Fusing Equipment
Technical Data
TD132010EN

Effective September 2017
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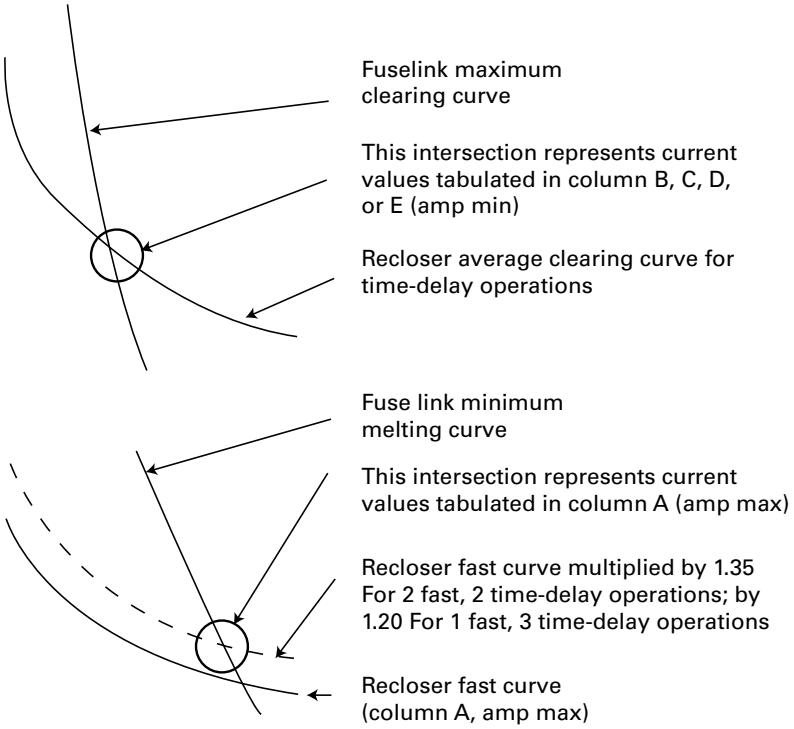
COOPER POWER SERIES

Coordination of fuse links with oil circuit reclosers



Powering Business Worldwide

Source-side fuses

Selection of the fuse links to be applied on the source side of oil circuit reclosers is based on the following rule:

For maximum values of fault current at the recloser location, the minimum melting time of the fuse link must be a least a specific factor times the average clearing time of the recloser's time-delay operation.

The factors for various operating sequences are shown in Table 1.

Load-side fuses

Fuse links used as protecting devices on the load side of oil circuit reclosers must be selected according to the following rules:

1. For all values of fault current possible on the selection protected by the fuse link, the minimum melting time of the link must be a least 1.35 times the maximum clearing time of the recloser's fast operation, assuming an operating sequence of two fast and two slow operations. The magnitude of the multiplying factor, derived experimentally, varies with the number of fast operations and takes into consideration manufacturer's tolerances and the cumulative temperature rise in the fusible element during the fast operations. For an operating sequence of one fast and three slow operations, the factor is reduced to 1.2 because cumulative temperature rise does not exist.
2. For all values of fault current possible on the section protected by the fuse, the maximum clearing time of the fuse should be no greater than the average clearing time of the recloser on a time-delay operation–provided two or more time-delay operations are being used.

Coordination tables

Tables 2 through 10 provide current ranges for coordinating Edison Types T, K, and N fuse links with Eaton Cooper Power series reclosers. In each table, Column "A, amp max" is the highest fault current at which a recloser fast operation precedes any fuse link melting. Column "B, C, D, or E, amp min" is the lowest current the fuse will interrupt without the recloser opening on its time-delay operation. These points are illustrated in Figure 1.

Table 1. Minimum multiplying factors for recloser-fuse link coordination (to protect the backup fuse and cause the protecting recloser to lockout)

		Minimum multiplying factor*		
Recloser type	**Reclosing time**	**Curve B04 or C04**	**Curve B13 or C13**	**Curve B22 or C22**
Type H or 3H	60-cycle reclosing	2.70	2.50	2.10
Type 4H, 6H, V4H, V6H, E, 4E, or L	90-cycle reclosing	2.20	2.10	1.85
Type D, DV, R, RV, RX, VW, VWV, W, or WV	120-cycle reclosing	1.90	1.80	1.70
Type R, RV, RX, VW, VWV, W, or WV	30-cycle reclosing	3.50	3.10	2.60

*Based on 50% preload.

