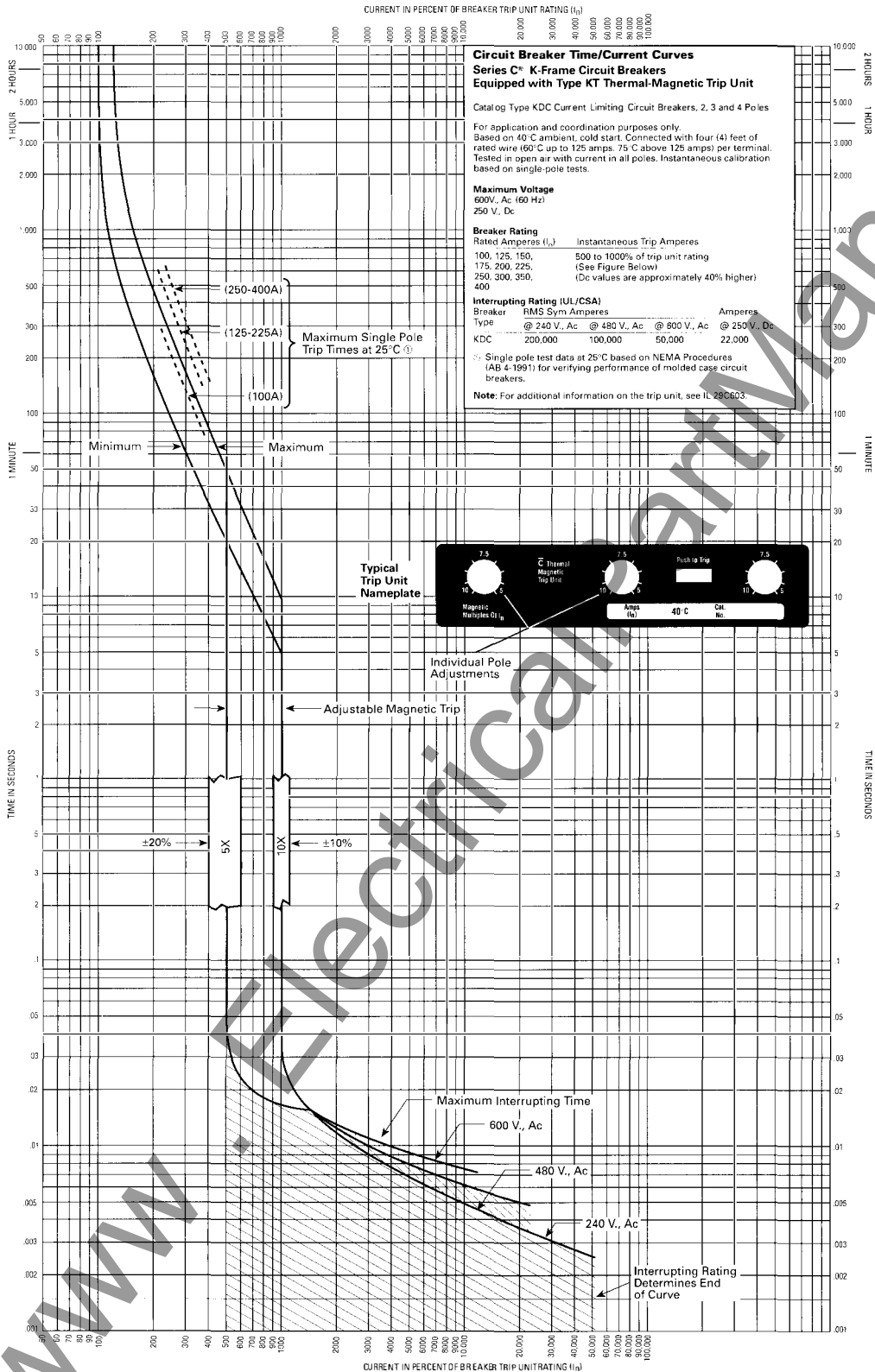
## Types KDB, KD, HKD Equipped with Type KT Thermal-Magnetic Trip Unit





# AB DE-ION Circuit Breakers

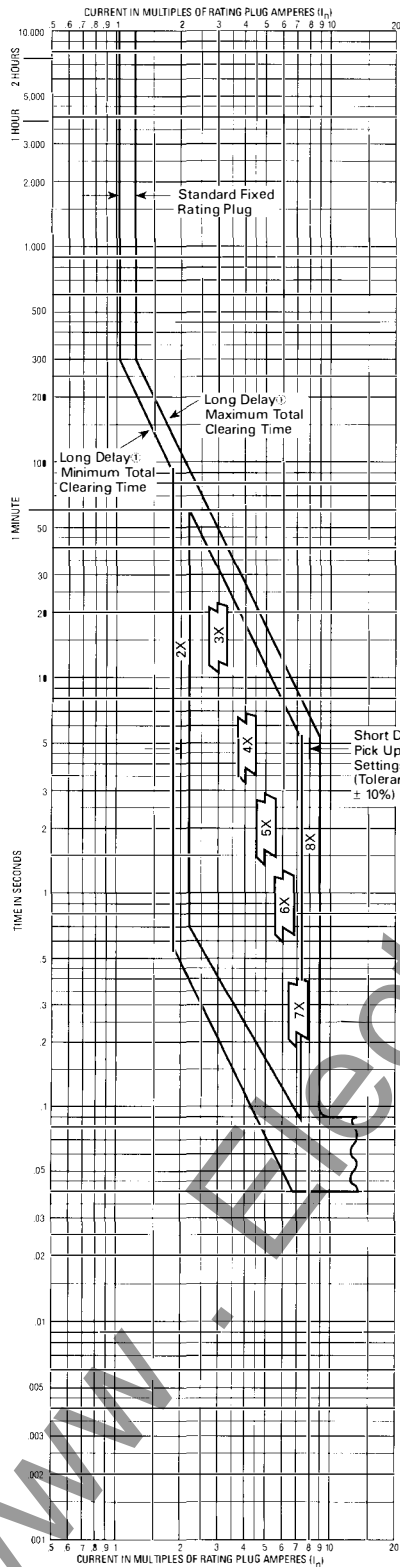
## Type KDC Equipped with Type KT Thermal-Magnetic Trip Unit





AB DE-ION Circuit Breakers

Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3400LS, KES3400LGS



### Circuit Breaker Time/Current Curves (Phase Current) ④

**Series C® K-Frame Circuit Breakers  
Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3400LS, KES3400LGS Digitrip RMS 310 Trip Units for use with Circuit Breaker Types KD, HKD, CKD, and CHKD, 400A. max.

**Fixed Short Delay Time**

**Typical Trip Unit Nameplate**

Amperes Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
400	Fixed	4K ES 400T	800-3200
350	Fixed	4K ES 350T	700-2800
300	Fixed	4K ES 300T	600-2400
250	Fixed	4K ES 250T	500-2000
225	Fixed	4K ES 225T	450-1800
200	Fixed	4K ES 200T	400-1600
200, 250, 300, 400	Adjustable	4K ES 400T1	400-3200
200, 300, 350, 400	Adjustable	4K ES 400T3	500-3200

Interrupting Ratings - 50/60 Hz RMS Sym. Amperes (kA)			
Breaker Type	U/CSA	480V	600V
KD, CKD	65	35	25
HKD, CHKD	100	65	35

Breaker Type IEC 947-2			
Breaker Type	240V	380V	415V
KD, CKD	65	40	40
HKD, CHKD	100	65	65

**Notes**  
 Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. 5TK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

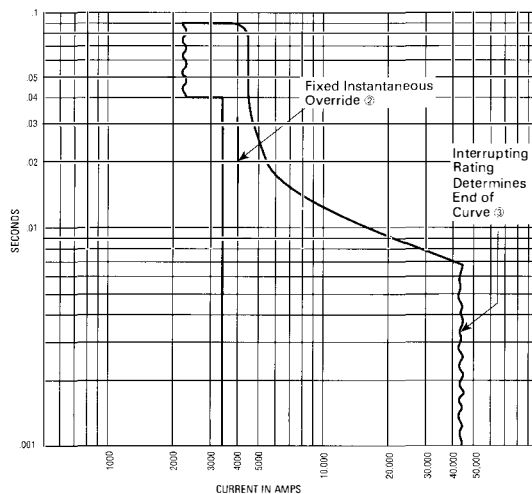
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if the current above the long delay pick up value exists for a time and then is cleared by the tripping of a down stream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

① Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

② For high fault current levels a fixed instantaneous override is provided at 4000A (Tolerance ±15%).

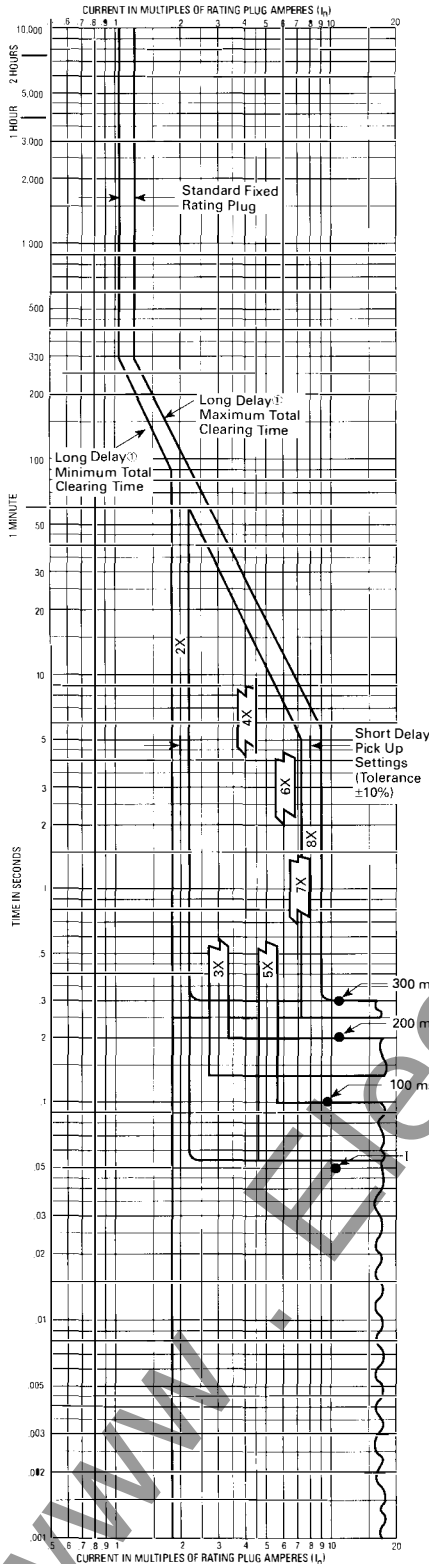
③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

④ For ground fault time/current curve see SC 5650-93.



## AB DE-ION Circuit Breakers

Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3400LSI, KES3400LSIG



### Circuit Breaker Time/Current Curves (Phase Current) ④

**Series C<sup>®</sup> K-Frame Circuit Breakers Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3400LSI, KES3400LSIG Digitrip RMS 310 Units for use with Circuit Breaker Types KD, HKD, CKD, and CHKD, 400A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

Amperes Rating (I <sub>N</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
400	Fixed	4KES 400T	800-3200
350	Fixed	4KES 350T	700-2800
300	Fixed	4KES 300T	600-2400
250	Fixed	4KES 250T	500-2000
225	Fixed	4KES 225T	450-1800
200	Fixed	4KES 200T	400-1600
200, 250, 300, 400	Adjustable	A4KES 400T1	400-3200
250, 300, 350, 400	Adjustable	A4KES 400T3	500-3200

Breaker Type	UL/CSA	480 V	800 V
KD, CKD	65	25	25
HKD, CHKD	100	65	35

Breaker Type	IEC 947-2	240 V	330 V	415V
KD, CKD	65	40	40	40
HKD, CHKD	100	65	65	65

**Notes**

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

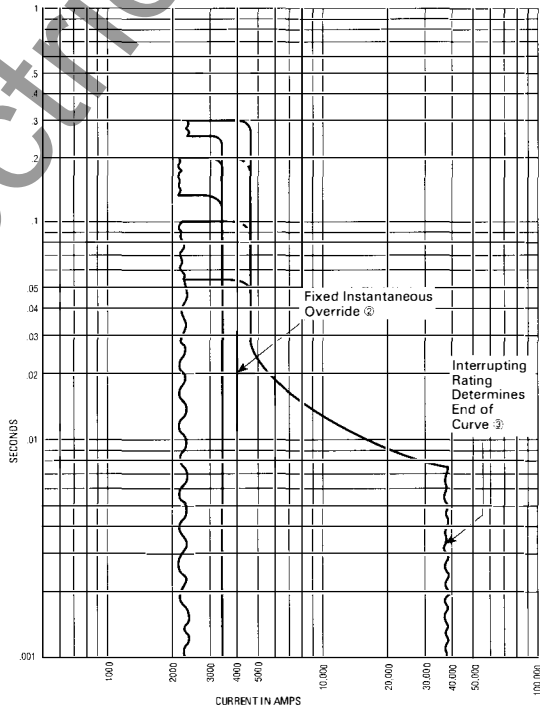
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

① Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

② For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%).

③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

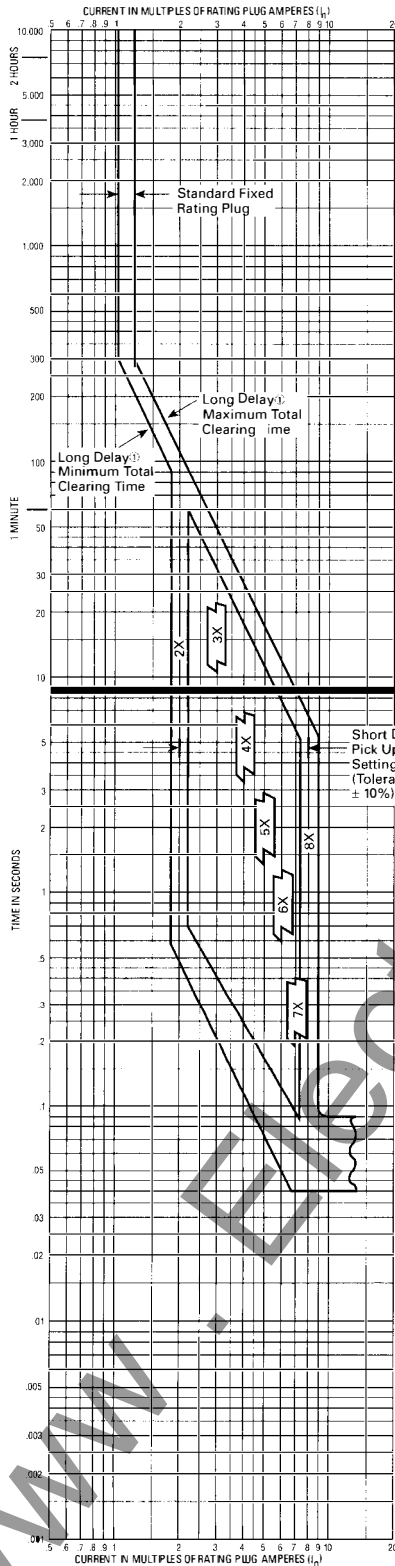
④ For ground fault time/current curve see SC 5 650-93.





AB DE-ION Circuit Breakers

Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3250LS, KES3250LSG



### Circuit Breaker Time/Current Curves (Phase Current) ①

**Series C® K-Frame Circuit Breakers  
Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3250LS, KES3250LSG Digitrip RMS 310 Units for use with Circuit Breaker Types KD, CKD, HKD, and CHKD, 250A, max.

**Fixed Short Delay Time**

**Typical Trip Unit Nameplate**

Ampere Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
250	Fixed	2KES 250T	50.0-200.0
225	Fixed	2KES 225T	45.0-180.0
200	Fixed	2KES 200T	40.0-160.0
175	Fixed	2KES 175T	35.0-140.0
150	Fixed	2KES 150T	30.0-120.0
125	Fixed	2KES 125T	25.0-100.0
125, 150, 200, 250	Adjustable	A2KES 250T1	25.0-200.0

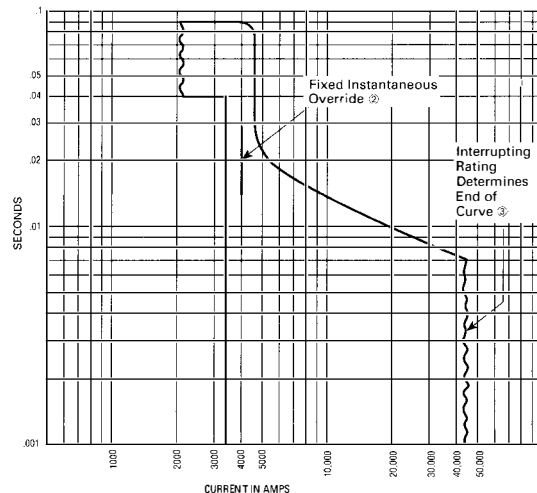
Breaker Type	UL/CSA	480V	60.0V
KD, CKD	65	35	25
HKD, CHKD	100	65	35

Breaker Type	IEC 947-2	380V	415V
KD, CKD	65	40	40
HKD, CHKD	100	65	65

**Notes**  
 Digitrip RMS 310 Trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB 4-1991.

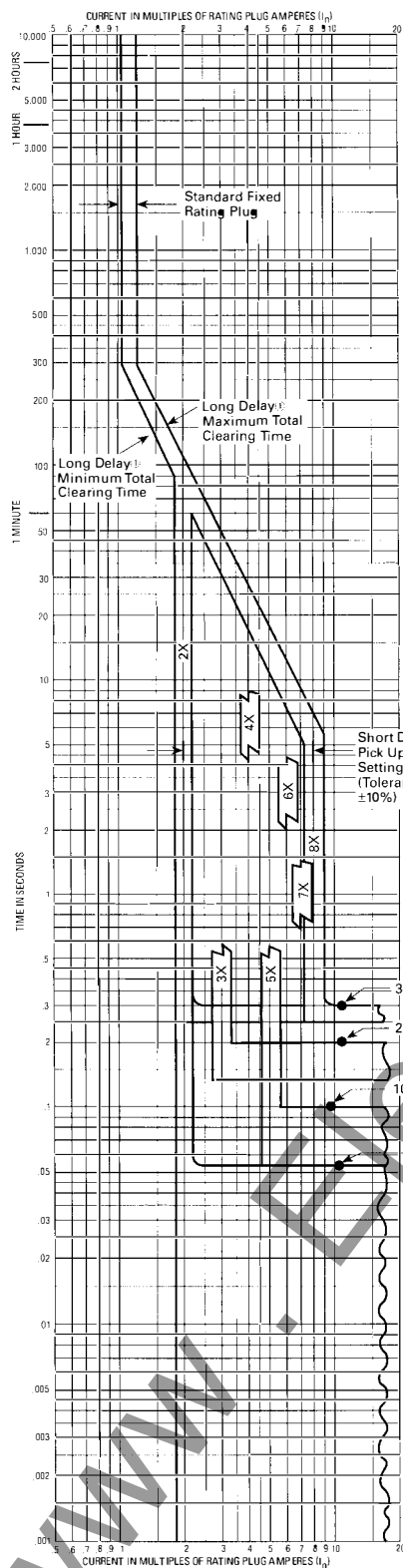
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if the current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

- Curve accuracy applies from -20° C to +55° C ambient. For possible continuous ampere derating for ambient above 40° C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%.)
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5651-93.



# AB DE-ION Circuit Breakers

Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3250LSI, KES3250LSIG



### Circuit Breaker Time/Current Curves (Phase Current)

**Series C<sup>®</sup> K-Frame Circuit Breakers**  
Equipped With Type KES Digitrip RMS 310 Trip Units

Catalog Types KES3250LSI, KES3250LSIG Digitrip RMS 310 Units for use with Circuit Breaker Types KD, HKD, CKD, and CHKD, 250A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

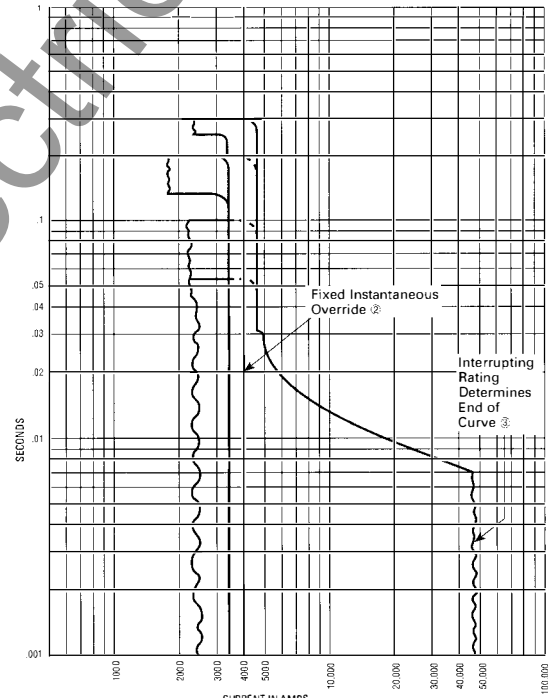
Ampere Rating (I <sub>tr</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
250	Fixed	2KES 250T	500-2000
225	Fixed	2KES 225T	450-1800
200	Fixed	2KES 200T	400-1600
175	Fixed	2KES 175T	350-1400
150	Fixed	2KES 150T	300-1200
125	Fixed	2KES 125T	250-1000
125, 150, 200, 250	Adjustable	A2KES 250T1	250-2000

Breaker Type	UL/CSA	480V	600V
KD, CKD	65	35	25
HKD, CHKD	100	65	35

Breaker Type	240V	380V	415V
KD, CKD	65	40	40
HKD, CHKD	100	65	65

**Notes**

- Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.
- There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.
- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5651-93.

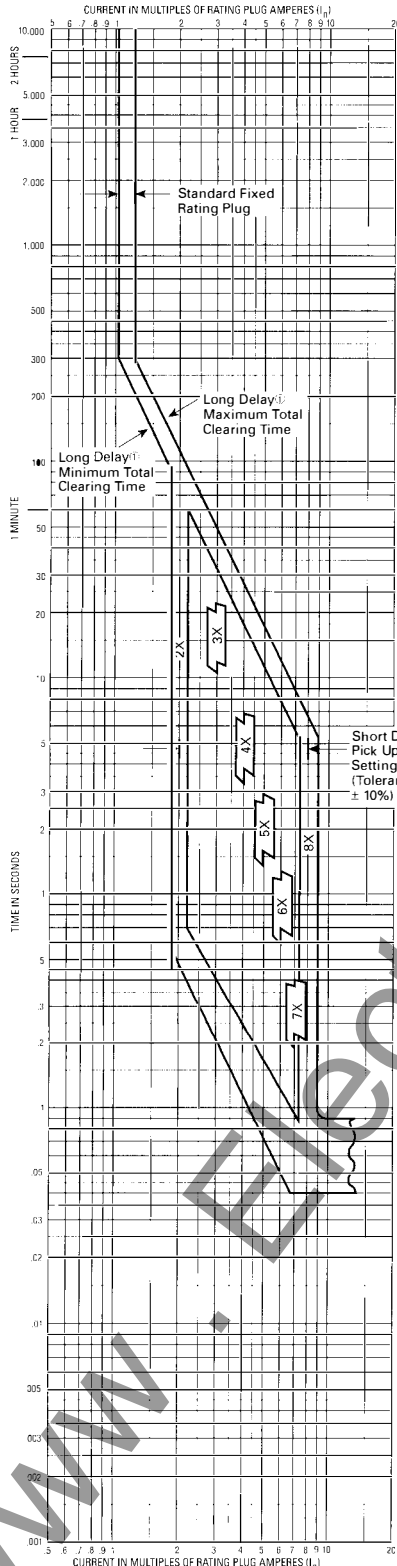






# AB DE-ION Circuit Breakers

## Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3125LS, KES3125LSG



### Circuit Breaker Time/Current Curves (Phase Current) ④

**Series C<sup>®</sup> K-Frame Circuit Breakers**  
Equipped With Type KES Digitrip RMS 310 Trip Units

Catalog Types KES3125LS, KES3125LSG Digitrip RMS 310 Trip Units for use with Circuit Breaker Types KD, CKD, HKD, and CHKD, 125A, max.

**Fixed Short Delay Time**

**Typical Trip Unit Nameplate**

**Available Rating Plugs**

Ampere Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
125	Fixed	1KES 125T	250-1000
110	Fixed	1KES 110T	220-880
100	Fixed	1KES 100T	200-800
90	Fixed	1KES 90T	180-720
70	Fixed	1KES 70T	140-560
70, 90, 100, 125	Adjustable	A1KES 125TT	140-1000

**Interrupting Ratings - 50/60 Hz**  
RMS Sym. Amperes (kA)

Breaker Type	UL/CSA	480V	600V
KD, CKD	65	35	25
HKD, CHKD	100	65	35

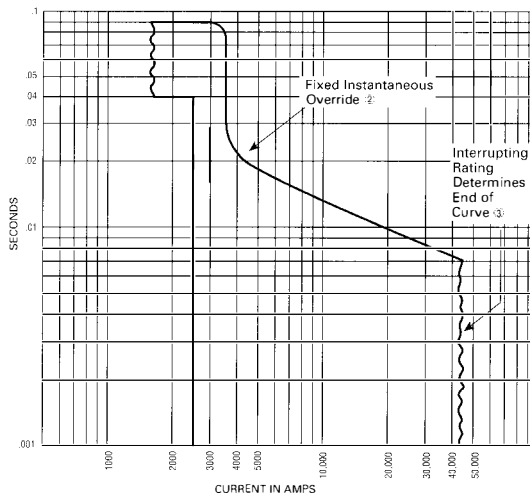
  

Breaker Type	IEC 947-2	380V	415V
KD, CKD	65	40	40
HKD, CHKD	100	65	65

**Notes**  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

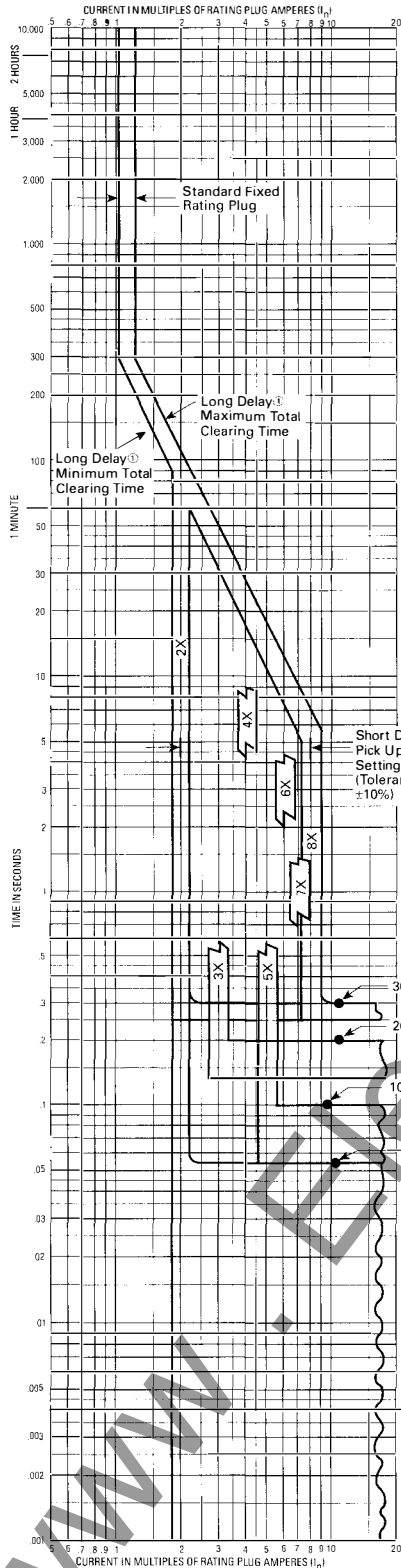
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick up value exists for a time and then is cleared by the tripping of a down stream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%.)
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5652-93.



## AB DE-ION Circuit Breakers

Types KD, CKD, HKD, CHKD Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3125LSI, KES3125LSIG



### Circuit Breaker Time/Current Curves (Phase Current) ①

**Series C® K-Frame Circuit Breakers Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3125LSI, KES3125LSIG Digitrip RMS 310 Trip Units for use with Circuit Breaker Types KD, CKD, CHKD, and CHKD, 125A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

Ampere Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
125	Fixed	1KES 125T	250-1000
110	Fixed	1KES 110T	220-880
100	Fixed	1KES 100T	200-800
90	Fixed	1KES 90T	180-720
70	Fixed	1KES 70T	140-560
70, 90, 100, 125	Adjustable	ATKES 125T 1	140-1000

Breaker Type	UL/CSA	480V	600V
KD, CKD	65	35	25
HKD, CHKD	100	65	35

Breaker Type	IEC 947-2	380V	415V
KD, CKD	65	40	40
HKD, CHKD	100	65	65

**Notes**

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

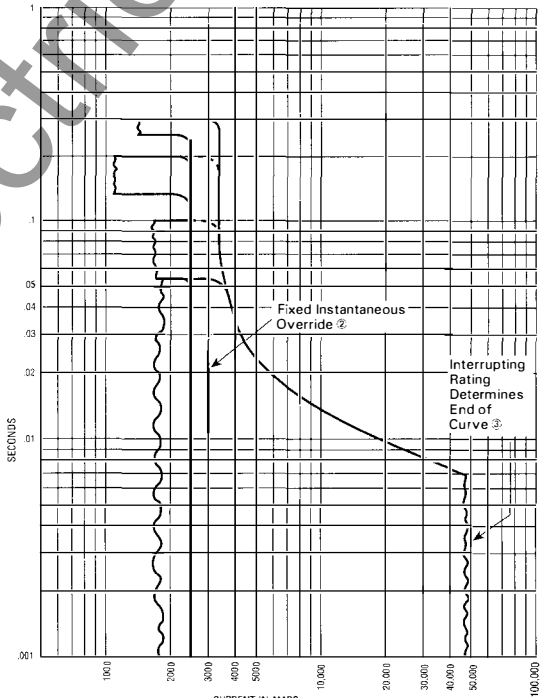
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

① Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

② For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%).

③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

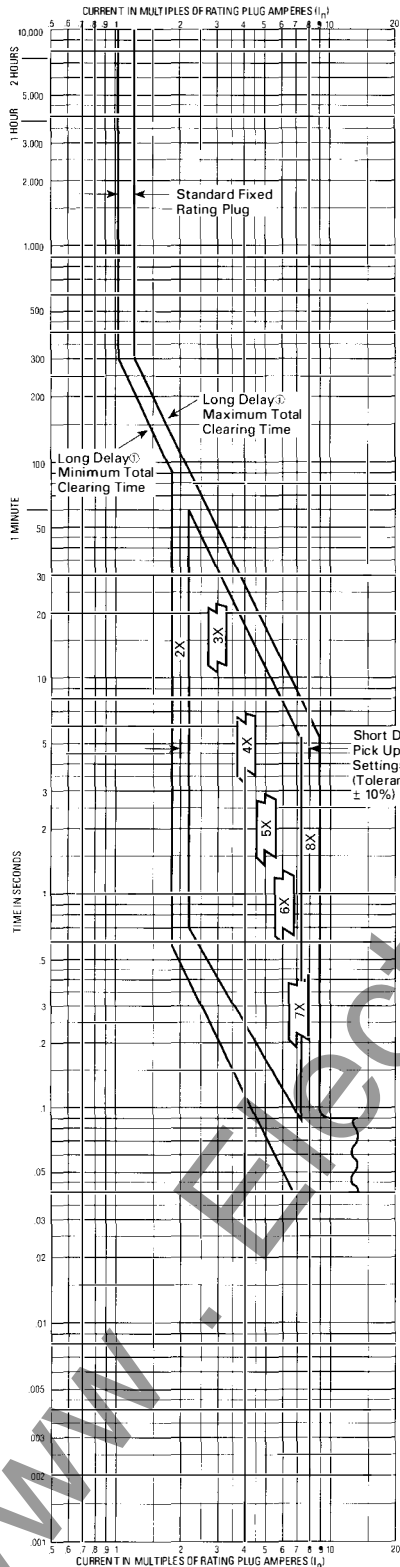
④ For ground fault time/current curve see SC-5652-93.





AB DE-ION Circuit Breakers

Type KDC Equipped with Type KES Digtrip RMS 310 Trip Units, Types KES3400LS, KES3400LSG



**Circuit Breaker Time/Current Curves (Phase Current) ④**

**Series C<sup>o</sup> K-Frame Circuit Breakers Equipped With Type KES Digtrip RMS 310 Trip Units**

Catalog Types KES3400LS, KES3400LSG Digtrip RMS 310 Trip Units for use with Circuit Breaker Type KDC, 400A, max.

**Fixed Short Delay Time**

**Typical Trip Unit Nameplate**

**Available Rating Plugs**

Ampere Rating (I <sub>pl</sub> )	Type	Catalog Number	Short Delay Pick up Range Amperes
400	Fixed	4KES 400 T	800-3200
350	Fixed	4KES 350 T	700-2800
300	Fixed	4KES 300 T	600-2400
250	Fixed	4KES 250 T	500-2000
225	Fixed	4KES 225 T	450-1800
200	Fixed	4KES 200 T	400-1600
200, 250, 300, 400	Adjustable	4KES 400 T1	400-3200
250, 300, 350, 400	Adjustable	4KES 400 T3	500-3200

**Interrupting Ratings - 50/60 Hz RMS Sym. Amperes (kA)**

Breaker Type	UL/CSA	480 V	600 V
KDC	240V	100	50

Breaker Type	IEC 947-2	380 V	415V
KDC	240V	100	100

**Notes**

Digtrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

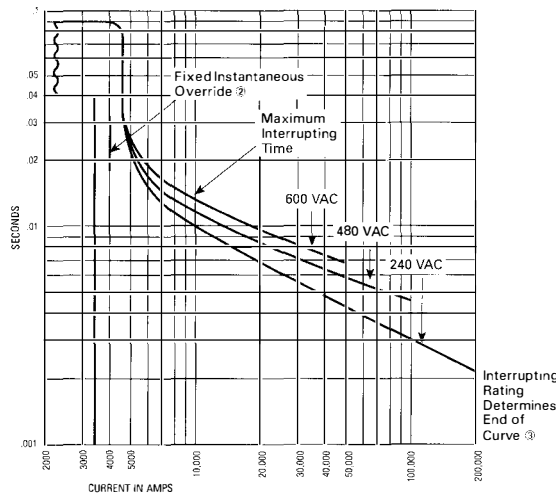
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick up value exists for a time and then is cleared by the tripping of a down stream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

<sup>1)</sup> Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

<sup>2)</sup> For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%)

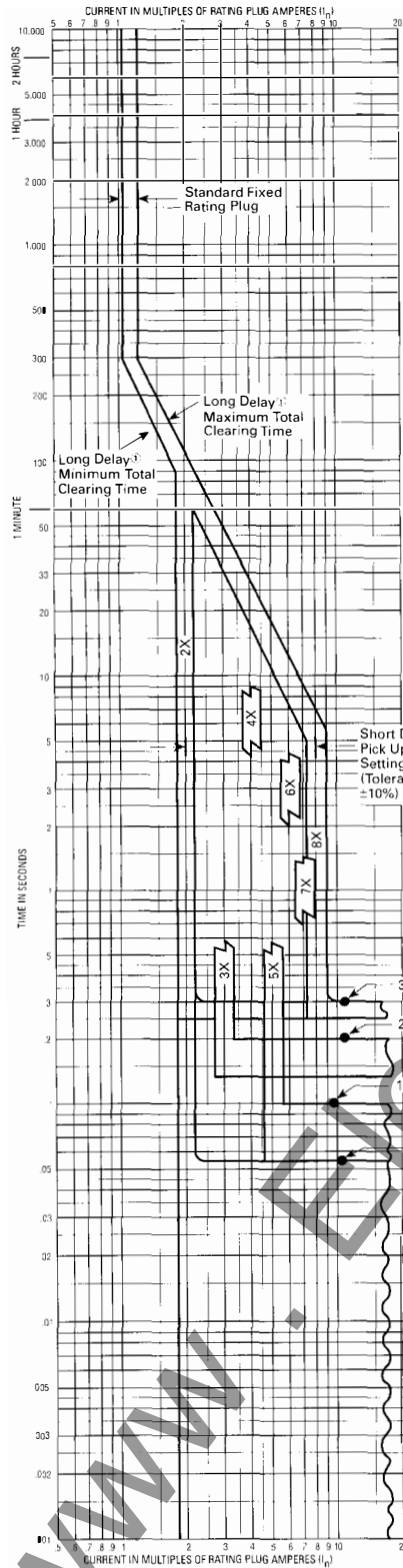
<sup>3)</sup> The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

<sup>4)</sup> For ground fault time/current curve see SC-5650-93.



## AB DE-ION Circuit Breakers

Type KDC Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3400LSI, KES3400LSIG



### Circuit Breaker Time/Current Curves (Phase Current)

**Series C<sup>o</sup> K-Frame Circuit Breakers  
Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3400LSI, KES3400LSIG, Digitrip RMS 310 Trip Units for use with Circuit Breaker Type KDC, 400A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

Amperes Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
400	Fixed	4KES 400T	800-3200
350	Fixed	4KES 350T	700-2800
300	Fixed	4KES 300T	600-2400
250	Fixed	4KES 250T	500-2000
225	Fixed	4KES 225T	450-1800
200	Fixed	4KES 200T	400-1600
200, 250, 300, 400	Adjustable	A4KES 400T1	400-3200
250, 300, 350, 400	Adjustable	A4KES 400T3	500-3200

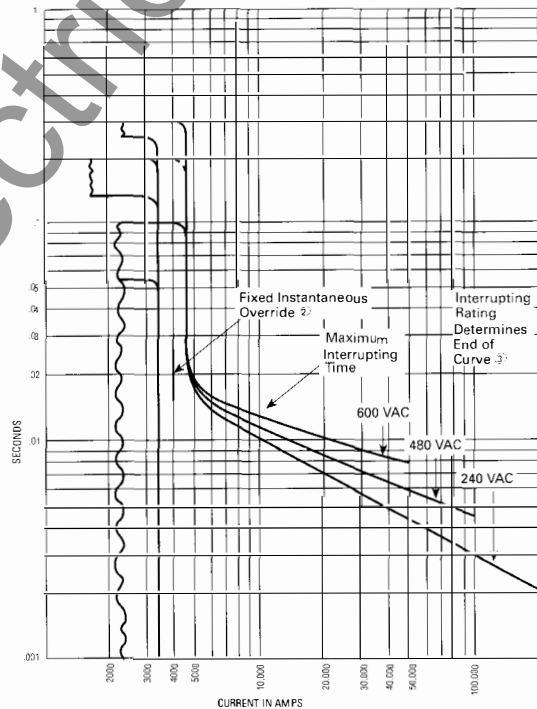
**Interrupting Ratings - 50/60 Hz  
RMS Sym. Amperes (kA):**

Breaker Type	240V	380V	600V
UL/CSA			
KDC	200	100	50

Breaker Type	240V	380V	415V
IEC 947-2			
KDC	200	100	100

**Notes**

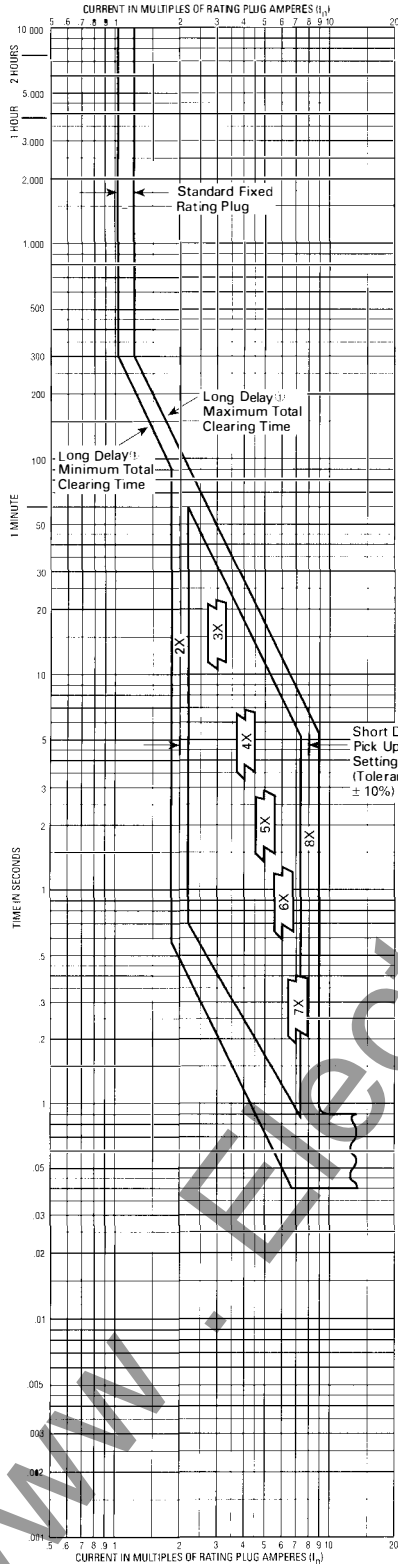
- Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.
- There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.
- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%)
- The end of the curves is determined by the interrupting rating of the circuit breaker. See above table.
- For ground fault time-current curve see SC-5660-93





# AB DE-ION Circuit Breakers

## Type KDC Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3250LS, KES3250LSG



### Circuit Breaker Time/Current Curves (Phase Current) ①

**Series C<sup>®</sup> K-Frame Circuit Breakers**  
Equipped With Type KES Digitrip RMS 310 Trip Units

Catalog Types KES3250LS, KES3250LSG Digitrip RMS 310 Units for use with Circuit Breaker Type KDC, 250A max.

**Fixed Short Delay Time**

**Typical Trip Unit Nameplate**

Ampere Rating (I <sub>p</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
250	Fixed	2KES 250 T	500-2000
225	Fixed	2KES 225 T	450-1800
200	Fixed	2KES 200 T	400-1600
175	Fixed	2KES 175 T	350-1400
150	Fixed	2KES 150 T	300-1200
125	Fixed	2KES 125 T	250-1000
125, 150, 200, 250	Adjustable	A2KES 250 TT	250-2000

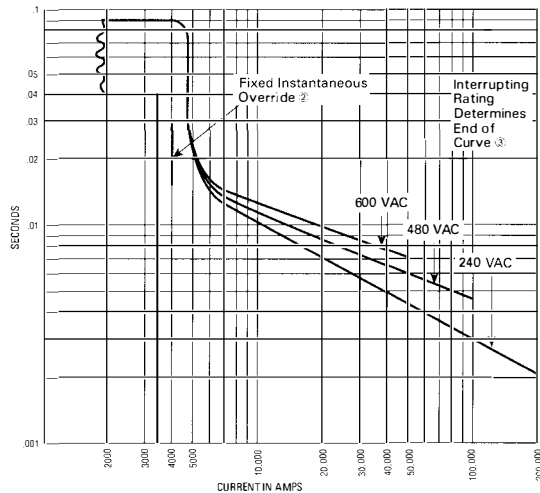
Breaker	UL/CSA	480 V	600V
KDC	240	100	50

Breaker	240V	380V	415V
KDC	200	100	100

**Notes**  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

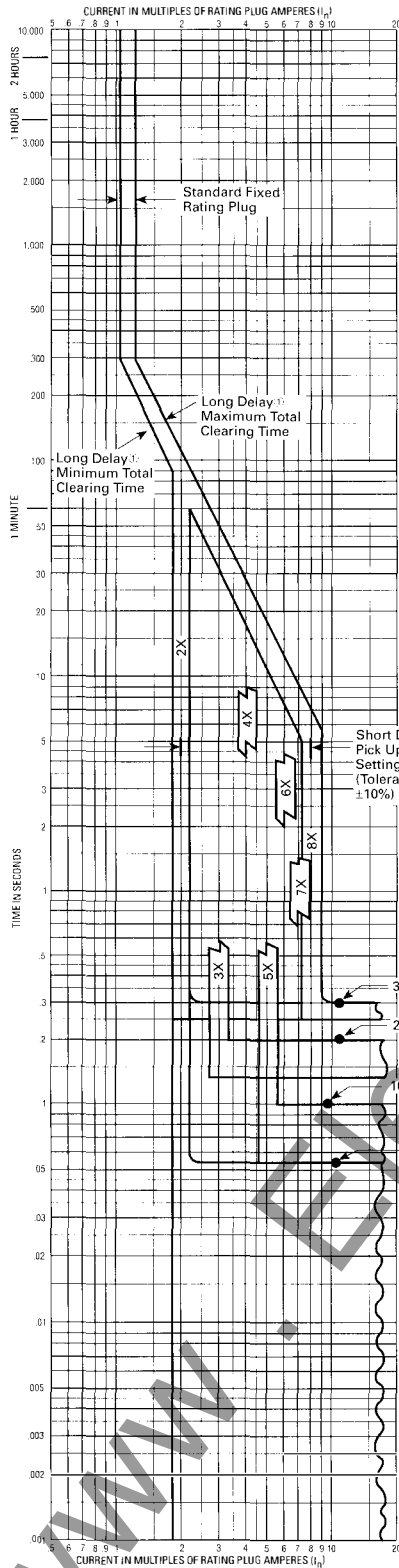
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ± 5%).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5651-93.



# AB DE-ION Circuit Breakers

Type KDC Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3250LSI, KES3250LSIG



### Circuit Breaker Time/Current Curves (Phase Current) ②

**Series C® K-Frame Circuit Breakers Equipped With Type KES Digitrip RMS 310 Units**

Catalog Types KES3250LSI, KES3250LSIG Digitrip RMS 310 Trip Units for use with Circuit Breaker Type KDC, 250A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

Ampere Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
250	Fixed	2KES 250T	500-2000
225	Fixed	2KES 225T	450-1800
200	Fixed	2KES 200T	400-1600
175	Fixed	2KES 175T	350-1400
150	Fixed	2KES 150T	300-1200
125	Fixed	2KES 125T	250-1000
125, 150, 200, 250	Adjustable	A2KES 250T1	250-2000

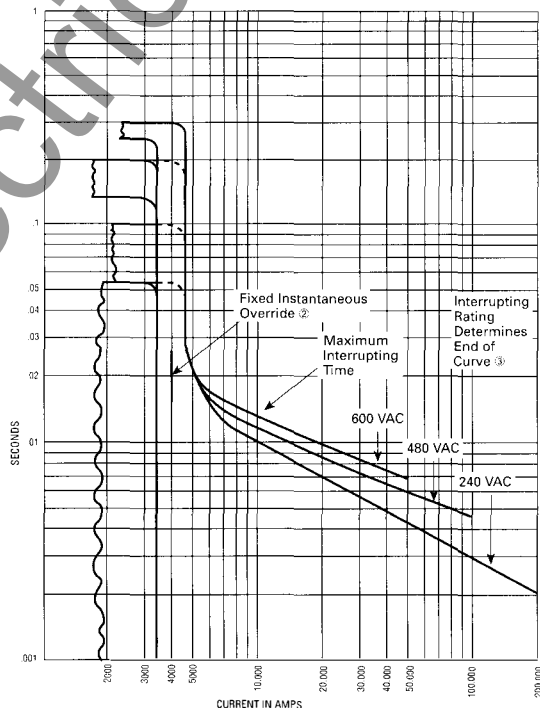
Breaker Type	UL/CSA	480V	600V
KDC	240V	100	50
KDC	200	100	50

Breaker Type	IEC 947-2	980V	415V
KDC	240V	100	100
KDC	200	100	100

**Notes**  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

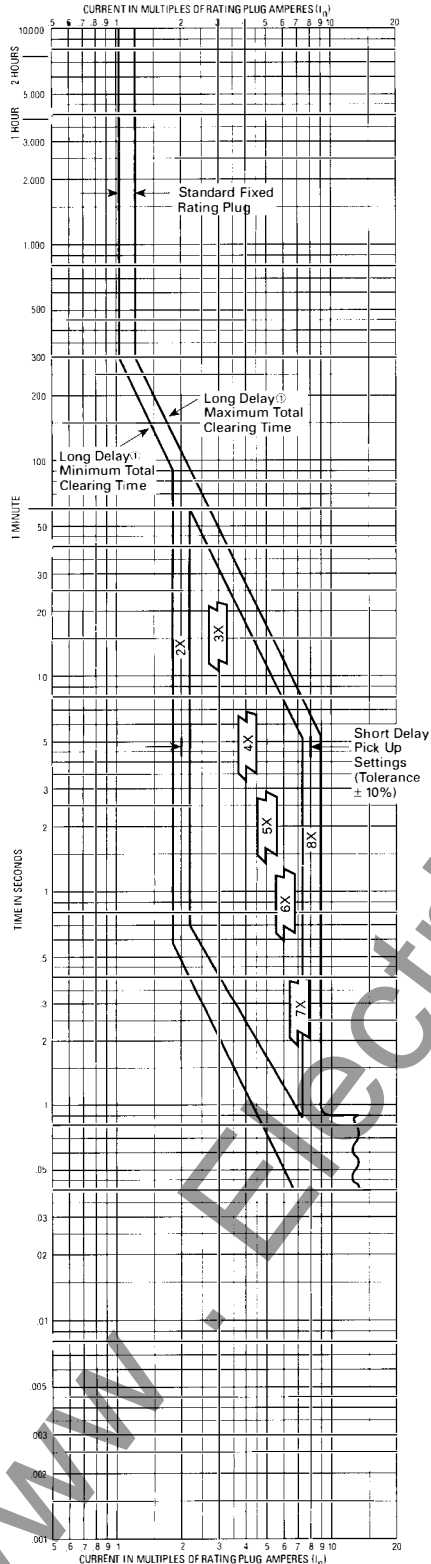
- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%.)
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5851-93.