B04--Four operations on B curve;
C04--Four operations on C curve.

B13--One operation on A curve and three operations on B curve;
C13--One operation on A curve and three operations on C curve.

B22--Two operation on A curve and two operations on B curve;
C22--Two operations on A curve and two operations on C curve.

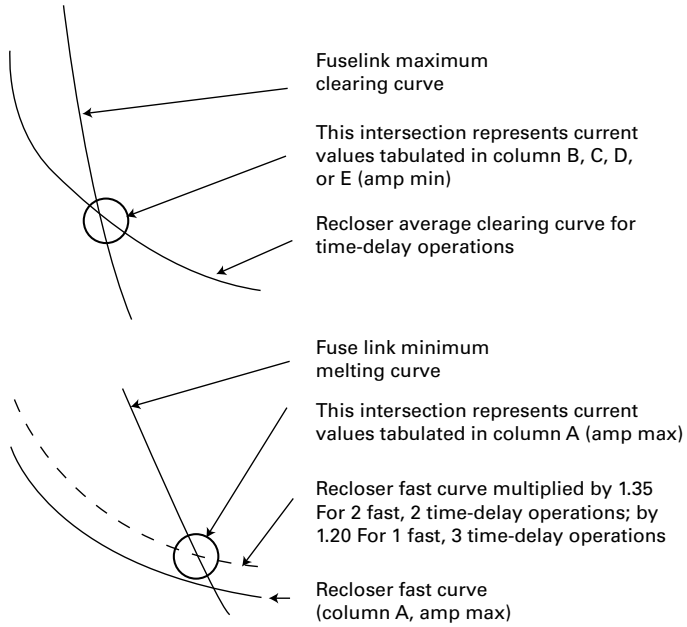


Figure 1.

Table 2. Coordination ranges between single-phase Types 4H and V4H and three-phase Types 6H and V6H reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	5-amp Continuous 10-amp min trip			10-amp Continuous 20-amp min trip			15-amp Continuous 30-amp min trip			25-amp Continuous 50-amp min trip		
	Curve			Curve			Curve			Curve		
	A	B	C	A	B	C	A	B	C	A	B	C
Fuse link	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min
6T	180	170	120	165	90	30	150	30	30			
8T				240	190	125	230	125	30	190	50	50
10T				340	280	195	340	200	120	280	50	50
12T				400		300	450	350	230	420	230	50
15T							600	525	390	530	400	250
20T							600		570	750	600	400
25T										990	850	600
30T										1000		910
40T												
50T												
65T												
80T												
6K	98	70	40	80	23	20						
8K	140	125	80	130	50	30	100	30	30			
10K	190	175	125	175	110	60	160	50	33			
12K	200		180	230	175	120	220	120	60	180	52	50
15K				310	255	180	300	190	130	275	100	60
20K				400		280	390	300	200	360	200	110
25K							510	445	300	500	320	190
30K							600		450	670	490	300
40K										820	700	500
50K										1000		720
65K												
80K												
100K												
5N	60	40	14	48	20	20						
8N	100	70	43	80	22	20						
10N	140	125	80	130	58	30	100	30	30			
15N	180	175	125	175	105	60	155	50	33	100	50	50
20N				230	175	125	220	130	60	180	50	50
25N				290	240	170	275	180	110	245	80	55
30N				380	350	250	360	225	200	340	190	100
40N							600		480	625	520	350
50N										840	780	540
60N										1000		950
75N												
85N												
100N												

(Continued)