AB DE-ION Circuit Breakers

Type KDC Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3125LS, KES3125LSG



**Circuit Breaker Time/Current Curves (Phase Current) 4**

**Series C<sup>®</sup> K-Frame Circuit Breakers**  
Equipped With Type KES Digitrip RMS 310 Trip Units

Catalog Types KES3125LS, KES3125LSG Digitrip RMS 310 Trip Units for use with Circuit Breaker Types KDC, 125A, max.

**Fixed Short Delay Time**

Digitrip RMS 310 Rating Plug  
Cat. In Engage Remove

Short Delay Pickup  $\times \frac{1}{2}$

Typical Trip Unit Nameplate  
TEST

**Available Rating Plugs**

Amperes Rating (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
125	Fixed	1KES 125T	250-1800
110	Fixed	1KES 110T	220-880
100	Fixed	1KES 100T	200-800
90	Fixed	1KES 90T	180-720
70	Fixed	1KES 70T	110-800
70, 90, 100, 125	Adjustable	AKS 125T1	140-1000

**Interrupting Ratings - 50/60 Hz**  
**RMS Sym. Amperes (kA)**

Breaker Type	UL/CSA	480 V	600 V
KDC	240	100	50

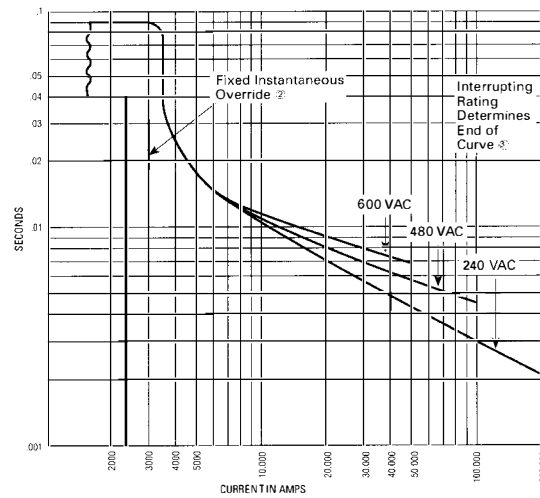
Breaker Type	IEC 947-2	380 V	415V
KDC	200	100	100

**Notes**

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1391.

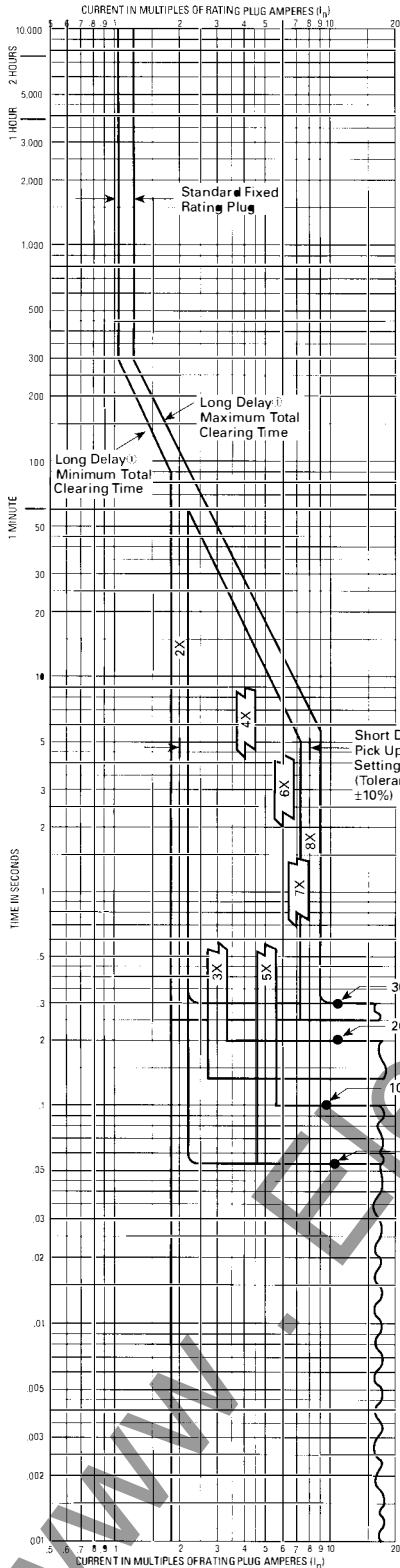
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance +15%).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curve see SC-5652-93.



## AB DE-ION Circuit Breakers

Type KDC Equipped with Type KES Digitrip RMS 310 Trip Units, Types KES3125LSI, KES3125LSIG



**Circuit Breaker Time/Current Curves (Phase Current) ④**

**Series C<sup>®</sup> K-Frame Circuit Breakers Equipped With Type KES Digitrip RMS 310 Trip Units**

Catalog Types KES3125LSI, KES3125LSIG Digitrip RMS 310 Trip Units for use with Circuit Breaker Type KDC, 125A, max.

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

Available Rating Plugs			
Ampere Rating (I <sub>a</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
125	Fixed	IKES 125T	250-1000
110	Fixed	IKES 110T	220-880
100	Fixed	IKES 100T	200-800
90	Fixed	IKES 90T	180-720
70	Fixed	IKES 70T	140-560
70, 90, 100, 125	Adjustable	AIKES 125T1	120-1000

Interrupting Ratings - 50/60 Hz RMS Sym. Amperes (kA)			
Breaker Type	UL/CSA	480V	600V
KDC	200	100	50

IEC 947-2			
Breaker Type	240V	380V	415V
KDC	200	100	100

**Notes**

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

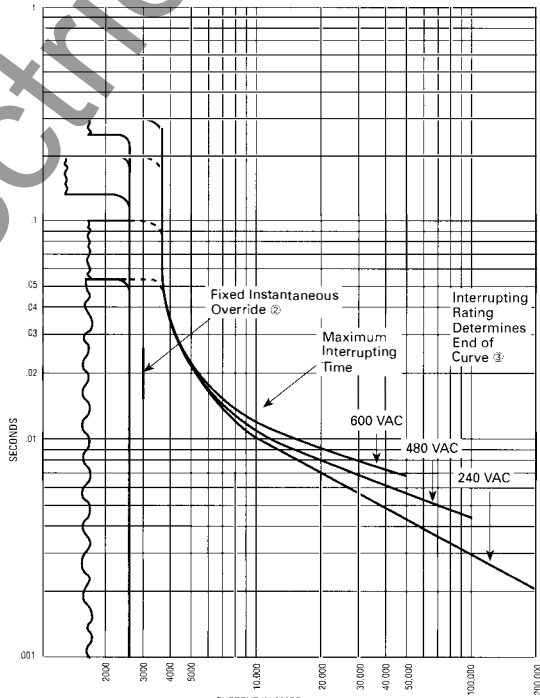
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

① Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

② For high fault current levels a fixed instantaneous override is provided at 4000A. (Tolerance ±15%.)

③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

④ For ground fault time/current curve see SC-5652-93.

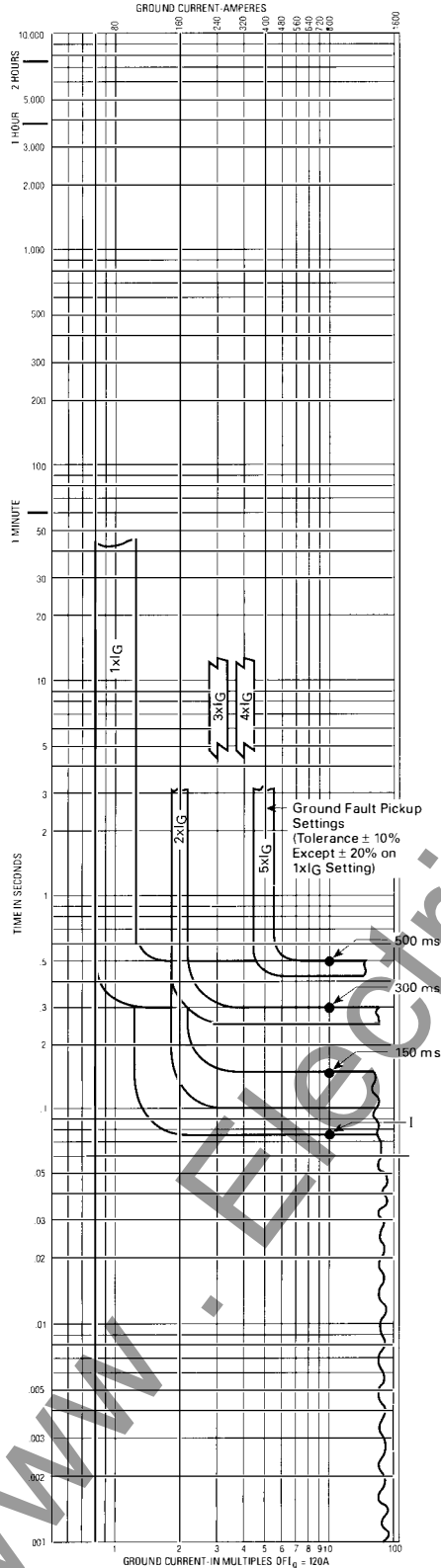






# AB DE-ION Circuit Breakers

## Ground Fault Protection (KES3400LSG, KES3400LSIG)



**Circuit Breaker Time/Current Curves (Ground Current)**

**Series C® K-Frame Circuit Breakers  
Equipped With Type KES Digitrip RMS 310 Trip Units  
For Ground Fault Protection**

Type Digitrip RMS 310 Trip Unit for use with Circuit Breaker Types KD, HKD, KDC, CKD, and CHKD  
For use with Trip Unit Catalog Numbers  
KES3400LSG  
KES3400LSIG

<p>Digitrip RMS 310 Rating Plug</p> <p>Set <math>I_n</math></p> <p>Push to Trip</p> <p>Engaged</p> <p>Remove</p>	<p>Short Delay</p> <p>Pickup <math>\times I_n</math> Time + ms</p> <p>3 5 300 500</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit</p> <p>40°C</p> <p><math>I_g = 80A</math></p>	<p>Ground Fault</p> <p>Pickup <math>\times I_n</math> Time + ms</p> <p>3 5 300 500</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit</p> <p>40°C</p> <p><math>I_g = 80A</math></p>
<p>Digitrip RMS 310 Rating Plug</p> <p>Set <math>I_n</math></p> <p>Push to Trip</p> <p>Engaged</p> <p>Remove</p>	<p>Short Delay</p> <p>Pickup <math>\times I_n</math> Time + ms</p> <p>3 5 200 300</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit</p> <p>40°C</p> <p><math>I_g = 80A</math></p>	<p>Ground Fault</p> <p>Pickup <math>\times I_n</math> Time + ms</p> <p>3 5 300 500</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit</p> <p>40°C</p> <p><math>I_g = 80A</math></p>

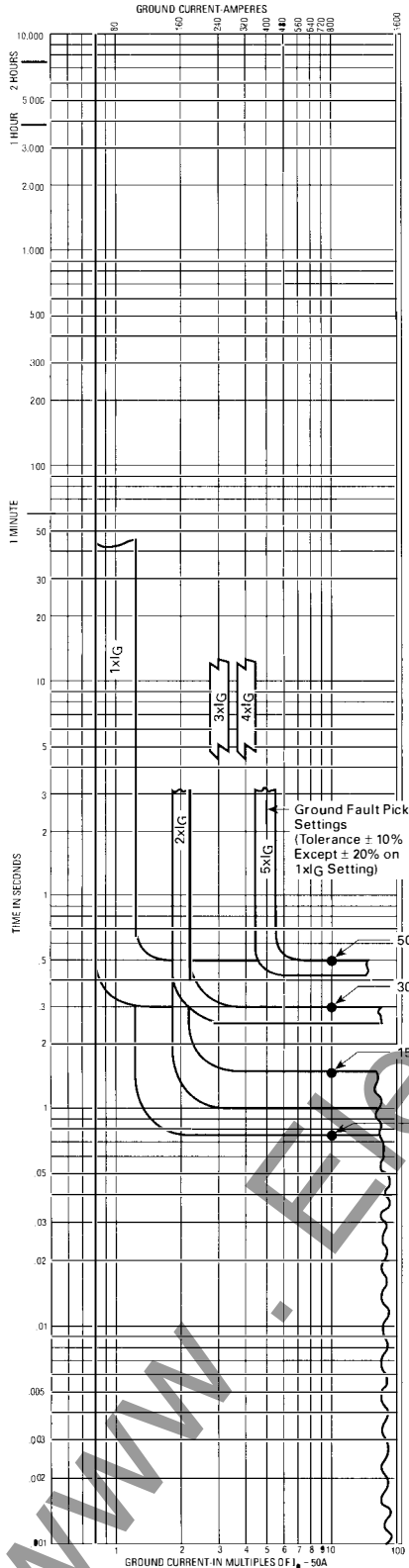
**Notes**  
Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

\* For phase time/current curves see SC-5638-93, SC-5639-93, SC-5644-93, or SC-5645-93.

# AB DE-ION Circuit Breakers

## Ground Fault Protection (KES3250LSG, KES3250LSIG)



**Circuit Breaker Time/Current Curves (Ground Current)**

**Series C° K-Frame Circuit Breakers  
 Equipped With Type KES Digitrip RMS 310 Trip Units  
 For Ground Fault Protection**

Type Digitrip RMS 310 Trip Unit for use with Circuit Breaker Types KD, HKD, KDC, CKD, and CHKD  
 For use with Trip Unit Catalog Numbers  
 KES3250LSG  
 KES3250LSIG

Digitrip RMS 310 Rating Plug

Car In Engaged Remove

Push to Trip

Short Delay

Pickup × I<sub>g</sub> Time + ms

4 5 6 300 300 INST

3 4 7 100 100 INST

2 8 INST

Digitrip RMS 310 Trip Unit  
 40°C  
 I<sub>g</sub> = 50A

Ground Fault

Pickup × I<sub>g</sub> Time + ms

3 4 5 300 500 INST TEST

2 8 INST

Digitrip RMS 310 Rating Plug

Car In Engaged Remove

Push to Trip

Short Delay

Pickup × I<sub>g</sub> Time + ms

4 5 6 300 300 INST

3 4 7 100 100 INST

2 8 INST

Digitrip RMS 310 Trip Unit  
 40°C  
 I<sub>g</sub> = 50A

Ground Fault

Pickup × I<sub>g</sub> Time + ms

3 4 5 300 500 INST TEST

2 8 INST

**Notes**  
 Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

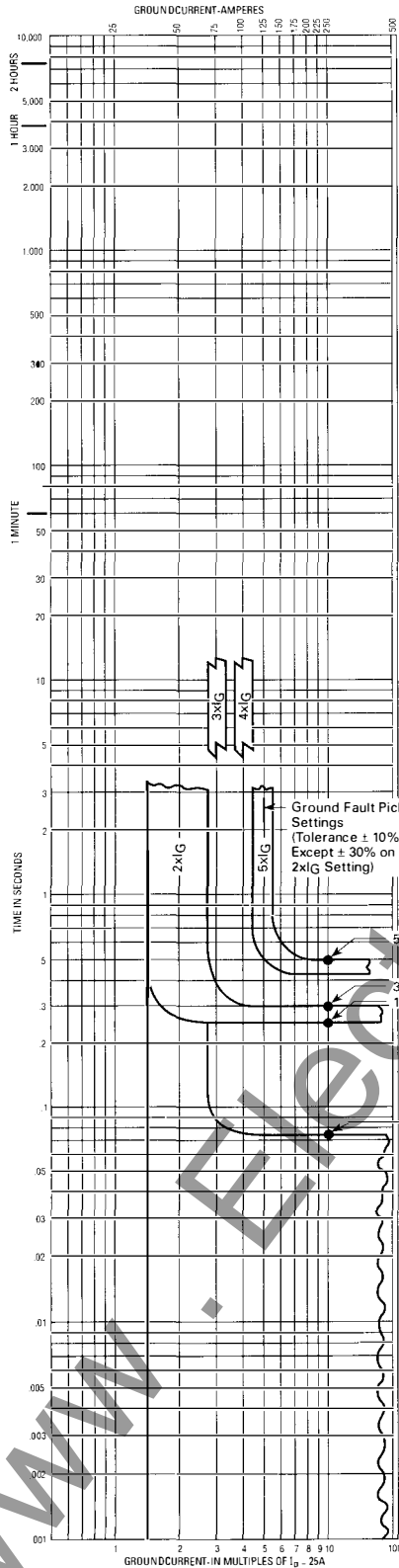
1 For phase time/current curves see SC-5640-93, SC-5641-93, SC-5646-93, or SC-5647-93.





# AB DE-ION Circuit Breakers

## Ground Fault Protection (KES3125LSG, KES3125LSIG)



**Circuit Breaker Time/Current Curves (Ground Current)**

**Series C\* K-Frame Circuit Breakers  
Equipped With Type KES Digitrip RMS 310 Units  
For Ground Fault Protection**

Type Digitrip RMS 310 Trip Unit for use with Circuit Breaker Types KD, HKD, KDC, CKD, and CHKD  
For use with Trip Unit Catalog Numbers  
KES3125LSG  
KES3125LSIG

<p>Digitrip RMS 310 Rating Plug</p> <p>Cat. <math>I_n</math></p> <p>Push to Trip</p> <p>Engaged</p> <p>Remove</p>	<p>Short Delay</p> <p>Pickup <math>\times I_g</math></p> <p>Time <math>\times ms</math></p> <p>4 5 6 3 4 5 2 3 4</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit 49°C</p> <p><math>I_g = 25A</math></p>	<p>Ground Fault</p> <p>Pickup <math>\times I_g</math></p> <p>Time <math>\times ms</math></p> <p>4 5 6 3 4 5 2 3 4</p> <p>INST</p> <p>TEST</p>
<p>Digitrip RMS 310 Rating Plug</p> <p>Cat. <math>I_n</math></p> <p>Push to Trip</p> <p>Engaged</p> <p>Remove</p>	<p>Short Delay</p> <p>Pickup <math>\times I_g</math></p> <p>Time <math>\times ms</math></p> <p>4 5 6 3 4 5 2 3 4</p> <p>INST</p> <p>Digitrip RMS 310 Trip Unit 49°C</p> <p><math>I_g = 25A</math></p>	<p>Ground Fault</p> <p>Pickup <math>\times I_g</math></p> <p>Time <math>\times ms</math></p> <p>4 5 6 3 4 5 2 3 4</p> <p>INST</p> <p>TEST</p>

**Notes**  
Curve accuracy applies from  $-20^\circ C$  to  $+55^\circ C$  ambient. For possible continuous ampere derating for ambient above  $40^\circ C$ , refer to Cutler-Hammer.

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

† For phase time/current curves see SC-5642-93, SC-5643-93, SC-5648-93, or SC-5649-93.



## **AB DE-ION Circuit Breakers**

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**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167L**

Page 1

May 1994  
 Supersedes Application Data 29-167G,  
 dated February 1993, and Application  
 Data 29-167H, dated September 1991  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® L-Frame Circuit  
 Breakers

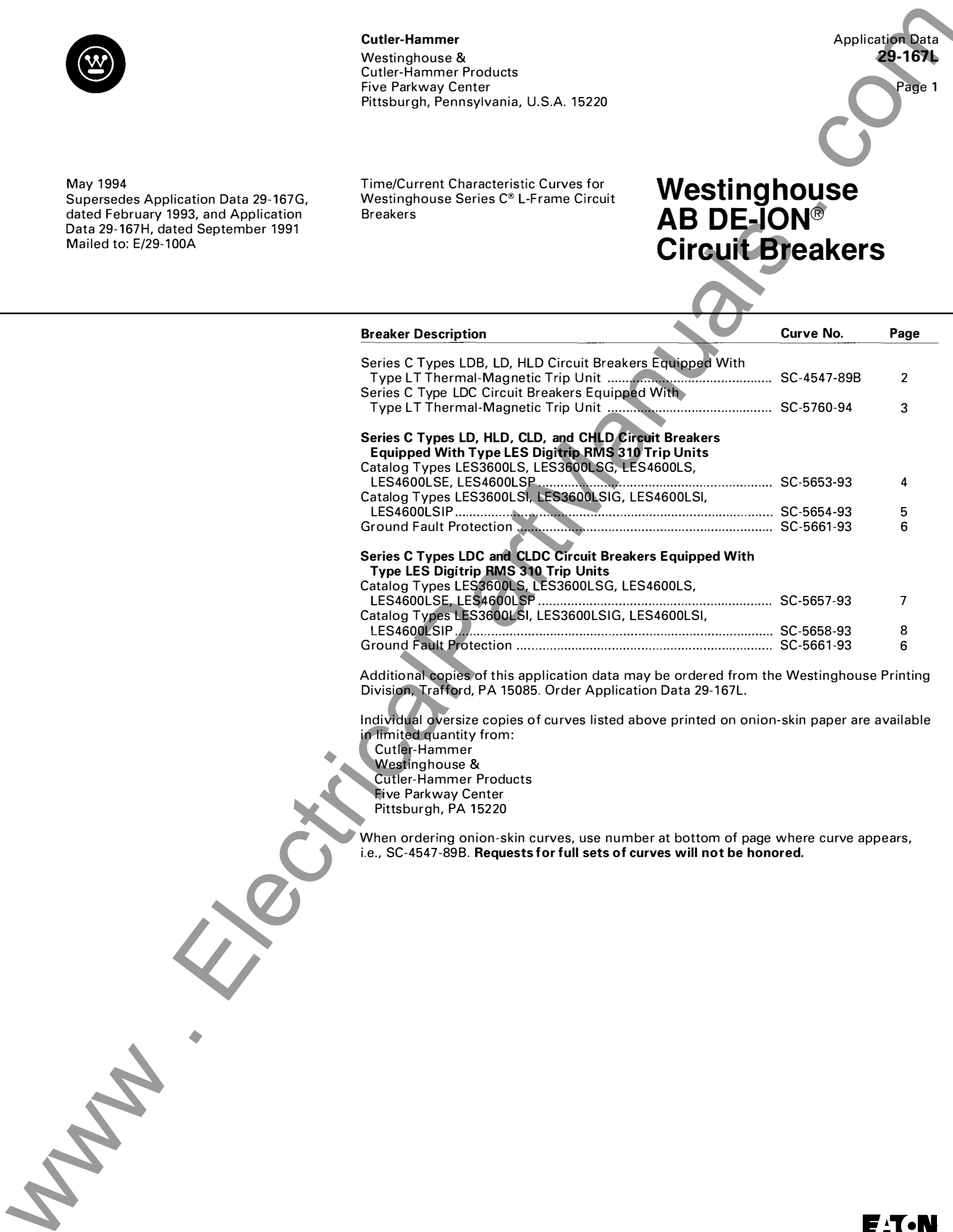
# Westinghouse AB DE-ION® Circuit Breakers

Breaker Description	Curve No.	Page
Series C Types LDB, LD, HLD Circuit Breakers Equipped With Type LT Thermal-Magnetic Trip Unit .....	SC-4547-89B	2
Series C Type LDC Circuit Breakers Equipped With Type LT Thermal-Magnetic Trip Unit .....	SC-5760-94	3
<b>Series C Types LD, HLD, CLD, and CHLD Circuit Breakers Equipped With Type LES Digitrip RMS 310 Trip Units</b>		
Catalog Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, LES4600LSP .....	SC-5653-93	4
Catalog Types LES3600LSI, LES3600LSIG, LES4600LSI, LES4600LSIP .....	SC-5654-93	5
Ground Fault Protection .....	SC-5661-93	6
<b>Series C Types LDC and CLDC Circuit Breakers Equipped With Type LES Digitrip RMS 310 Trip Units</b>		
Catalog Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, LES4600LSP .....	SC-5657-93	7
Catalog Types LES3600LSI, LES3600LSIG, LES4600LSI, LES4600LSIP .....	SC-5658-93	8
Ground Fault Protection .....	SC-5661-93	6

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167L.

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:  
 Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-4547-89B. **Requests for full sets of curves will not be honored.**

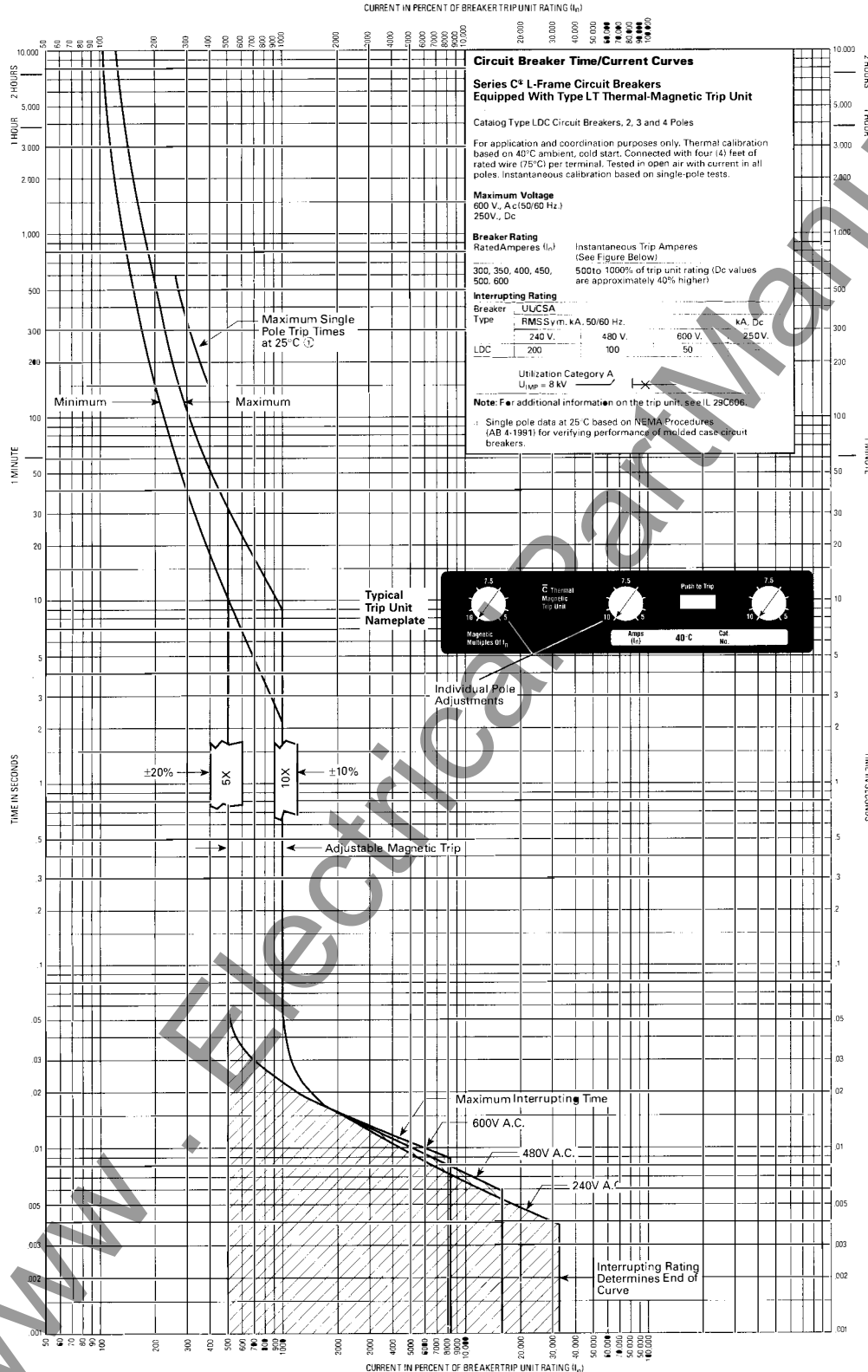


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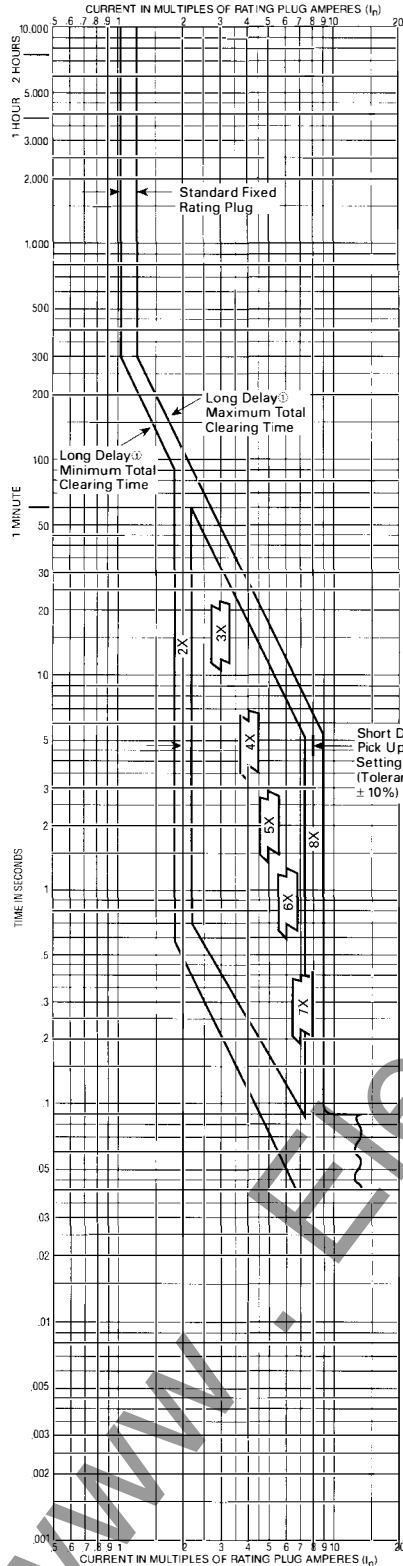
# AB DE-ION Circuit Breakers

## Type LDC Equipped With Type LT Thermal-Magnetic Trip Unit



# AB DE-ION Circuit Breakers

Types LD, HLD, CLD, and CHLD Equipped With Type LES Digitrip RMS 310 Trip Units, Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, LES4600LSP



**Circuit Breaker Time/Current Curves (Phase Current)**

**Series C® L-Frame Circuit Breakers**  
Equipped With Type LES Digitrip RMS 310 Trip Units

Catalog Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, and LES4600LSP  
Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LD, HLD, CLD, and CHLD  
3 and 4 Poles

Fixed Short Delay Time	Typical Trip Unit Nameplate

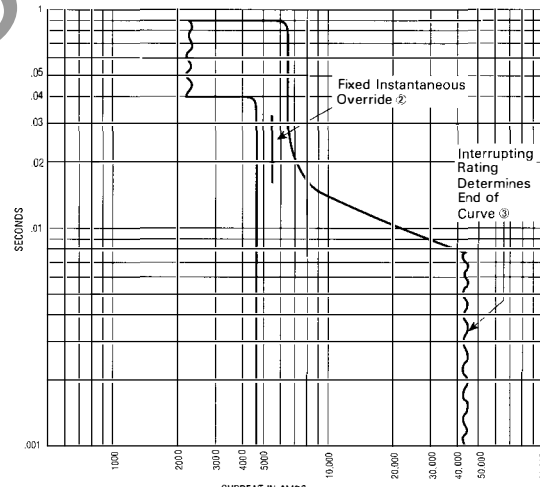
Available Rating Plugs	Type	Rating Plug Catalog Number	Short Delay Pickup Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1000-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	A6LES600T1	600-4800

Interrupting Ratings @ 50/60 Hz RMS Sym. Amperes (kA)						
Breaker Type	UL/CSA		IEC 947-2		Utilization Category A	
	Volts	kA	Volts (U <sub>L</sub> )	Rating	I <sub>cu</sub>	I <sub>cs</sub>
LD, CLD	240	65	240	65	100	65
HLD, CHLD	480	35	380	35	50	33
	600	25	415	25	40	20
		35			65	33

Utilization Category A  
U<sub>imp</sub> = 8kV

**Notes**  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.  
Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.  
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.

① Curve accuracy applies from -20 °C to +55 °C ambient. For possible continuous ampere derating for ambient above 40 °C, refer to Cutler-Hammer.  
② For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance +15%).  
③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.  
④ For ground fault time/current curves see SC-5661-93.

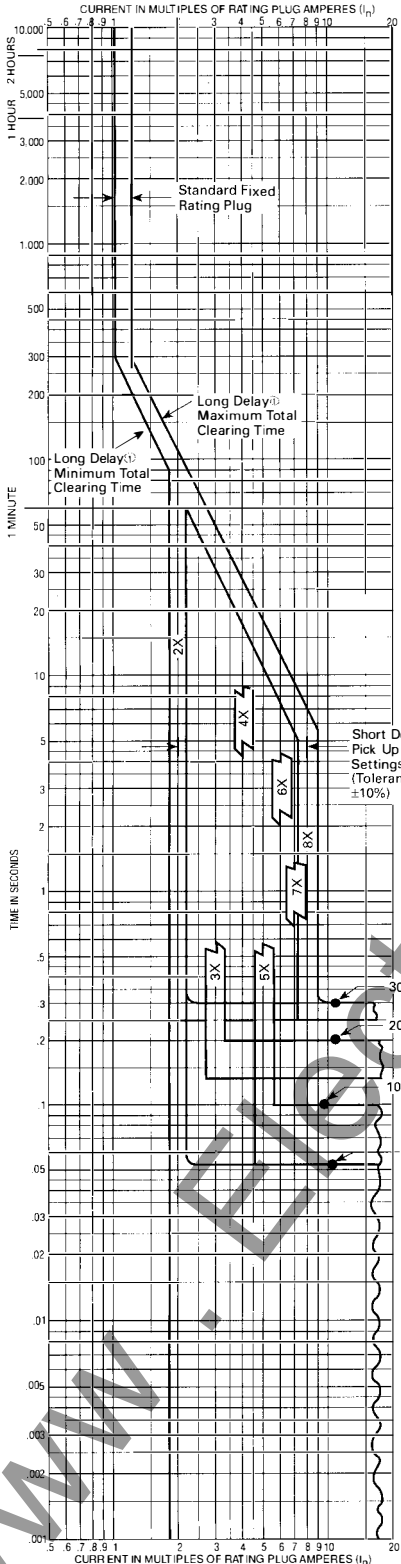






# AB DE-ION Circuit Breakers

Types LD, HLD, CLD, and CHLD Equipped With Type LES Digitrip RMS 310 Trip Units,  
Types LES3600LSI, LES3600LSIG, LES4600LSI, LES4600LSIP



### Circuit Breaker Time/Current Curves (Phase Current) ③

**Series C<sup>®</sup> L-Frame Circuit Breakers  
Equipped With Type LES Digitrip RMS 310 Trip Units**

Catalog Types LES3600LSI, LES3600LSIG, LES4600LSI, and LES4600LSIP  
Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LD, HLD, CLD, and CHLD  
3 and 4 Poles

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

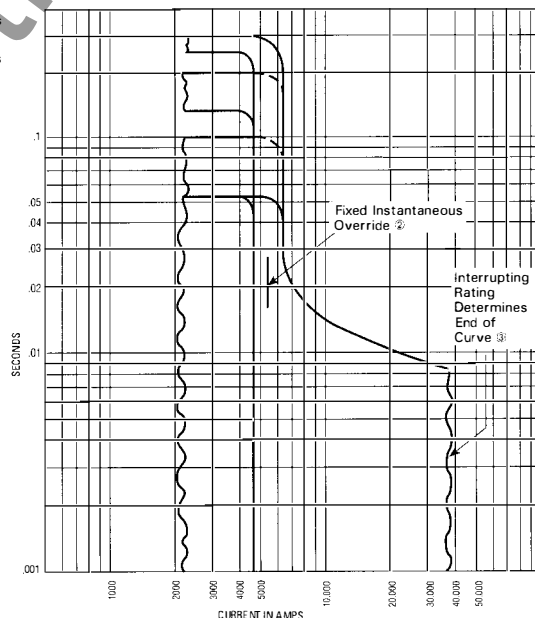
Ampere Rating (I <sub>n</sub> )	Type	Rating Plug Catalog Number	Short Delay Pick Up Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1000-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	6LES600T1	600-4800

Breaker Type	UL/CSA Volts	240	480	600
LD, CLD	kA	65	35	25
HLD, CHLD	kA	100	65	35

Breaker Type	UL/CSA Volts (U <sub>n</sub> )	240	380	415
LD, CLD	kA	65	33	40
HLD, CHLD	kA	100	50	65

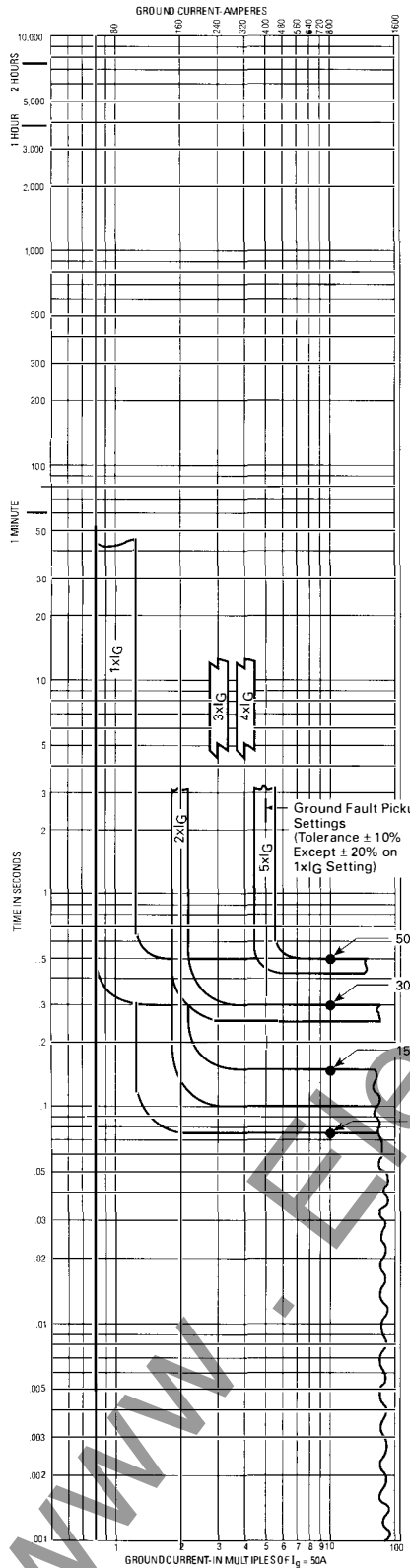
**Notes**

- Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.
- Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.
- There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.
- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance ±15%).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curves see SC-5661-93.



## AB DE-ION Circuit Breakers

Types LD, LCD, HLD, CLD, CHLD, and CLDC Equipped With Type LES Digitrip RMS 310 Trip Units, Ground Fault Protection



**Circuit Breaker Time/Current Curves (Ground Current) ①**

**Series C<sup>o</sup> L-Frame Circuit Breakers  
 Equipped With Type LES Digitrip RMS 310 Trip Units  
 for Ground Fault Protection**

Catalog Types LES3600L.SG and LES3600L.SIG Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LD, HLD, LDC, CLD, CHLD, and CLDC

Fixed Short Delay Time		Typical Trip Unit Nameplate	
Adjustable Short Delay Time		Typical Trip Unit Nameplate	

**Notes**  
 Curve accuracy applies from  $-20^{\circ}C$  to  $+55^{\circ}C$  ambient. For possible continuous ampere derating for ambient above  $40^{\circ}C$ , refer to Cutler-Hammer.

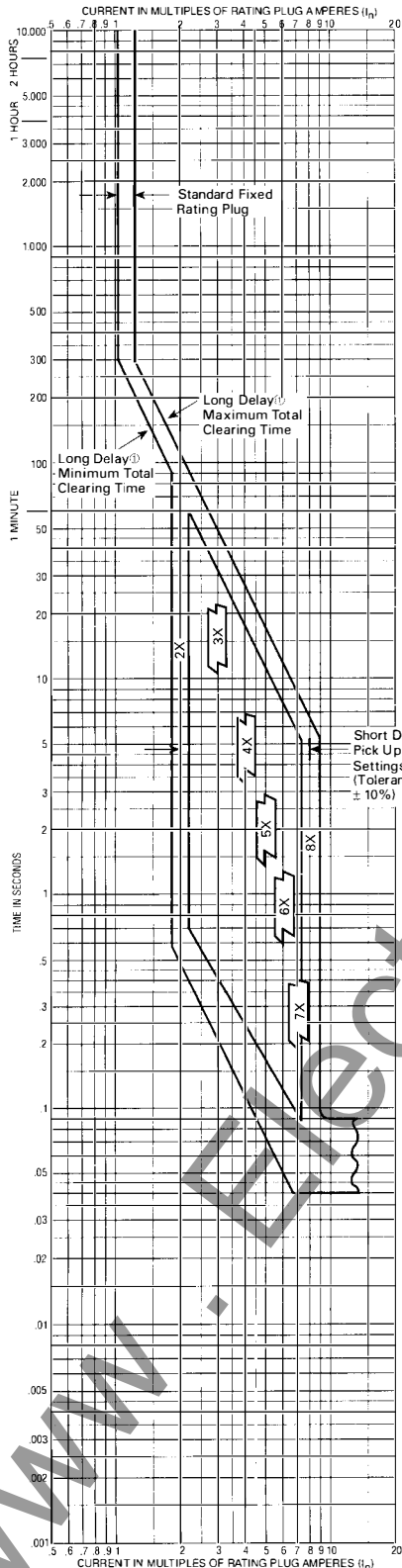
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication (AB4-1991).

① For phase time/current curves:  
 SC-5653-93  
 SC-5654-93  
 SC-5657-93  
 SC-5658-93



AB DE-ION Circuit Breakers

Types LDC and CLDC Equipped With Type LES Digitrip RMS 310 Trip Units, Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, LES4600LSP



**Circuit Breaker Time/Current Curves (Phase Current) ④**

**Series C® L-Frame Circuit Breakers Equipped With Type LES Digitrip RMS 310 Trip Units**

Catalog Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, and LES4600LSP  
Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LDC and CLDC  
3 and 4 Poles

**Fixed Short Delay Time**

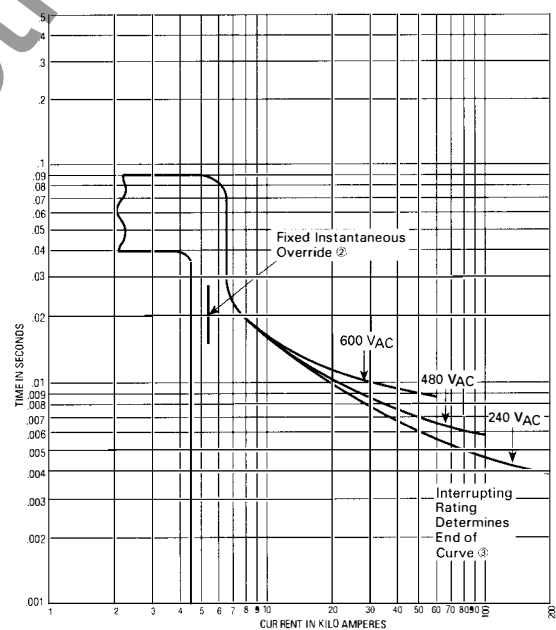
**Typical Trip Unit Nameplate**

Available Rating Plugs Ampere Rating (I <sub>n</sub> )	Type	Rating Plug Catalog Number	Short Delay Pickup Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1600-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	A6LES600T1	600-4800

Interrupting Ratings @ 50/60 Hz RMS Sym. Amperes (kA)					
Breaker Type	UL/CSA Volts	240	480	600	
LDC, CLDC	kA	200	100	50	
IEC 947-2					
	Volts (U <sub>e</sub> )	240	380	415	
Rating					
LDC, CLDC	kA	200	100	50	100 50

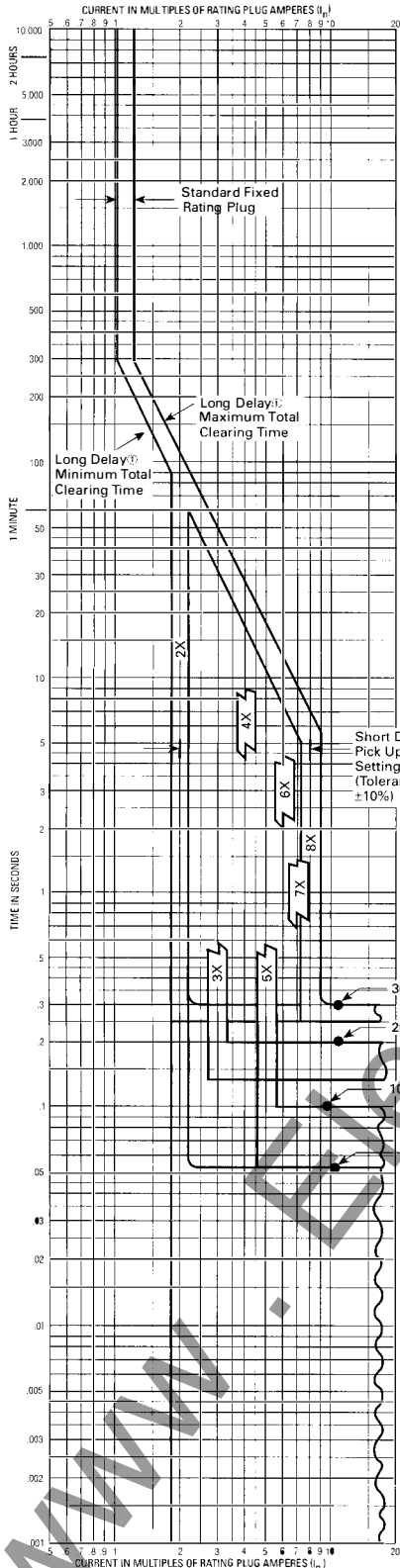
Utilization Category A  
U<sub>imp</sub> = 8kV

**Notes**  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.  
Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.  
There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.  
③ Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.  
② For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance ±15%)  
① The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.  
④ For ground fault time/current curves see SC-5661-93.



# AB DE-ION Circuit Breakers

Types LDC and CLDC Equipped With Type LES Digitrip RMS 310 Trip Units, Types LES3600LSI, LES3600LSIG, LES4600LSI, LES4600LSIP



**Circuit Breaker Time/Current Curves (Phase Current) ④**

**Series C<sup>®</sup> L-Frame Circuit Breakers**  
Equipped With Type LES Digitrip RMS 310 Trip Units

Catalog Types LES3600LSI, LES3600LSIG, LES4600LSI, and LES4600LSIP  
Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LDC and CLDC  
3 and 4 Poles

**Adjustable Short Delay Time**

**Typical Trip Unit Nameplate**

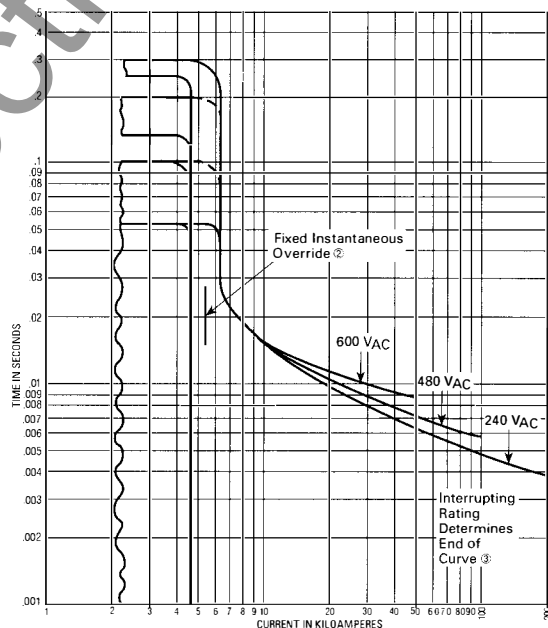
Ampere Rating ( $I_n$ )	Type	Rating Plug Catalog Number	Short Delay Pickup Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1000-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	A6LES600T1	600-4800

**Interrupting Ratings @ 50/60 Hz RMS Sym. Amperes (kA)**

Breaker Type	UL/CSA	240 Volts ( $U_n$ )	380 Volts ( $U_n$ )	415 Volts ( $U_n$ )
LDC, CLDC	kA	200	100	50

IEC 947-2  
Rating  
LDC, CLDC  
Utilization Category A  
 $U_{imp} = 8kV$

**Notes**  
 ① Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.  
 Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.  
 There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit 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 the memory.  
 ② Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Cutler-Hammer.  
 ③ For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance ±15%).  
 ④ The end of the curves is determined by the interrupting rating of the circuit breaker. See above tabulation.  
 ⑤ For ground fault time/current curves see SC-5661-93.





**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167M**

Page 1

May 1994  
 New Information  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® M-Frame  
 Circuit Breakers

# Westinghouse AB DE-ION® Circuit Breakers

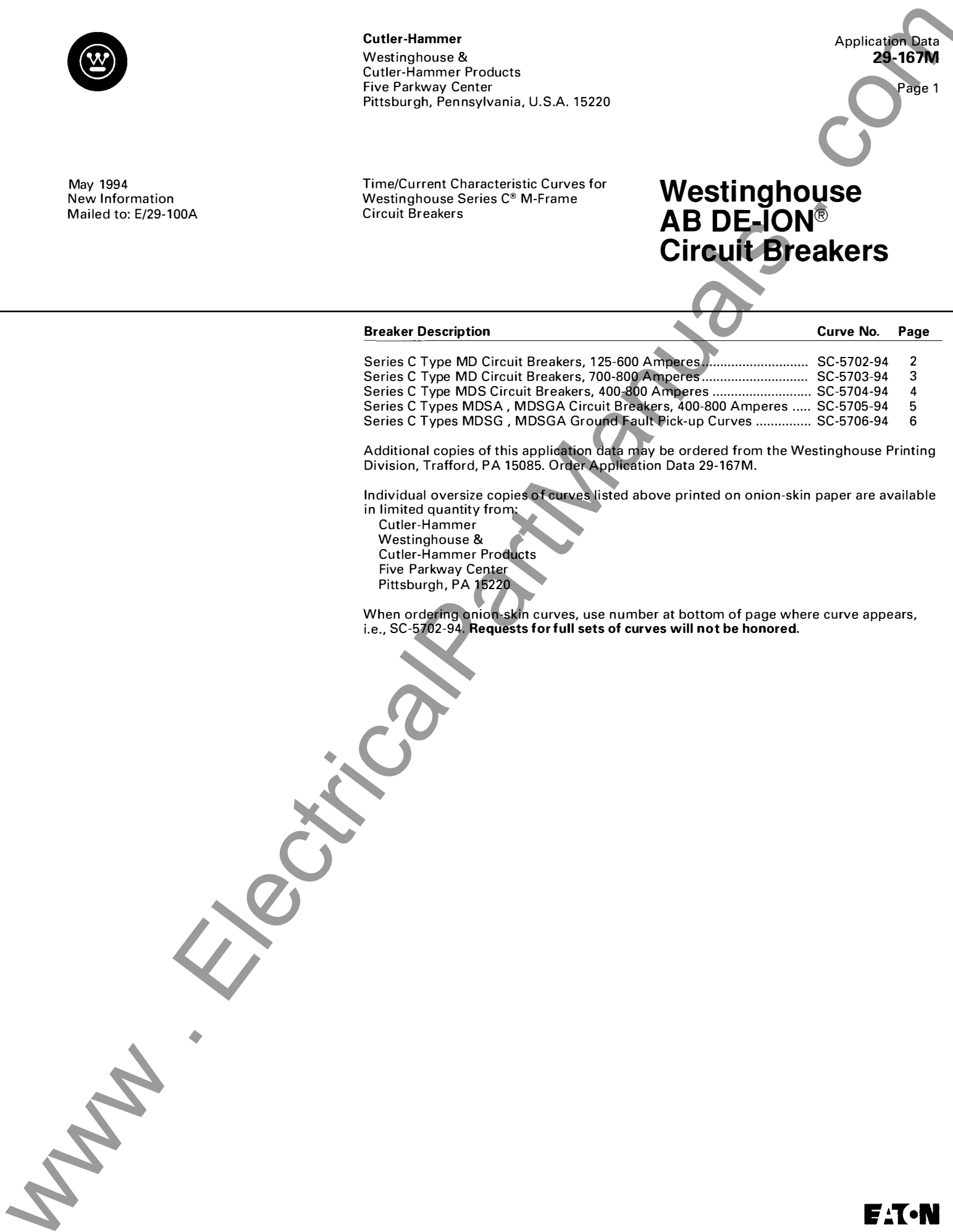
Breaker Description	Curve No.	Page
Series C Type MD Circuit Breakers, 125-600 Amperes .....	SC-5702-94	2
Series C Type MD Circuit Breakers, 700-800 Amperes .....	SC-5703-94	3
Series C Type MDS Circuit Breakers, 400-800 Amperes .....	SC-5704-94	4
Series C Types MDSA , MDSGA Circuit Breakers, 400-800 Amperes .....	SC-5705-94	5
Series C Types MDSG , MDSGA Ground Fault Pick-up Curves .....	SC-5706-94	6

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167M.

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:

Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-5702-94. **Requests for full sets of curves will not be honored.**

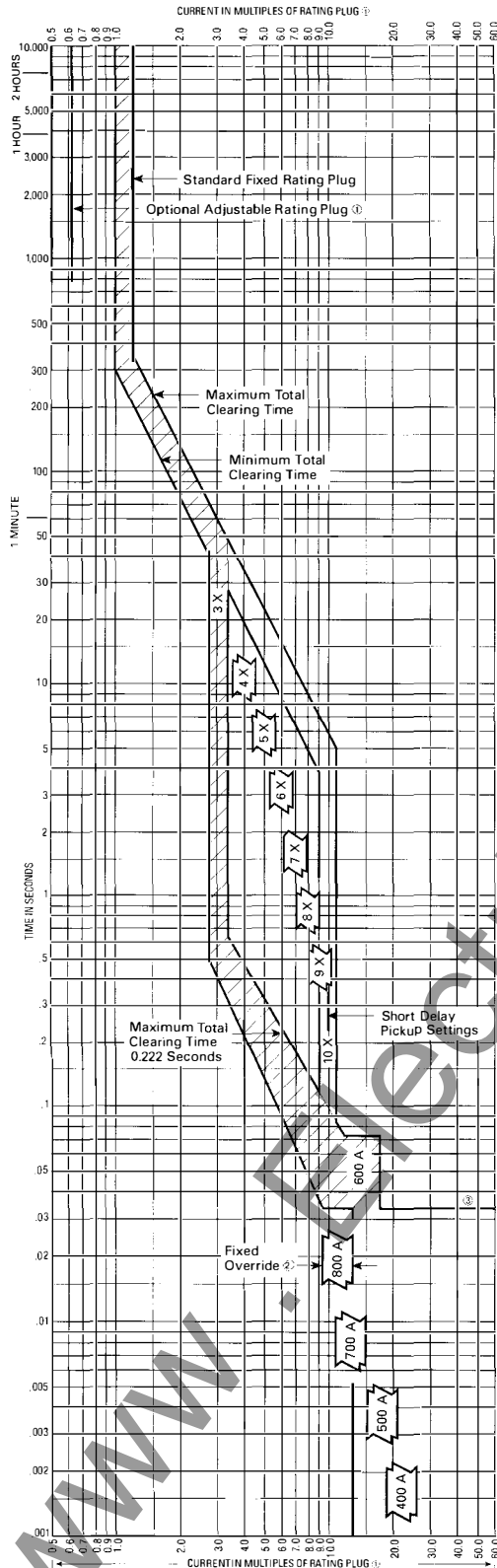


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# AB DE-ION Circuit Breakers

Type MDS, 400-800 Amperes



**Circuit Breaker Time/Current Curves**  
**Series C<sup>o</sup> M-Frame Circuit Breakers**  
 Catalog Type MDS Circuit Breakers, 400-800 Amperes, 2 and 3 Poles

Curve accuracy applies from -20°C to +55°C Ambient. For possible continuous ampere derating for ambients above +40°C refer to Cutler-Hammer.

**Maximum Ac Volts:** 600, at 50/60 Hz

**Breaker Ratings**  
 Continuous Amperes: 400-800  
 Short Delay Pickup Settings: 3 to 10x Rating Plug Value with Calibration Settings as Shown on Curve (Tot. ±10%)

**Interrupting Rating (UL/CSA Listed)**

Breaker Frame	Symmetrical RMS Amperes	600 Volts
MDS	42,000	35,000

**Rating Plugs Available**

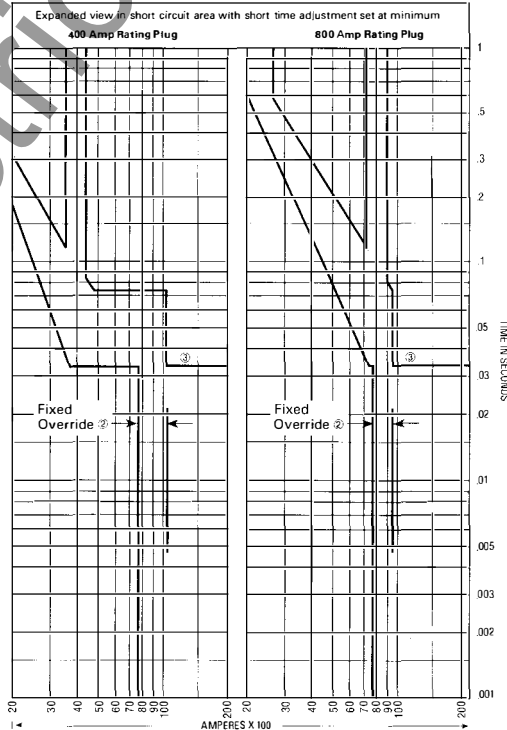
Continuous Amperes	Range Adjustment
800 Amp	Fixed 100%
800 Amp	50 - 100%
700 Amp	Fixed 100%
700 Amp	70 - 100%
600 Amp	Fixed 100%
600 Amp	70 - 100%
500 Amp	Fixed 100%
500 Amp	80 - 100%
400 Amp	Fixed 100%

① When adjustable rating plugs are used, short delay pickup setting tracks the selected position of the adjustable rating plug. For example, with an adjustable 800 amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 800 x 50% x 4 = 1600 amps.

② For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is as shown. (Tolerance ±15%)

③ The end of the curve is determined by the interrupting rating and/or the specific application.

④ For ground fault time-current characteristics of MDS see Curve No. SC-5706-94.

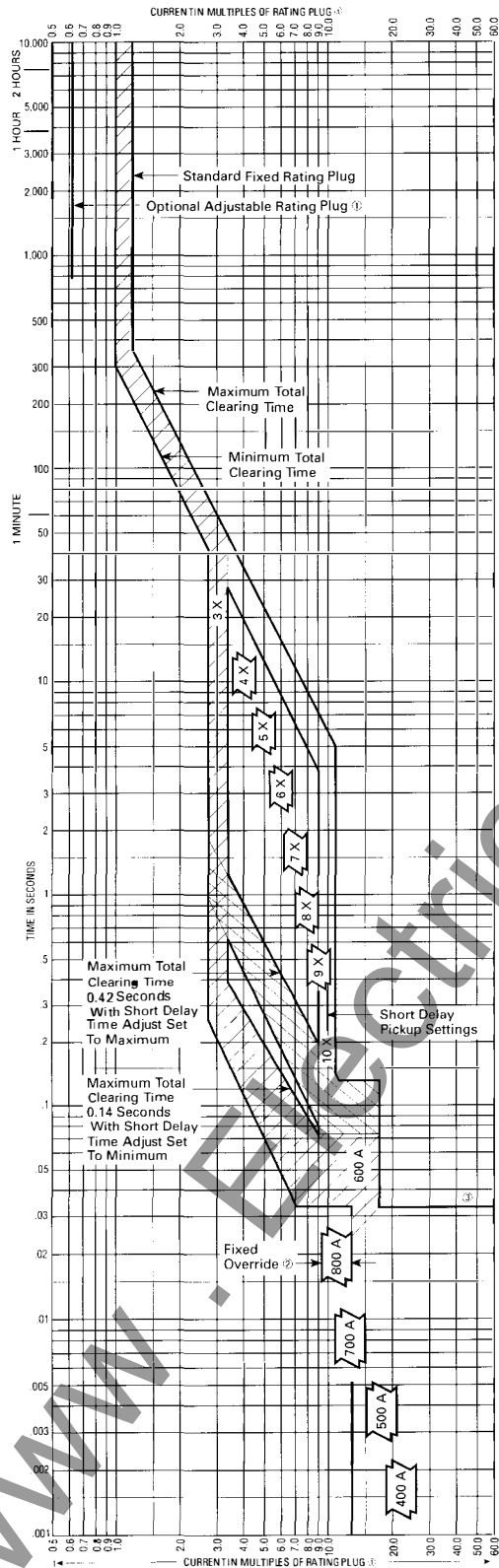






# AB DE-ION Circuit Breakers

## Types MDSA, MDSGA, 400-800 Amperes



**Circuit Breaker Time/Current Curves**

**Series C<sup>3</sup> M-Frame Circuit Breakers**

Catalog Types MDSA, MDSGA Circuit Breakers, 400-800 Amperes, 2 and 3 Poles

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Cutler-Hammer.

**Maximum Ac Volts:** 600, at 50/60 Hz

Breaker	Continuous Amperes	Short Delay Pickup Settings
400-800		3x to 10x Rating Plug Value with Calibration Settings as Shown on Curve (Tol. ±10%)

Breaker	Symmetrical RMS Amperes	480 Volts	600 Volts
MDSA	42,000	35,000	22,000
MDSGA			

**Rating Plugs Available**

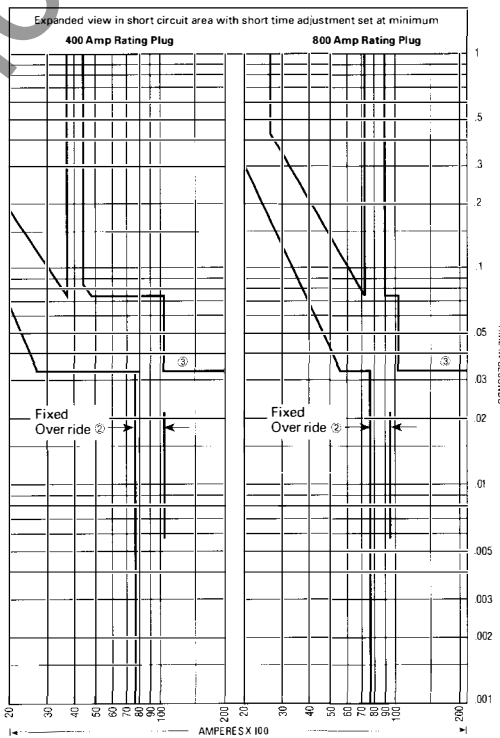
Continuous Amperes	Range of Adjustment
800 Amp	Fixed 100%
800 Amp	50 - 100%
700 Amp	Fixed 100%
700 Amp	70 - 100%
600 Amp	Fixed 100%
600 Amp	70 - 100%
500 Amp	Fixed 100%
500 Amp	80 - 100%
400 Amp	Fixed 100%

① When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 800 amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 800 x 50% x 4 = 1600 amps.

② For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is as shown. (Tolerance ±15%)

③ The end of the curves is determined by the interrupting rating and/or the specific application.

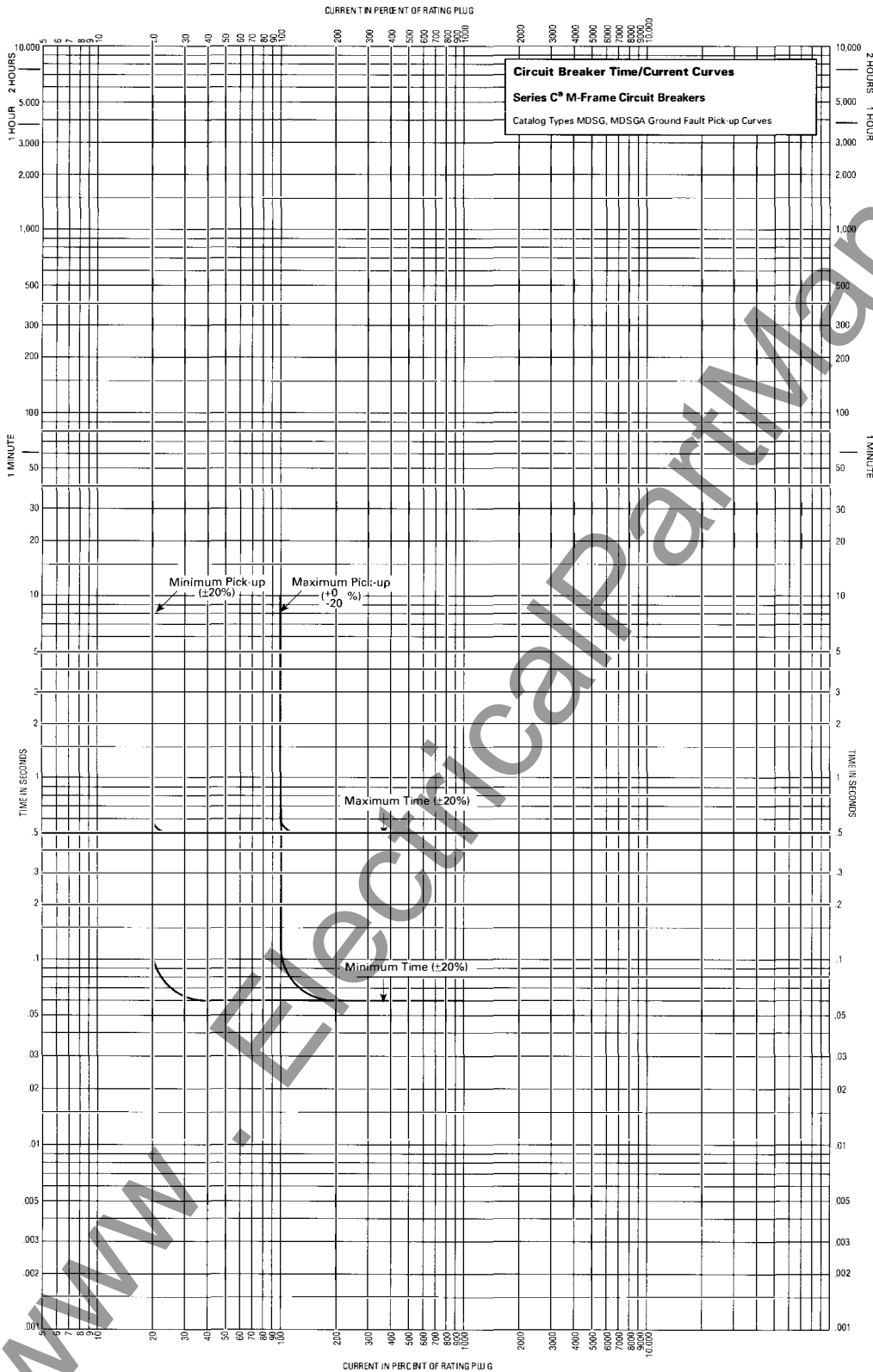
④ For ground fault time-current characteristics of MDSGA see Curve No. SC-5706-94.





# AB DE-ION Circuit Breakers

## Types MDSG, MDSGA Ground Fault Pick-up Curves





**AB DE-ION Circuit Breakers**

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## AB DE-ION Circuit Breakers

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**Cutler-Hammer**  
Westinghouse &  
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Five Parkway Center  
Pittsburgh, Pennsylvania, U.S.A. 15220





**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167N**  
 Page 1

May 1994  
 Supersedes Application Data 29-167K,  
 dated January 1993  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® N-Frame Circuit  
 Breakers with Type NES Digitrip RMS 310  
 Trip Units

# Westinghouse AB DE-ION® Circuit Breakers

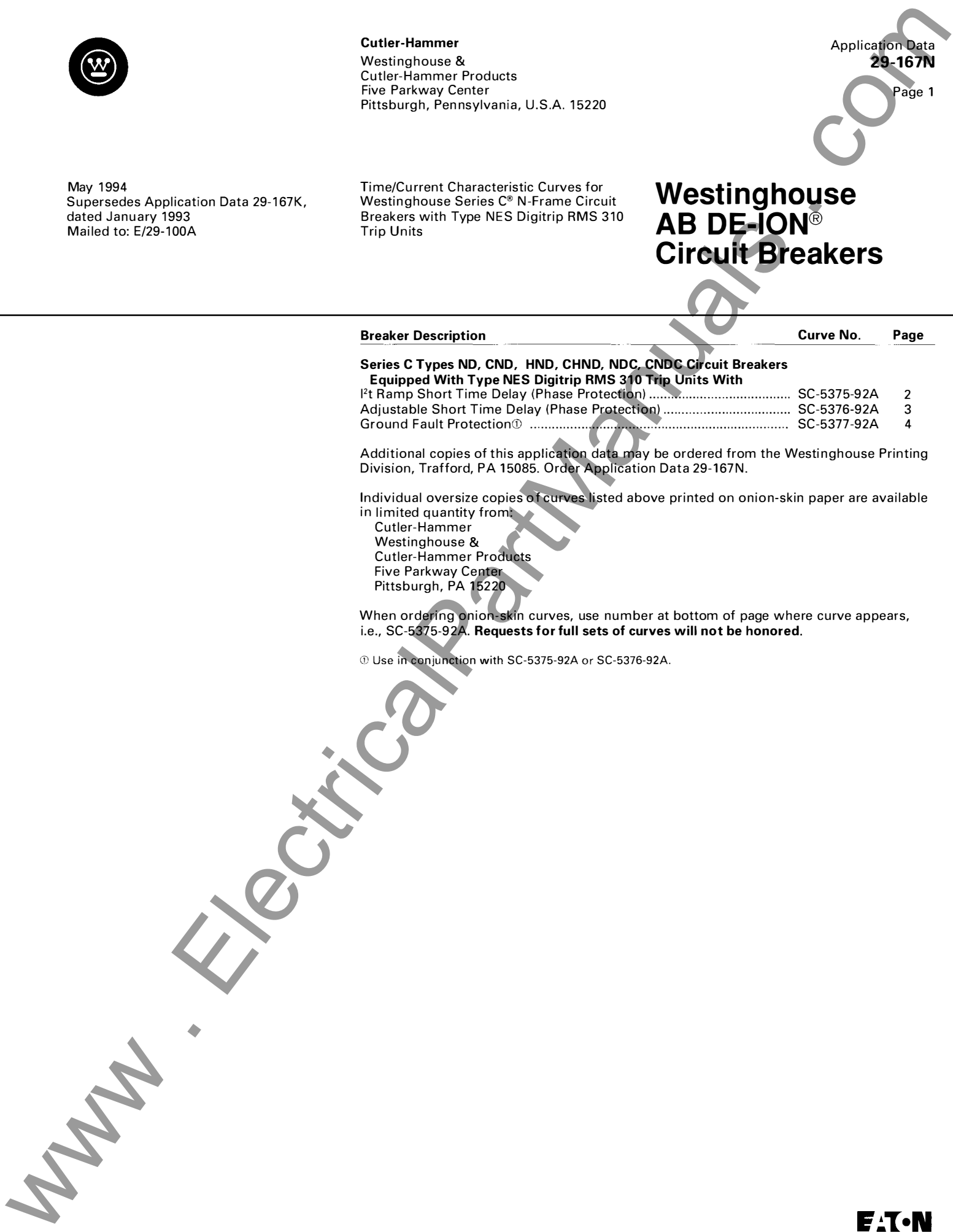
Breaker Description	Curve No.	Page
<b>Series C Types ND, CND, HND, CHND, NDC, CNDC Circuit Breakers            Equipped With Type NES Digitrip RMS 310 Trip Units With</b>		
1 <sup>2</sup> t Ramp Short Time Delay (Phase Protection) .....	SC-5375-92A	2
Adjustable Short Time Delay (Phase Protection) .....	SC-5376-92A	3
Ground Fault Protection <sup>①</sup> .....	SC-5377-92A	4

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167N.

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:  
 Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-5375-92A. **Requests for full sets of curves will not be honored.**

<sup>①</sup> Use in conjunction with SC-5375-92A or SC-5376-92A.

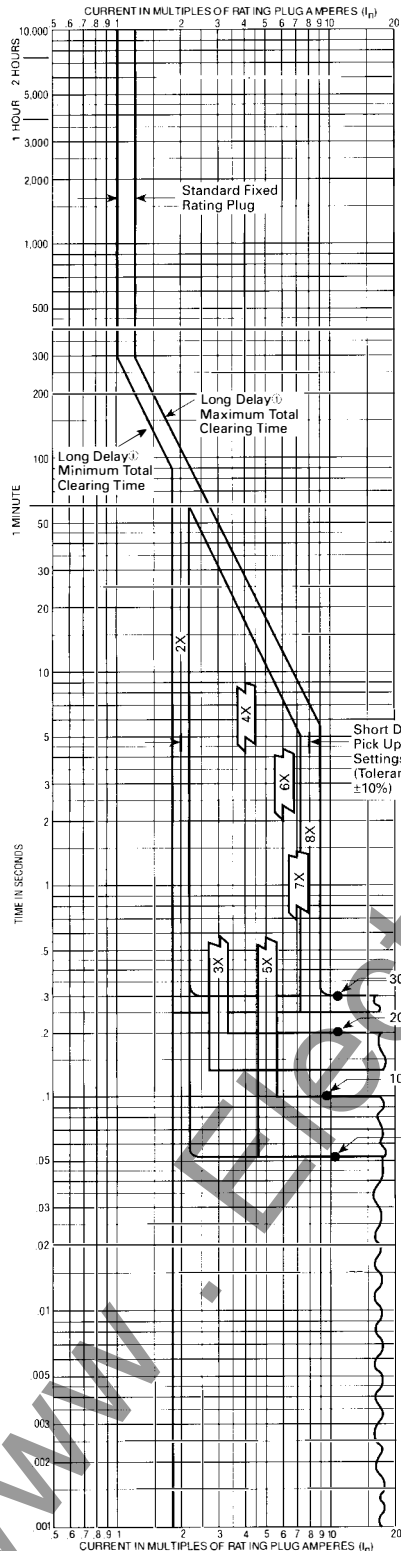


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# AB DE-ION Circuit Breakers

## Types ND, CND, HND, CHND, NDC, CNDC Equipped With Type NES Digitrip RMS 310 Trip Units With Adjustable Short Time Delay (Phase Protection)



**Circuit Breaker Time/Current Curves (Phase Current)**  
**Series C<sup>®</sup> N-Frame Circuit Breakers**  
**Equipped With Type NES Digitrip RMS 310 Trip Units**

The NES Digitrip RMS 310 Trip Units are AC only devices that employ microprocessor based technology that provides true RMS current sensing means for proper correlation with thermal characteristics of conductors and equipment. They are used with Circuit Breaker Types ND, CND, HND, CHND, NDC, and CNDC.

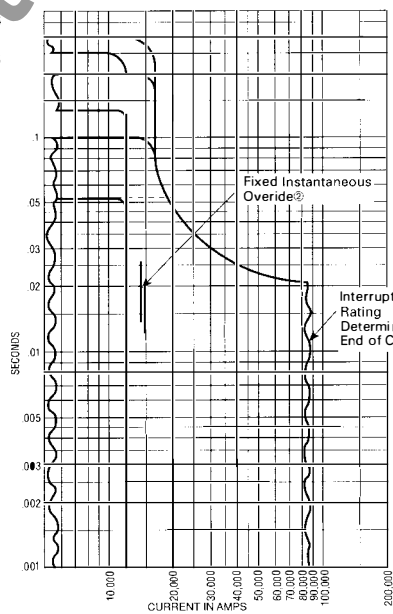
**Adjustable Short Time Delay**      **Typical Trip Unit Nameplate**

Frame Rating Amperes (Max.)	Available Rating Plugs (I <sub>n</sub> )	Type	Catalog Number	Short Delay Pickup Range Amperes
800	800	Fixed	8NES800T	1600-6400
	700	Fixed	8NES700T	1400-5600
	630	Fixed	8NES630T	1260-5040
	600	Fixed	8NES600T	1200-4800
	550	Fixed	8NES550T	1100-4400
	500	Fixed	8NES500T	1000-4000
	450	Fixed	8NES450T	900-3600
	400	Fixed	8NES400T	800-3200
	400, 500, 600, 800	Adj.	ABNES800T1	800-6400
	400, 500, 630, 800	Adj.	ABNES800T2	800-6400
1200	1200	Fixed	12NES1200T	2400-9600
	1000	Fixed	12NES1000T	2000-8000
	900	Fixed	12NES900T	1800-7200
	800	Fixed	12NES800T	1600-6400
	700	Fixed	12NES700T	1400-5600
	630	Fixed	12NES630T	1260-5040
	600	Fixed	12NES600T	1200-4800
	600, 800, 1000, 1200	Adj.	A12NES1200T1	1200-9600

**Interrupting Ratings - 50/60 Hz**  
RMS Sym. Amperes (kA)

Breaker Type	UL/CSA	480V	600V	IEC 947-2	
	240V	480V	600V	220-240V	380-415V
ND, CND	65	50	35	65	50
HND, CHND	100	85	35	100	85
NDC, CNDC	200	100	50	200	100

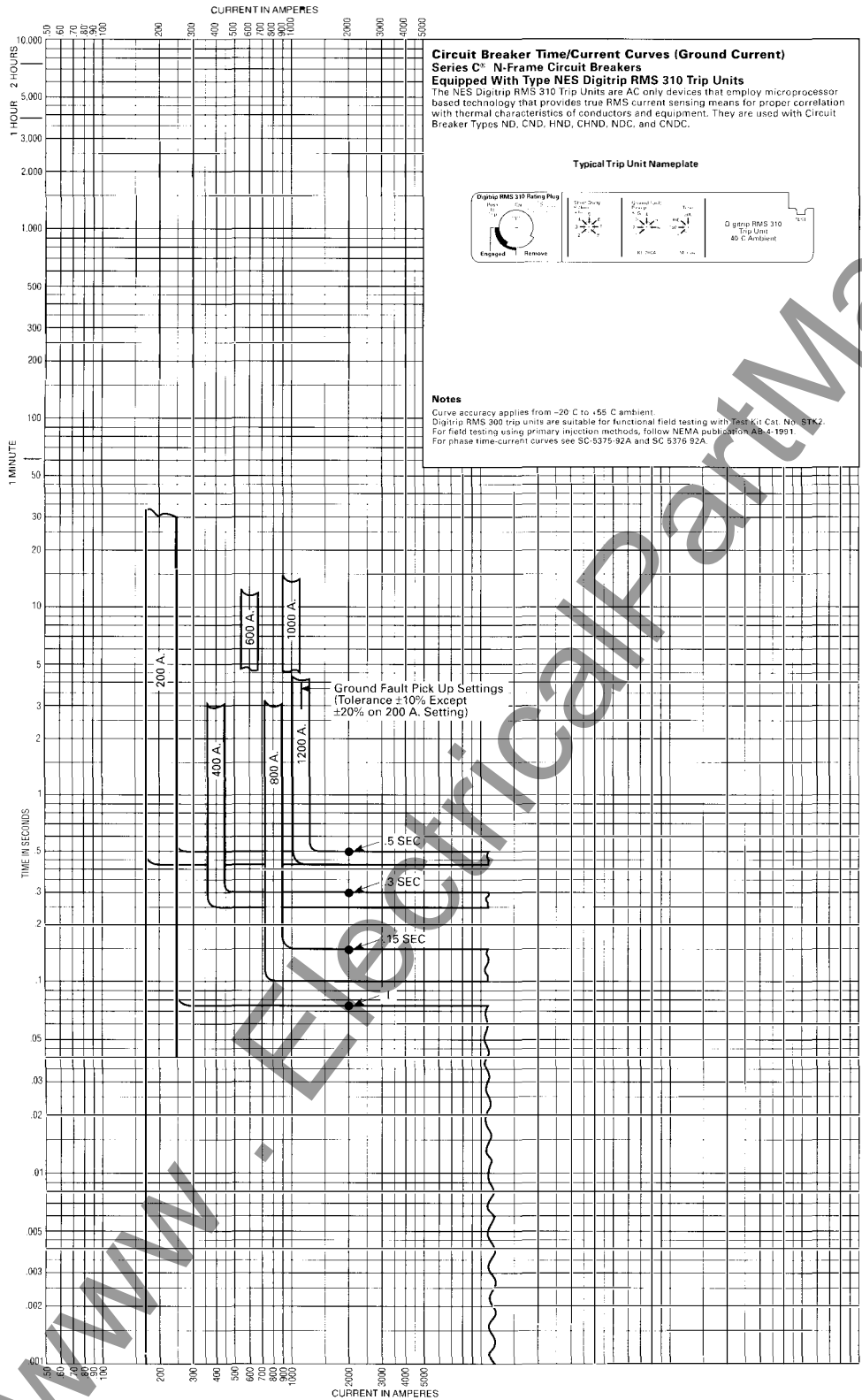
Notes:  
1. There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in 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 the memory.  
2. For high fault current levels a fixed instantaneous override is provided at 14000A (Tolerance ±15%).  
3. The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.  
4. Not UL/CSA Listed.





## AB DE-ION Circuit Breakers

Types ND, CND, HND, CHND, NDC, CNDC Equipped With Type NES Digitrip RMS 310 Trip Units With Ground Fault Protection





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**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167R**

Page 1

May 1994  
 New Information and Supersedes  
 Application Data 29-167D, dated  
 March 1993, and Application Data 29-167J,  
 dated August 1990  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® R-Frame  
 Circuit Breakers

# Westinghouse Series C® Molded Case Circuit Breakers R-Frame

Breaker Description	Curve No.	Page
<b>Series C Types RD, CRD, RDC, CRDC Circuit Breakers Equipped With Digitrip RMS 310 Trip Units</b>		
Typical Instantaneous Time-Phase Current Characteristic Curve Based on $I_n$ .....	SC-5629-93	2
Typical Long Delay/Short Delay Time-Phase Current Characteristic Curve Based on $I_n$ .....	SC-5630-93	3
Typical Ground Fault/Protection Time/Current Characteristic Curve Based on $I_n$ .....	SC-5631-93	4
<b>Series C Types RD, CRD, RDC, CRDC Circuit Breakers Equipped With Digitrip RMS 510/610/810 Trip Units</b>		
Typical Instantaneous Time-Phase Current Characteristic Curve Based on $I_n$ .....	SC-5626-93	5
Typical Long Delay/Short Delay Time-Phase Current Characteristic Curve Based on $I_r$ .....	SC-5627-93	6
Typical Ground Fault/Protection Time/Current Characteristic Curve Based on $I_n$ .....	SC-5628-93	7

**Definitions**

$I_n$  is the maximum value of continuous current for which the trip unit can be set.  
 $I_n$  is the basis (or reference) for both the Instantaneous and the Ground protection current settings.

The value of the rating plug is printed on the Rating Plug.

$I_r$  is the basis for both the Long Delay and the Short Delay (if provided) protection current settings.

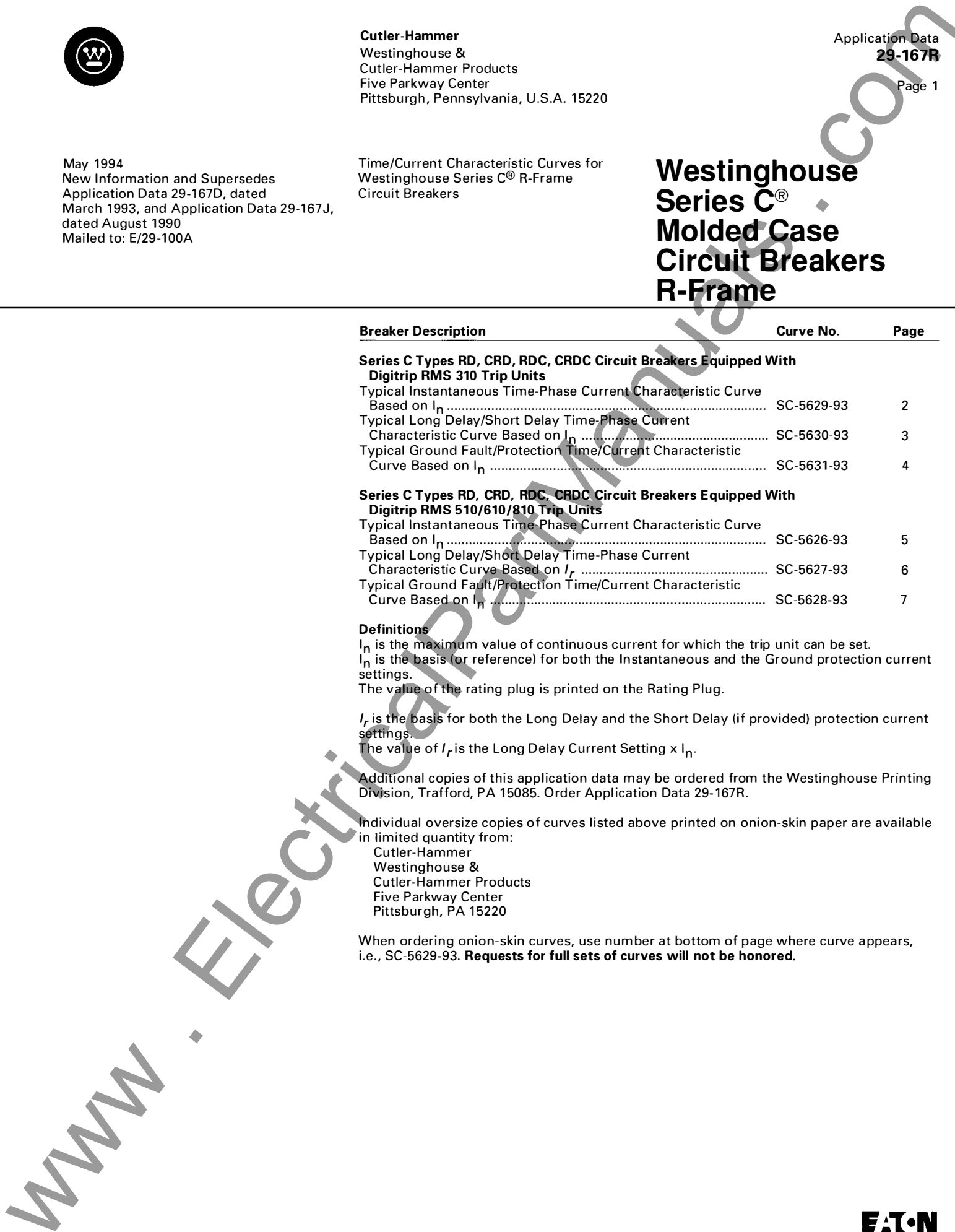
The value of  $I_r$  is the Long Delay Current Setting  $\times I_n$ .

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167R.

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:

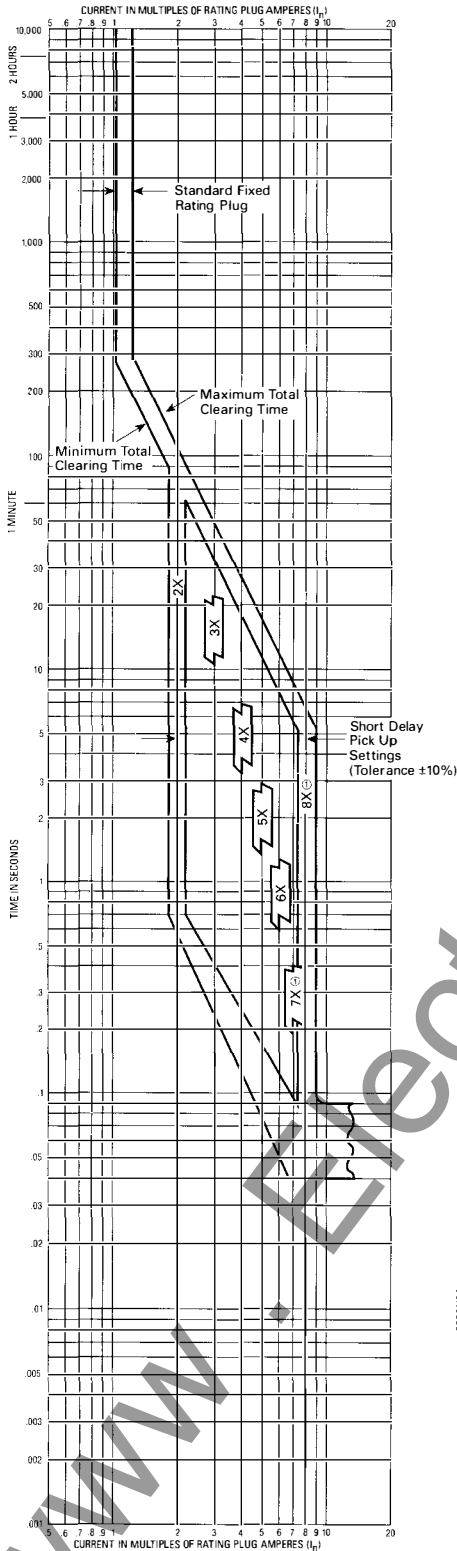
Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-5629-93. **Requests for full sets of curves will not be honored.**



# 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  $I_n$



### Circuit Breaker Time/Current Curves (Phase Current) ④

**Series C® R-Frame Circuit Breakers**  
Equipped With Type Digitrip RMS 310 Trip Units

**Typical Trip Unit Nameplate**

For use with Trip Unit Catalog Numbers

1600A Max.	2000A Max.	2500A Max.
RES1600LS	RES2000LS	RES2500LS
RES1600LSG	RES2000LSG	RES2500LSG
RES1600LS	RES2000LS	RES2500LS

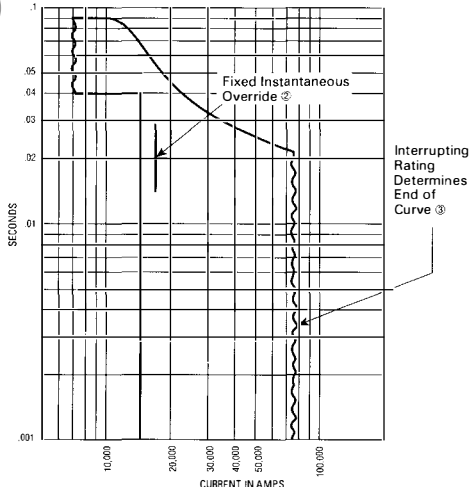
Frame Rating Amperes (Max.)	Available Rating Plugs Amperes Rating ( $I_n$ )	Type	Catalog Number	Short Delay Pickup Range Amperes	
1600	1600	Fixed	16RES16T	3200-12800	
	1400	Fixed	16RES14T	2800-11200	
	1250	Fixed	16RES125T <sup>②</sup>	2500-10000	
	1200	Fixed	16RES12T	2400-9600	
	1000	Fixed	16RES10T	2000-8000	
	800	Fixed	16RES8T	1600-6400	
	800, 1000, 1200, 1600	Adj.	A16RES16T1	1600-12800	
	800, 1000, 1250, 1600	Adj.	A16RES16T2 <sup>③</sup>	1600-12800	
	2000	2000	Fixed	20RES20T	4000-16000
		1600	Fixed	20RES16T	3200-12800
1400		Fixed	20RES14T	2800-11200	
1250		Fixed	20RES125T <sup>②</sup>	2500-10000	
1200		Fixed	20RES12T	2400-9600	
1000		Fixed	20RES10T	2000-8000	
1000, 1200, 1600, 2000		Adj.	A20RES20T1	2000-16000	
1000, 1250, 1600, 2000		Adj.	A20RES20T2 <sup>③</sup>	2000-16000	
2500		2500	Fixed	25RES25T	5000-15000
		2000	Fixed	25RES20T	4000-12000
	1600	Fixed	25RES16T	3200-9600	
	1250	Fixed	25RES125T <sup>②</sup>	2500-7500	
	1200	Fixed	25RES12T	2400-7200	
	1200, 1600, 2000, 2500	Adj.	A25RES25T1	24000-15000	
	1250, 1600, 2000, 2500	Adj.	A25RES25T2 <sup>③</sup>	2500-15000	

Breaker Type	Interrupting Ratings — 50/60 Hz RMS Sym Amperes (kA)			IEC 947-2		
	UL/CSA	480V	600V	220-240V	380-415V	$i_{cu}$
RD, CRD	125	65	50	125	65	42
RDC, CRDC	200	100	65	200	100	65

Utilization Category A  
 $i_{cs} = 0.25 i_{cu}$   
 $i_{imp} = 8 \text{ kV}$

**Notes**

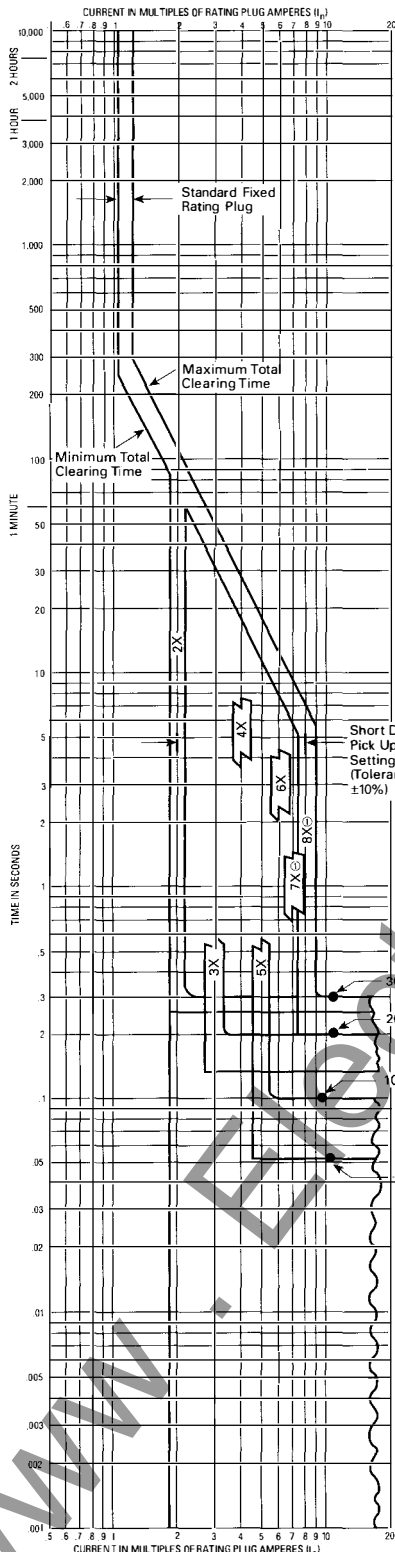
- Curve accuracy applies from -20°C to +55°C ambient. For possible ampere derating for ambient above 40°C, refer to Cutler-Hammer.
- Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.
- For 2500A styles, maximum short delay pickup setting - 6X.
- For high fault current levels a fixed instantaneous override is provided at 17,500A (Tolerance ±15%).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time-current curves see SC-5631-93.
- Not UL/CSA Listed.