Table 2. (Cont'd) Coordination ranges between single-phase Types 4H and V4H and three-phase Types 6H and V6H reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	35-amp Continuous 70-amp min trip			50-amp Continuous 100-amp min trip			70-amp Continuous 140-amp min trip			100-amp Continuous 200-amp min trip		
	Curve			Curve			Curve			Curve		
	A	B	C	A	B	C	A	B	C	A	B	C
Fuse link	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min
6T												
8T												
10T	240	70	70									
12T	390	70	70	300	100	100						
15T	550	290	70	490	100	100	360	140	140			
20T	750	500	240	680	200	100	590	140	140			
25T	940	700	450	880	500	120	820	140	140	670	200	200
30T	1300		750	1300	880	500	1200	600	140	1000	200	200
40T	1400		1200	1700	1400	900	1500	1000	600	1400	700	200
50T				2000		1400	1900	1500	1000	1800	1200	500
65T							2600	2200	1500	2500	1750	1100
80T							3000		2200	3000	2750	1750
6K												
8K												
10K												
12K												
15K	220	70	70									
20K	330	100	70									
25K	480	200	100	400	100	100						
30K	610	350	220	580	200	125	500	140	140			
40K	820	580	375	780	400	240	720	250	140	510	200	200
50K	1100	810	600	1100	680	400	920	450	280	830	250	200
65K	1400	1250	900	1350	980	610	1380	800	450	1200	450	250
80K				1800	1550	1000	1600	1250	800	1550	850	450
100K				2000		1750	2400	2000	1500	2400	1600	1000
5N												
8N												
10N												
15N												
20N												
25N	195	70	70									
30N	300	100	70	200	100	100						
40N	600	400	240	560	200	120	500	140	140			
50N	800	620	425	790	450	225	710	250	175	560	200	200
60N	1200	1100	790	1200	900	525	1250	650	300	1000	250	200
75N	1400		1200	1500	1350	900	1500	1100	700	1400	700	275
85N				2000		1400	2000	1600	1200	2000	1380	800
100N							3000	2800	2000	3000	2400	1700

Coordination ranges are based on two fast operations on the A curve. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%.

Table 3. Coordination ranges between single-phase Types L reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	5-amp Continuous 10-amp min trip			10-amp Continuous 20-amp min trip			15-amp Continuous 30-amp min trip			25-amp Continuous 50-amp min trip		
	Curve			Curve			Curve			Curve		
	A	B	C	A	B	C	A	B	C	A	B	C
Fuse link	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min
6T	180	160	110	160	90	20	140	30	30			
8T	200		180	240	180	100	200	100	30	180	50	50
10T				340	300	180	320	210	80	260	55	50
12T				400		300	450	350	210	400	170	50
15T							600	550	360	570	380	200
20T							600		550	750	600	360
25T										950	810	570
30T										1000		850
40T												
50T												
65T												
80T												
6K	100	65	33	78	23	20						
8K	145	115	65	120	48	29	105	30	30			
10K	200	175	120	170	100	50	150	30	33	118	50	50
12K	200		175	240	175	95	215	105	60	180	52	50
15K				330	260	165	305	190	110	275	90	60
20K				400		250	400	330	190	360	175	100
25K				400		375	540	460	300	500	290	160
30K							600		425	650	465	280
40K										860	700	460
50K										1000		680
65K												
80K												
100K												
140K												
5N	70	35	14	50	20	20						
8N	100	65	35	80	23	20	55	30	30			
10N	145	120	75	125	50	28	110	30	30			
15N	200	175	120	175	100	50	150	50	33	120	50	50
20N				240	175	110	220	125	60	175	55	50
25N				300	250	155	280	190	95	245	80	55
30N				400	360	250	380	300	175	350	150	95
40N							600		460	660	500	300
50N										880	760	500
60N										1000		850
75N												
85N												
100N												

(Continued)