# 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  $I_n$



### Circuit Breaker Time/Current Curves (Phase Current) ④

**Series C® R-Frame Circuit Breakers Equipped With Type Digitrip RMS 310 Trip Units**

Typical Trip Unit Nameplate

For use with Trip Unit Catalog Numbers

1600A Max.	2000A Max.	2500A Max.
RES1600LSI	RES2000LSI	RES2500LSI
RES1600LSIG	RES2000LSIG	RES2500LSIG
RES1600LSI	RES2000LSI	RES2500LSI

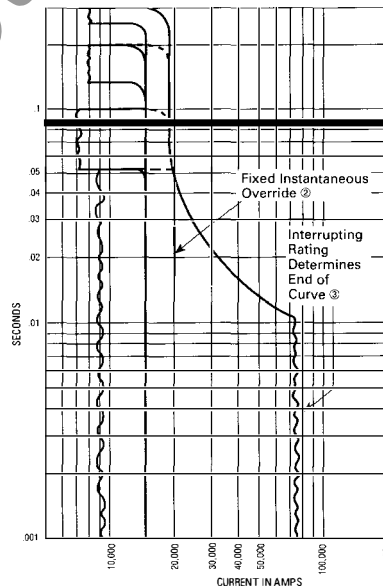
Frame Rating Amperes (Max.)	Available Rating Plugs (In)	Type	Catalog Number	Short Delay Pickup Range Amperes	
1600	1600	Fixed	16RS16T	3200-12800	
	1400	Fixed	16RS14T	2800-11200	
	1250	Fixed	16RS125T <sup>②</sup>	2500-10000	
	1200	Fixed	16RS12T	2400-9600	
	1000	Fixed	16RS10T	2000-8000	
	800	Fixed	16RS08T	1600-6400	
	800, 1000, 1200, 1600	Adj.	A16RS16T1	1600-12800	
	800, 1000, 1250, 1600	Adj.	A16RS16T2 <sup>③</sup>	1600-12800	
	2000	2000	Fixed	20RS20T	4000-16000
		1600	Fixed	20RS16T	3200-12800
1400		Fixed	20RS14T	2800-11200	
1250		Fixed	20RS125T <sup>②</sup>	2500-10000	
1200		Fixed	20RS12T	2400-9600	
1000		Fixed	20RS10T	2000-8000	
1000, 1200, 1600, 2000		Adj.	A20RS20T1	2000-16000	
1000, 1250, 1600, 2000		Adj.	A20RS20T2 <sup>③</sup>	2000-16000	
2500		2500	Fixed	25RES25T	5000-15000
		2000	Fixed	25RES20T	4000-12000
	1600	Fixed	25RES16T	3200-9600	
	1250	Fixed	25RES125T <sup>②</sup>	2500-7500	
	1200	Fixed	25RES12T	2400-7200	
	1000, 1600, 2000, 2500	Adj.	A25RES25T1	24000-15000	
	1250, 1600, 2000, 2500	Adj.	A25RES25T2 <sup>③</sup>	2500-15000	

**Interrupting Ratings - 50/60 Hz RMS Sym Amperes (kA)**

Breaker Type	UL/CSA	480V	600V	IEC 947-2	380-415V	$I_{cu}$
RD, CRD	125	65	50	125	65	42
RDC, CRDC	200	100	65	200	100	65

Utilization Category A  
 $I_{cs} = 0.25 I_{cu}$   
 $U_{imp} = 8 kV$

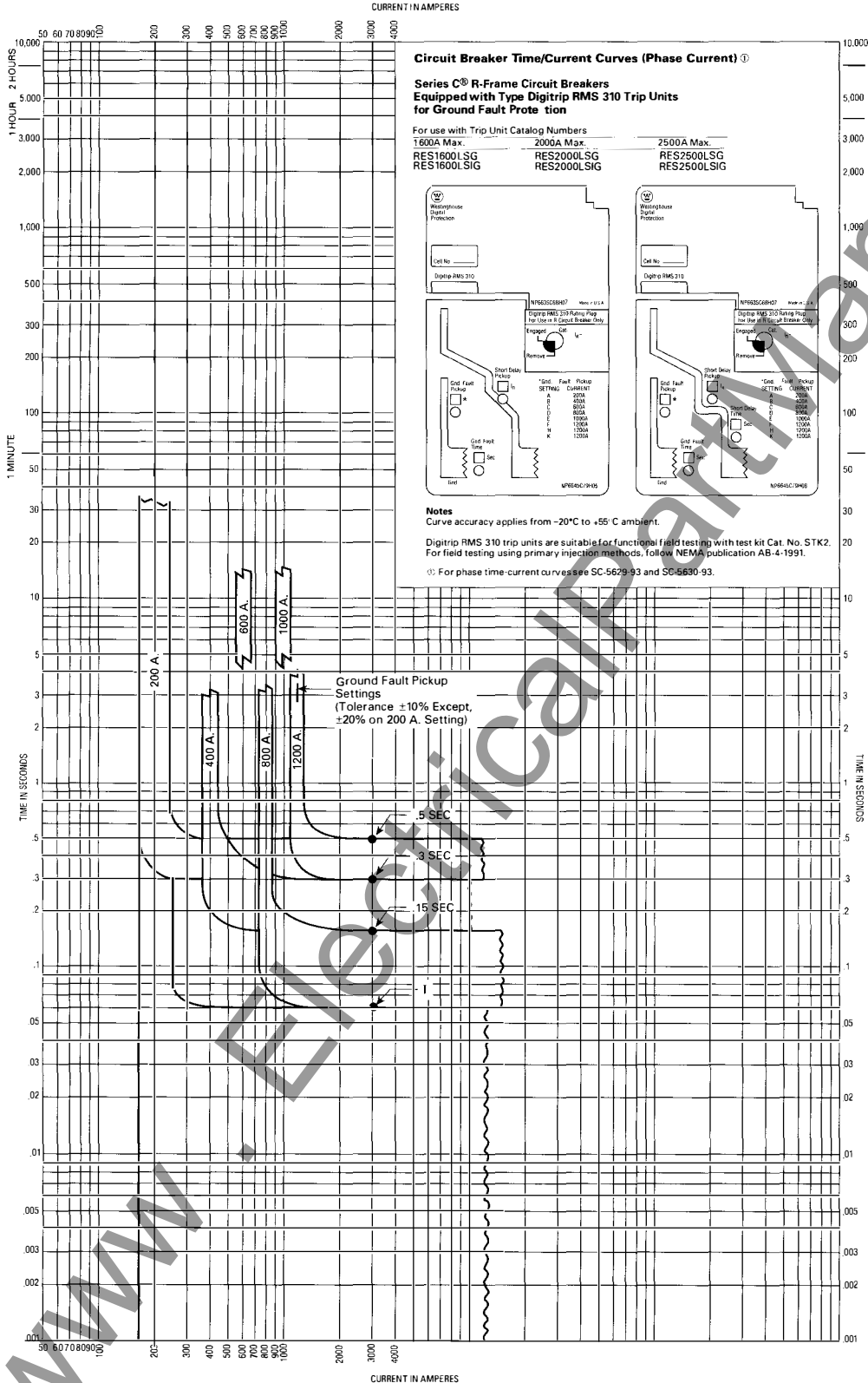
**Notes**  
Curve accuracy applies from -20°C to +55°C ambient. For possible ampere derating for ambient above 40°C, refer to Cutler-Hammer.  
Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.  
① For 2500A styles, maximum short delay pickup setting = 6X.  
② For high fault current levels a fixed instantaneous override is provided at 17,500A (Tolerance ±15%).  
③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.  
④ For ground fault time-current curves see SC-5631-93.  
⑤ Not UL/CSA Listed.





# 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  $I_n$



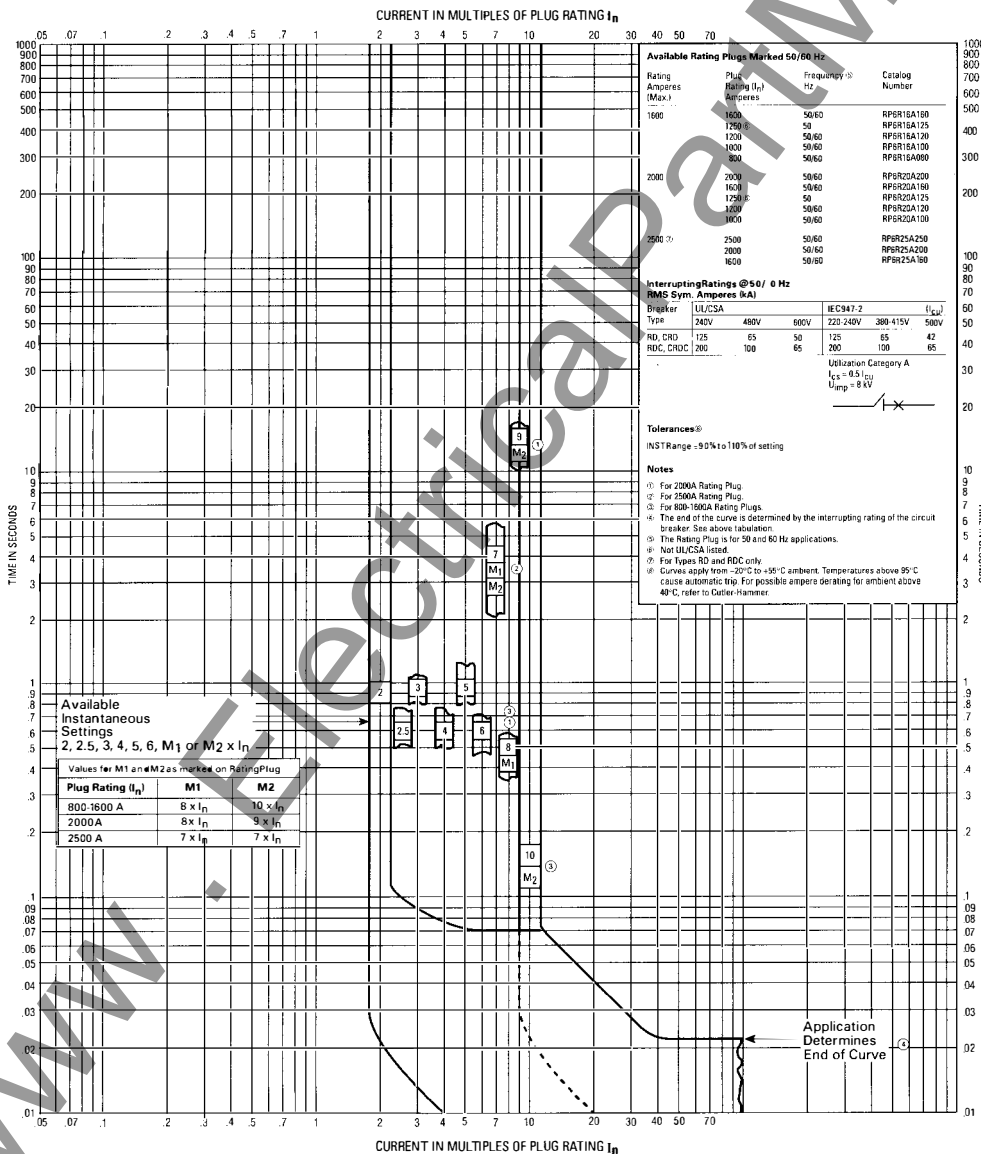


# AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 510/610/810 Trip Units. Typical Instantaneous Time-Phase Current Characteristic Curve Based on  $I_n$

**IMPORTANT**  
TRIP UNITS ARE NOT AVAILABLE WITH ONLY INSTANTANEOUS PROTECTION. THIS CURVE MUST BE USED in conjunction WITH Curve No. SC-5627-93 for LONG DELAY (and if applicable SHORT DELAY) PROTECTION to obtain the complete time-current characteristic.

## Series C<sup>®</sup> R-Frame Circuit Breakers with DIGITRIP RMS 510/610/810 Trip Units Typical Instantaneous Time-Phase Current Characteristic Curve (I)

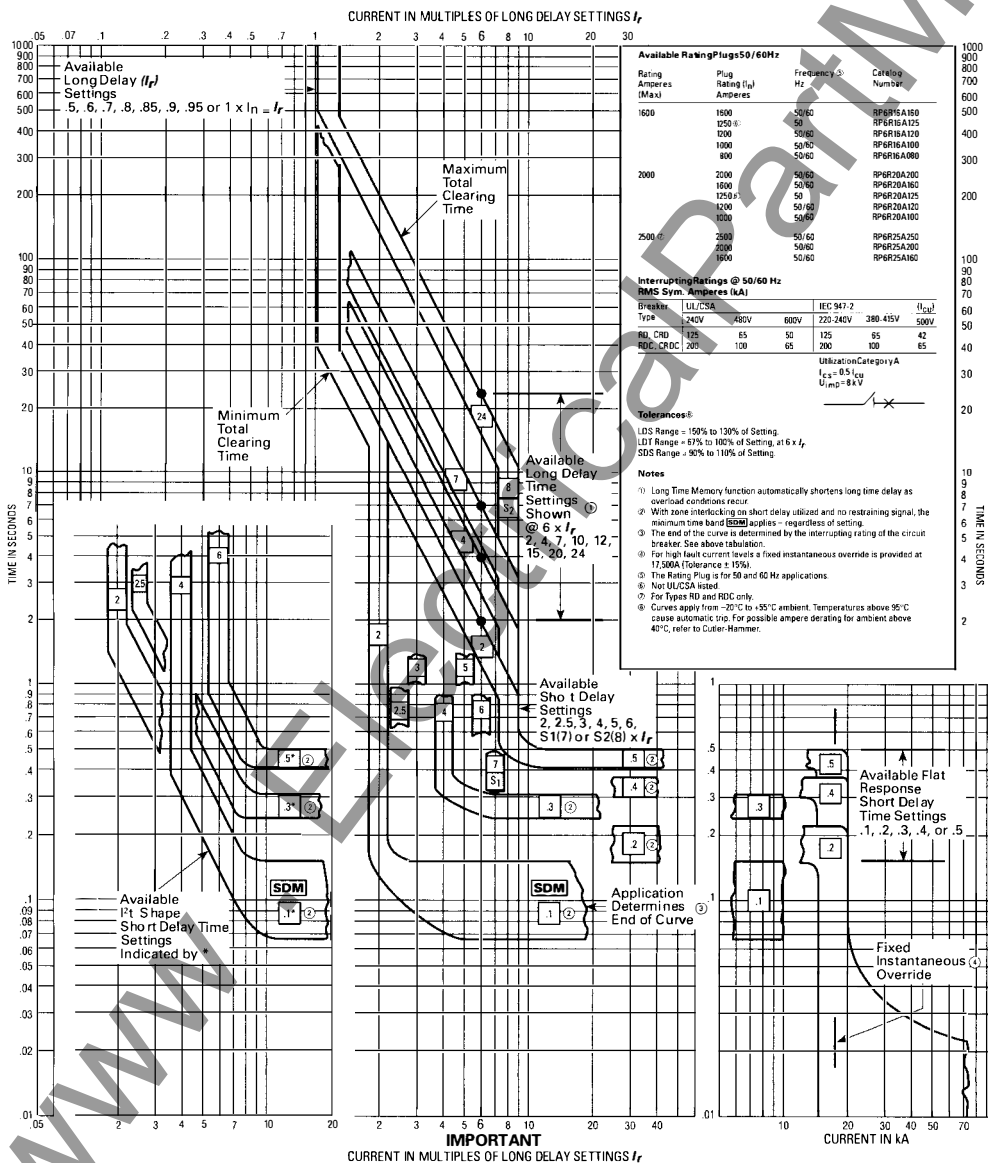




# AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 510/610/810 Trip Units. Typical Long Delay/Short Delay Time-Phase Current Characteristic Curve Based on  $I_r$

## Series C<sup>®</sup>R-Frame Circuit Breakers with DIGITRIP RMS 510/610/810 Trip Units Typical Long Delay and Short Delay Time-Phase Current Characteristic Curve (LS)



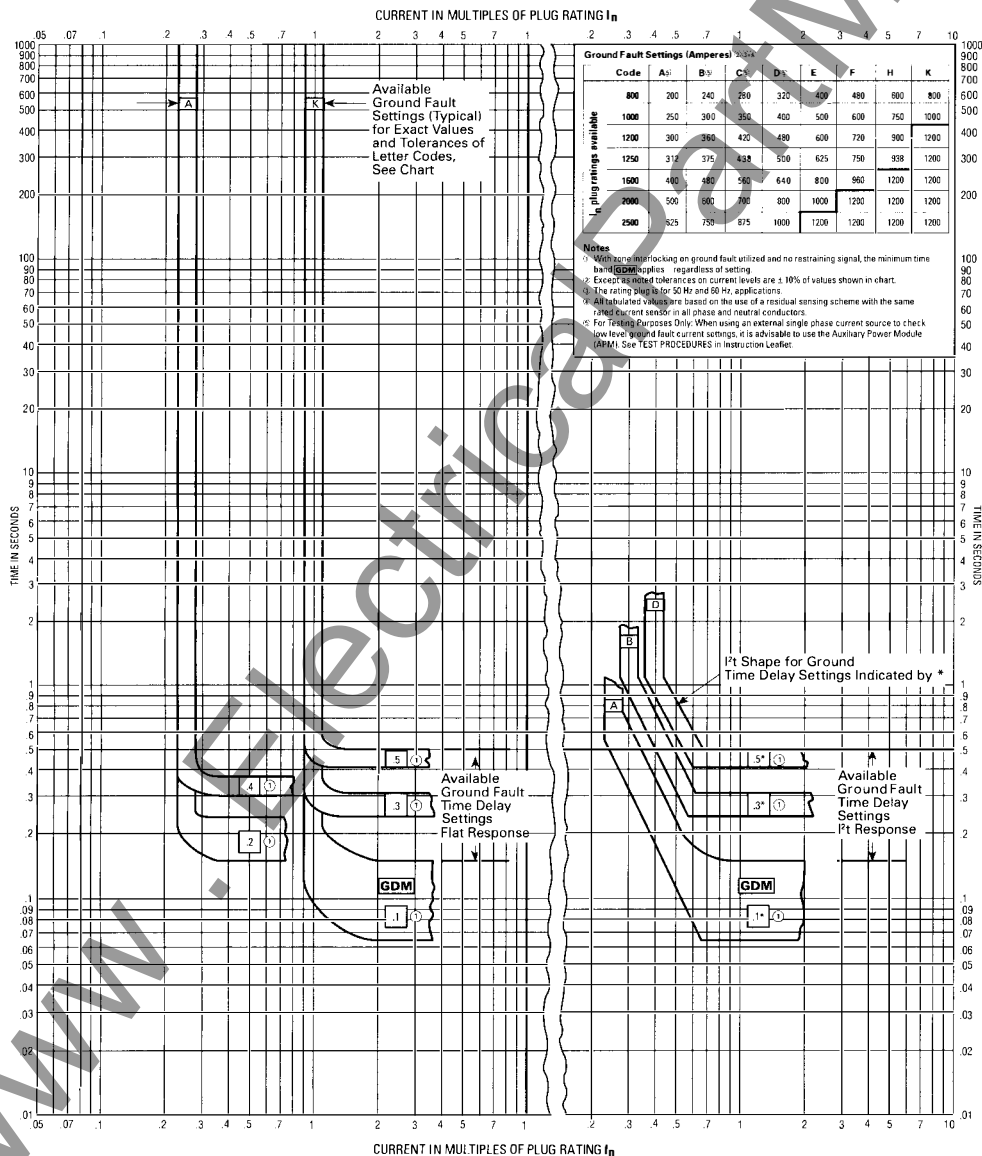




# AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 510/610/810 Trip Units. Typical Ground Fault/Protection Time/Current Characteristic Curve Based on  $I_n$

## Series C<sup>o</sup>R-Frame Circuit Breakers with DIGITRIP RMS 510/610/810 Trip Units Typical Time-Ground Current Characteristic Curve (G)





## **AB DE-ION Circuit Breakers**

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**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167C**

Page 1

May 1994  
 Supersedes Application Data 29-164,  
 pages 1-36, dated April 1983, and  
 Application Data 29-165, pages 1-20,  
 dated February 1986  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Current Limit-R® Circuit  
 Breakers and Tri-Pac® Circuit Breakers

# Westinghouse AB DE-ION® Current Limiting Circuit Breakers

Voltages shown in curve headings are maximum at which the breaker may be applied. Interrupting capacity of individual breaker is tabulated on each curve.

Breaker Description	Curve No.	Page
<b>Current Limit-R® Circuit Breakers</b>		
Type FCL 15 Amperes .....	SC-4340-80A	2
Type FCL 20 Amperes .....	SC-4341-80A	3
Type FCL 25 Amperes .....	SC-4342-80A	4
Type FCL 30 Amperes .....	SC-4343-80A	5
Type FCL 35 Amperes .....	SC-4344-80A	6
Type FCL 40 Amperes .....	SC-4345-80A	7
Type FCL 45 Amperes .....	SC-4346-80A	8
Type FCL 50 Amperes .....	SC-4347-80A	9
Type FCL 60 Amperes .....	SC-4348-80A	10
Type FCL 70 Amperes .....	SC-4349-80A	11
Type FCL 80 Amperes .....	SC-4350-80A	12
Type FCL 90 Amperes .....	SC-4351-80A	13
Type FCL 100 Amperes .....	SC-4352-80A	14
Types LCL and LCLG 125-250 Amperes .....	SC-3624-81A	15
Types LCLA and LCLGA 125-250 Amperes .....	SC-3625-81A	16
Types LCL and LCLG 200-400 Amperes .....	SC-3626-81A	17
Types LCLA and LCLGA 200-400 Amperes .....	SC-3627-81A	18
Ground Fault Pick-up Curves for Types LCLG and LCLGA .....	SC-3906-86A	19
<b>Tri-Pac® Current Limiting Circuit Breakers</b>		
Type FB 15 Amperes .....	SC-3572-76A	20
Type FB 20 Amperes .....	SC-3573-76A	21
Type FB 30 Amperes .....	SC-3574-76A	22
Type FB 40 Amperes .....	SC-3575-76A	23
Type FB 50 Amperes .....	SC-3576-76A	24
Type FB 70 Amperes .....	SC-3577-76A	25
Type FB 90 Amperes .....	SC-3578-76A	26
Type FB 100 Amperes .....	SC-3579-76A	27
Type LA 70 Amperes .....	SC-3580-76A	28
Type LA 90 Amperes .....	SC-3581-76A	29
Type LA 100 Amperes .....	SC-3582-76A	30
Type LA 125 Amperes .....	SC-3583-76A	31
Type LA 150 Amperes .....	SC-3584-76A	32
Type LA 175 Amperes .....	SC-3585-76A	33
Type LA 200 Amperes .....	SC-3586-76A	34
Type LA 225 Amperes .....	SC-3587-76A	35
Type LA 250 Amperes .....	SC-3588-76A	36
Type LA 300 Amperes .....	SC-3589-76A	37
Type LA 350 Amperes .....	SC-3590-76A	38
Type LA 400 Amperes .....	SC-3591-76A	39
Type NB 300 Amperes .....	SC-3592-76B	40
Type NB 350 Amperes .....	SC-3593-76B	41
Type NB 400 Amperes .....	SC-3594-76B	42
Type NB 500 Amperes .....	SC-3595-76B	43
Type NB 600 Amperes .....	SC-3596-76B	44
Type NB 700 Amperes .....	SC-3597-76B	45
Type NB 800 Amperes .....	SC-3598-76B	46
Type PB 600 Amperes .....	SC-3599-76B	47
Type PB 800 Amperes .....	SC-3600-76B	48
Type PB 1000 Amperes .....	SC-3601-76B	49
Type PB 1200 Amperes .....	SC-3602-76B	50
Type PB 1400 Amperes .....	SC-3603-76B	51
Type PB 1600 Amperes .....	SC-3604-76B	52

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167C.

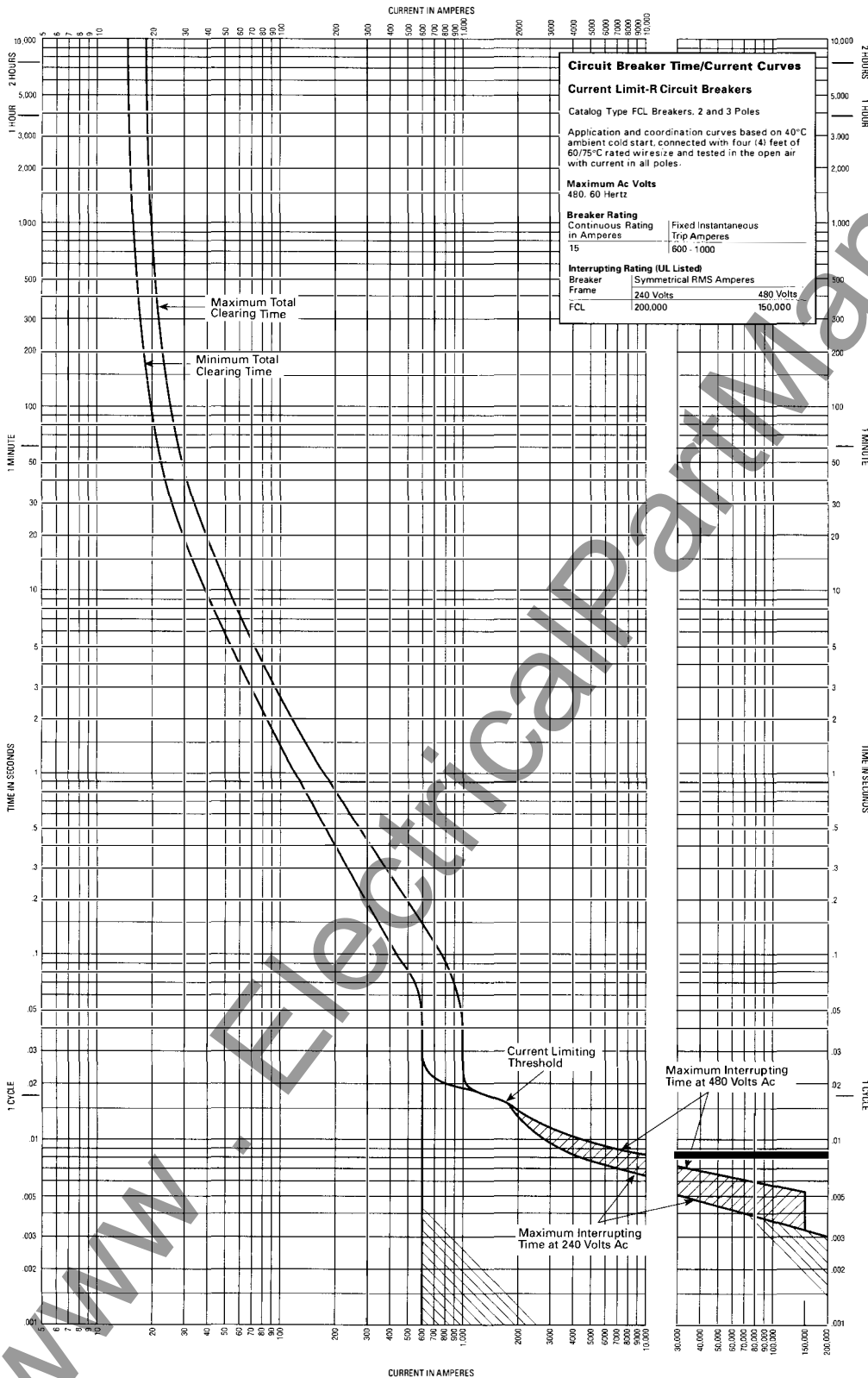
Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:  
 Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-4340-80A. **Requests for full sets of curves will not be honored.**



# AB DE-ION Current Limit-R® Circuit Breakers

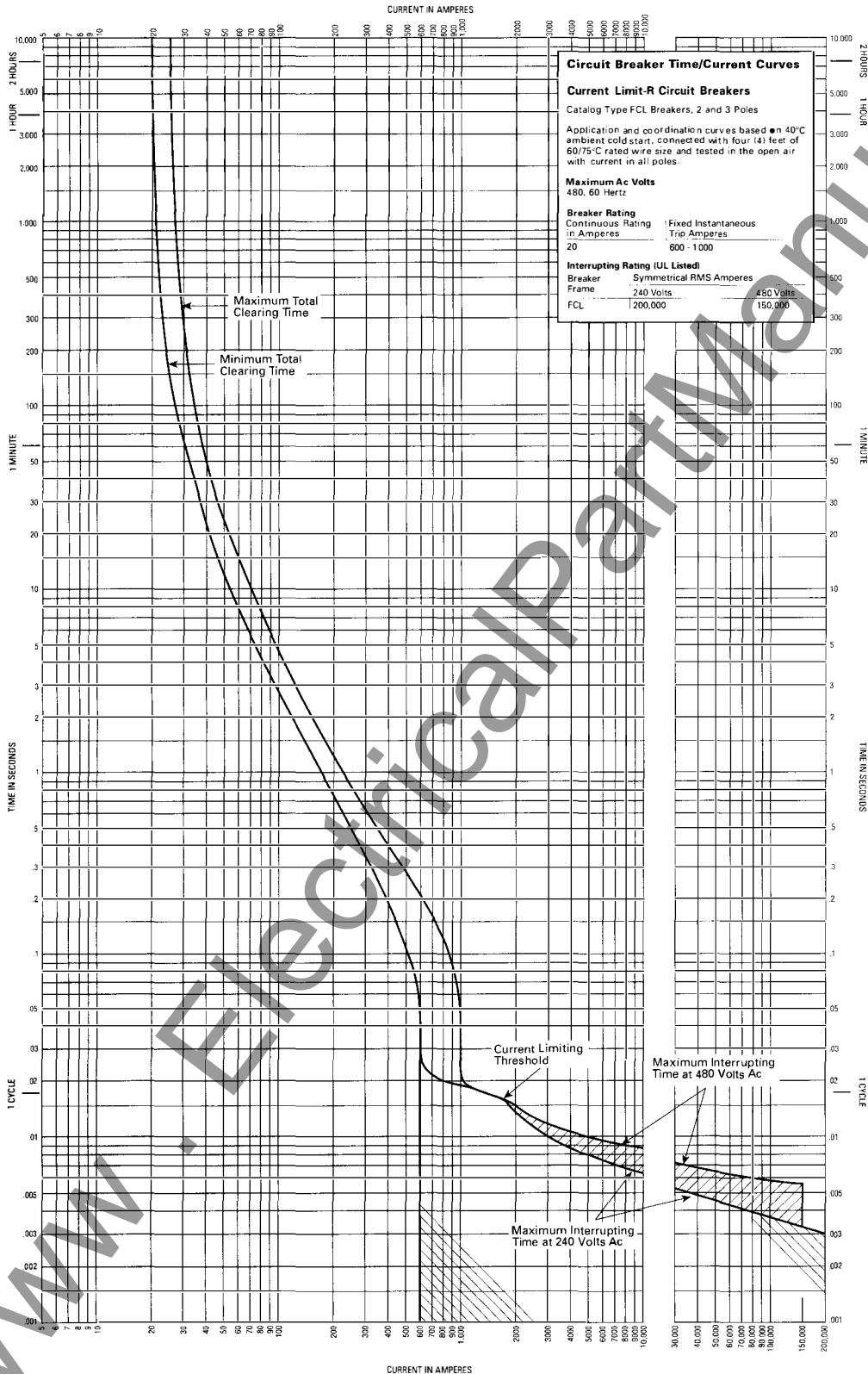
Type FCL, 15 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

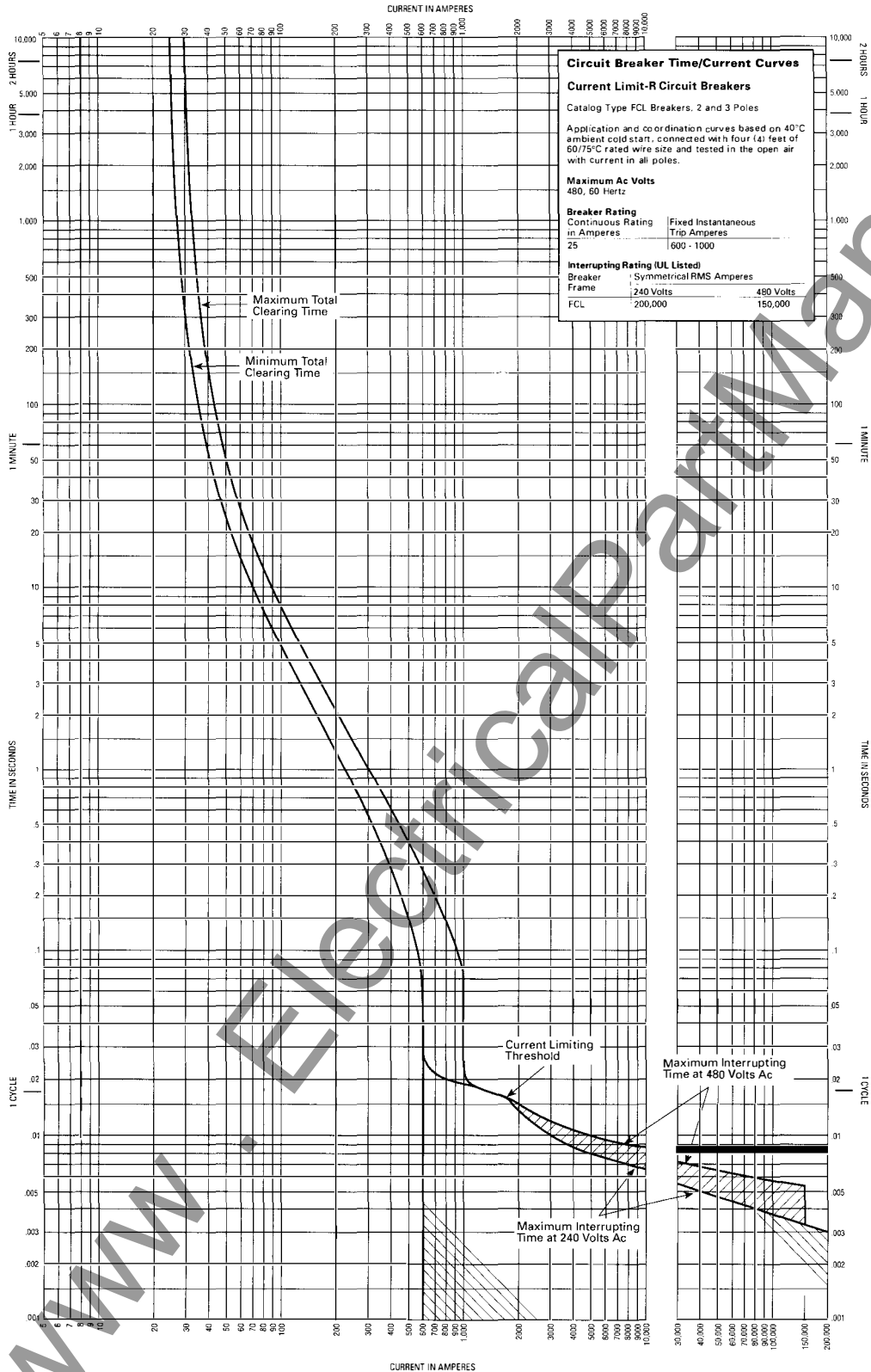
## Type FCL, 20 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

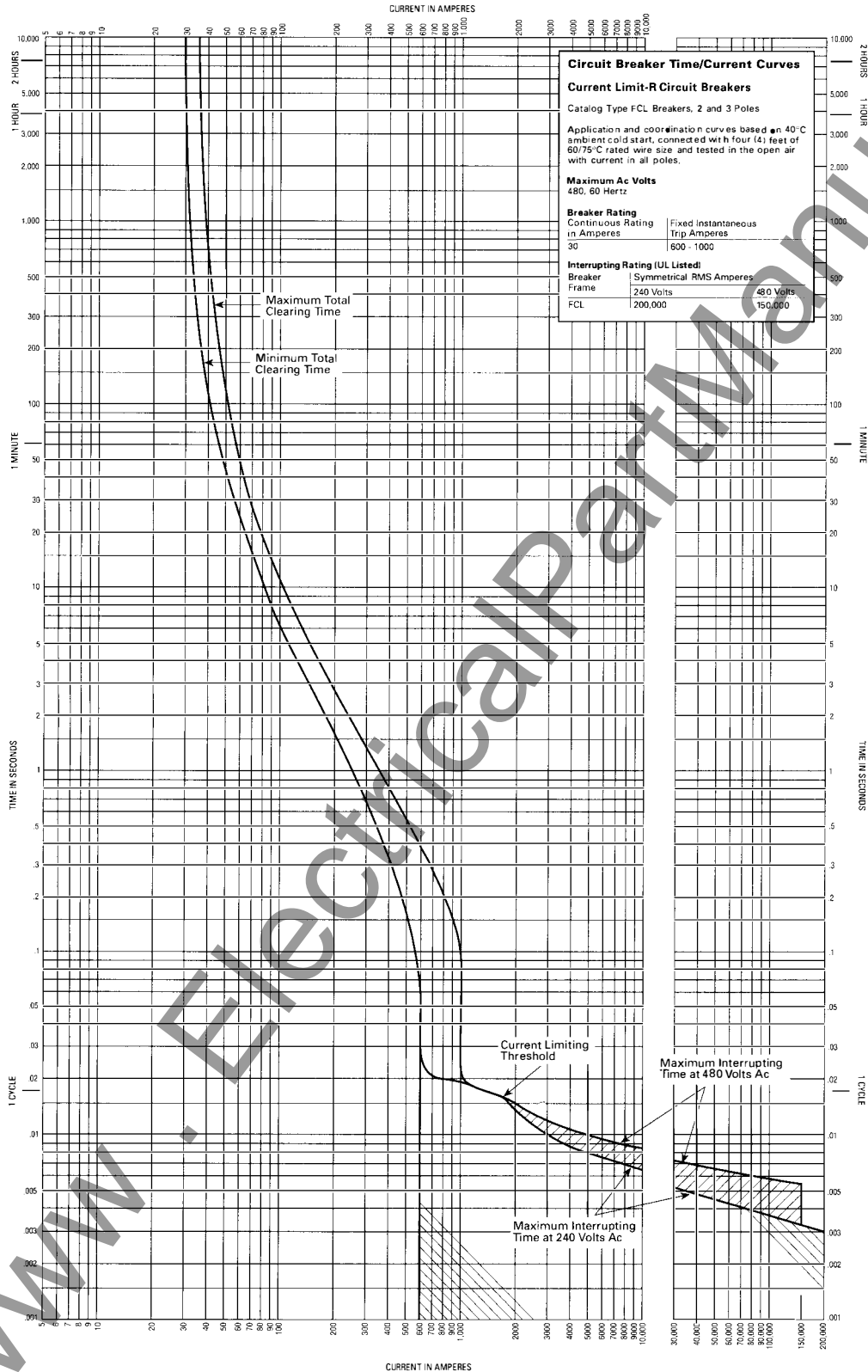
Type FCL, 25 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

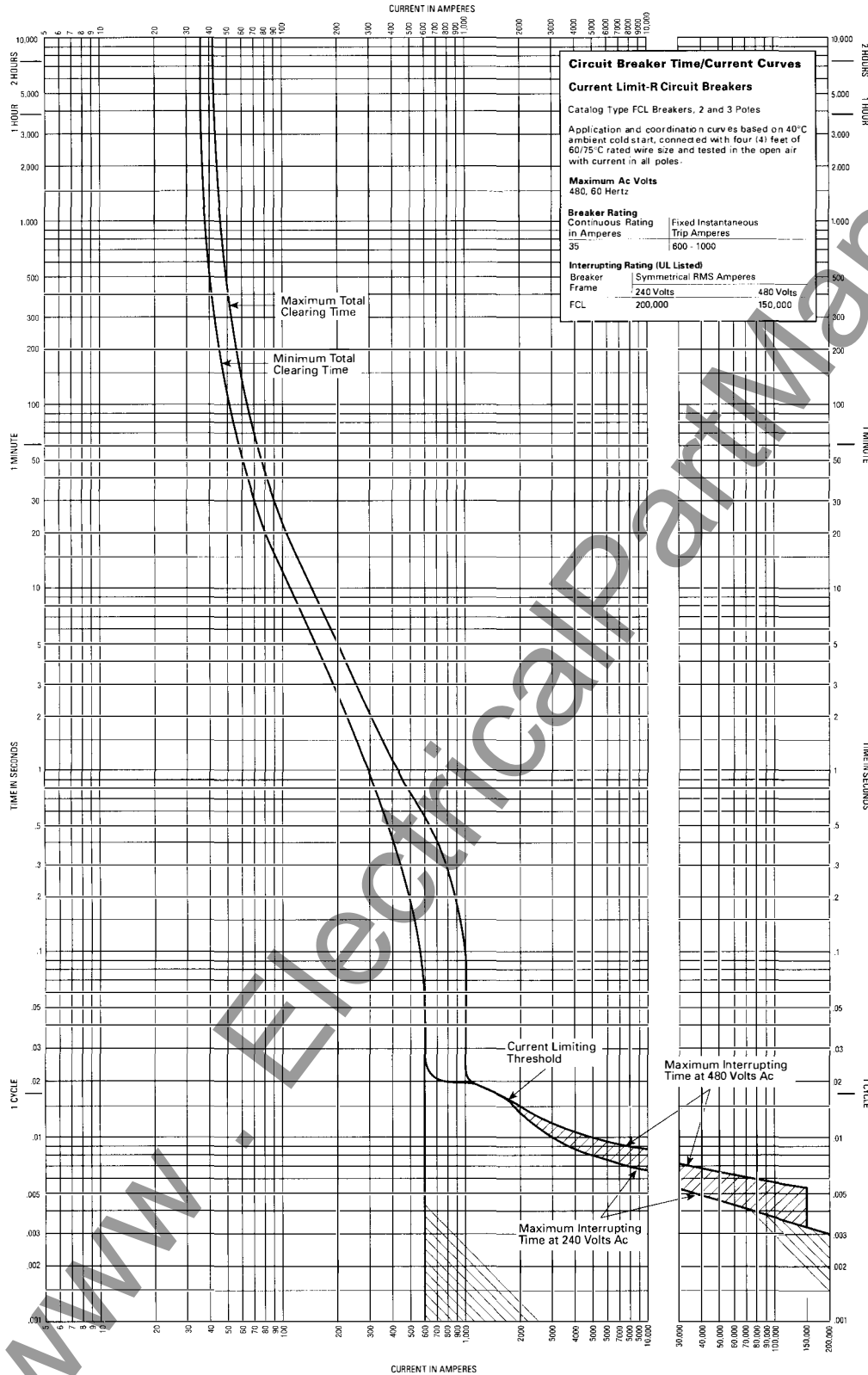
Type FCL, 30 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

Type FCL, 35 Amperes, 2 and 3 Poles

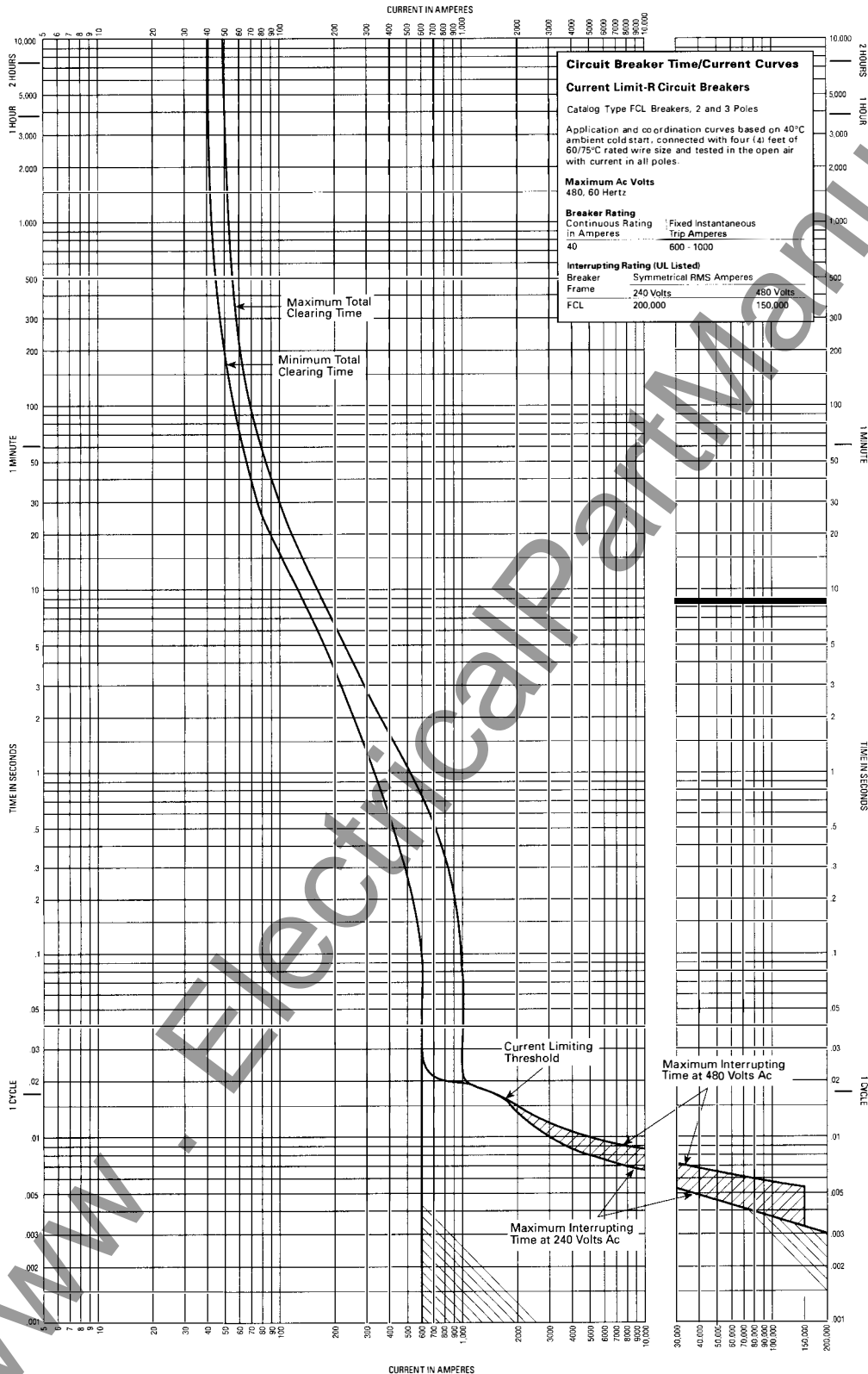






# AB DE-ION Current Limit-R® Circuit Breakers

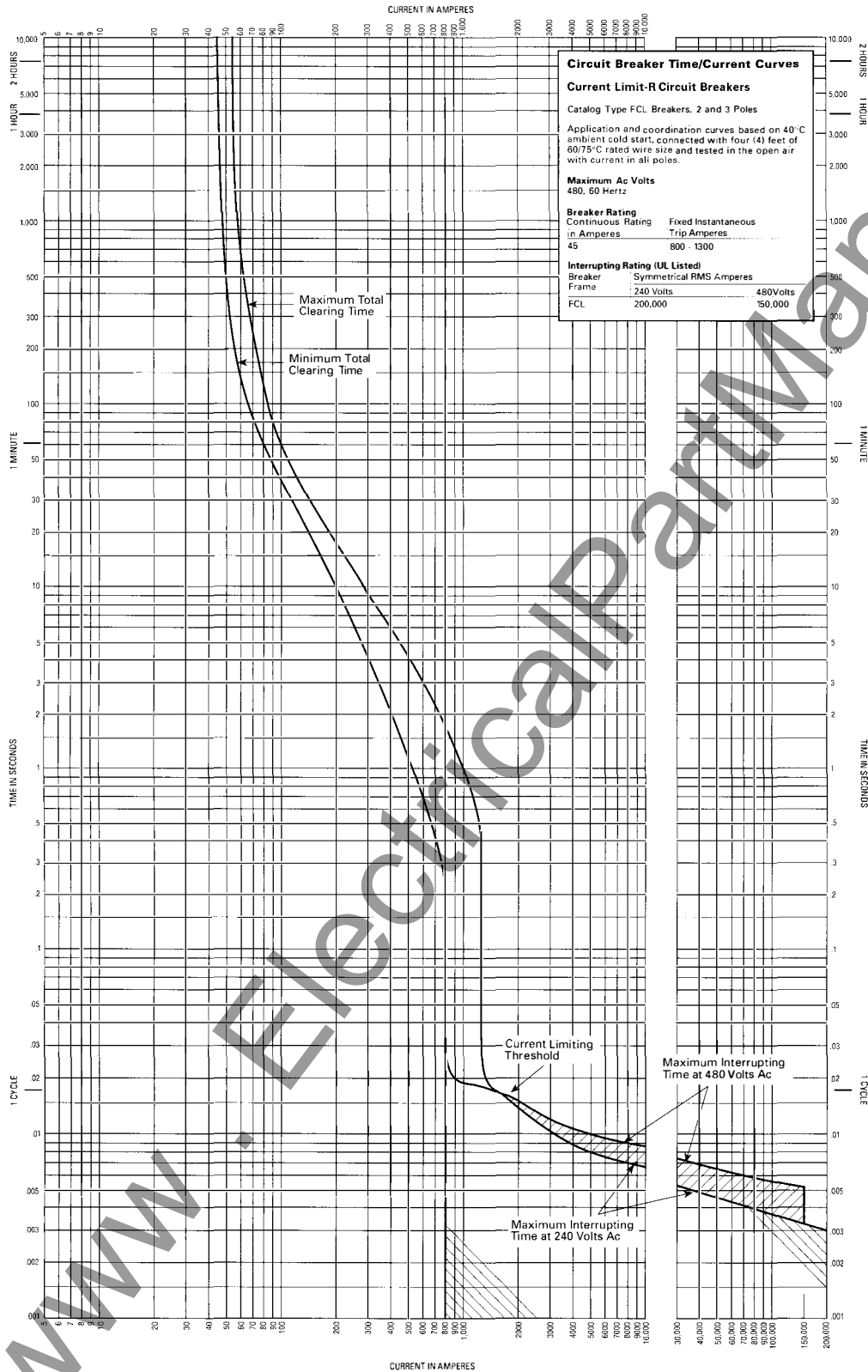
## Type FCL, 40 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

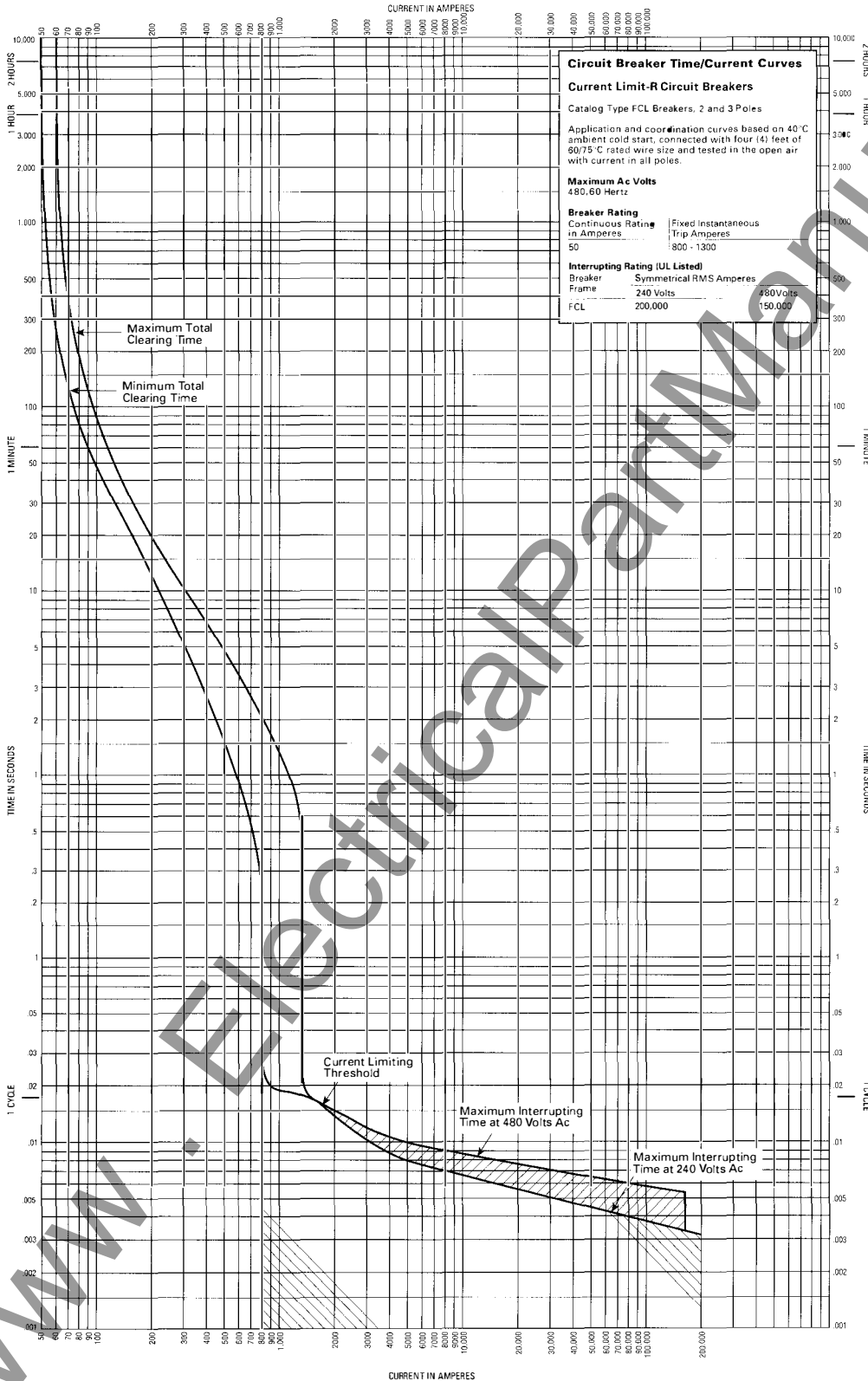
Type FCL, 45 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