TABLE 3 (Cont'd) Coordination ranges between single-phase Types E reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	35-amp Continuous 70-amp min trip			50-amp Continuous 100-amp min trip			70-amp Continuous 140-amp min trip			100-amp Continuous 200-amp min trip		
	Curve			Curve			Curve			Curve		
	A	B	C	A	B	C	A	B	C	A	B	C
Fuse link	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min	amp max	amp min	amp min
6T												
8T												
10T	240	70	70									
12T	350	70	70	300	100	100						
15T	500	250	70	460	100	100	380	140	140			
20T	700	450	130	650	160	100	600	140	140			
25T	920	700	380	850	450	100	800	140	140	700	200	200
30T	1350	1100	700	1300	860	450	1200	600	140	1000	200	200
40T	1400		1100	1600	1400	850	1600	1200	550	1400	550	200
50T				2000	1800	1300	2000	1800	960	2000	1200	250
65T							2500		1600	2500	1800	920
80T										2500		1600
6K												
8K												
10K												
12K												
15K	225	70	70									
20K	320	110	70	250	100	100						
25K	450	175	100	390	115	100	312	140	140			
30K	610	325	175	550	200	115	460	140	140			
40K	800	550	325	750	370	220	690	250	140	550	200	200
50K	1200	815	525	990	650	365	910	450	275	800	260	200
65K	1400	1300	820	1390	1100	600	1275	800	410	1200	400	250
80K	1400		1250	1750	1600	1000	1650	1500	800	1550	800	400
100K				2000		1600	2500		1400	2500	1600	850
140K										2500		2100
5N												
8N												
10N												
15N												
20N	130	70	70									
25N	200	70	70									
30N	290	100	70	230	100	100						
40N	600	375	175	550	200	120	500	140	140			
50N	850	640	375	780	425	225	700	190	150	500	200	200
60N	1250		750	1200	900	500	1200	650	260	1000	260	200
75N	1400		1200	1600	1400	850	1500	1200	650	1400	600	250
85N				2000		1350	2200		1200	2000	1250	600
100N										2500		1500

Coordination ranges are based on two fast operations on the A curve. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%.

Table 4. Coordination ranges between single-phase Types L reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	25-amp Continuous 50-amp min trip				35-amp Continuous 70-amp min trip				50-amp Continuous 100-amp min trip				70-amp Continuous 140-amp min trip			
	Curve				Curve				Curve				Curve			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Fuse link	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min
8T	200	50	50	50												
10T	310	50	50	50	270	70	70	70								
12T	450	150	50	50	400	70	70	70	340	100	100	100				
15T	260	400	100	95	580	180	70	70	500	100	100	100	460	140	140	140
20T	820	650	200	580	790	475	100	95	740	100	100	100	680	140	140	140
25T	1200	950	400	800	1000	750	200	180	970	400	100	100	950	140	140	140
30T	1500		650	1300	1400	1200	500	1000	1400	900	230	220	1300	400	140	140
40T	1500		1100		2000	1800	800	1600	1700	1500	580	1300	1700	1200	280	260
50T					2100		1200		2300		900	2000	2200	1700	550	1600
65T					2100		1700		3000		1400	2700	2800	2600	1100	2400
80T									3000		1800		3800	3400	1500	3000
100T													4200		2400	
140T																
200T																
12K	180	50	50	50												
15K	270	95	62	62	260	70	70	70								
20K	390	140	90	90	350	120	70	70	270	100	100	100				
25K	520	330	130	130	500	160	100	100	430	100	100	100				
30K	700	510	210	450	670	350	150	150	580	200	130	130	550	140	140	140
40K	1200	800	350	700	900	600	240	500	820	330	190	190	750	250	140	140
50K	1450	1300	550	1100	1200	900	400	800	1200	640	290	330	1000	380	250	250
65K					1600	1400	600	1400	1400	1200	450	1000	1400	800	340	340
80K					2000		1000		1800		750		1800	1500	500	1300
100K									2800		1300	2600	2600		1000	2200
140K																
200K																
15N	140	50	50	50												
20N	200	50	50	50	160	70	70	70								
25N	265	50	55	55	230	70	70	70								
30N	360	130	85	85	330	110	70	70	275	100	100	100				
40N	700	550	200	480	670	400	150	150	620	185	120	120	550	140	140	140
50N	950	830	395	760	900	680	240	600	750	350	200	200	780	245	170	170
60N	1500		700	1300	1400	1200	510	1100	1300	900	300	800	1250	600	240	240
75N									1750	1500	650	1350	1700	1200	360	1000
85N									2450	2250	1100	2000	2300	1850	750	1700
100N									3000		1800		3500		1500	3000
150N													4200		3700	
200N																

(Continued)

Table 4 (Cont'd) Coordination ranges between single-phase Types L reclosers and Edison Types T, K, and N fuse links

Fault-current ranges for selective blowing of load-side fuses

	100-amp Continuous 200-amp min trip				140-amp Continuous 280-amp min trip				200-amp Continuous 400-amp min trip				280-amp Continuous 560-amp min trip			
	Curve				Curve				Curve				Curve			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Fuse link	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp max	amp min	amp min	amp min
8T																
10T																
12T																
15T																
20T																
25T	750	200	200	200												
30T	1200	200	200	200	980	280	280	280								
40T	1600	450	200	200	1400	280	280	280	1200	400	400	400				
50T	2100	1200	275	270	1800	280	280	280	1700	400	400	400				
65T	2800	1900	450	410	2500	800	280	280	2200	400	400	400	2000	560	560	560
80T	3500	2800	1000	2500	3200	2200	500	500	2900	800	400	400	2900	560	560	560
100T	4500	4100	1800	3800	4200	3400	1000	3000	4000	2200	650	600	3700	1200	560	560
140T	6000		3700		6000		3000		6000	5000	1800	4500	6000	4300	1300	2000
200T					6000		5500		6000		4500		6000	4500	4000	
12K																
15K																
20K																
25K																
30K																
40K	610	200	200	200												
50K	900	200	200	200	760	280	280	280								
65K	1300	390	250	250	1200	280	280	280								
80K	1700	610	360	360	1500	440	280	280	1300	400	400	400				
100K	2500	1700	500	500	2400	800	400	400	2100	400	400	400	1800	560	560	560
140K	4000		1600	1500	3900	3000	1200	2500	3500	1700	800	800	3400	1100	700	700
200K									6000	4700	1900	4000	5900	3500	1400	1400
15N																
20N																
25N																
30N																
40N	400	200	200	200												
50N	660	200	200	200	350	280	280	280								
60N	1100	275	200	200	950	280	280	280	700	400	400					
75N	1500	540	250	250	1400	280	280	280	1200	400	400	400				
85N	2100	1300	400	400	1950	650	280	280	1700	400	400	400	1500	560	560	560
100N	3200	2500	1000	2250	3100	2000	600	1750	2750	900	400	400	2500	560	560	560
150N	6000		3000		6000	5500	2500		6000	4000	1300	3850	5200	3250	600	600
200N	6000		5100		6000		4500		6000		3500		6000		2100	5600

Coordination ranges are based on two fast operations on the A curve. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%.

Table 5. Coordination ranges between single-phase Types D and DV reclosers and Edison Types T tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	100-amp Continuous 200-amp min trip					140-amp Continuous 280-amp min trip				
	Curve					Curve				
	A	B	C	D	E	A	B	C	D	E
Fuse link	amp max	amp min	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp min
12T	250	200	200	200	200					
15T	400	200	200	200	200					
20T	560	200	200	200	200	500	280	280	280	280
25T	750	200	200	200	200	700	280	280	280	280
30T	1050	200	200	200	200	1000	280	280	280	280
40T	1400	320	200	1000	200	1400	280	280	280	280
50T	1700	800	200		200	1700	280	280	280	280
65T	2150	1900	630			2150	900	280		280
80T	2650		1450			2650	2000	500		1000
100T	3500		2500			3500		1550		
140T	5300		5000			5300		4550		
	160-amp Continuous 320-amp min trip					185-amp Continuous 370-amp min trip				
Fuse link	Curve					Curve				
12T										
15T										
20T	450	320	320	320	320					
25T	620	320	320	320	320	600	370	370	370	370
30T	950	320	320	320	320	900	370	370	370	370
40T	1350	320	320	320	320	1300	370	370	370	370
50T	1650	320	320	320	320	1650	370	370	370	370
65T	2150	320	320	1600	320	2150	370	370	370	370
80T	2650	1400	320		320	2650	900	370		370
100T	3500	3000	1100			3500	2350	630		1500
140T	5300		4000			5300		3500		
	225-amp Continuous 450-amp min trip					280-amp Continuous 560-amp min trip				
Fuse link	Curve					Curve				
30T	850	450	450	450	450	720	560	560	560	560
40T	1200	450	450	450	450	1050	560	560	560	560
50T	1600	450	450	450	450	1500	560	560	560	560
65T	2100	450	450	450	450	2000	560	560	560	560
80T	2650	450	450	450	450	2600	560	560	560	560
100T	3500	1400	450		450	3500	560	560	1550	560
140T	5300		2000			5300	3200	1250		3200
200T	8300		6000			8300		4500		
	400-amp Continuous 800-amp min trip					560-amp Continuous 1120-amp min trip				
Fuse link	Curve					Curve				
30T										
40T										
50T	1200	800	800	800	800					
65T	1700	800	800	800	800	1400	1120	1120	1120	1120
80T	2400	800	800	800	800	2000	1120	1120	1120	1120
100T	3200	800	800	800	800	2800	1120	1120	1120	1120
140T	5300	1700	800	3400	800	5100	1120	1120	1120	1120
200T	8300	5300	2700		5800	8300	2900	1500	7200	1500