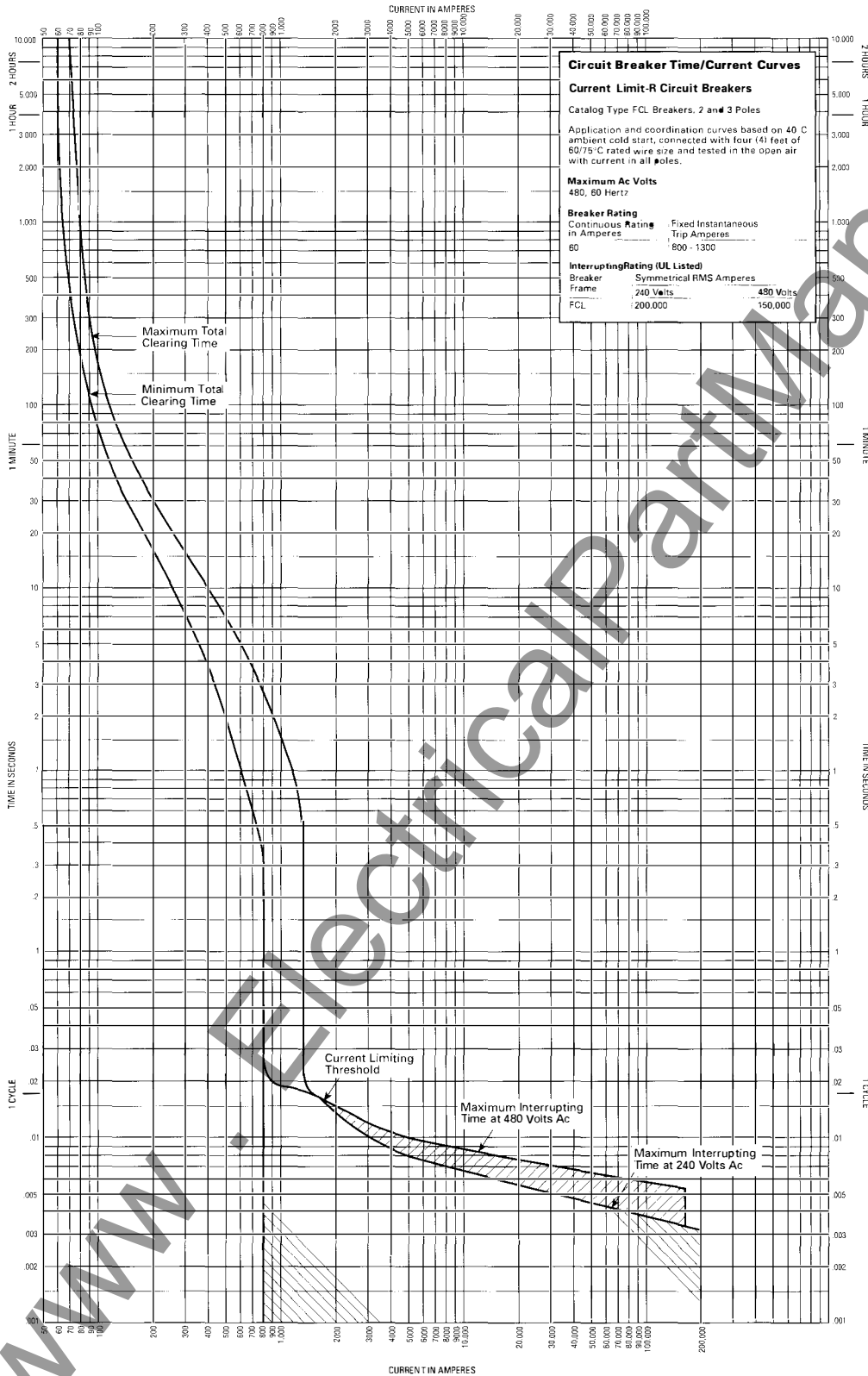
Type FCL, 50 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

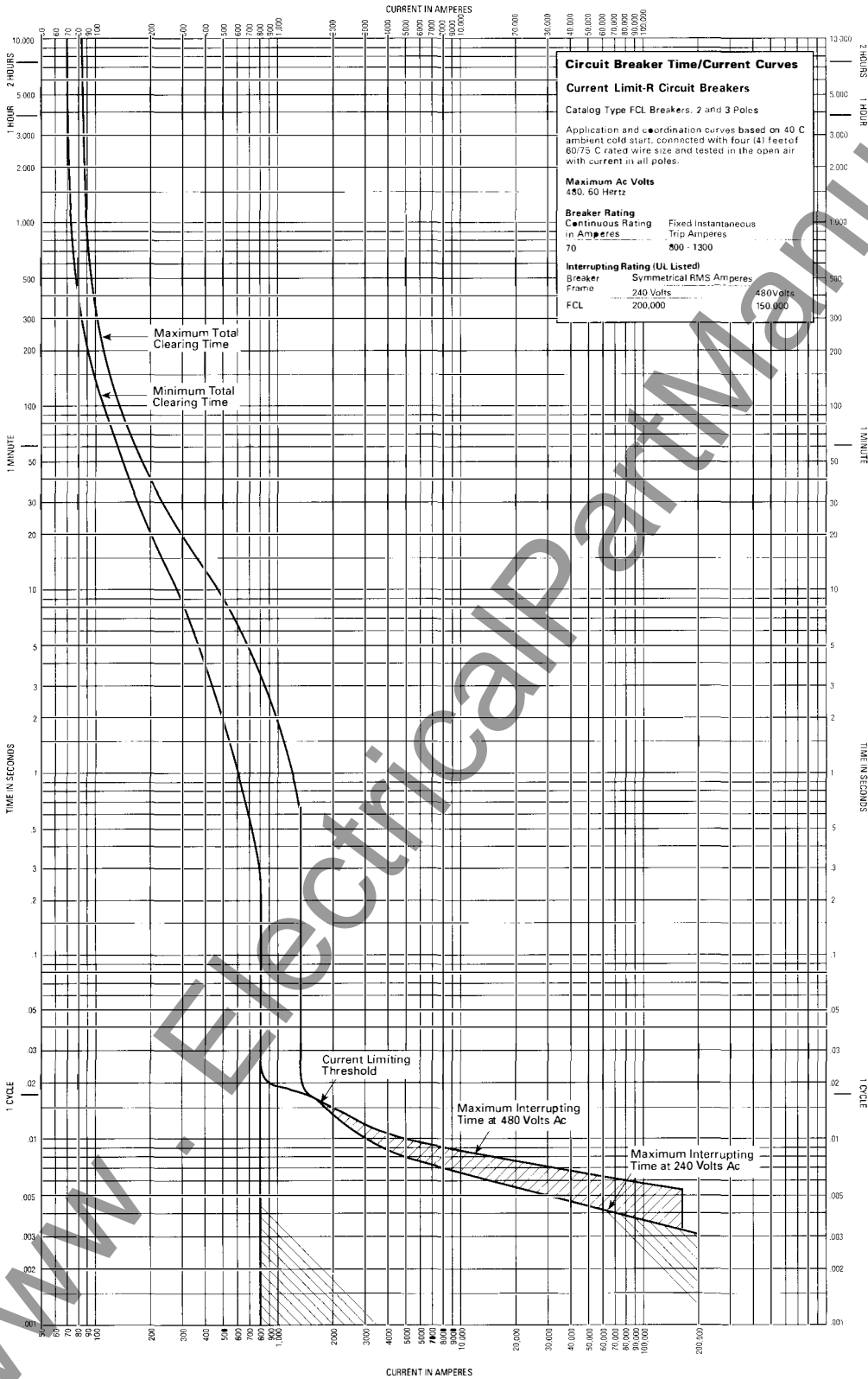
Type FCL, 60 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R® Circuit Breakers

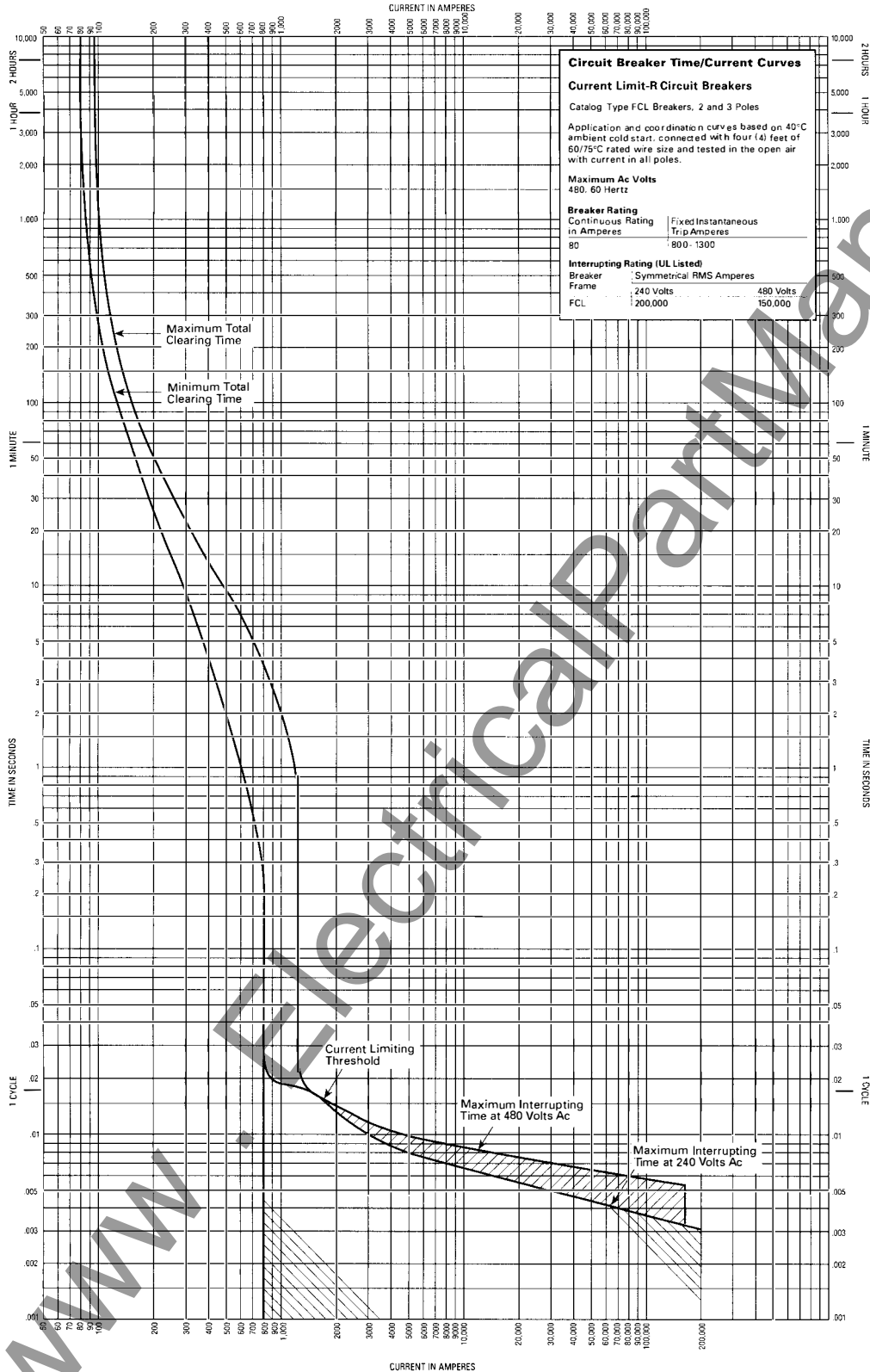
Type FCL, 70 Amperes, 2 and 3 Poles





# AB DE-ION Current Limit-R<sup>®</sup> Circuit Breakers

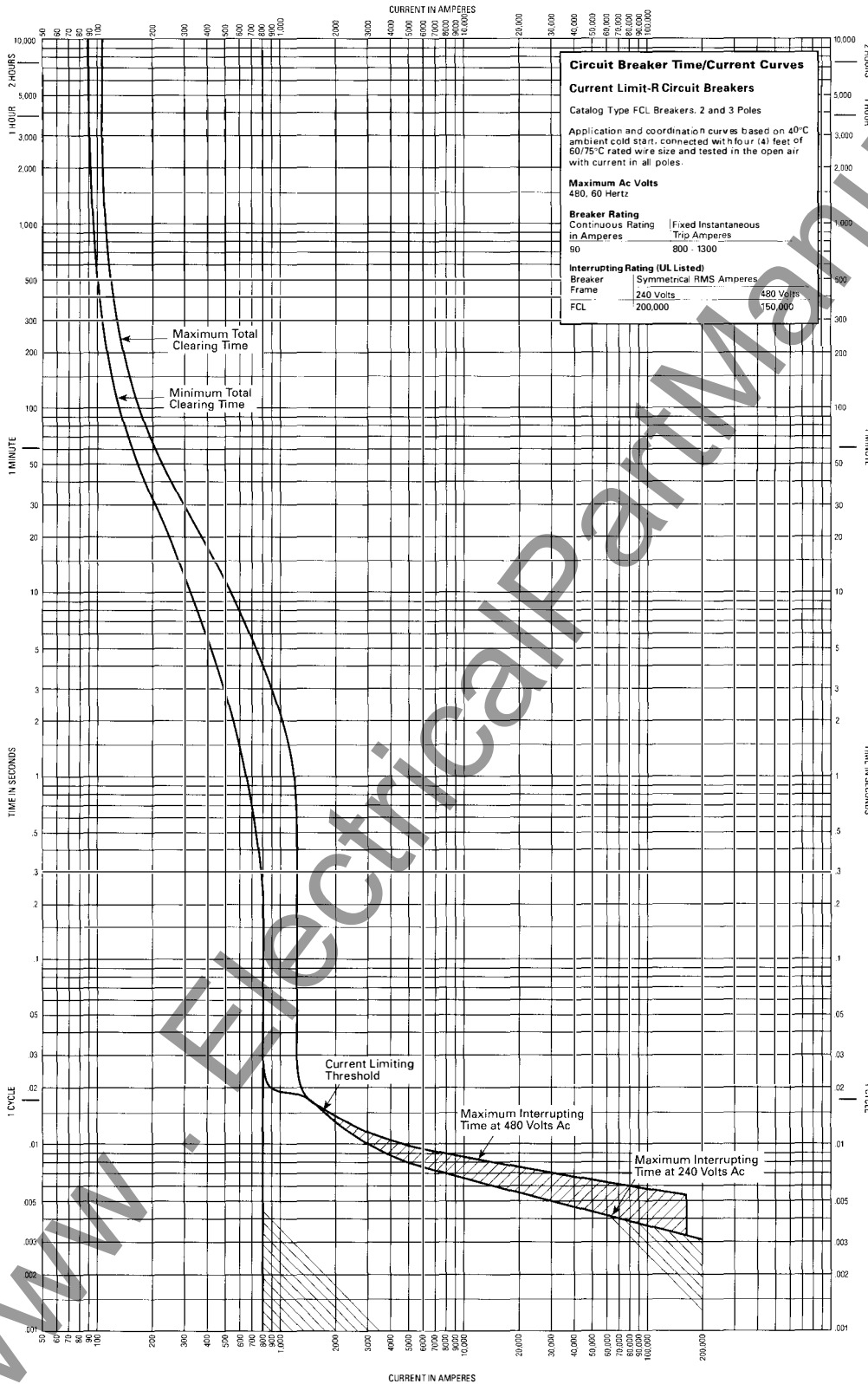
Type FCL, 80 Amperes, 2 and 3 Poles





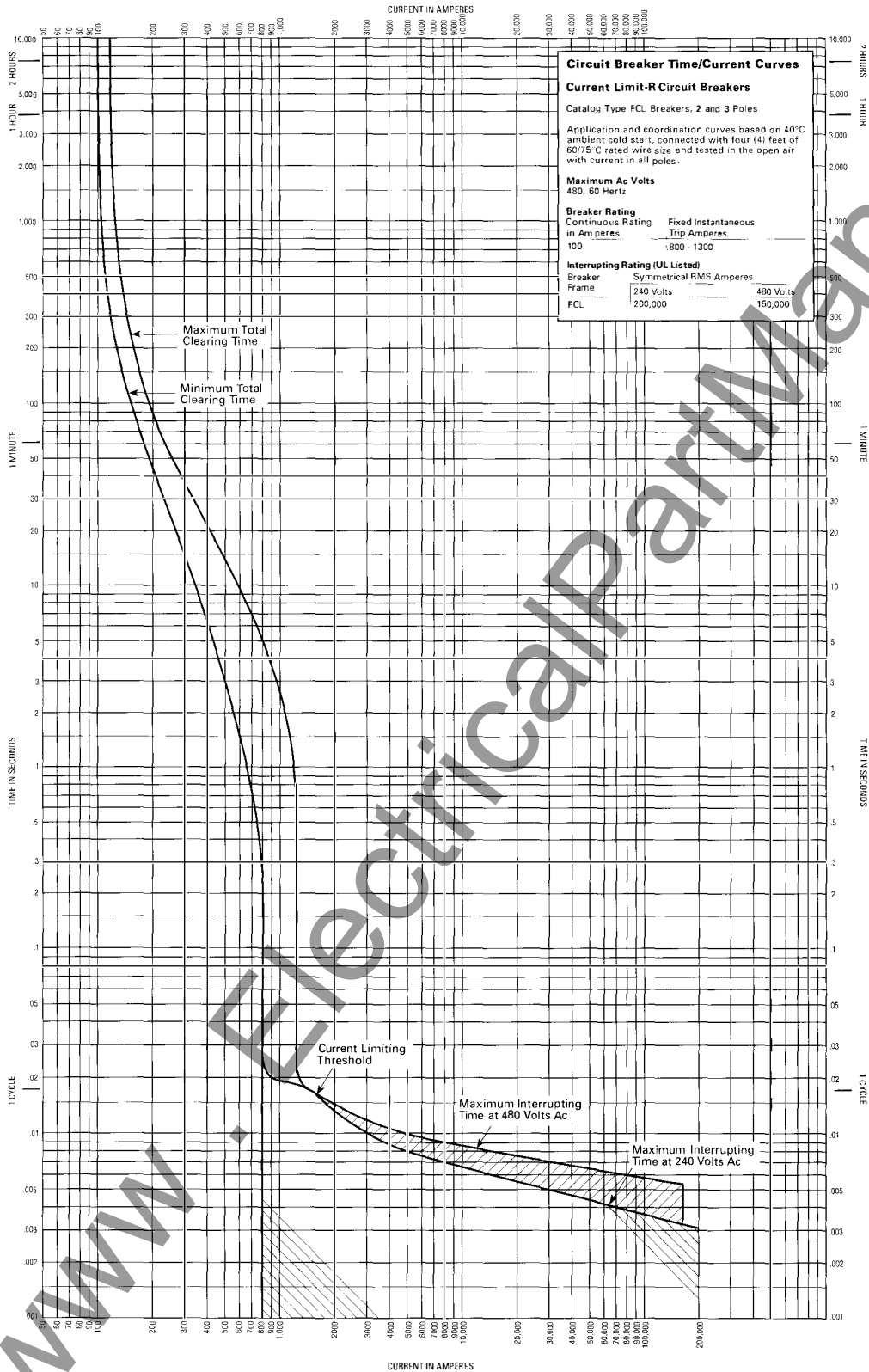
# AB DE-ION Current Limit-R® Circuit Breakers

Type FCL, 90 Amperes, 2 and 3 Poles



# AB DE-ION Current Limit-R® Circuit Breakers

Type FCL, 100 Amperes, 2 and 3 Poles

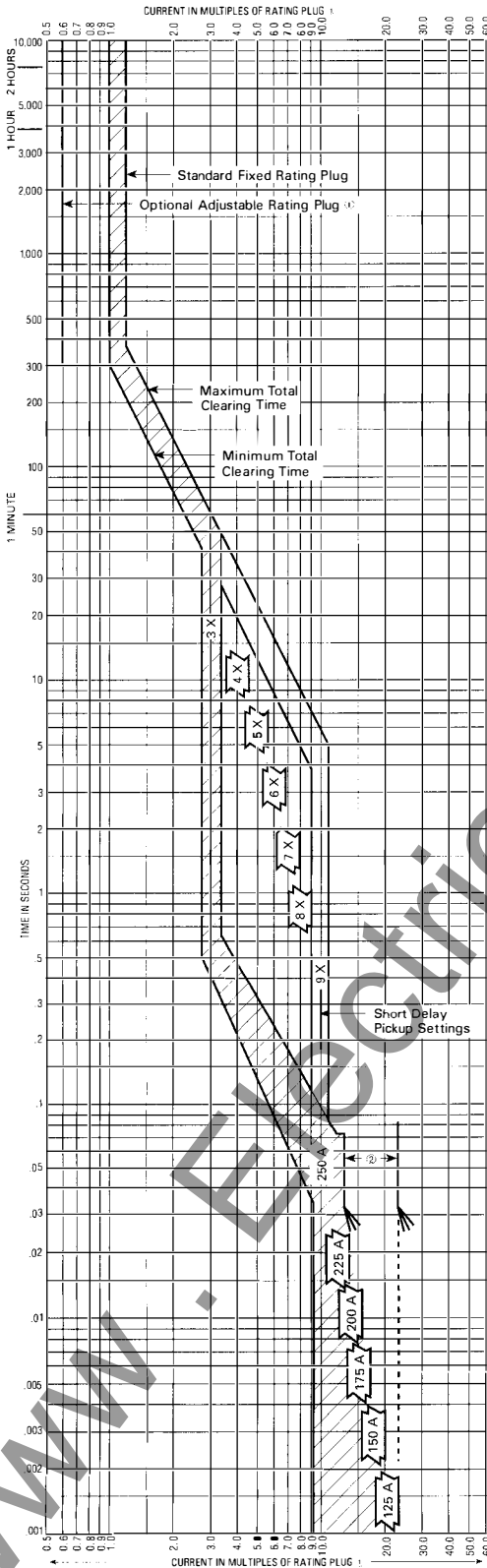






# AB DE-ION Current Limit-R® Circuit Breakers

Types LCL and LCLG, 125-250 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Current Limit-R Circuit Breakers**

Catalog Type LCL, LCLG Breakers, 2 and 3 Poles

Curve accuracy applies from -20 C to +55 C ambient. For possible continuous ampere derating for ambients above +40 C refer to Cutler-Hammer.

**Maximum Ac Volts**  
600, 50/60 Hertz

**Breaker Ratings**  
Continuous Amperes: 125-250  
Short Delay Pickup Settings: 3X to 9X rating plug value with calibration settings as shown on curve (Tol. ±10%)

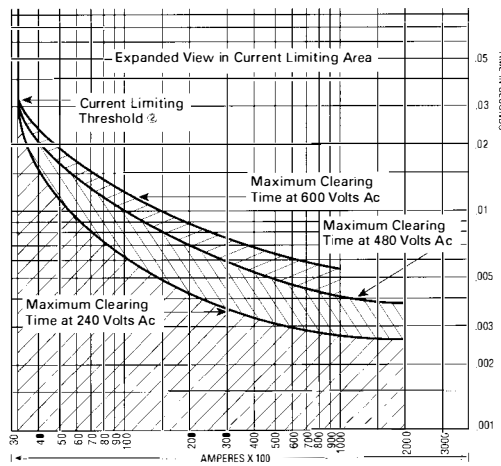
**Interrupting Rating (UL/CSA Listed)**

Frame	240 Volts	480 Volts	600 Volts
LCL, LCLG	200,000	200,000	100,000

**Rating Plugs Available**  
Continuous Amperes Range of Adjustment

250 Amp	Fixed 100%
250 Amp	50-100%
225 Amp	Fixed 100%
225 Amp	70-100%
200 Amp	Fixed 100%
200 Amp	70-100%
175 Amp	Fixed 100%
175 Amp	75-100%
150 Amp	Fixed 100%
125 Amp	Fixed 100%

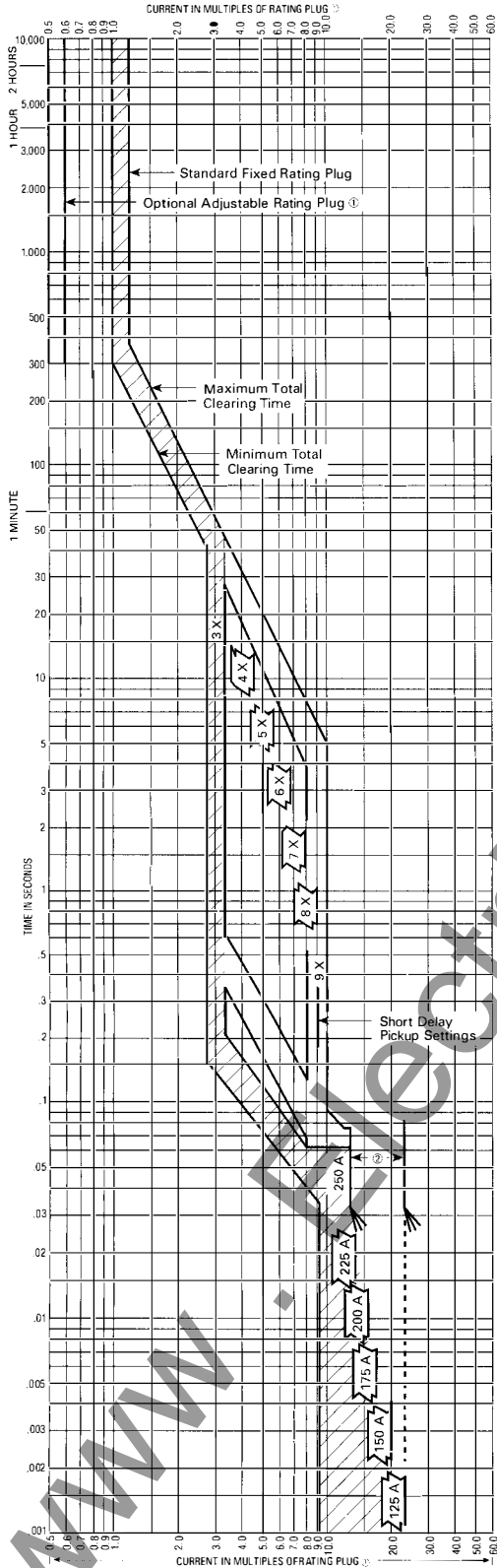
- When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 250 amp rating plug set at 50% and the short delay pickup set at 4X, the short delay pickup is 250 X 50% X 4 = 500 amps.
- The threshold point changes with the ampere value of the rating plug.
- For ground fault time-current characteristics of LCLG, see Curve No. SC-390686.





# AB DE-ION Current Limit-R® Circuit Breakers

Types LCLA and LCLGA, 125-250 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Current Limit-R Circuit Breakers**

Catalog Type LCLA, LCLGA Breakers, 2 and 3 Poles

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Cutler-Hammer.

**Maximum Ac Volts**  
 600, 50/60 Hertz

**Breaker Ratings**  
 Continuous Amperes: 125-250

**Short Delay Pickup Settings**  
 3X to 9X rating plug value with calibration settings as shown on curve (Tot. ±10%)

Interrupting Rating (UL/CSA Listed)	240 Volts	480 Volts	600 Volts
LCLA, LCLGA:	200,000	200,000	100,000

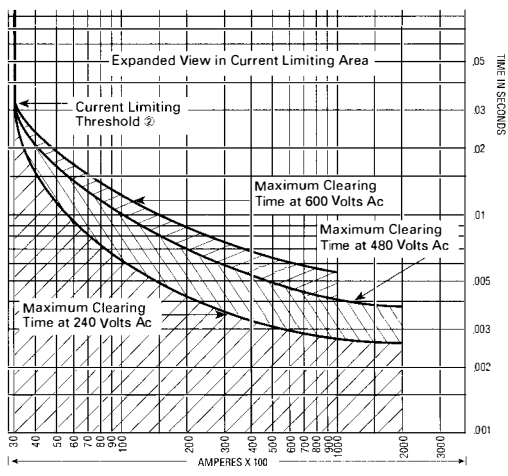
**Rating Plugs Available**  
 Continuous Amperes Range of Adjustment

250 Amp	Fixed 100%
250 Amp	50-100% ①
225 Amp	Fixed 100%
225 Amp	70-100% ②
200 Amp	Fixed 100%
200 Amp	70-100% ②
175 Amp	Fixed 100%
175 Amp	75-100% ③
150 Amp	Fixed 100%
125 Amp	Fixed 100%

① When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 250 amp rating plug set at 50% and the short delay pickup set at 4X, the short delay pickup is 250 X 50% X 4 = 500 amperes.

② The threshold point changes with the ampere value of the rating plug.

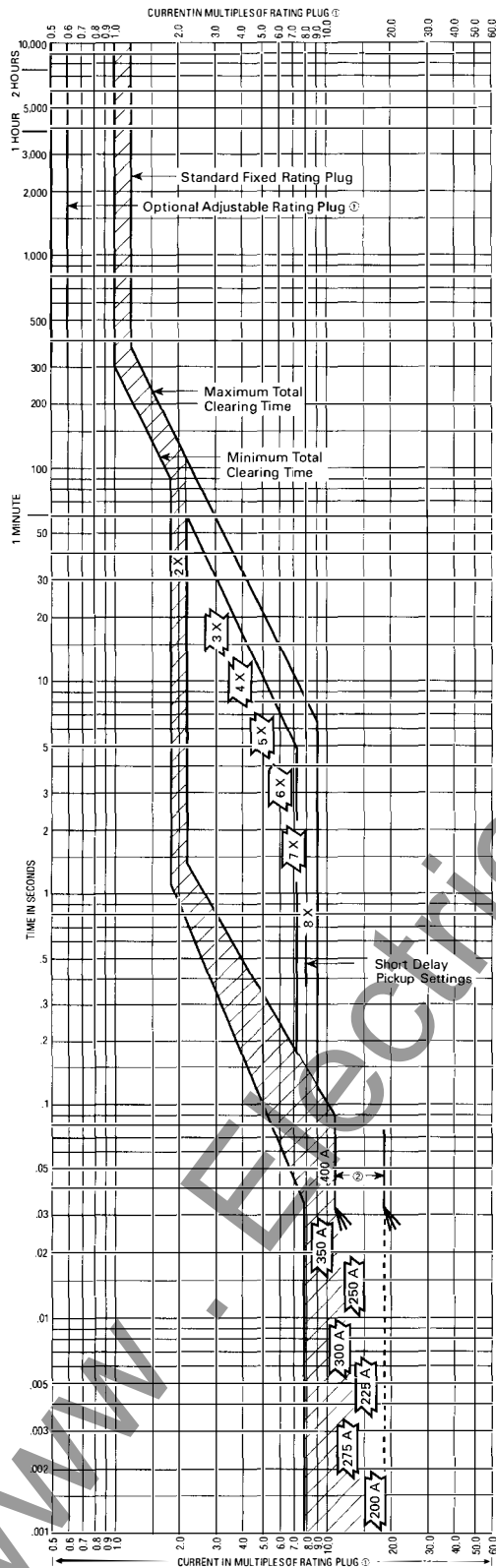
③ For ground fault time-current characteristics of LCLGA, see Curve No. SC-3906-86.





# AB DE-ION Current Limit-R® Circuit Breakers

Types LCL and LCLG, 200-400 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Current Limit-R Circuit Breakers**

Catalog Type LCL, LCLG Breakers, 2 and 3 Poles

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Cutler-Hammer.

**Maximum Ac Volts**  
600, 50/60 Hertz

**Breaker Ratings**

Continuous Amperes	Short Delay Pickup Settings	
200-400	2X to 8X rating plug value with calibration settings as shown on curve (Tot. ±10%)	

**Interrupting Rating (UL/CSA Listed)**

Frame	240 Volts	480 Volts	600 Volts
LCL, LCLG <sup>③</sup>	200,000	200,000	100,000

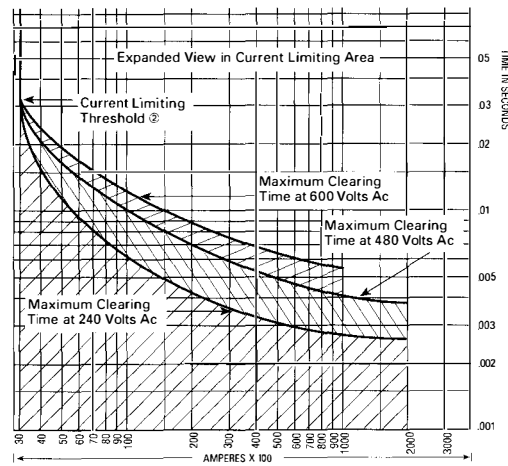
**Rating Plugs Available**

Continuous Amperes	Range of Adjustment
400 Amp	Fixed 100%
400 Amp	50-100%
350 Amp	Fixed 100%
350 Amp	70-100%
300 Amp	Fixed 100%
300 Amp	75-100%
275 Amp	Fixed 100%
250 Amp	Fixed 100%
225 Amp	Fixed 100%
200 Amp	Fixed 100%

① When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 400 amp rating plug set at 50% and the short delay pickup set at 4X, the short delay pickup is 400 X 50% X 4 = 800 amps.

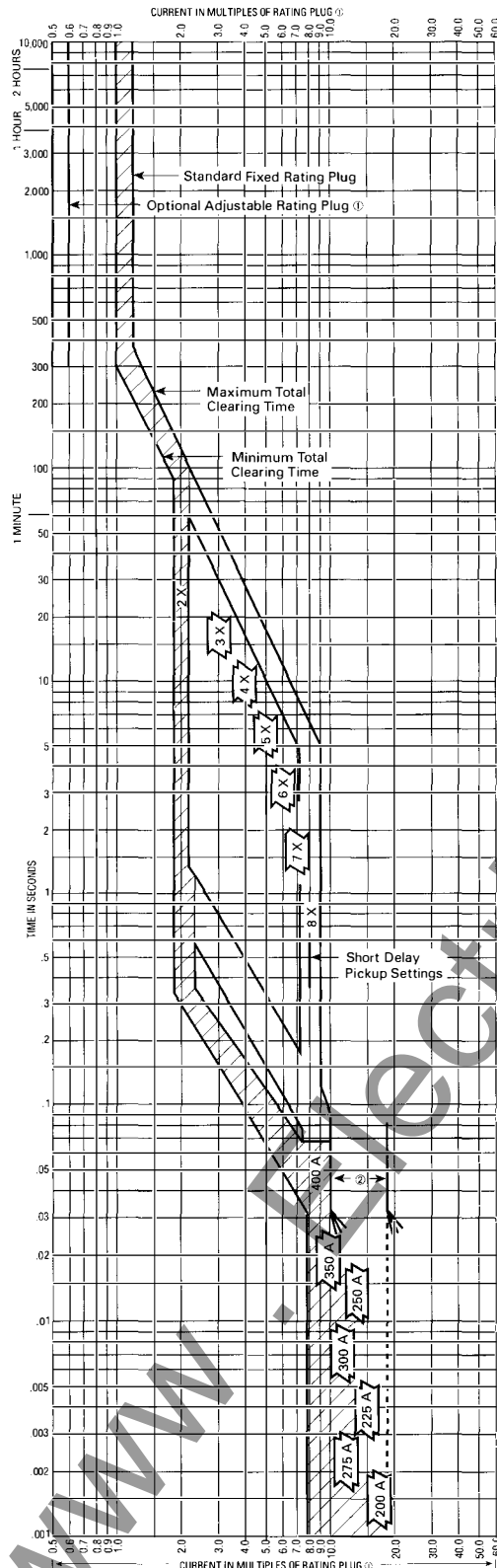
② The threshold point changes with the ampere value of the rating plug.

③ For ground fault time-current characteristics of LCLG, see Curve No. SC-3906-85.



# AB DE-ION Current Limit-R® Circuit Breakers

Type LCLA and LCLGA, 200-400 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Current Limit-R Circuit Breakers**

Catalog Type LCLA, LCLGA Breakers, 2 and 3 Poles

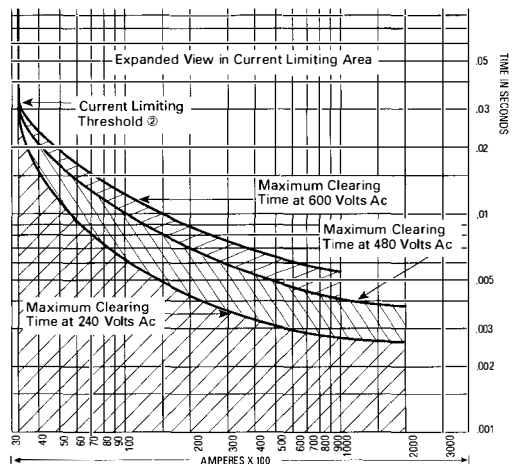
Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Cutler-Hammer.

<b>Maximum Ac Volts</b> 600, 50/60 Hertz	
<b>Breaker Ratings</b> Continuous Amperes	Short Delay Pickup Settings
200-400	2X to 8X rating plug value with calibration settings as shown on curve (Tot. ±10%)
<b>Interrupting Rating (UL/CSA Listed)</b>	
Frame	240 Volts      480 Volts      600 Volts
LCLA, LCLGA	200,000      200,000      100,000
<b>Rating Plugs Available</b>	
Continuous Amperes Range of Adjustment	
400 Amp	Fixed 100%
400 Amp	50-100% <sup>①</sup>
350 Amp	Fixed 100%
350 Amp	70-100% <sup>①</sup>
300 Amp	Fixed 100%
300 Amp	70-100% <sup>①</sup>
275 Amp	Fixed 100%
250 Amp	Fixed 100%
225 Amp	Fixed 100%
200 Amp	Fixed 100%

① When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 400 amp rating plug set at 50% and the short delay pickup set at 4X, the short delay pickup is 400 X 50% X 4 = 800 amps.

② The threshold point changes with the ampere value of the rating plug.

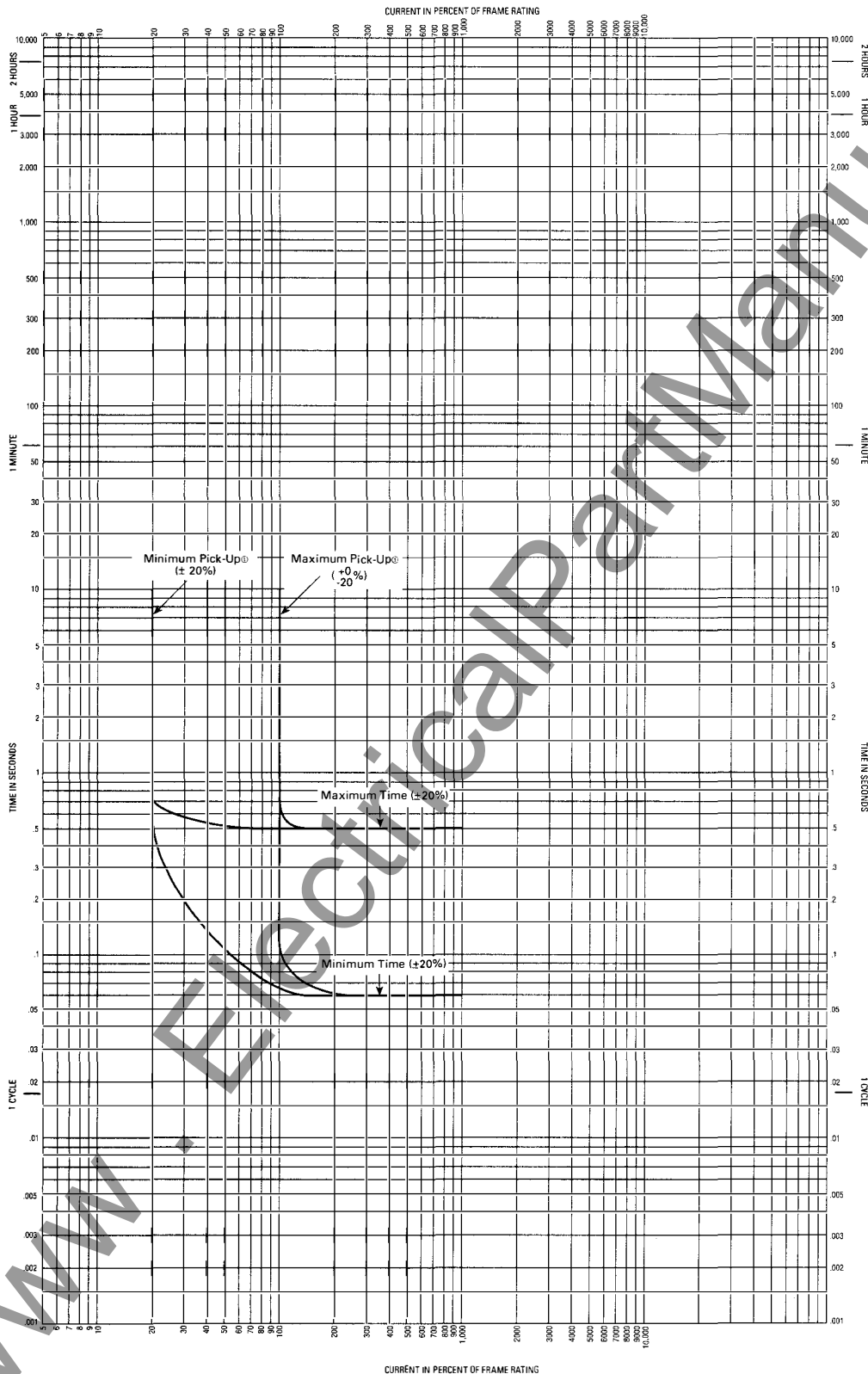
③ For ground fault time-current characteristics of LCLGA, see Curve No. SC-3606-86.