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

Table 6. Coordination ranges between single-phase Types D and DV reclosers and Edison Types K tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	100-amp Continuous 200-amp min trip					140-amp Continuous 280-amp min trip				
	Curve					Curve				
	A	B	C	D	E	A	B	C	D	E
Fuse link	amp max	amp min	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp min
25K	320	200	200	200	200					
30K	460	200	200	200	200	370	280	280	280	280
40K	650	200	200	200	200	570	280	280	280	280
50K	890	200	200	200	200	830	280	280	280	280
65K	1150	350	225	450	225	1100	280	280	280	280
80K	1450	640	360		380	1450	350	280	400	280
100K	2050	1750	550		1750	2050	700	315		400
140K	3100		2150			3100	2800	1300		
200K	4900					4900		4000		
	160-amp Continuous 320-amp min trip					185-amp Continuous 370-amp min trip				
Fuse link	Curve					Curve				
25K										
30K										
40K	515	320	320	320	320	450	370	370	370	370
50K	720	320	320	320	320	700	370	370	370	370
65K	1025	320	320	320	320	980	370	370	370	370
80K	1400	320	320	320	320	1400	370	370	370	370
100K	2000	510	1075	800	320	2000	370	370	370	370
140K	3100	2000			2000	3100	1650	930		1150
200K	4900					4900		2700		
	225-amp Continuous 450-amp min trip					280-amp Continuous 560-amp min trip				
Fuse link	Curve					Curve				
50K	600	450	450	450	450					
65K	900	450	450	450	450	780	560	560	560	560
80K	1200	450	450	450	450	1150	560	560	560	560
100K	1900	450	450	450	450	1750	560	560	560	560
140K	3100	1275	770	2350	830	3050	940	700	1275	620
200K	4900	4200	2000			4900	2600	1600		2500
	400-amp Continuous 800-amp min trip					560-amp Continuous 1120-amp min trip				
Fuse link	Curve					Curve				
50K										
65K										
80K										
100K	1550	800	800	800	800					
140K	2750	800	800	800	800	2500	1120	1120	1120	1120
200K	4900	1800	1150	2350	1400	4650	1120	1120	1120	1120

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

Table 7. Coordination ranges between single-phase Types R, RV and RX reclosers and Edison Type T tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	25-amp Continuous 50-amp min trip					35-amp Continuous 70-amp min trip				
	Curve					Curve				
	A	B	C	D	E	A	B	C	D	E
Fuse link	amp max	amp min	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp min
6T	145	50	50	50	50	120	70	70	70	70
8T	215	50	50	50	50	200	70	70	70	70
10T	300	50	50	50	50	300	70	70	70	70
12T	415	130	50	275	50	415	70	70	70	70
15T	550	350	77		225	550	140	70	450	70
20T	720	640	300			720	360	70		70
25T	900		610			900	700	250		
30T	1150		920			1150		700		
40T						1500		1250		
50T										
65T										
80T										
100T										
	50-amp Continuous 100-amp min trip					70-amp Continuous 140-amp min trip				
Fuse link	Curve					Curve				
6T										
8T	175	100	100	100	100					
10T	260	100	100	100	100	215	140	140	140	140
12T	390	100	100	100	100	355	140	140	140	140
15T	525	100	100	100	100	500	140	140	140	140
20T	700	100	100	100	100	700	140	140	140	140
25T	900	360	100		100	890	140	140	140	140
30T	1150	820	285			1150	430	140		140
40T	1550	1400	800			1500	1000	260		800
50T	1900		1400			1900	1700	780		
65T	2400		2050			2400		1600		
80T	3000		2650			3000		2450		
100T						3700		3400		

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

Table 8. Coordination ranges between single-phase Types R, RV and RX reclosers and Edison Type K tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	25-amp Continuous 50-amp min trip					35-amp Continuous 70-amp min trip				
	Curve					Curve				
	A	B	C	D	E	A	B	C	D	E
Fuse link	amp max	amp min	amp min	amp min	amp min	amp max	amp min	amp min	amp min	amp min
6K	58	50	50	50	50					
8K	100	50	50	50	50					
10K	150	50	50	50	50	135	70	70	70	70
12K	205	50	50	50	50	190	70	70	70	70
15K	290	80	50	82	50	275	70	70	70	70
20K	370	140	80	200	82	365	70	70	93	70
25K	480	245	120		150	480	155	87	215	70
30K	605	500	230		480	605	270	155		200
40K	780		450			780	530	280		
50K	990		740			990		520		
65K	1250		1100			1250		960		
80K						1575		1450		
100K										
140K										

	50-amp Continuous 100-amp min trip					70-amp Continuous 140-amp min trip				
Fuse link	Curve					Curve				
6K										
8K										
10K										
12K	155	100	100	100	100					
15K	235	100	100	100	100	200	140	140	140	140
20K	335	100	100	100	100	280	140	140	140	140
25K	460	100	100	100	100	420	140	140	140	140
30K	600	155	100	170	100	570	140	140	140	140
40K	780	320	170	600	200	780	175	140	230	140
50K	990	570	315		420	990	360	230	520	140
65K	1250		500			1250	620	330		240
80K	1575		1000			1575	1400	560		380
100K	2200		1850			2200		1425		
140K						3300		3000		

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

Table 9. Coordination ranges between single-phase Types R, RV, RX, VW, VWV, W, WV reclosers and edison Type T tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	100-amp Continuous 200-amp min trip					
	Curve					
	A_R	**A_w**	**B**	**C**	**D**	**E**
Fuse link	**amp max**	**amp max**	**amp min**	**amp min**	**amp min**	**amp min**
12T	275	250	200	200	200	200
15T	430	400	200	200	200	200
20T	630	570	200	200	200	200
25T	840	780	200	200	200	200
30T	1150	1075	200	200	200	200
40T	1500	1400	200	200	1000	200
50T	1900	1700	860	200		200
65T	2400	2150	1850	560		1800
80T	3000	2700		1400		
100T	3700	3400		2750		
140T	5700	5300		5000		
200T						
	140-amp Continuous 280-amp min trip					
Fuse link	**Curve**					
12K						
15K	340		280	280	280	280
20K	540	480	280	280	280	280
25K	740	690	280	280	280	280
30K	1050	1000	280	280	280	280
40K	1450	1375	280	280	280	280
50K	1900	1700	280	280	280	280
65K	2400	2150	800	280		720
80K	3000	2700	1750	410		720
100K	3700		3400	1450		
140K	5700	5300	4500			
200T						
	160-amp Continuous 320-amp min trip					
Fuse link	**Curve**					
12T						
15T						
20T	480	450	320	320	320	320
25T	680	620	320	320	320	320
30T	1025	940	320	320	320	320
40T	1450	1350	320	320	320	320
50T	1900	1700	320	320	320	320
65T	2400	2150	320	320	1000	320
80T	3000	2700	1200	320		320
100T	3700	3400	2750	1000		1800
140T	5700	5300		4000		
200T		8500		7800		

(Continued)