# AB DE-ION Current Limit-R<sup>®</sup> Circuit Breakers

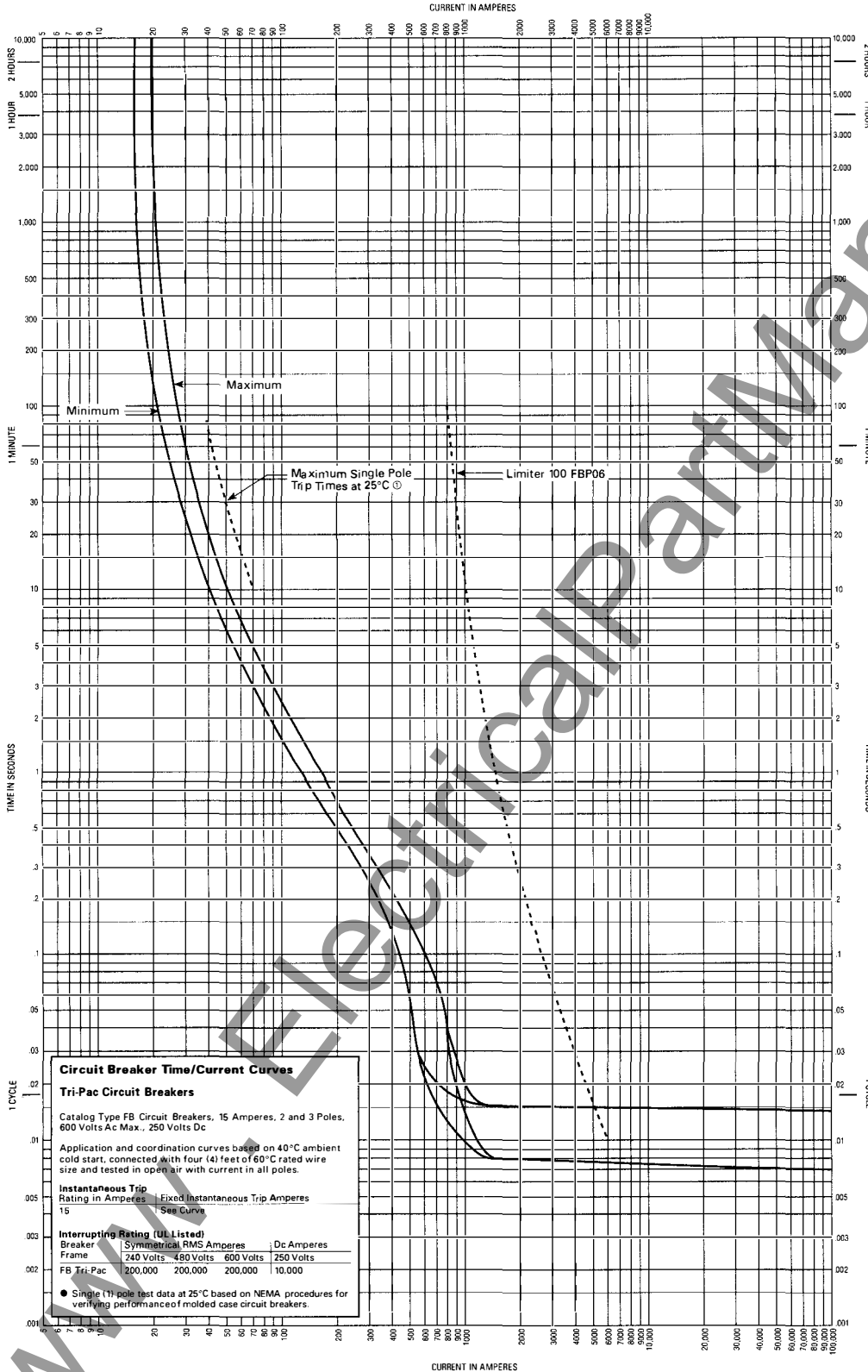
## Ground Fault Pick-up Curves for Types LCLG and LCLGA





# AB DE-ION Tri-Pac® Circuit Breakers

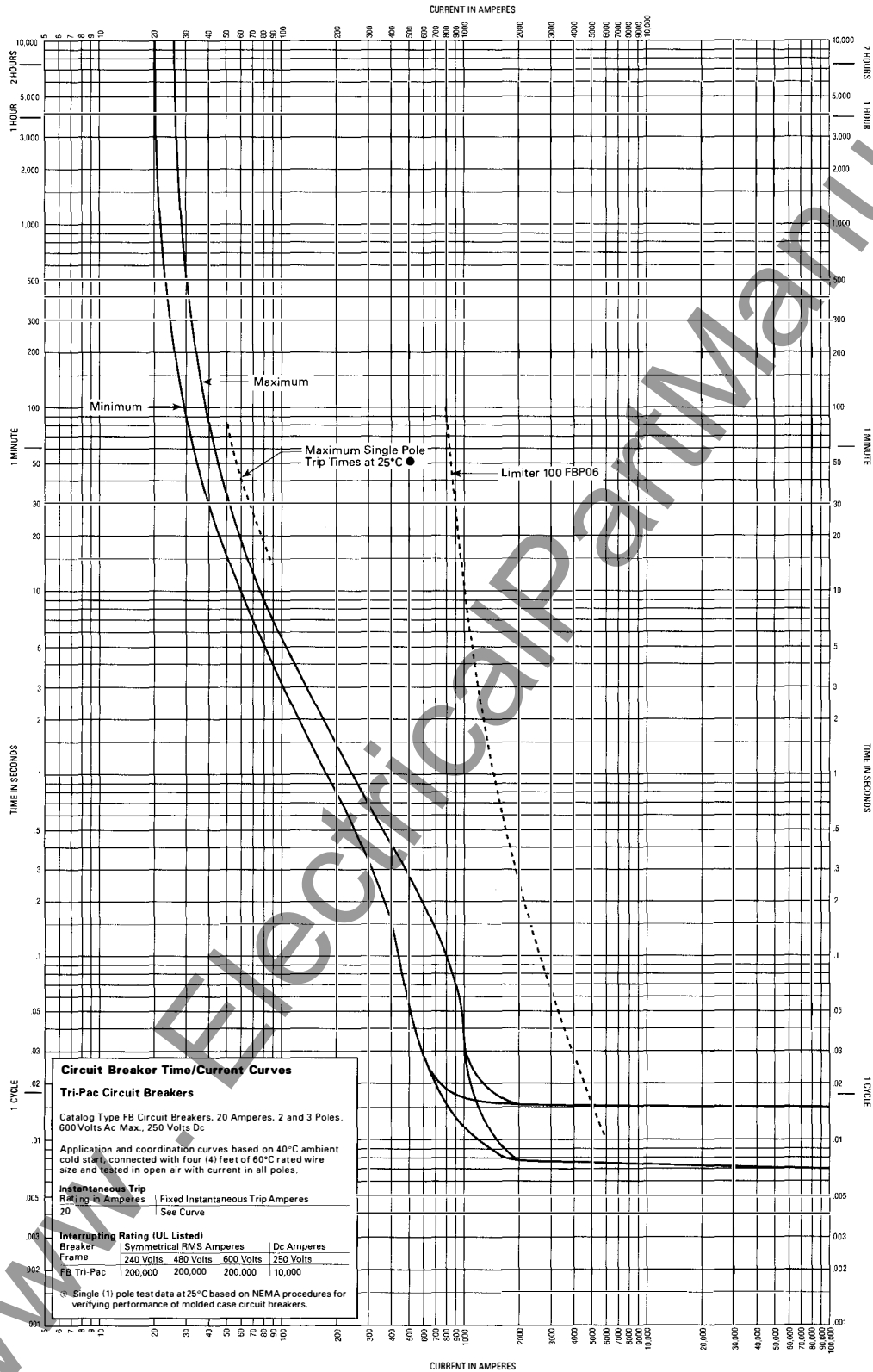
Type FB, 15 Amperes, 2 and 3 Poles





# AB DE-ION Tri Pac® Circuit Breakers

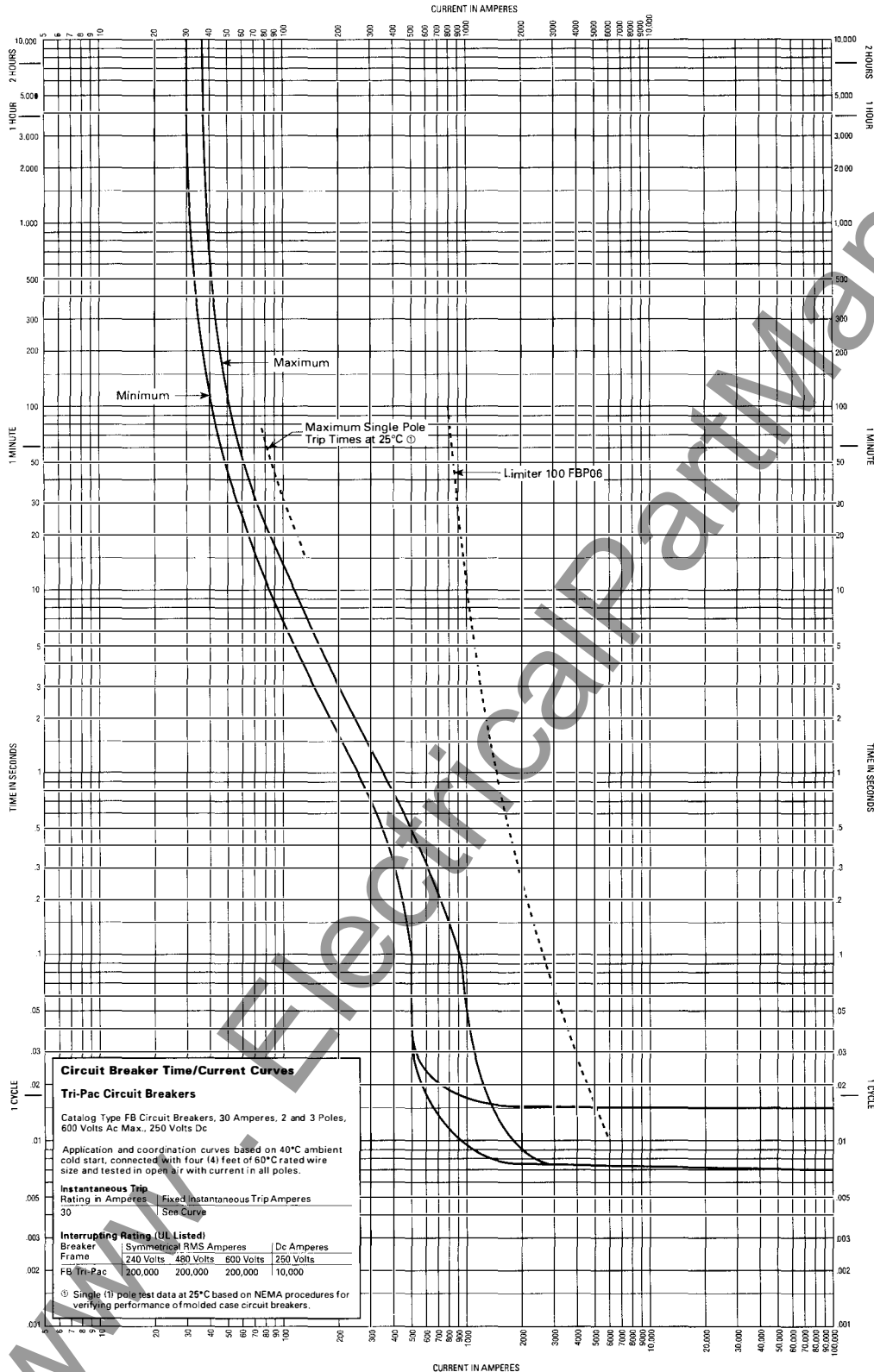
## Type FB, 20 Amperes, 2 and 3 Poles





# AB DE-ION Tri-Pac® Circuit Breakers

Type FB, 30 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Tri-Pac Circuit Breakers**

Catalog Type FB Circuit Breakers, 30 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.

**Instantaneous Trip**

Rating in Amperes	Fixed Instantaneous Trip Amperes
30	See Curve

**Interrupting Rating (UL Listed)**

Breaker	Symmetrical RMS Amperes	Dc Amperes
Frame	240 Volts 480 Volts 600 Volts 250 Volts	
FB Tri-Pac	200,000 200,000 200,000 10,000	

① Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.

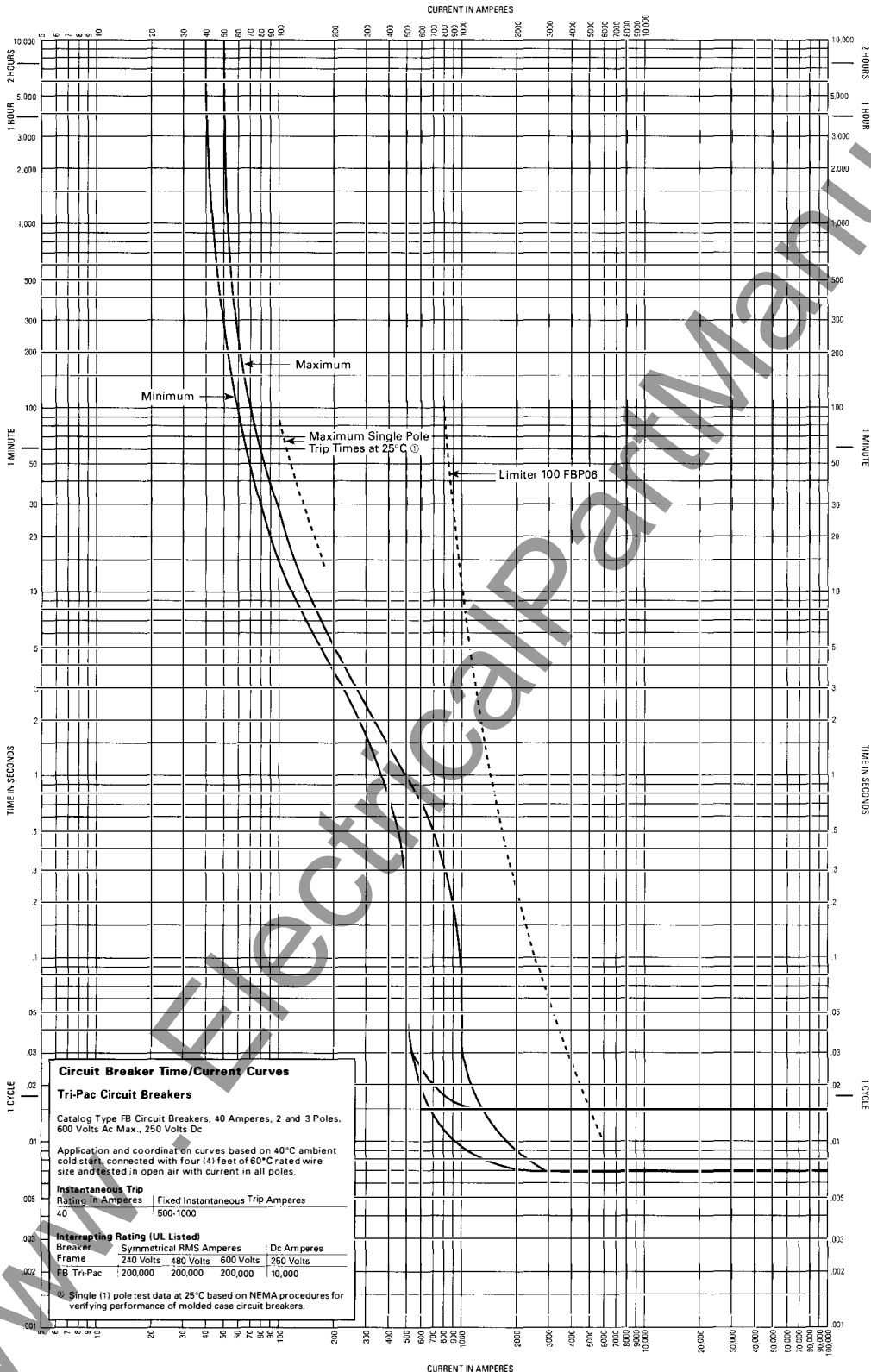






# AB DE-ION Tri Pac® Circuit Breakers

## Type FB, 40 Amperes, 2 and 3 Poles



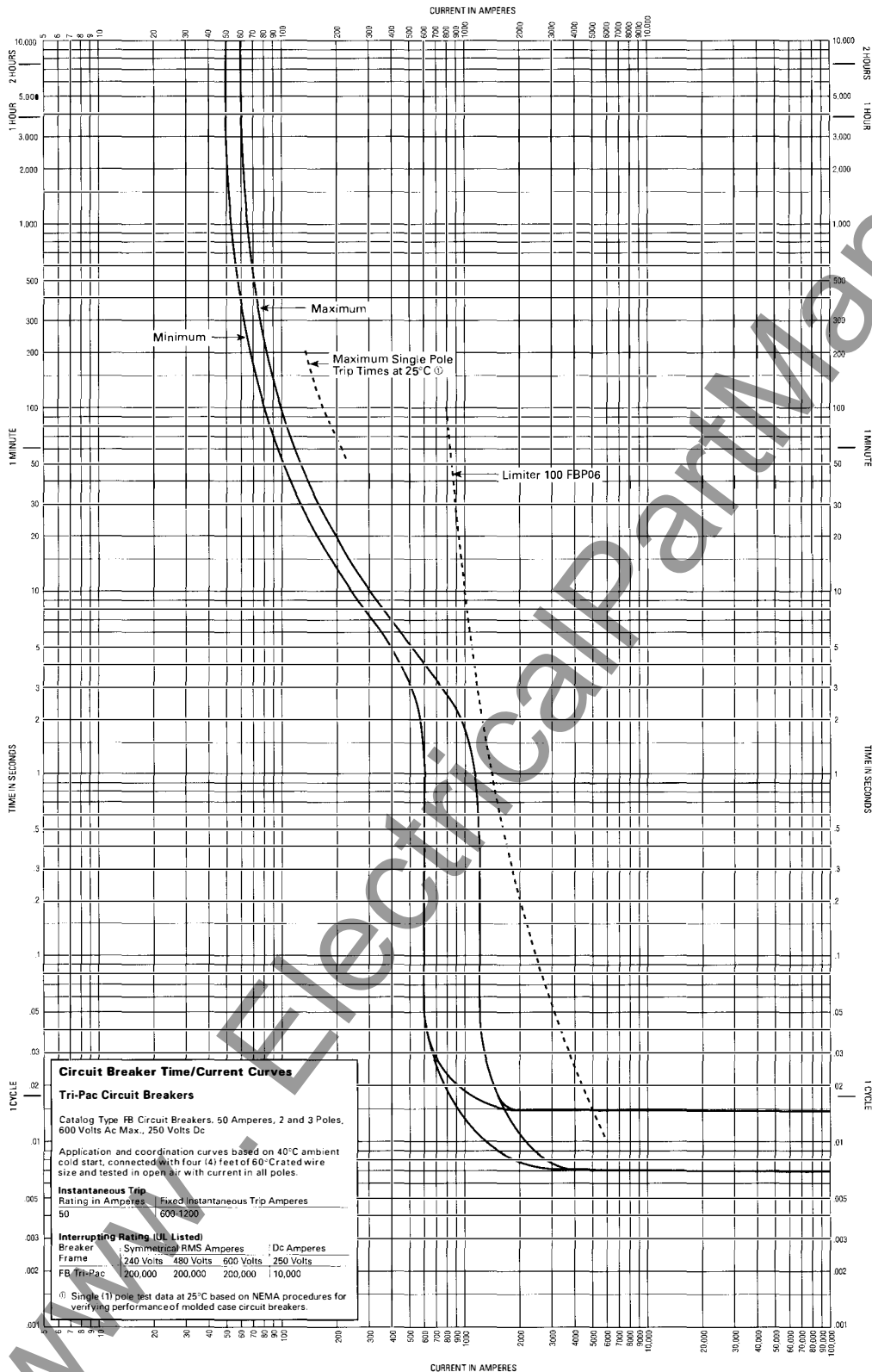
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type FB Circuit Breakers, 40 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating In Amperes | Fixed Instantaneous Trip Amperes  
 40 | 500-1000  
**Interrupting Rating (UL Listed)**  
 Breaker | Symmetrical RMS Amperes | Dc Amperes  
 Frame | 240 Volts | 480 Volts | 600 Volts | 750 Volts  
 FB Tri-Pac | 200,000 | 200,000 | 200,000 | 10,000  
 Ⓢ Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri-Pac® Circuit Breakers

Type FB, 50 Amperes, 2 and 3 Poles



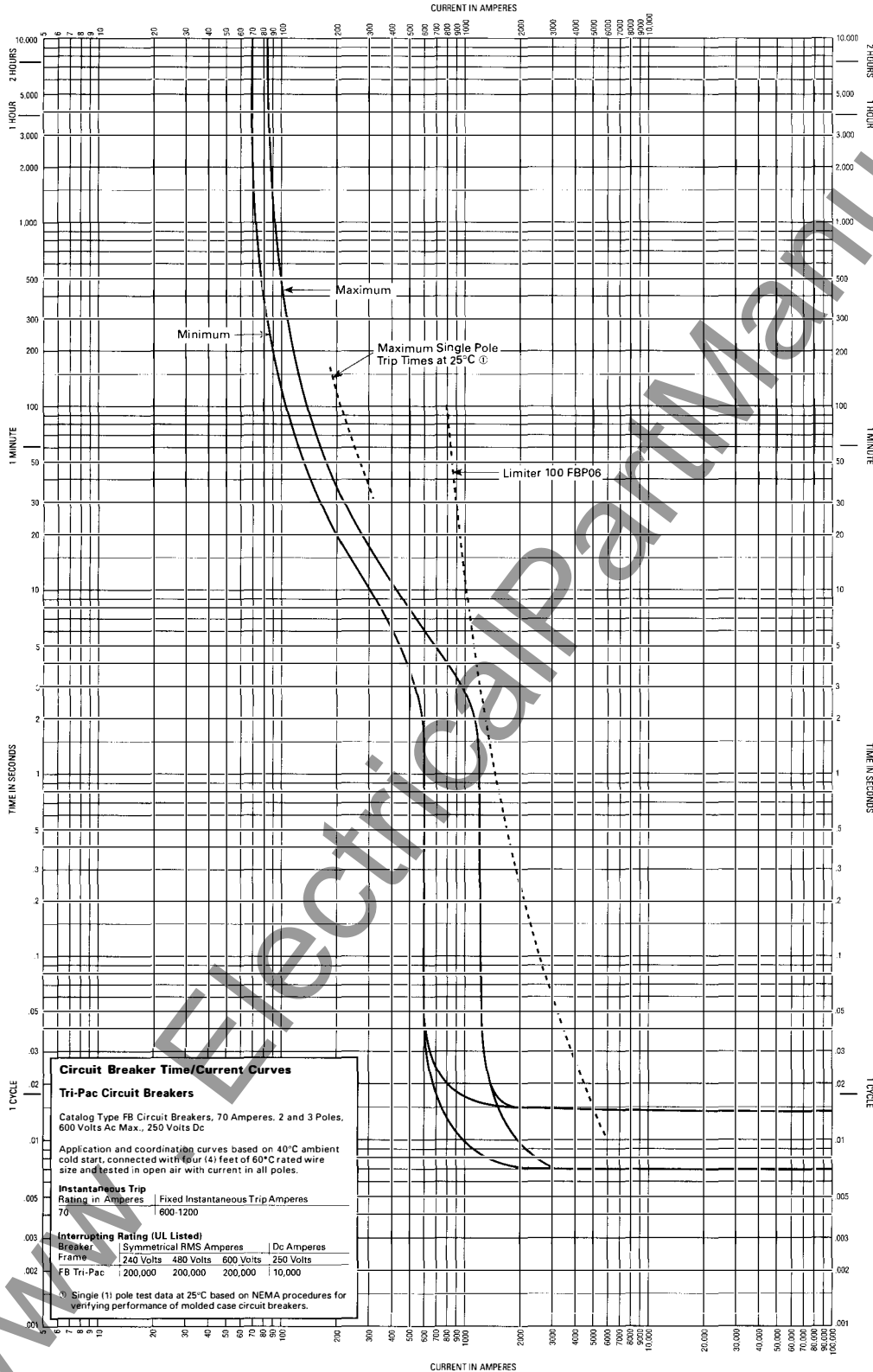
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type FB Circuit Breakers, 50 Amperes, 2 and 3 Poles,  
 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient  
 cold start, connected with four (4) feet of 60-Crated wire  
 size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes Fixed Instantaneous Trip Amperes  
 50 600-1200  
**Interrupting Rating (UL Listed)**  
 Breaker Symmetrical RMS Amperes DC Amperes  
 Frame 240 Volts 480 Volts 600 Volts 250 Volts  
 FB Tri-Pac 200,000 200,000 200,000 110,000  
 (1) Single (1) pole test data at 25°C based on NEMA procedures for  
 verifying performance of molded case circuit breakers.





## AB DE-ION Tri Pac® Circuit Breakers

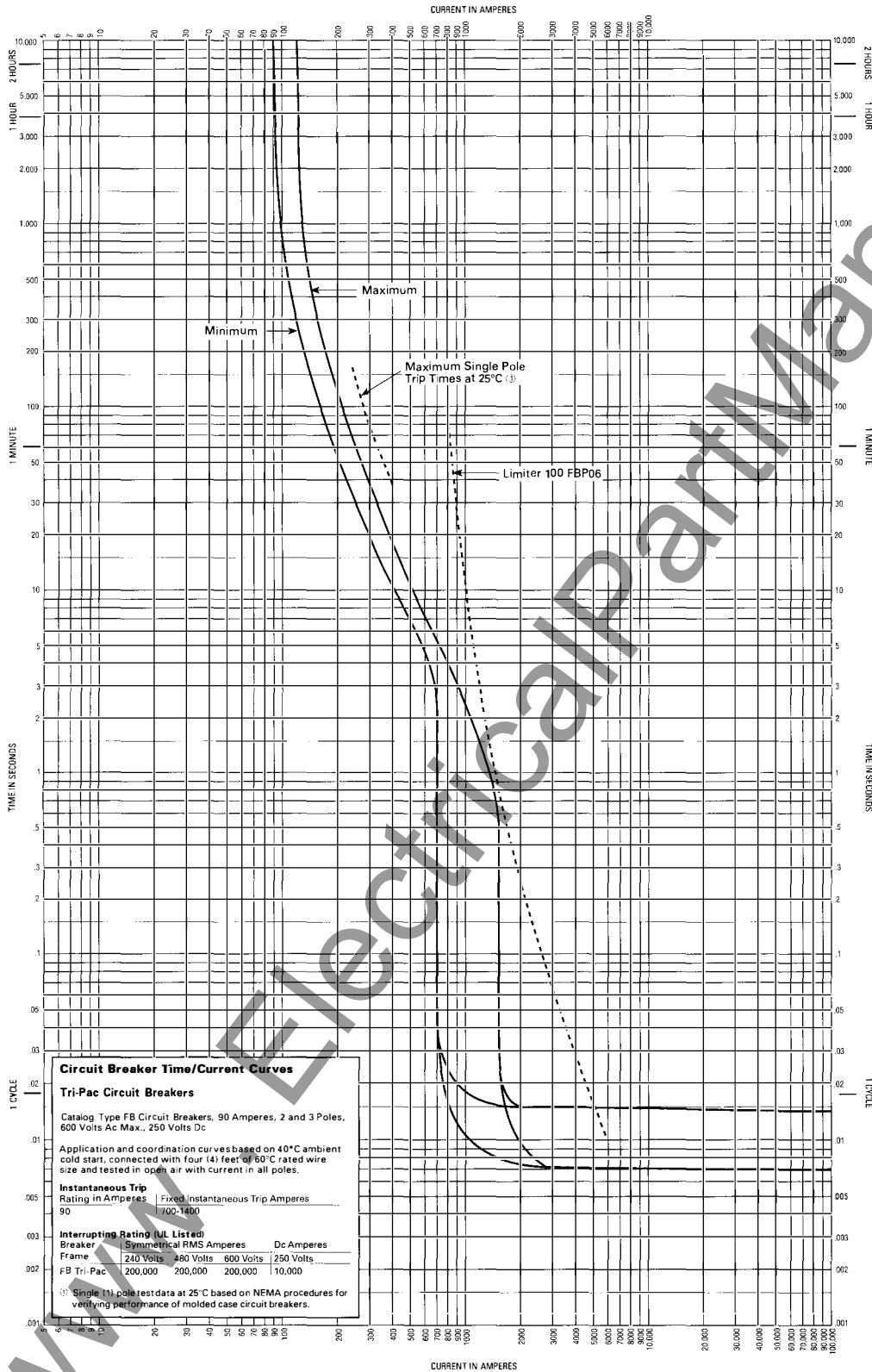
Type FB, 70 Amperes, 2 and 3 Poles





# AB DE-ION Tri-Pac® Circuit Breakers

Type FB, 90 Amperes, 2 and 3 Poles



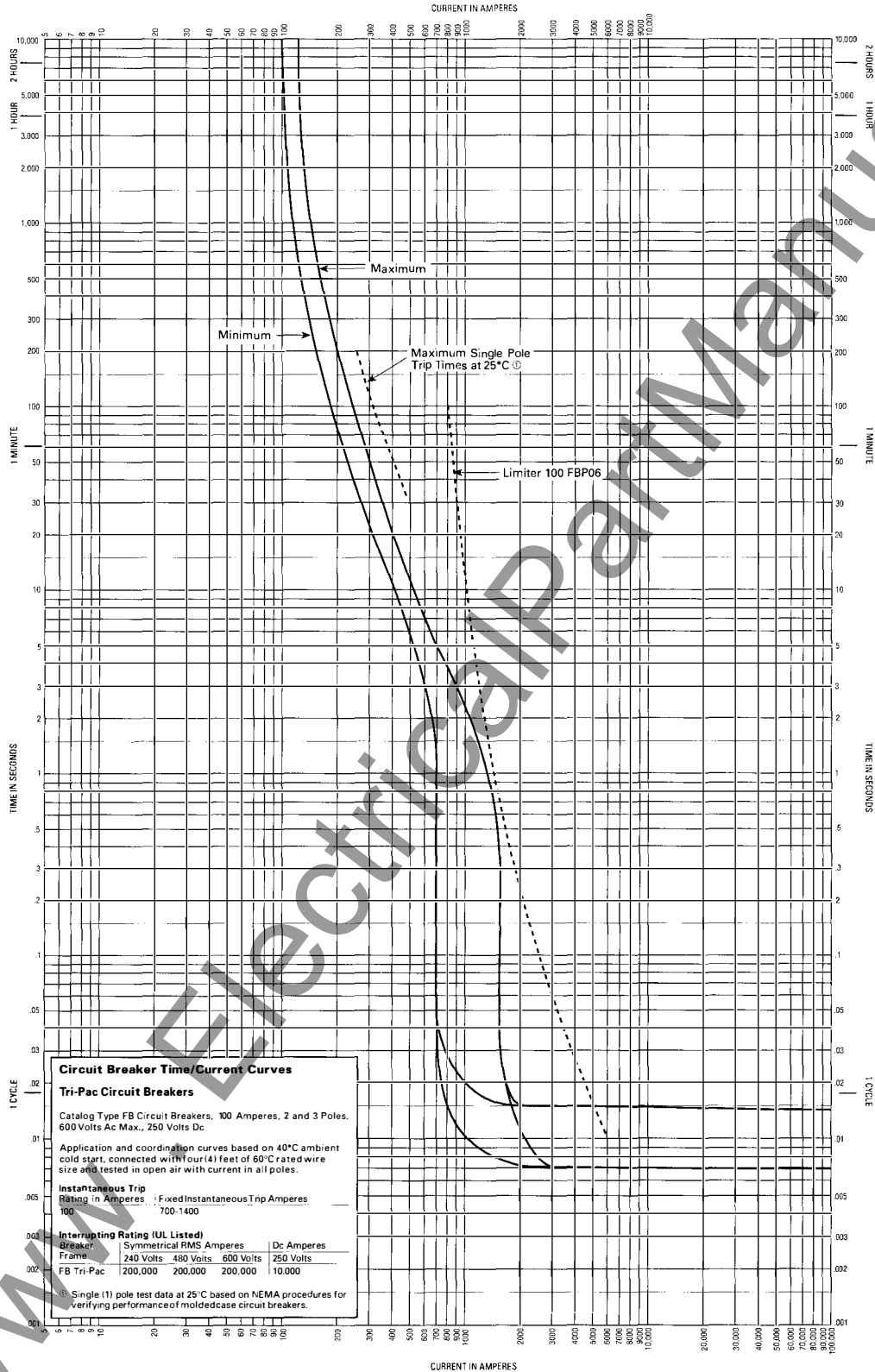
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type FB Circuit Breakers, 90 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip Rating in Amperes** | Fixed Instantaneous Trip Amperes  
 90 | 700-1400  
**Interrupting Rating (UL Listed)**  
 Breaker | Symmetrical RMS Amperes | Dc Amperes  
 Frame | 240 Volts | 480 Volts | 600 Volts | 250 Volts  
 FB Tri-Pac | 200,000 | 200,000 | 200,000 | 10,000  
 Ⓢ Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri Pac® Circuit Breakers

## Type FB, 100 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type FB Circuit Breakers, 100 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.

**Instantaneous Trip**  
 Rating in Amperes: Fixed Instantaneous Trip Amperes  
 100: 700-1400

**Interrupting Rating (IUL Listed)**

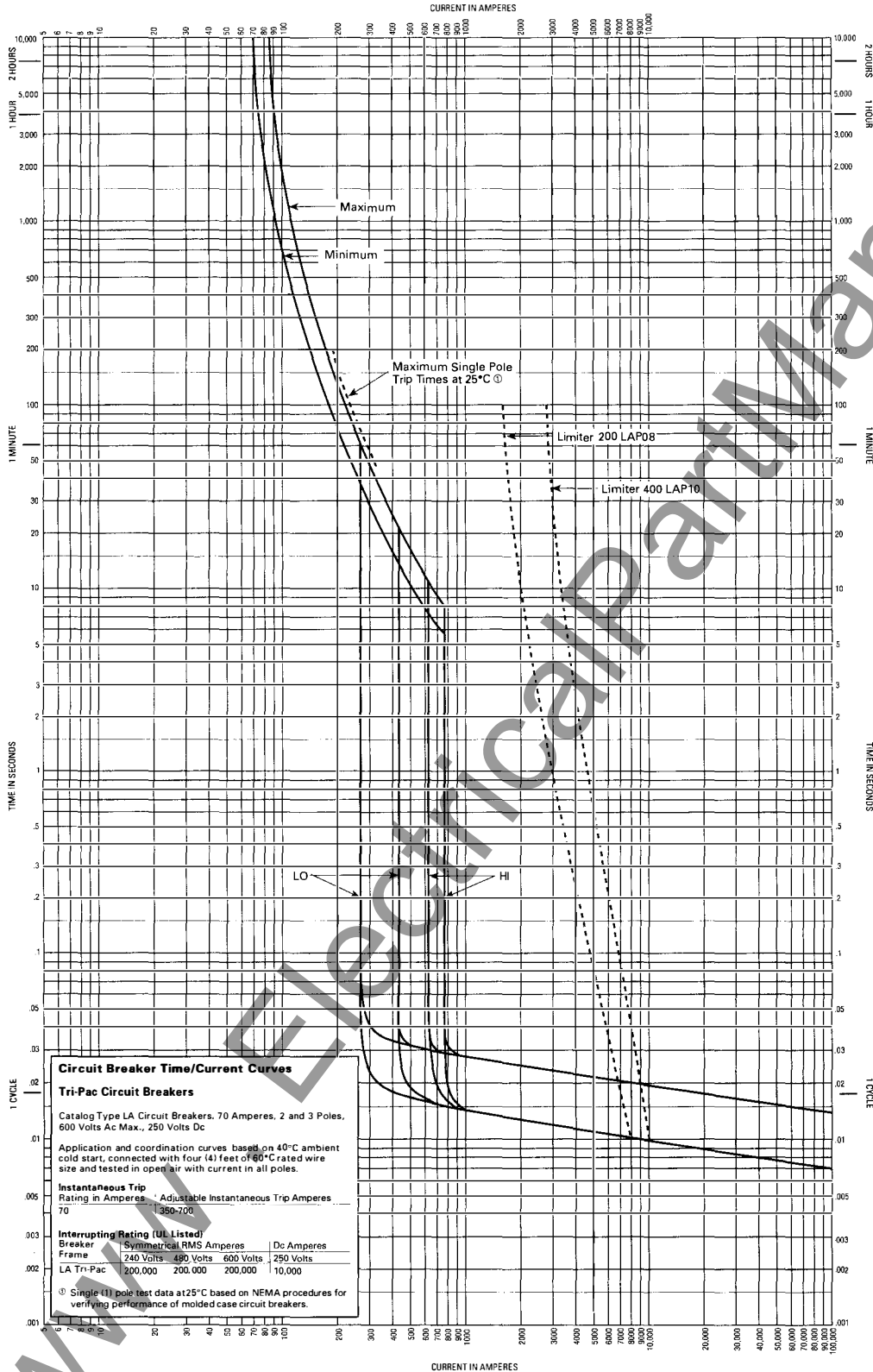
Breaker Frame	Symmetrical RMS Amperes	Dc Amperes		
240 Volts	480 Volts	600 Volts	250 Volts	
FB Tri-Pac	200,000	200,000	200,000	10,000

Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.



# AB DE-ION Tri-Pac® Circuit Breakers

Type LA, 70 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 70 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.  
 Instantaneous Trip Rating in Amperes: 70, Adjustable Instantaneous Trip Amperes: 1350-700  
 Interrupting Rating (UL Listed) Breaker Frame: Symmetrical RMS Amperes, Dc Amperes  
 LA Tri-Pac: 200,000, 200,000, 200,000, 10,000

Frame	240 Volts	480 Volts	600 Volts	250 Volts
LA Tri-Pac	200,000	200,000	200,000	10,000

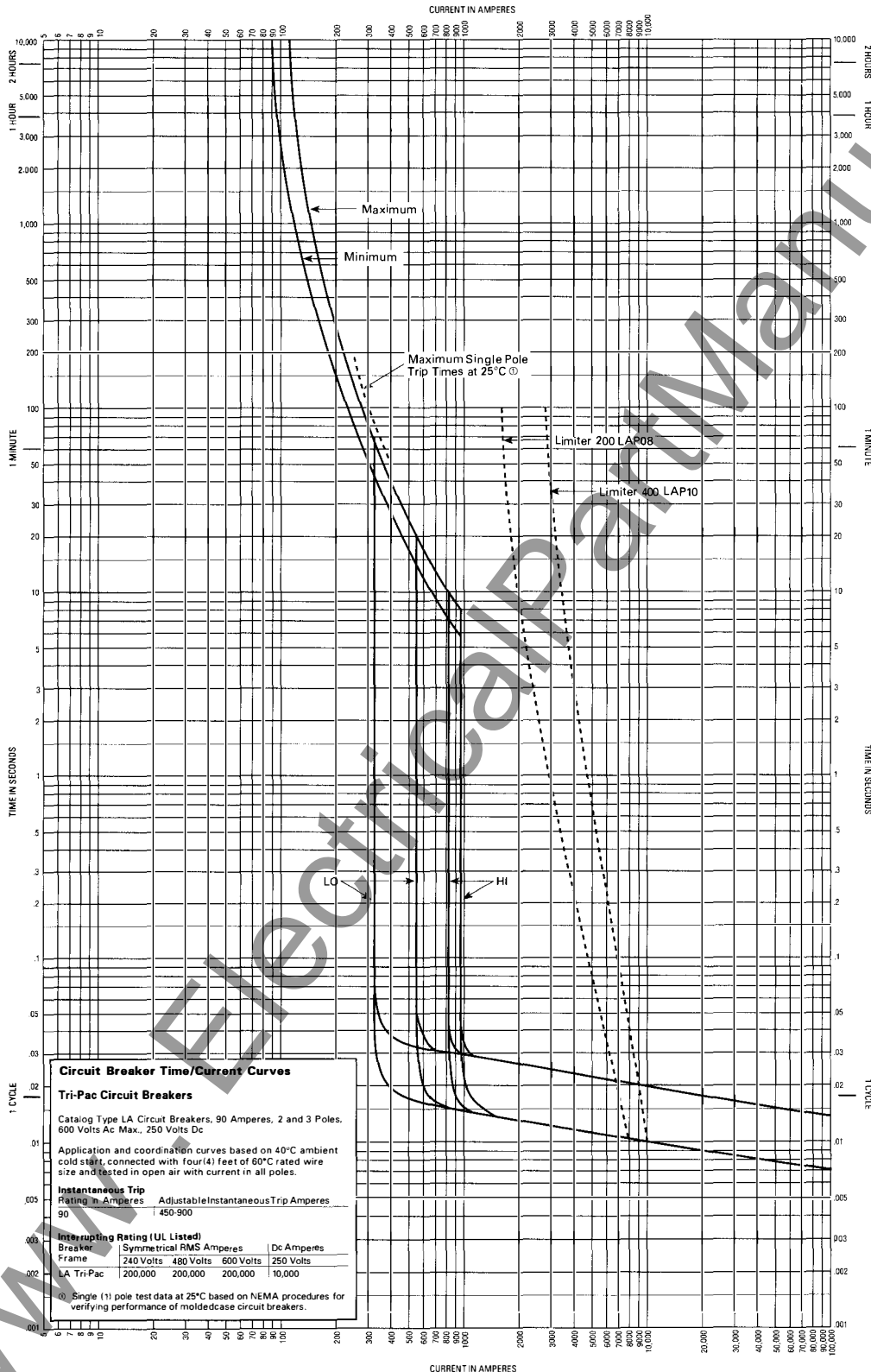
① Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri Pac® Circuit Breakers

## Type LA, 90 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 90 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 60°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes      Adjustable Instantaneous Trip Amperes  
 90                              450-900  
**Interrupting Rating (UL Listed)**  

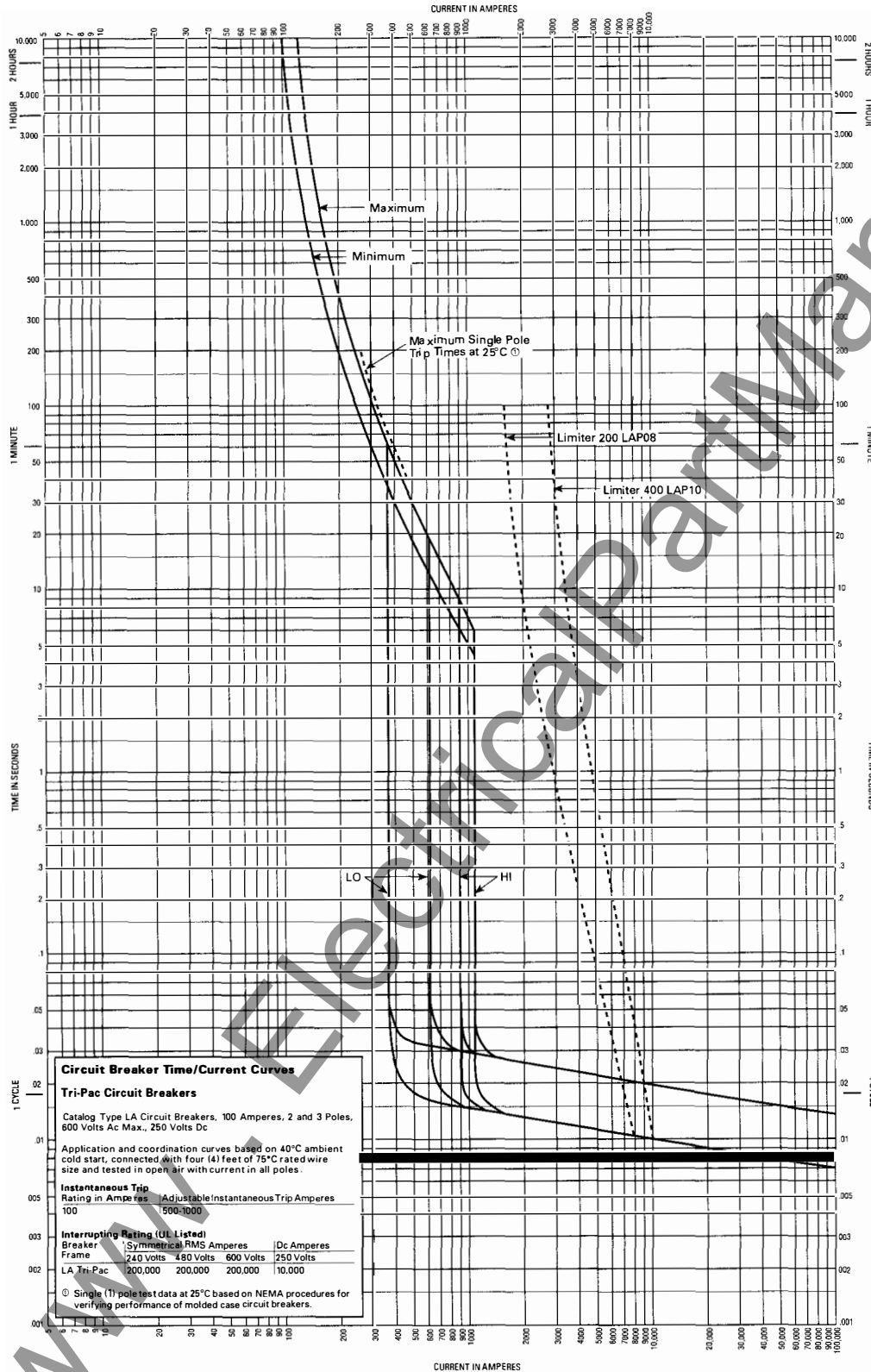
Breaker Frame	Symmetrical RMS Amperes	Dc Amperes
LA Tri-Pac	200,000    200,000    200,000	10,000

 (1) Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.



# AB DE-ION Tri-Pac® Circuit Breakers

Type LA, 100 Amperes, 2 and 3 Poles



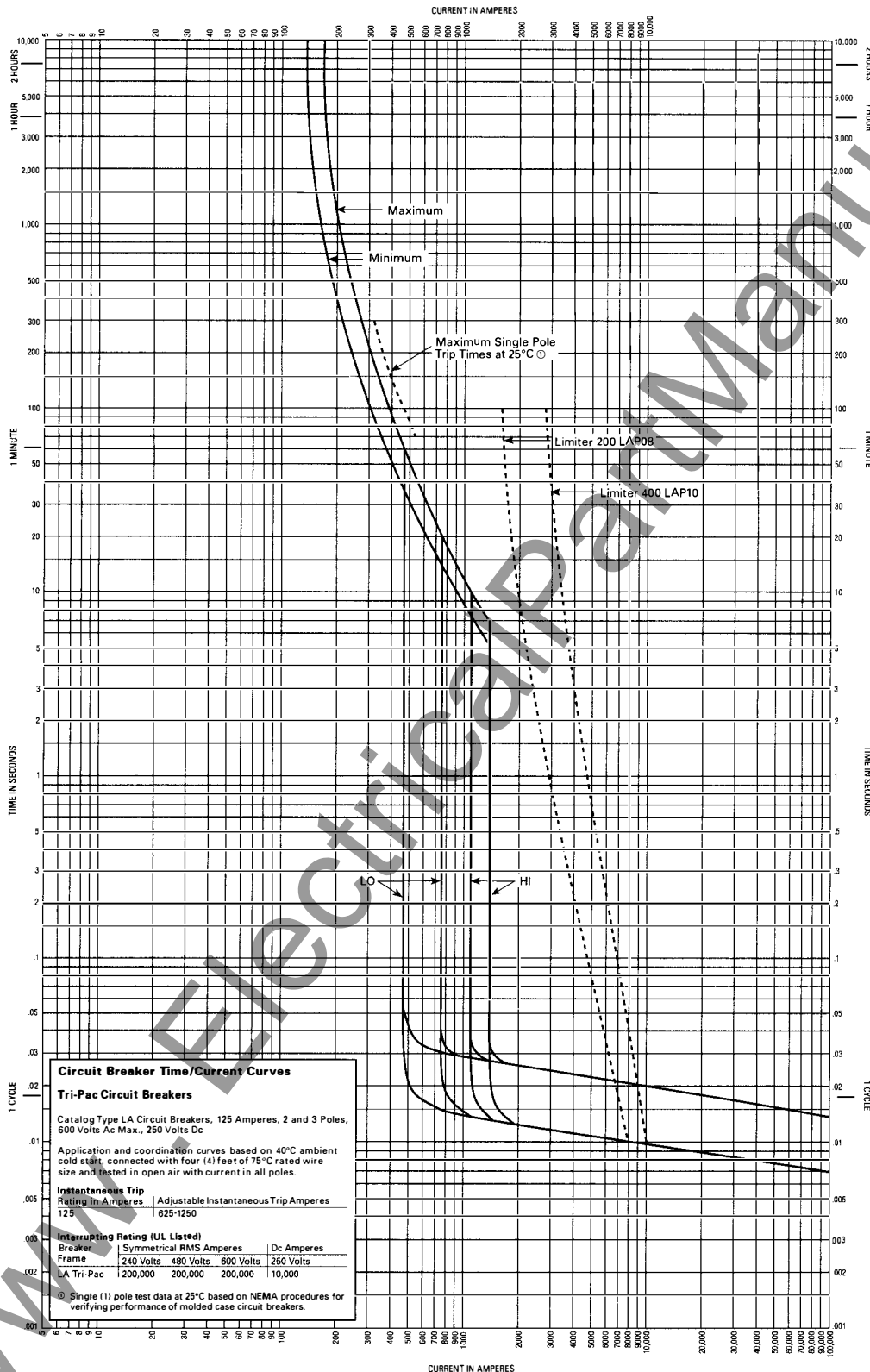
ELECTRICAL MANUALS.COM





# AB DE-ION Tri Pac® Circuit Breakers

Type LA, 125 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 125 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes | Adjustable Instantaneous Trip Amperes  
 125 | 625-1250  
**Interrupting Rating (UL Listed)**  

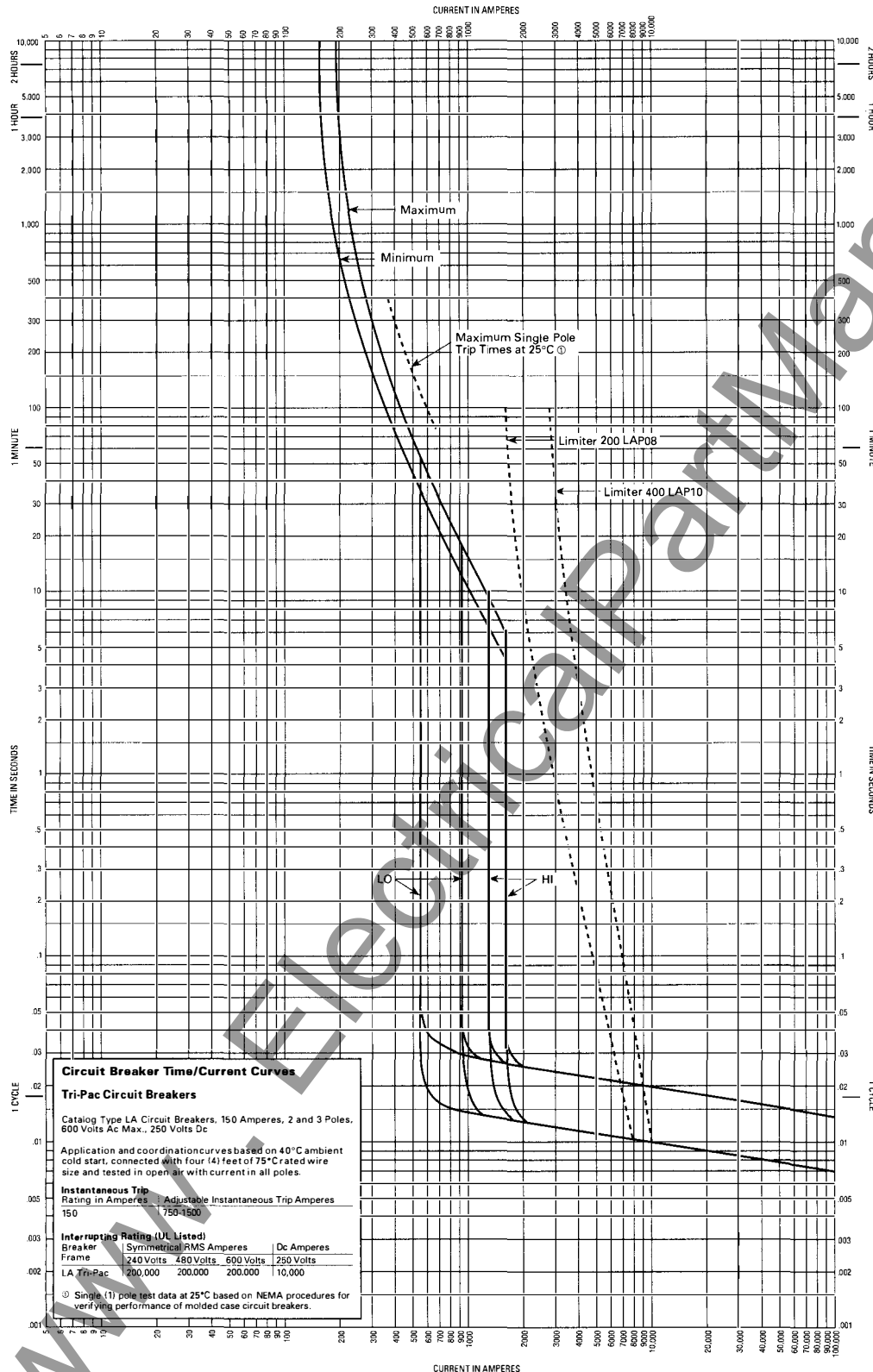
Breaker	Symmetrical RMS Amperes	Dc Amperes
Frame	240 Volts 480 Volts 600 Volts 250 Volts	
LA Tri-Pac	200,000 200,000 200,000 10,000	

 Ⓢ Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.



# AB DE-ION Tri-Pac® Circuit Breakers

Type LA, 150 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 150 Amperes, 2 and 3 Poles.  
 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C Crated wire size and tested in open air with current in all poles.

**Instantaneous Trip**  
 Rating in Amperes: Adjustable Instantaneous Trip Amperes  
 150 750-1500

**Interrupting Rating (UL Listed)**

Breaker	Symmetrical RMS Amperes	Dc Amperes
Frame	240 Volts 480 Volts 600 Volts 250 Volts	
LA Tri-Pac	200,000 200,000 200,000 10,000	

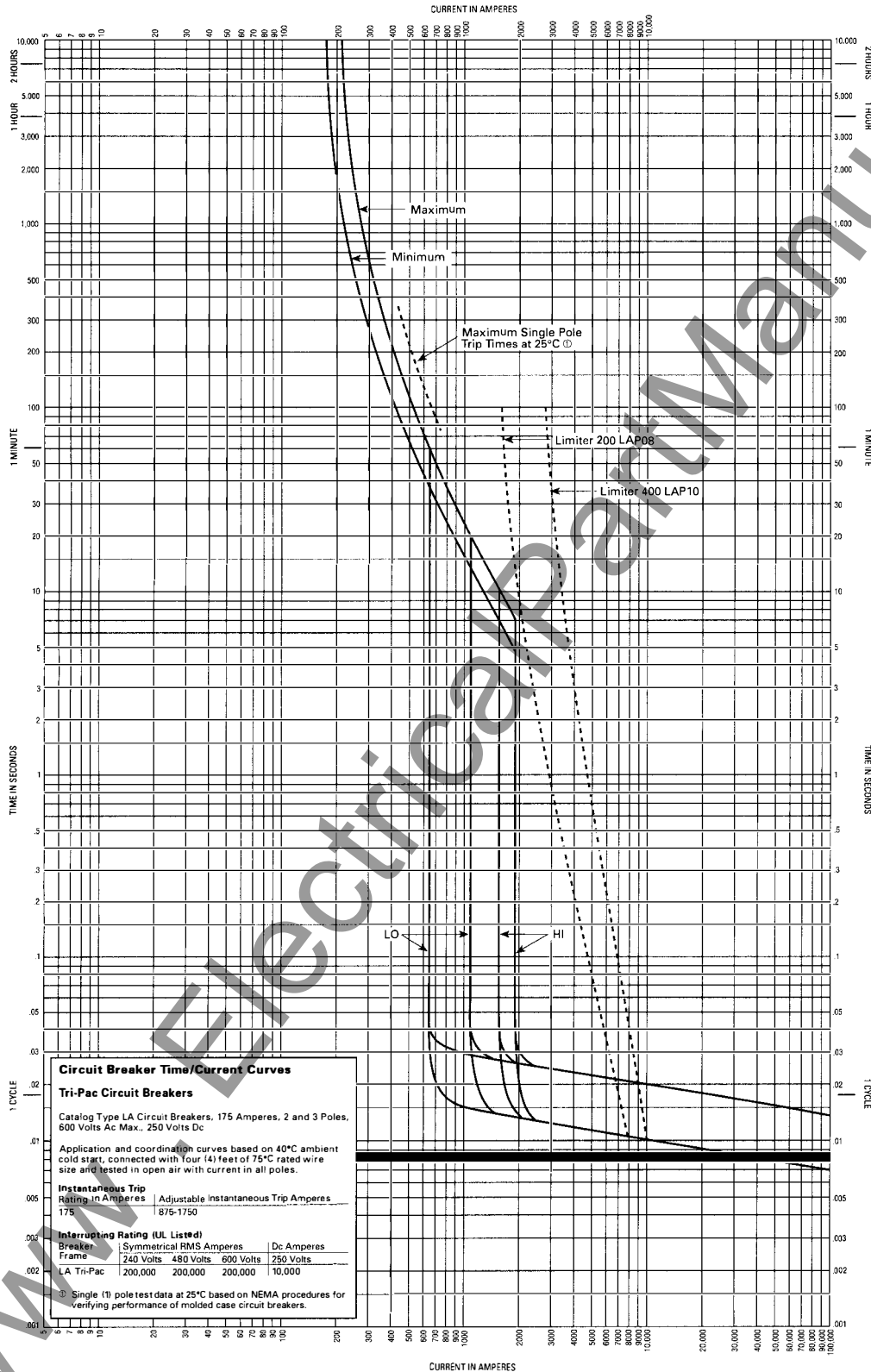
Ⓢ Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri Pac® Circuit Breakers

## Type LA, 175 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**

Catalog Type LA Circuit Breakers, 175 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

Instantaneous Trip	
Rating in Amperes	Adjustable Instantaneous Trip Amperes
175	875-1750

Interrupting Rating (UL Listed)			
Breaker Frame	Symmetrical RMS Amperes	Dc Amperes	
	240 Volts	480 Volts	600 Volts
LA Tri-Pac	200,000	200,000	200,000
			10,000

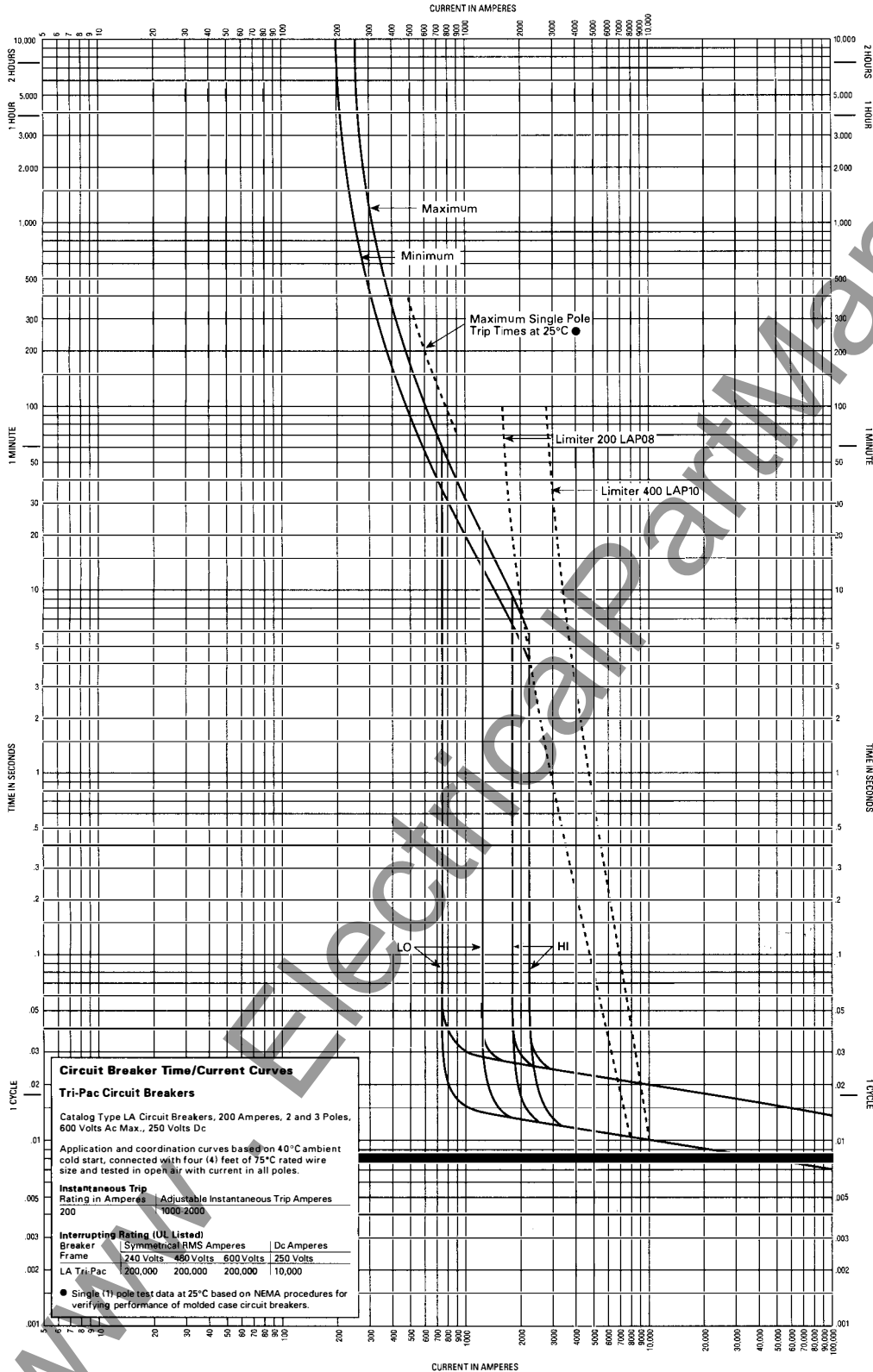
① Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri-Pac® Circuit Breakers

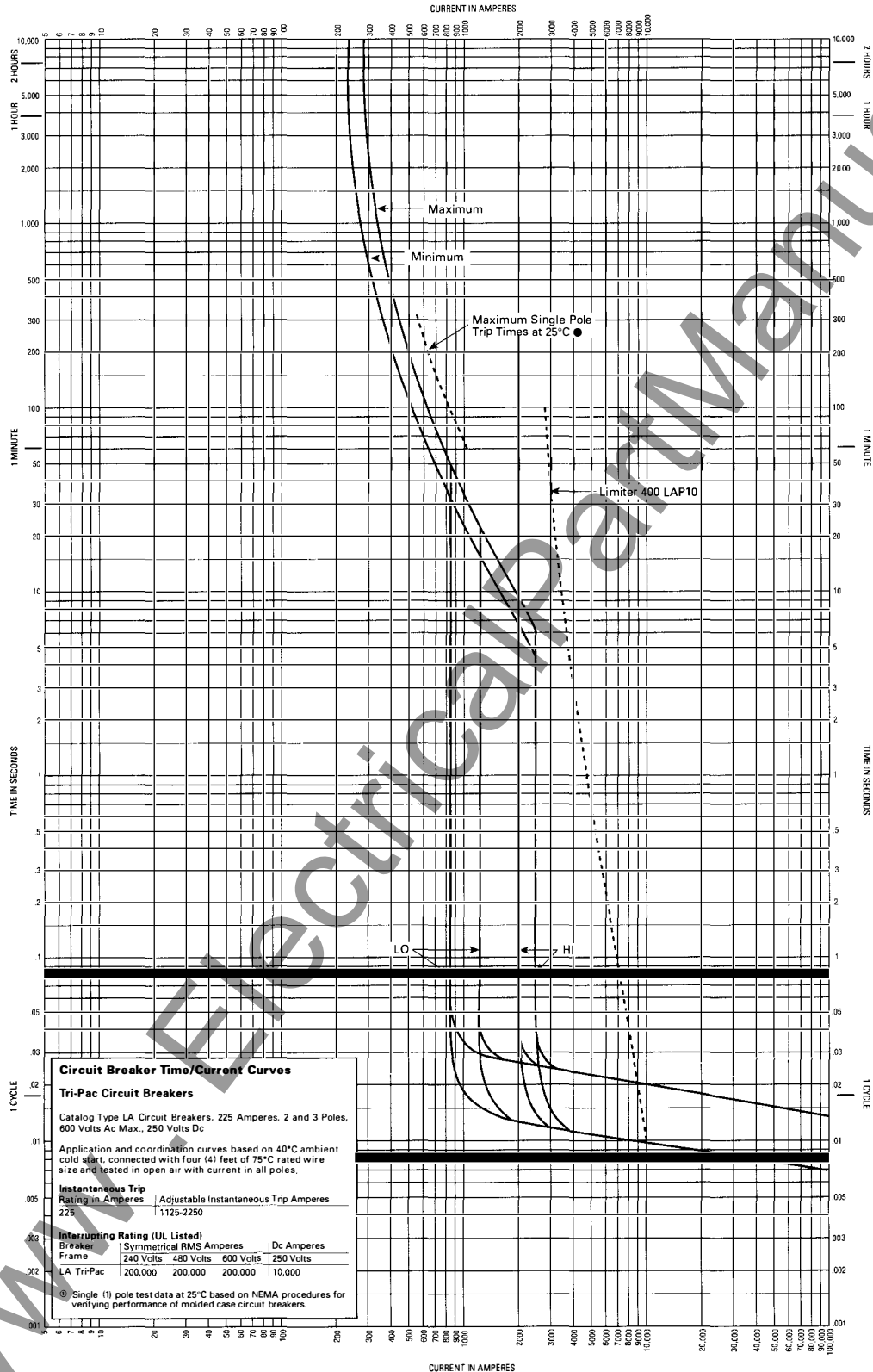
Type LA, 200 Amperes, 2 and 3 Poles





# AB DE-ION Tri Pac® Circuit Breakers

## Type LA, 225 Amperes, 2 and 3 Poles



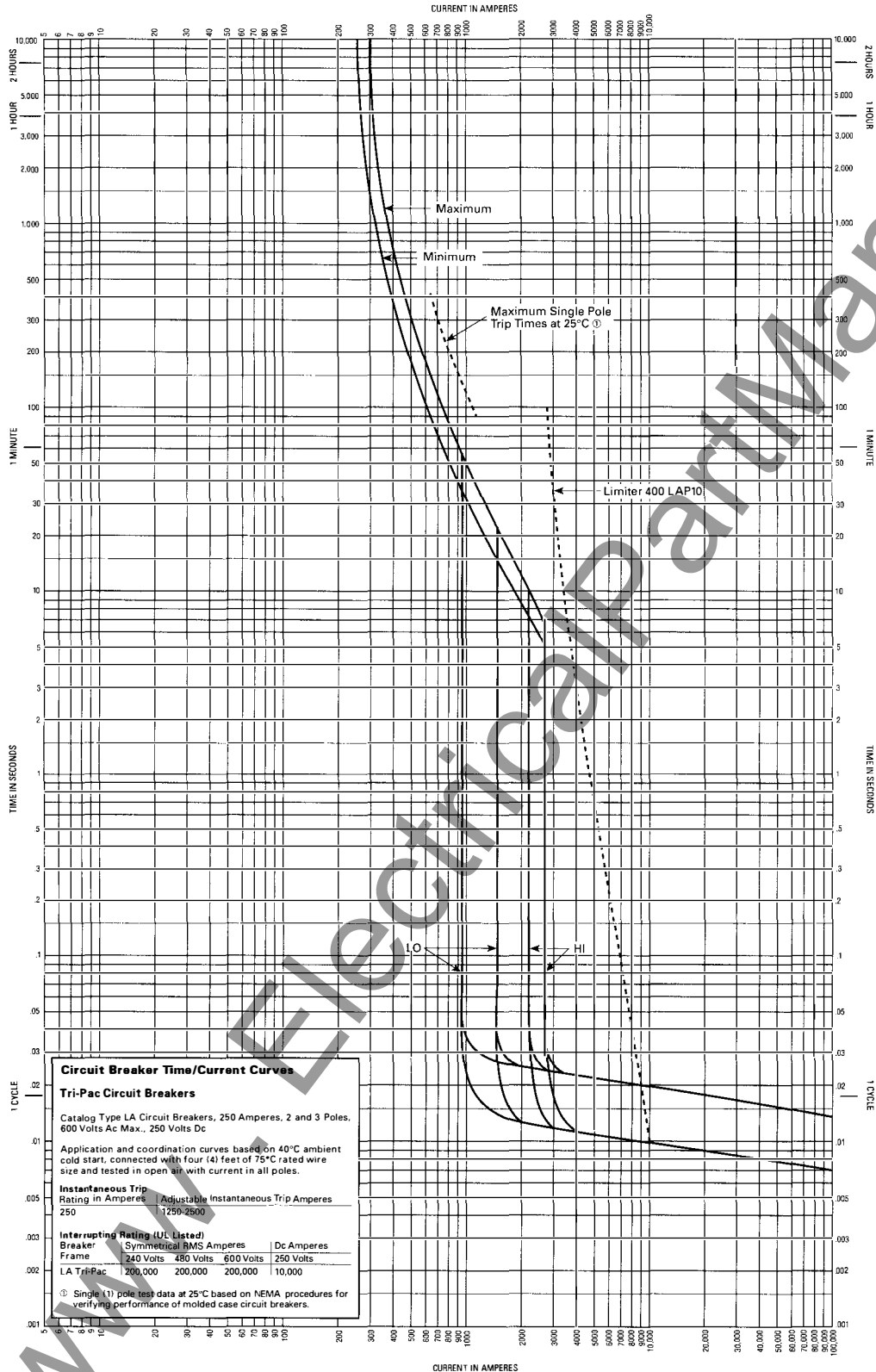
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 225 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes | Adjustable Instantaneous Trip Amperes  
 225 | 1125-2250  
**Interrupting Rating (UL Listed)**  
 Breaker | Symmetrical RMS Amperes | Dc Amperes  
 Frame | 240 Volts | 480 Volts | 600 Volts | 250 Volts  
 LA Tri-Pac | 200,000 | 200,000 | 200,000 | 10,000  
 Ⓞ Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.

CURRENT IN AMPERES



# AB DE-ION Tri-Pac® Circuit Breakers

Type LA, 250 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 250 Amperes, 2 and 3 Poles,  
 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient  
 cold start, connected with four (4) feet of 75°C rated wire  
 size and tested in open air with current in all poles.

**Instantaneous Trip**  
 Rating in Amperes     Adjustable Instantaneous Trip Amperes  
 250                             1250-2500

Interrupting Rating (UL Listed) Breaker Frame	Symmetrical RMS Amperes		Dc Amperes
	240 Volts	480 Volts	600 Volts
LA Tri-Pac	200,000	200,000	200,000
			10,000

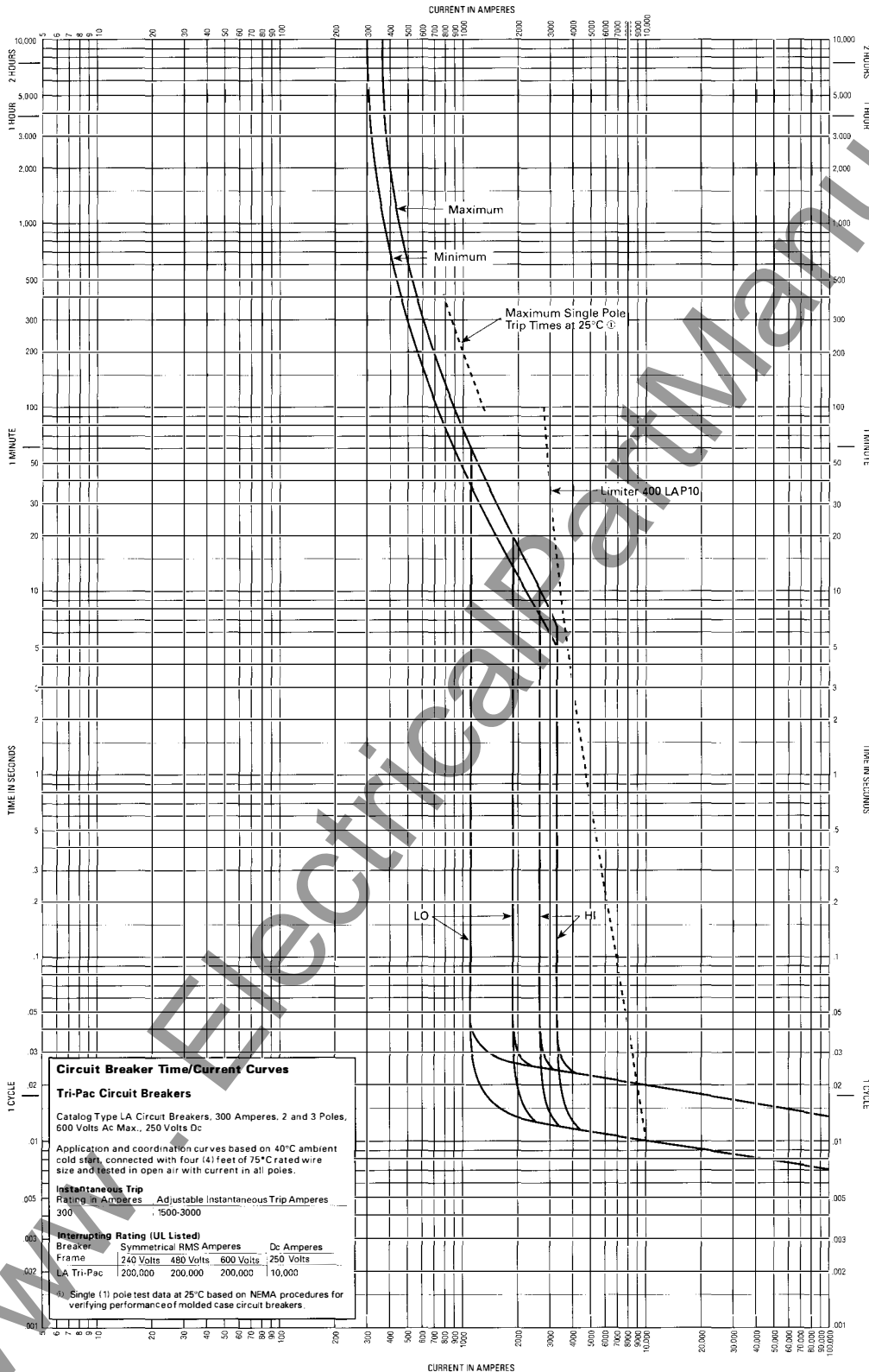
① Single (1) pole test data at 25°C based on NEMA procedures for  
 verifying performance of molded case circuit breakers.





# AB DE-ION Tri Pac® Circuit Breakers

Type LA, 300 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Tri-Pac Circuit Breakers**

Catalog Type LA Circuit Breakers, 300 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

**Instantaneous Trip**  
Rating in Amperes: Adjustable Instantaneous Trip Amperes  
300 1500-3000

**Interrupting Rating (UL Listed)**

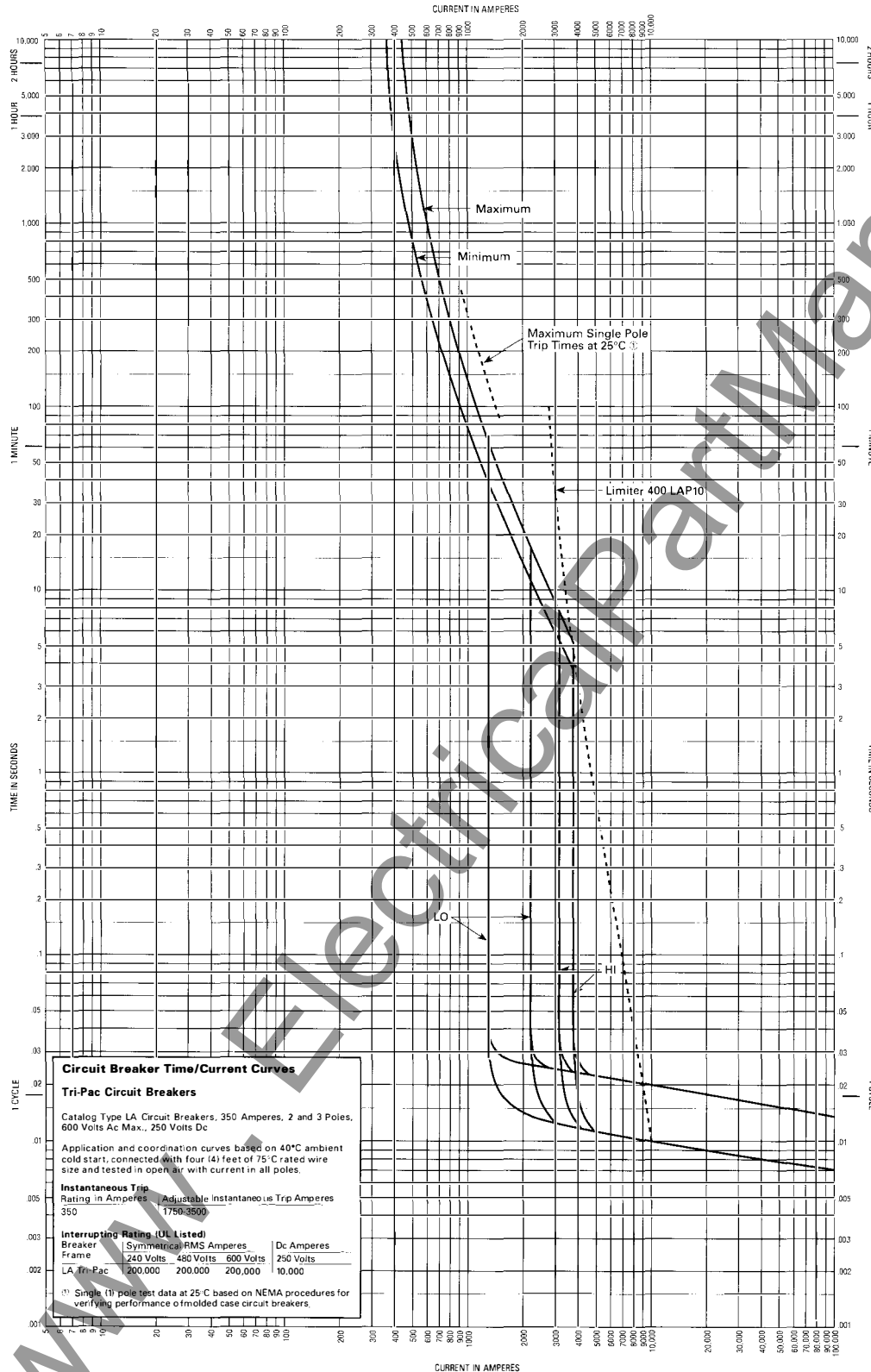
Breaker	Symmetrical RMS Amperes	Dc Amperes
Frame	240 Volts 480 Volts 600 Volts 250 Volts	
LA Tri-Pac	200,000 200,000 200,000	10,000

① Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.



# AB DE-ION Tri-Pac® Circuit Breakers

Type LA, 350 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 350 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes      Adjustable Instantaneous Trip Amperes  
 350                              1750-3500  
**Interrupting Rating (UL Listed)**  
 Breaker      Symmetrical RMS Amperes      Dc Amperes  
 Frame      240 Volts      480 Volts      600 Volts      250 Volts  
 LA Tri-Pac      200,000      200,000      200,000      10,000  
 (1) Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.

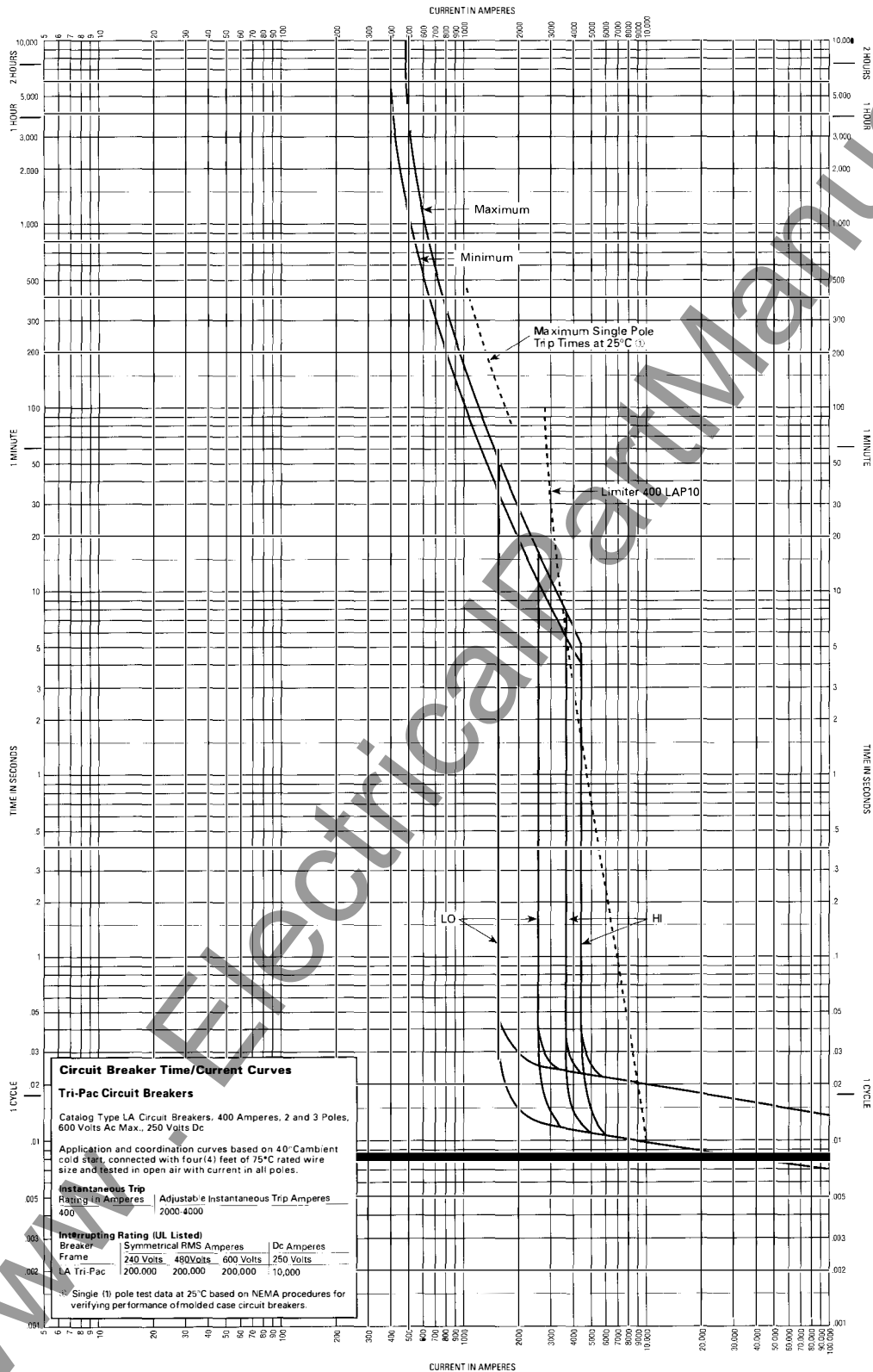






# AB DE-ION Tri Pac® Circuit Breakers

## Type LA, 400 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type LA Circuit Breakers, 400 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc

Application and coordination curves based on 40° Ambient cold start, connected with four (4) feet of 75°C rated wire size and lashed in open air with current in all poles.

Instantaneous Trip Range in Amperes	Adjustable Instantaneous Trip Amperes
400	2000-4000

Interrupting Rating (UL Listed)	Symmetrical RMS Amperes		DC Amperes	
	240 Volts	480 Volts	600 Volts	250 Volts
LA Tri-Pac	200,000	200,000	200,000	10,000

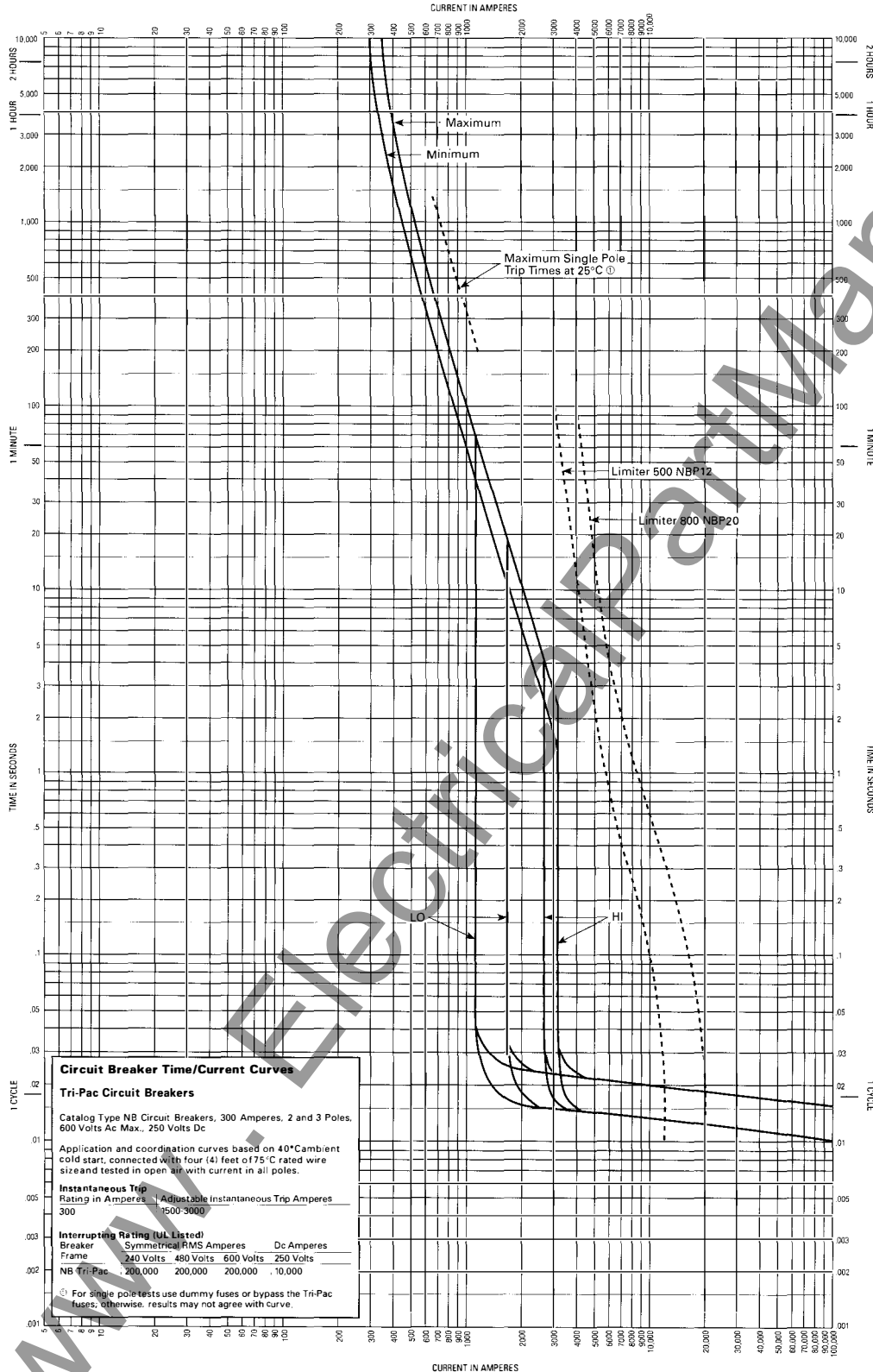
Single (1) pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.





# AB DE-ION Tri-Pac® Circuit Breakers

Type NB, 300 Amperes, 2 and 3 Poles



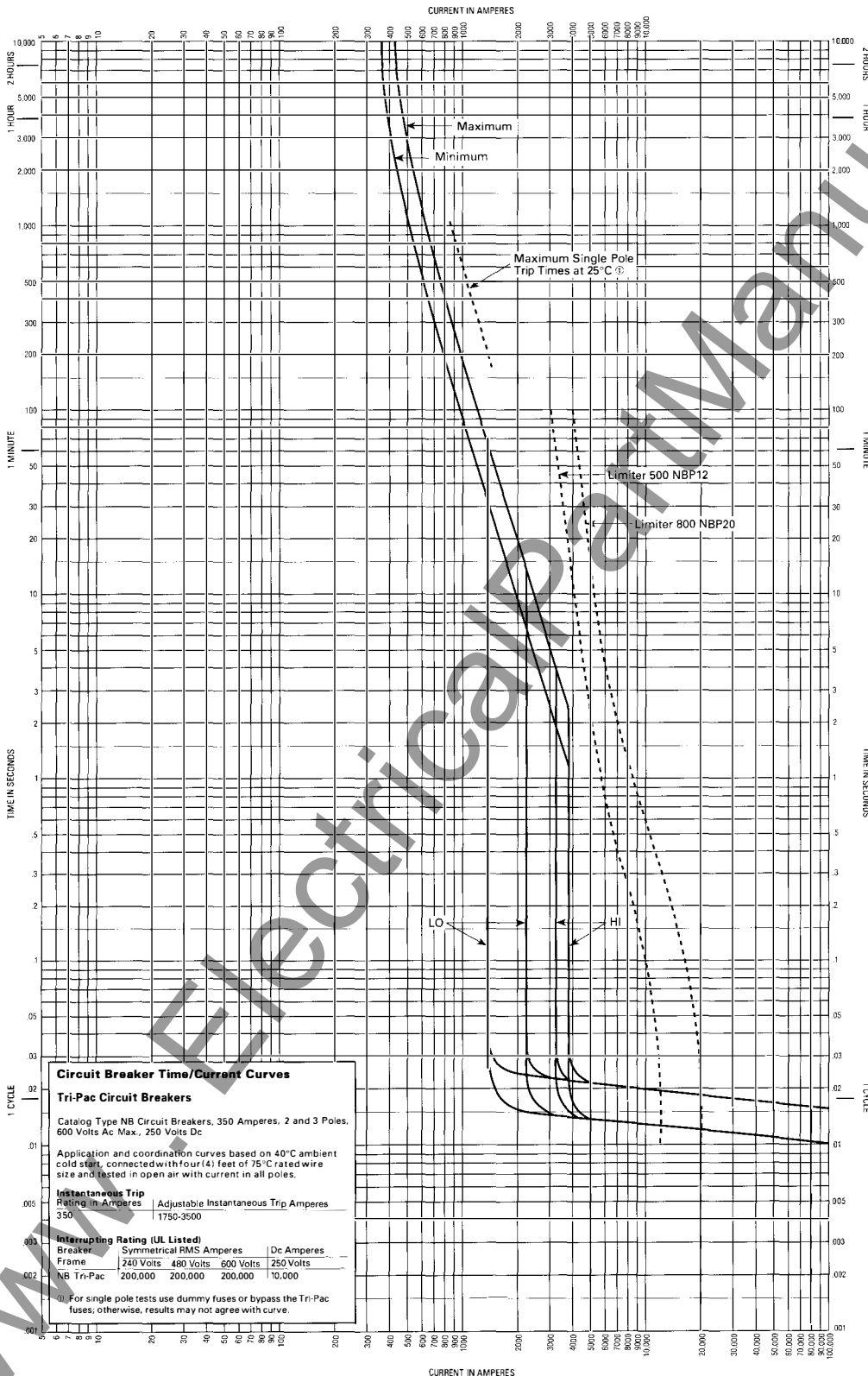
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type NB Circuit Breakers, 300 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc.  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip Rating in Amperes** | Adjustable Instantaneous Trip Amperes  
 300 | 1500-3000  
**Interrupting Rating (UL Listed)**  
 Breaker Symmetrical RMS Amperes Dc Amperes  
 Frame 240 Volts 480 Volts 600 Volts 750 Volts  
 NB Tri-Pac 200,000 200,000 200,000 10,000  
 For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri Pac® Circuit Breakers

Type NB, 350 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type NB Circuit Breakers, 350 Amperes, 2 and 3 Poles, 600 Volts Ac Max., 250 Volts Dc  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 16-gauge wire size and tested in open air with current in all poles.

<b>Instantaneous Trip Rating in Amperes</b>	Adjustable Instantaneous Trip Amperes
350	1750-3500

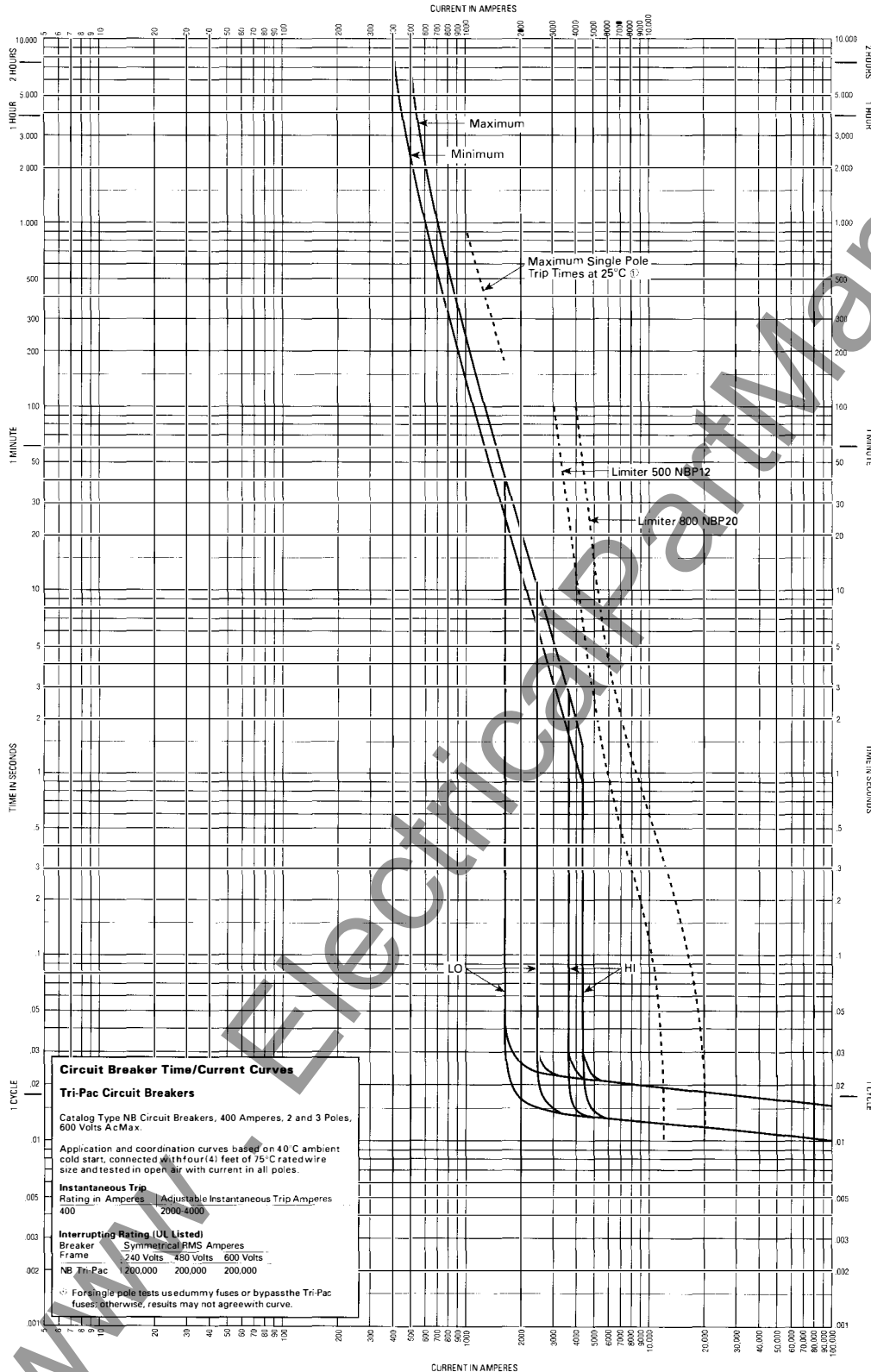
<b>Interrupting Rating (UL Listed)</b>			
<b>Breaker</b>	Symmetrical RMS Amperes	Dc Amperes	
<b>Frame</b>	240 Volts 480 Volts 600 Volts	250 Volts	
<b>NB Tri-Pac</b>	200,000 200,000 200,000	10,000	

1) For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.



# AB DE-ION Tri-Pac® Circuit Breakers

Type NB, 400 Amperes, 2 and 3 Poles



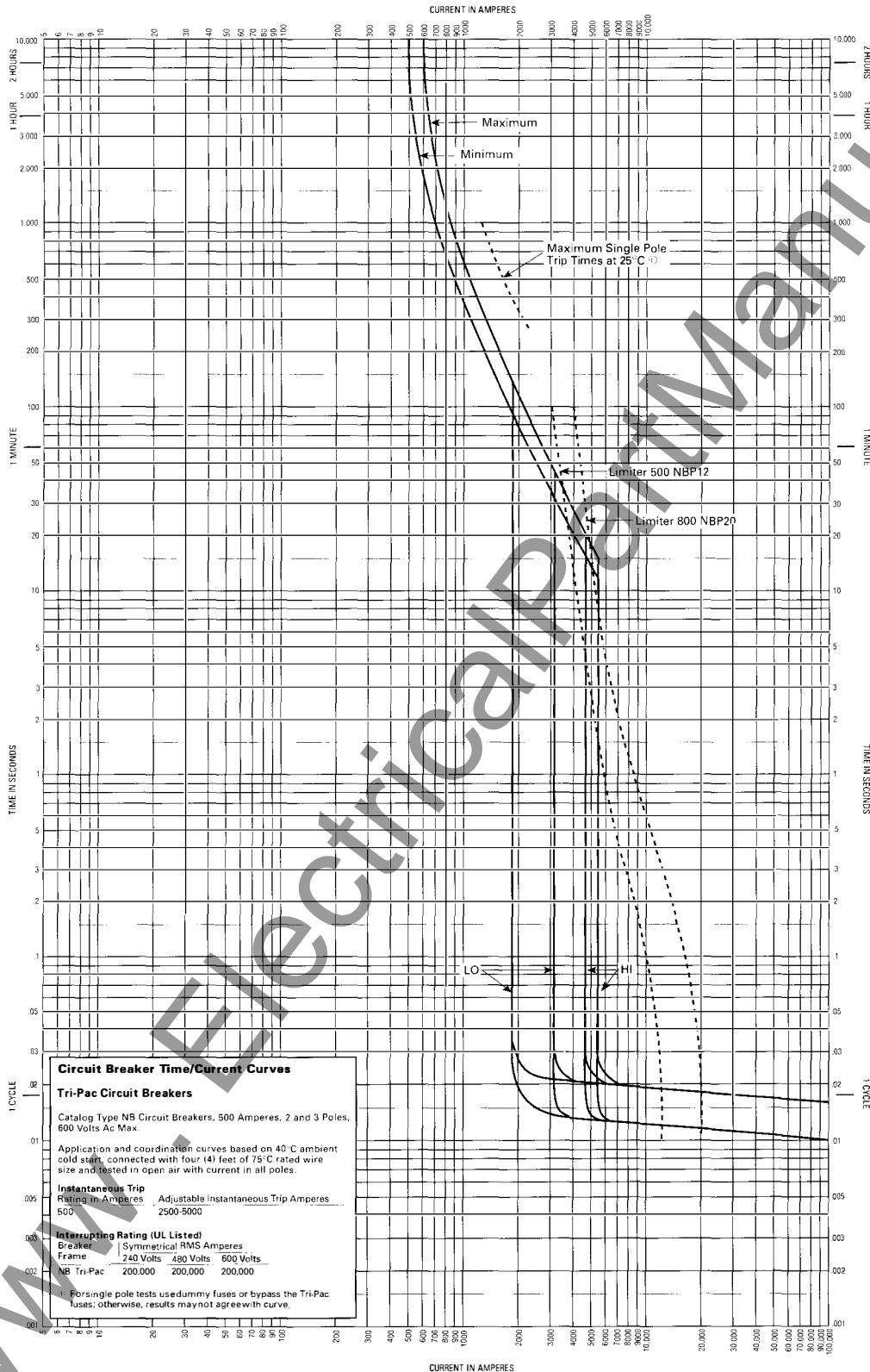
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type NB Circuit Breakers, 400 Amperes, 2 and 3 Poles, 600 Volts Ac Max.  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating in Amperes | Adjustable Instantaneous Trip Amperes  
 400 | 2000-4000  
**Interrupting Rating (UL Listed)**  
 Breaker | Symmetrical RMS Amperes  
 Frame | 240 Volts | 480 Volts | 600 Volts  
 NB Tri-Pac | 200,000 | 200,000 | 200,000  
 \* For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri Pac® Circuit Breakers

Type NB, 500 Amperes, 2 and 3 Poles

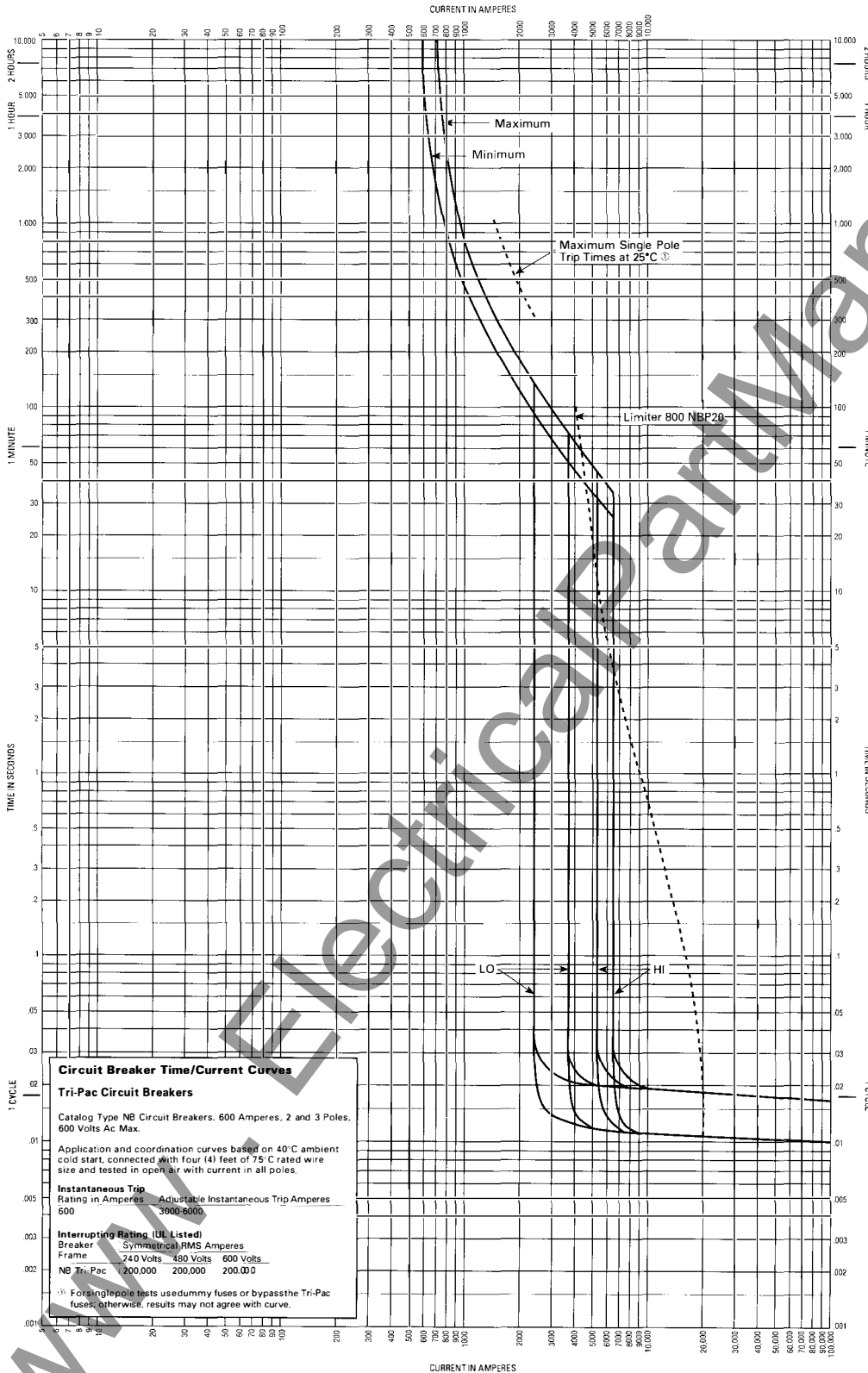


**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type NB Circuit Breakers, 500 Amperes, 2 and 3 Poles, 600 Volts Ac Max.  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
**Instantaneous Trip**  
 Rating In Amperes     Adjustable Instantaneous Trip Amperes  
 500                             2500-5000  
**Interrupting Rating (UL Listed)**  
 Breaker     Symmetrical RMS Amperes  
 Frame     240 Volts     480 Volts     600 Volts  
 NB Tri-Pac     200,000     200,000     200,000  
 1 For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.



# AB DE-ION Tri-Pac® Circuit Breakers

Type NB, 600 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**

**Tri-Pac Circuit Breakers**

Catalog Type NB Circuit Breakers, 600 Amperes, 2 and 3 Poles, 600 Volts Ac Max.

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

**Instantaneous Trip**  
 Rating in Amperes      Adjustable Instantaneous Trip Amperes  
 600                              3000-6000

**Interrupting Rating (UL Listed)**  
 Breaker      Symmetrical RMS Amperes  
 Frame      240 Volts    480 Volts    600 Volts  
 NB Tri-Pac    200,000    200,000    200,000

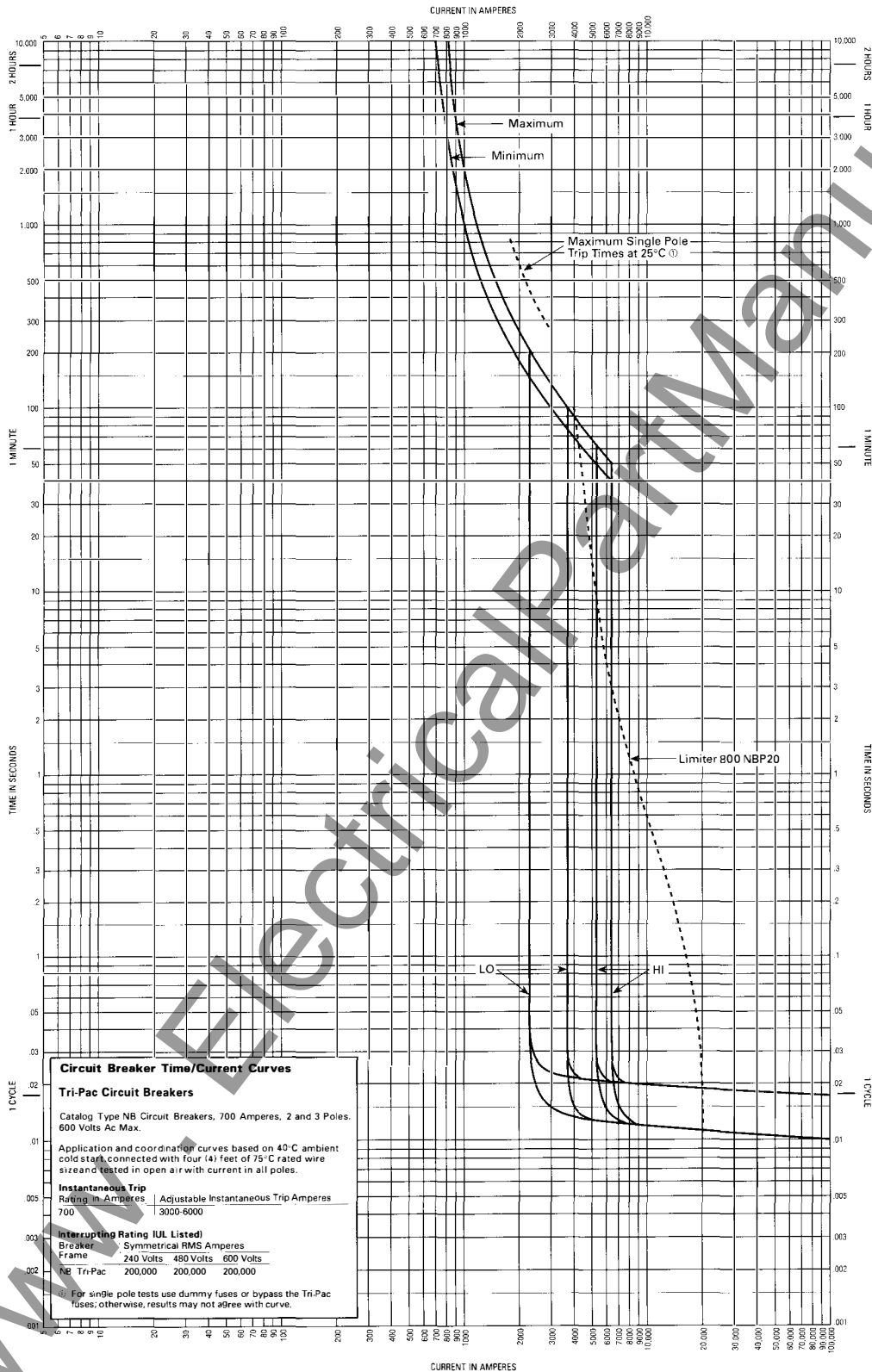
ⓘ For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri Pac® Circuit Breakers

## Type NB, 700 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type NB Circuit Breakers, 700 Amperes, 2 and 3 Poles.  
 600 Volts Ac Max.

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

<b>Instantaneous Trip Rating in Amperes</b>	Adjustable Instantaneous Trip Amperes
700	3000-6000

<b>Interrupting Rating IUL Listed</b>	
Breaker	Symmetrical RMS Amperes
Frame	240 Volts 480 Volts 600 Volts
NB Tri-Pac	200,000 200,000 200,000

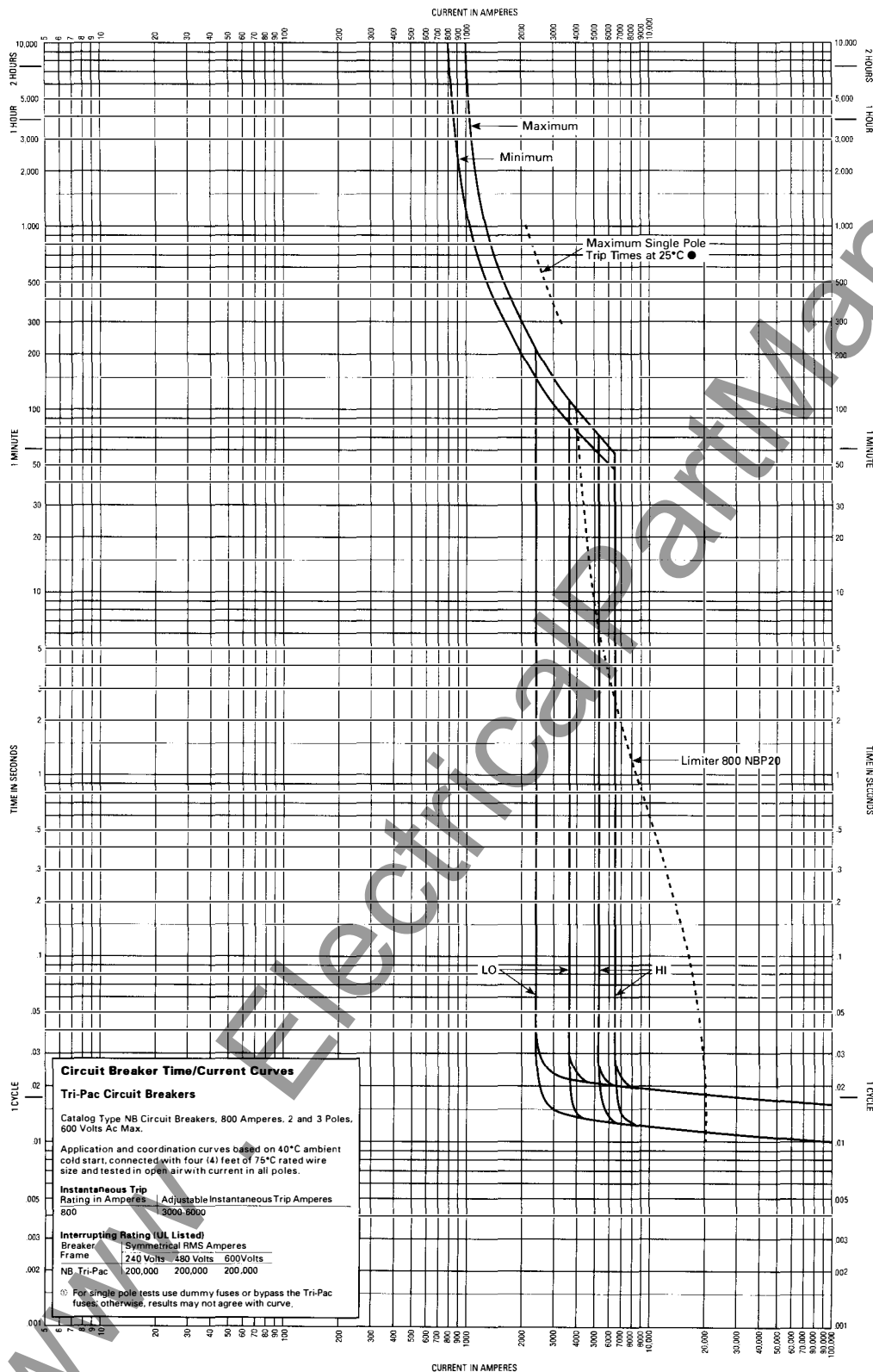
① For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri-Pac® Circuit Breakers

Type NB, 800 Amperes, 2 and 3 Poles

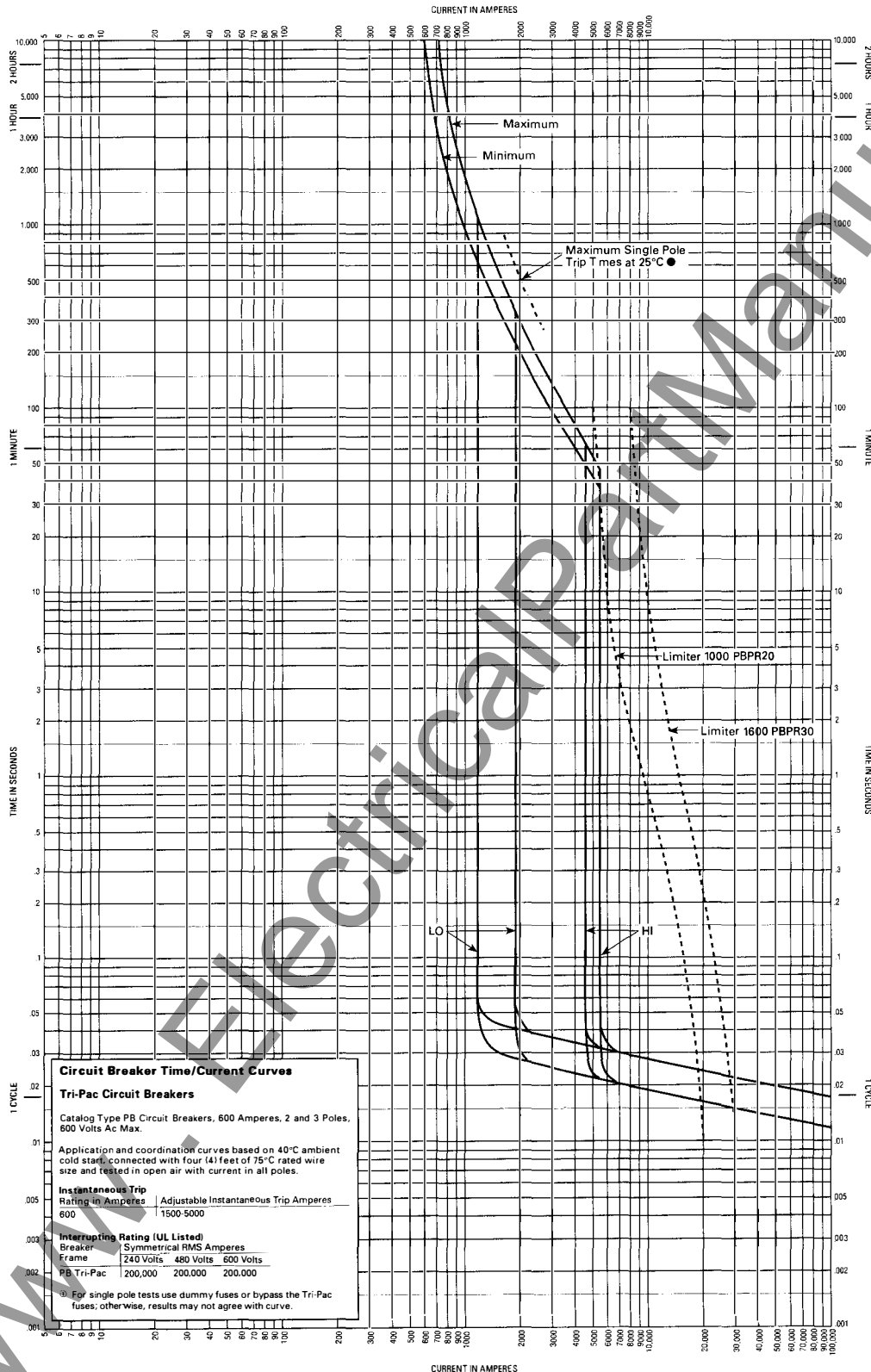






# AB DE-ION Tri Pac® Circuit Breakers

## Type PB, 600 Amperes, 2 and 3 Poles



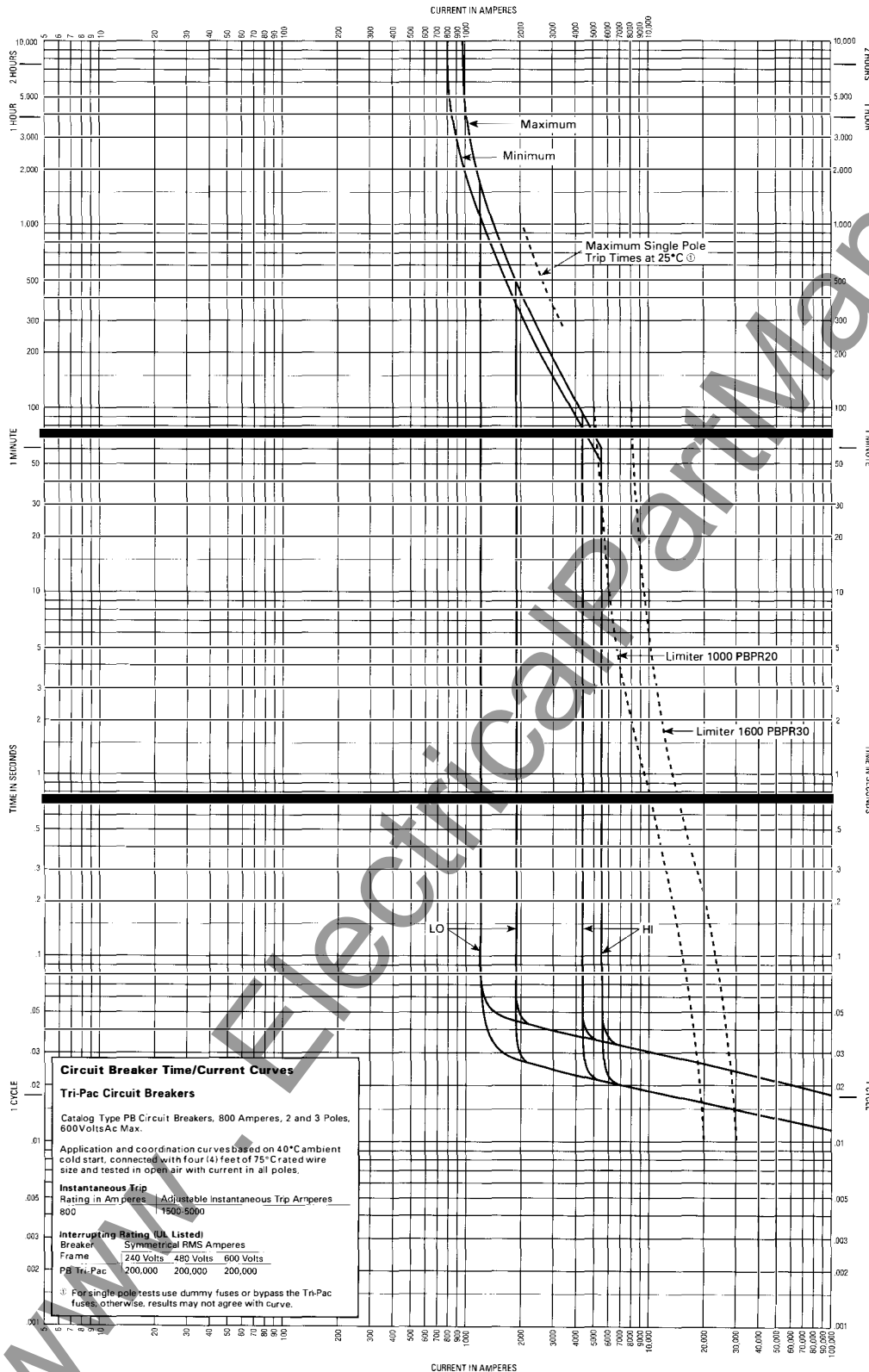
**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type PB Circuit Breakers, 600 Amperes, 2 and 3 Poles, 600 Volts Ac Max.  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  
 Instantaneous Trip Rating in Amperes | Adjustable Instantaneous Trip Amperes  
 600 | 1500-5000  
 Interrupting Rating (UL Listed)  
 Breaker | Symmetrical RMS Amperes  
 Frame | 240 Volts | 480 Volts | 600 Volts  
 PB Tri-Pac | 200,000 | 200,000 | 200,000  
 For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri-Pac® Circuit Breakers

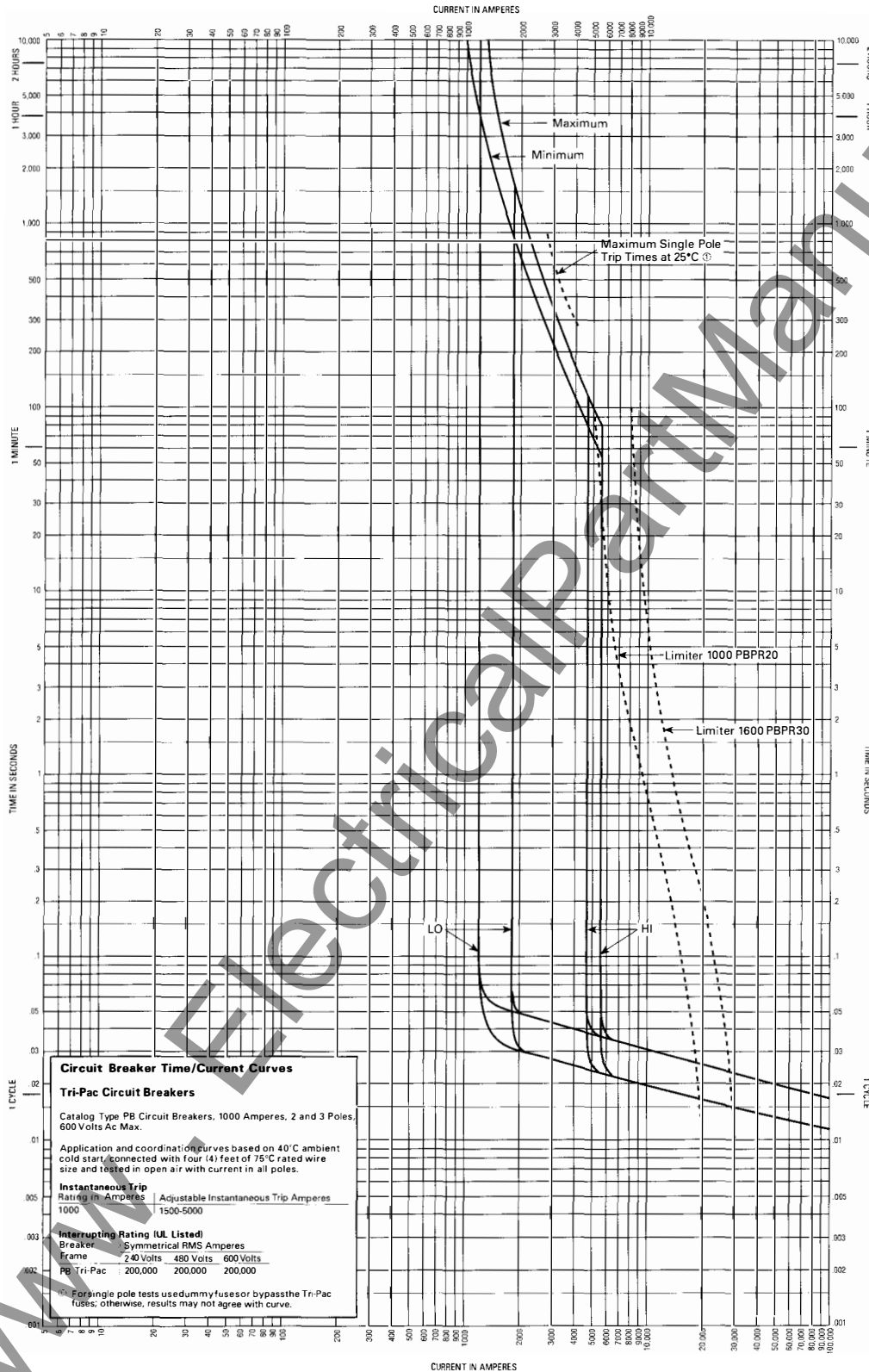
Type PB, 800 Amperes, 2 and 3 Poles





# AB DE-ION Tri Pac® Circuit Breakers

Type PB, 1000 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**

Catalog Type PB Circuit Breakers, 1000 Amperes, 2 and 3 Poles, 600 Volts Ac Max.

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

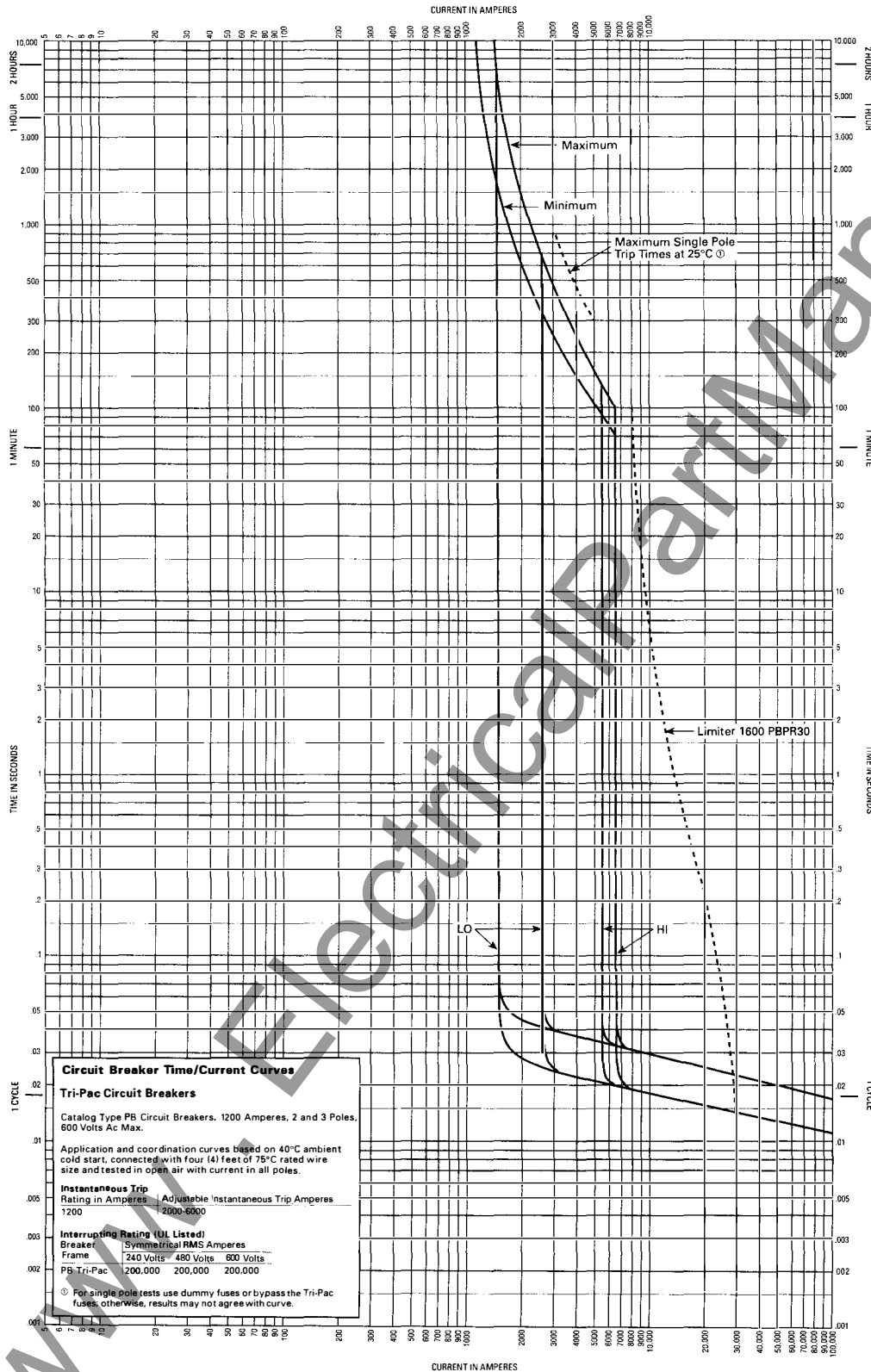
Instantaneous Trip Rating in Amperes	Adjustable Instantaneous Trip Amperes
1000	1500-5000

Interrupting Rating (UL Listed) Breaker Frame	Symmetrical RMS Amperes
PB Tri-Pac	200,000 200,000 200,000

For single pole tests used dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.

# AB DE-ION Tri-Pac® Circuit Breakers

Type PB, 1200 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**

Catalog Type PB Circuit Breakers, 1200 Amperes, 2 and 3 Poles, 600 Volts Ac Max.

Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.

<b>Instantaneous Trip Rating in Amperes</b>	Adjustable Instantaneous Trip Amperes
1200	2000-6000

<b>Interrupting Rating (UL Listed)</b>	
<b>Breaker</b>	Symmetrical RMS Amperes
<b>Frame</b>	240 Volts 480 Volts 600 Volts
<b>PB Tri-Pac</b>	200,000 200,000 200,000

Ⓢ For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.

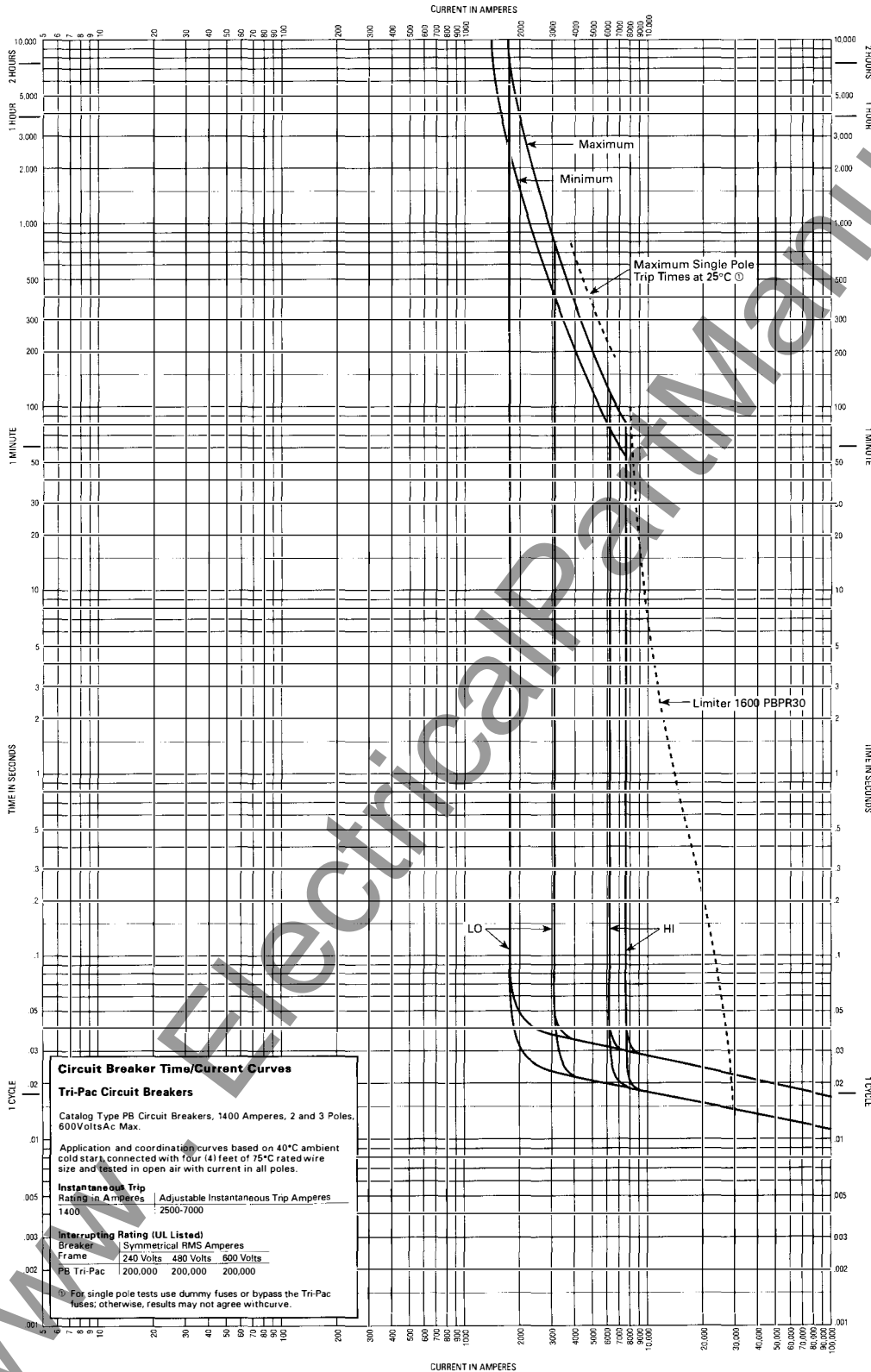


ElectricalPartManuals.com



# AB DE-ION Tri Pac® Circuit Breakers

## Type PB, 1400 Amperes, 2 and 3 Poles



**Circuit Breaker Time/Current Curves**  
**Tri-Pac Circuit Breakers**  
 Catalog Type PB Circuit Breakers, 1400 Amperes, 2 and 3 Poles, 600VoltsAc Max.  
 Application and coordination curves based on 40°C ambient cold start, connected with four (4) feet of 75°C rated wire size and tested in open air with current in all poles.  

<b>Instantaneous Trip Rating in Amperes</b>	Adjustable Instantaneous Trip Amperes
1400	2500-7000

<b>Interrupting Rating (UL Listed)</b>	
Breaker	Symmetrical RMS Amperes
Frame	240 Volts 480 Volts 600 Volts
PB Tri-Pac	200,000 200,000 200,000

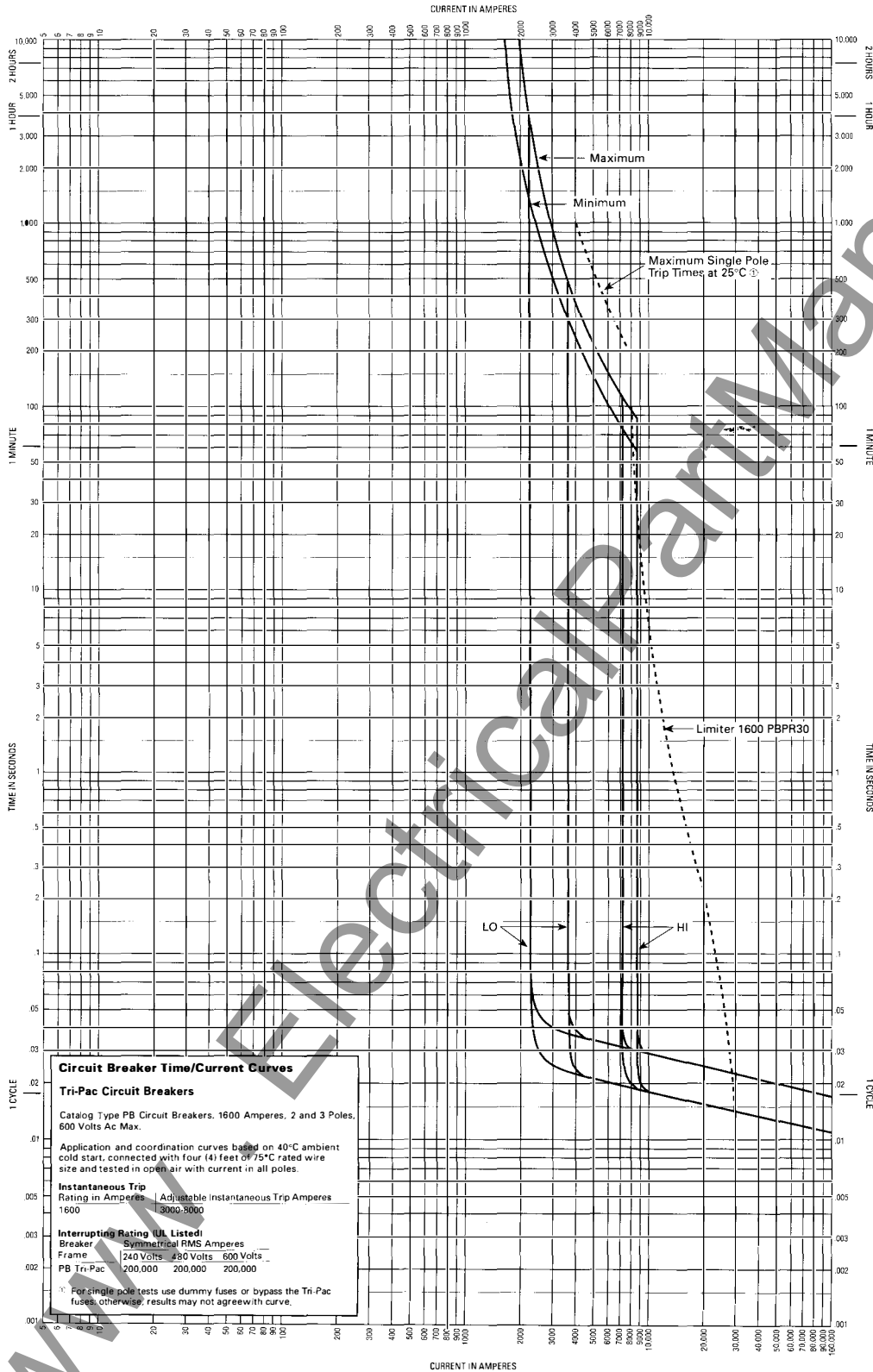
For single pole tests use dummy fuses or bypass the Tri-Pac fuses; otherwise, results may not agree with curve.





# AB DE-ION Tri-Pac® Circuit Breakers

Type PB, 1600 Amperes, 2 and 3 Poles





**Cutler-Hammer**  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, Pennsylvania, U.S.A. 15220

Application Data  
**29-167H**

Page 1

May 1994  
 Supersedes Application Data 29-167E,  
 dated April 1993  
 Mailed to: E/29-100A

Time/Current Characteristic Curves for  
 Westinghouse Series C® Types HMCP,  
 GMCP 63 Amperes and HMCP 150, 250,  
 400 and 600 Amperes Motor Circuit  
 Protectors

# Westinghouse Motor Circuit Protector

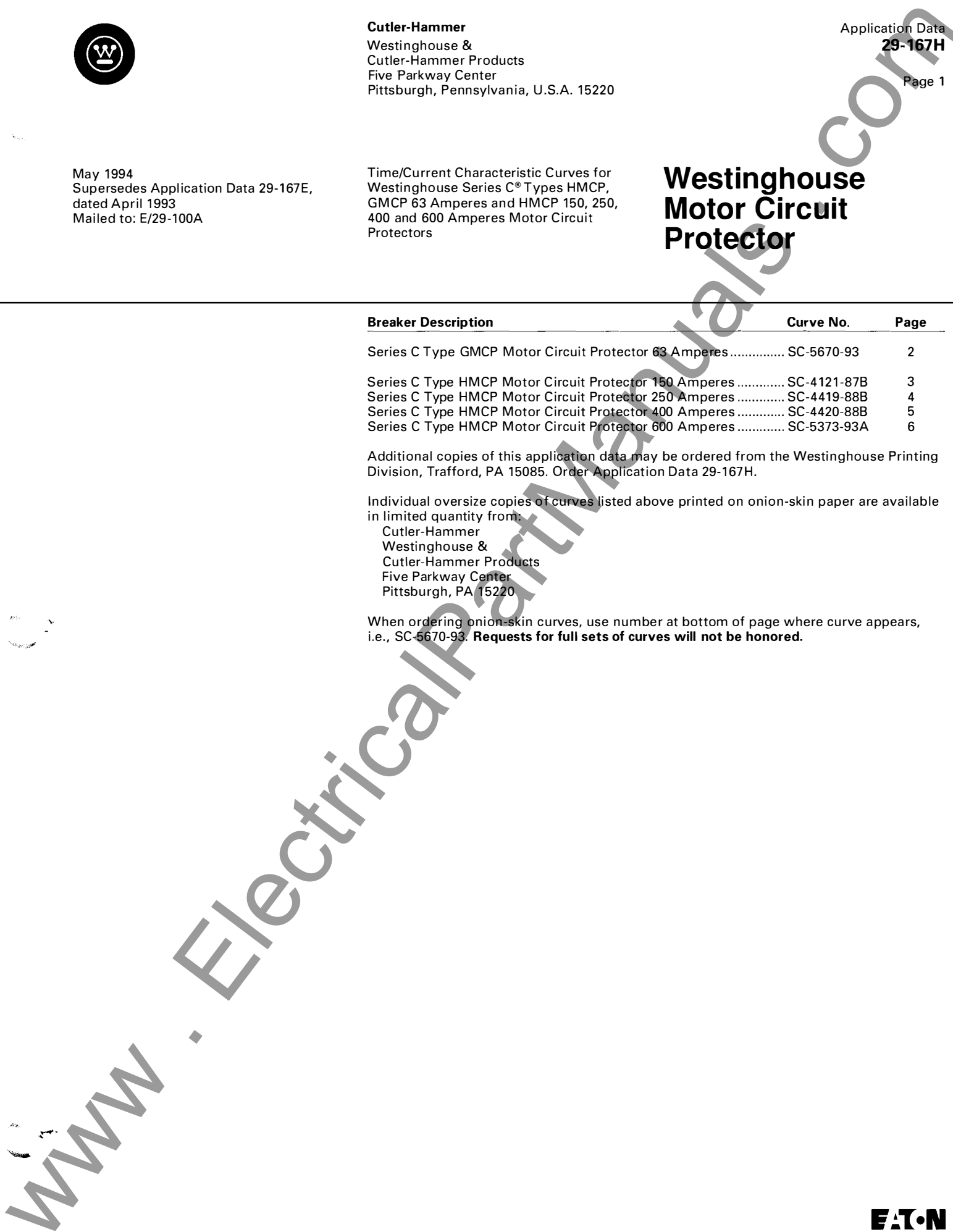
Breaker Description	Curve No.	Page
Series C Type GMCP Motor Circuit Protector 63 Amperes .....	SC-5670-93	2
Series C Type HMCP Motor Circuit Protector 150 Amperes .....	SC-4121-87B	3
Series C Type HMCP Motor Circuit Protector 250 Amperes .....	SC-4419-88B	4
Series C Type HMCP Motor Circuit Protector 400 Amperes .....	SC-4420-88B	5
Series C Type HMCP Motor Circuit Protector 600 Amperes .....	SC-5373-93A	6

Additional copies of this application data may be ordered from the Westinghouse Printing Division, Trafford, PA 15085. Order Application Data 29-167H.

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:

Cutler-Hammer  
 Westinghouse &  
 Cutler-Hammer Products  
 Five Parkway Center  
 Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-5670-93. **Requests for full sets of curves will not be honored.**



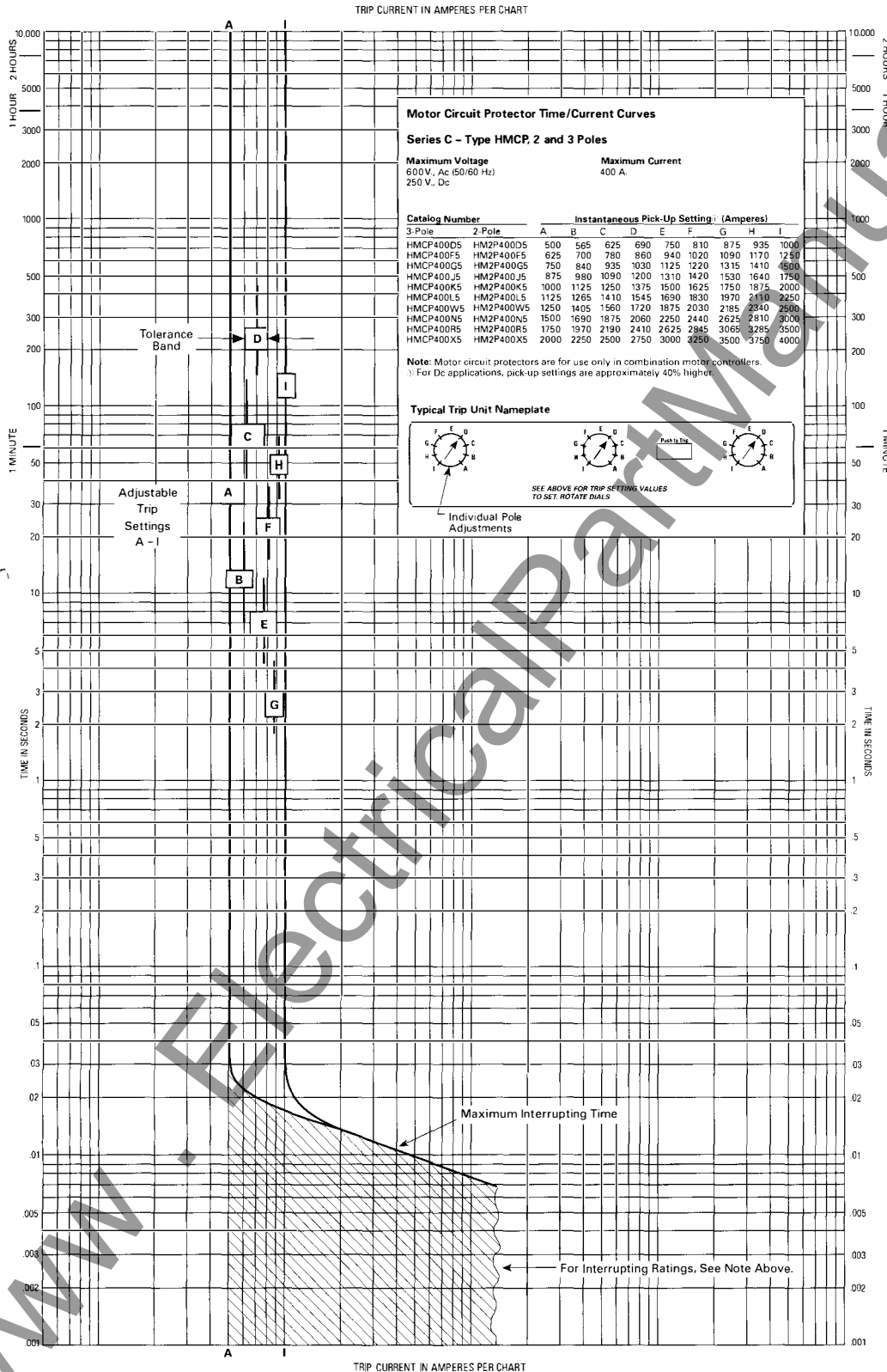
[www.ElectricalPartManuals.com](http://www.ElectricalPartManuals.com)





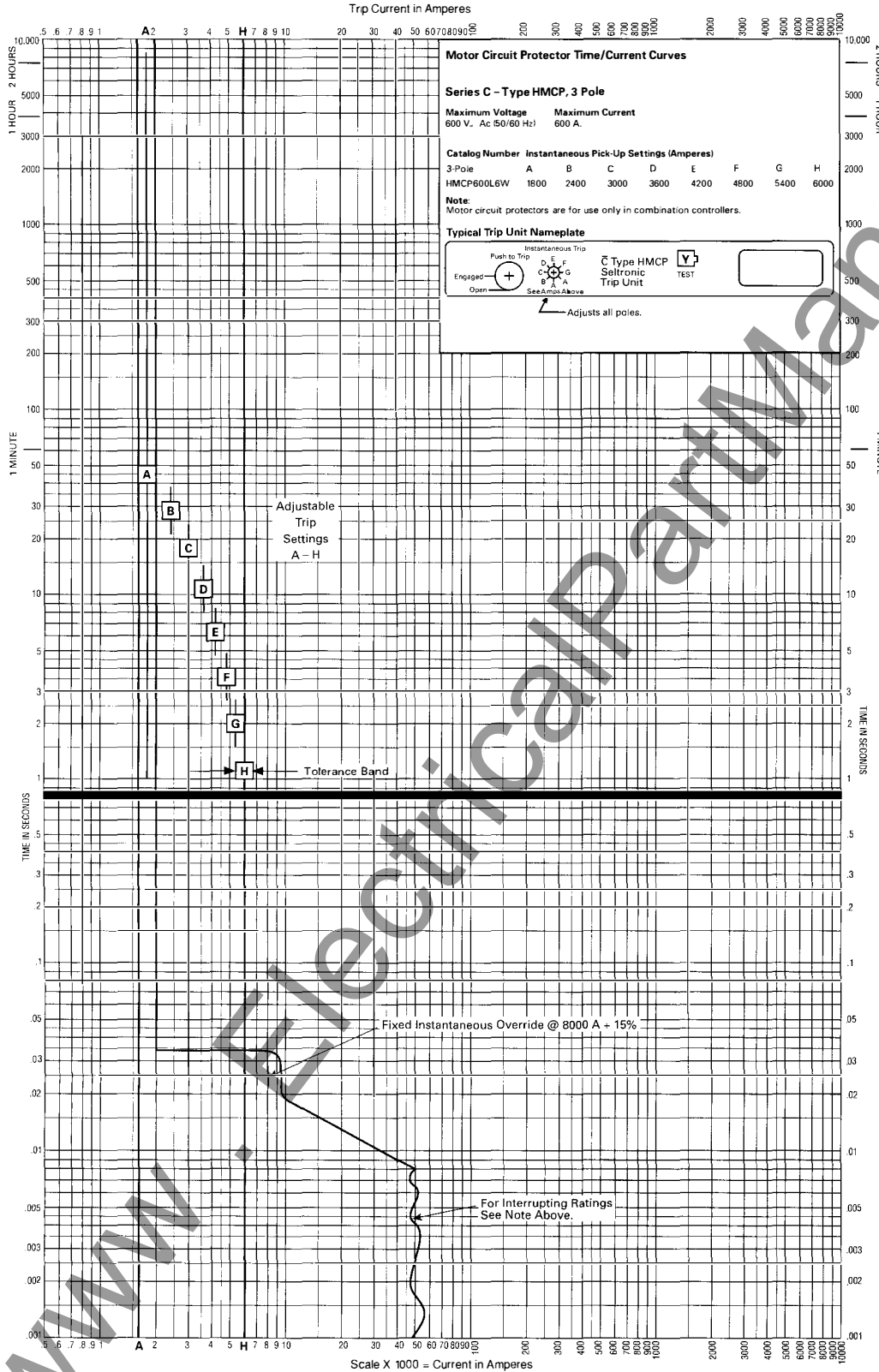
# Motor Circuit Protector

## Type HMCP Motor Circuit Protector 400 Amperes



# Motor Circuit Protector

## Type HMCP Motor Circuit Protector 600 Amperes





**Motor Circuit Protector**

www.ElectricalPartManuals.com



## Motor Circuit Protector

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