Table 9. (Cont'd) Coordination ranges between single-phase Types R, RV, RX, VW, VWV, W, WV reclosers and Edison Type T tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	185-amp Continuous 370-amp min Trip					
	Curve					
	A_R	**A_w**	**B**	**C**	**D**	**E**
Fuse link	**amp max**	**amp max**	**amp min**	**amp min**	**amp min**	**amp min**
20T	440		370	370	370	370
25T	630	580	370	370	370	370
30T	980	900	370	370	370	370
40T	1400	1300	370	370	370	370
50T	1850	1600	370	370	370	370
65T	2400	2150	370	370	370	370
80T	3000	2700	720	370	2350	370
100T	3700	3400	2100	570		700
140T	5700	5300		3150		
200T		8500		7200		
	225-amp Continuous 450-amp min trip					
Fuse link	**Curve**					
20T						
25T	530		450	450	450	450
30T	860	800	450	450	450	450
40T	1300	1200	450	450	450	450
50T	1775	1550	450	450	450	450
65T	2350	2100	450	450	450	450
80T	2950	2650	450	450	450	450
100T	3700		1300	450	3500	450
140T	5700	5300	5000	1800		5000
200T		8500		6200		
	280-amp Continuous 560-amp min trip					
Fuse link	**Curve**					
20T						
25T						
30T	750	680	560	560	560	560
40T	1150	1050	560	560	560	560
50T	1675	1450	560	560	560	560
65T	2200	2000	560	560	560	560
80T	2900	2600	560	560	1450	560
100T	3700	3400	560	560		560
140T	5700	5300	2800	1100		2150
200T		8500		4200		
	400X-amp Continuous 560-amp min trip					
Fuse link	**Curve**					
40T	670		560	560	560	560
50T	1150	1000	560	560	560	560
65T	2100	1900	560	560	560	560
80T	2700	2500	560	560	560	560
100T	3550	3300	560	560	560	560
140T	5700	5300	2650	900		1150
200T		8500	8000	4300		

(Continued)

Table 9. (Cont'd) Coordination ranges between single-phase Types R, RV, RX, VW, VWV, W, WV reclosers and Edison Type T tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	400-amp Continuous 800-amp min trip					
	Curve					
	A_R	A_W	B	C	D	E
Fuse link	amp max	amp max	amp min	amp min	amp min	amp min
40T						
50T	1350	1175	800	800	800	800
65T	1900	1700	800	800	800	800
80T	2650	2400	800	800	800	800
100T	3550	3300	800	800	800	800
140T	5700	5300	1650	800	3200	800
200T		8500	5000	2650		5000

	560X-amp Continuous 750-amp min Trip (Type W only)				
	Curve				
Fuse link	A_W	B	C	D	E
65T	1150	750	750	750	750
80T	2400	750	750	750	750
100T	3300	750	750	750	750
140T	5150	930	750	2600	930
200T	8300	5000	2100		4000

	560-amp Continuous 1120-amp min trip (Type W only)				
Fuse link	Curve				
65T					
80T	1900	1120	1120	1120	1120
100T	2800	1120	1120	1120	1120
140T	5000	1120	1120	1120	1120
200T	8500	3000	1600	7000	3000

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

Table 10. Coordination ranges between single-phase Types R, RV, RX, VW, VWV, W, WV reclosers and Edison Type K tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	100-amp Continuous 200-amp min trip					
	Curve					
	A_R	**A_W**	**B**	**C**	**D**	**E**
Fuse link	**amp max**	**amp max**	**amp min**	**amp min**	**amp min**	**amp min**
25K	350	315	200	200	200	200
30K	500	470	200	200	200	200
40K	710	650	200	200	200	200
50K	950	890	200	200	200	200
65K	1250	1150	340	220	400	220
80K	1575	1500	800	350		370
100K	2200	2050	1650	560		920
140K	3300	3100		2300		
200K	5250	5000		4900		
	140-amp Continuous 280-amp min trip					
Fuse link	**Curve**					
25K						
30K	400	370	280	280	280	280
40K	620	560	280	280	280	280
50K	880	815	280	280	280	280
65K	1150	1100	280	280	280	280
80K	1575	1500	360	280	370	360
100K	2200	2050	650	370		660
140K	3300	3100	2700	1300		2700
200K		5250	5000	3900		
	160-amp Continuous 320-amp min trip					
Fuse link	**Curve**					
25K						
30K						
40K	560	515	320	320	320	320
50K	830	750	320	320	320	320
65K	1125	1050	320	320	320	320
80K	1525	1450	320	320	320	320
100K	2200	2050	460	320	630	320
140K	3300	3100	2000	1075		1400
200K	5250	5000		3400		
	185-amp continuous 370-amp min trip					
Fuse link	**Curve**					
40K	510	455	370	370	370	370
50K	770	710	370	370	370	370
65K	1075	970	370	370	370	370
80K	1500	1425	370	370	370	370
100K	2200	2050	370	370	370	370
140K	3300	3100	1600	900		1050
200K	5250	5000		2600		
	225-amp Continuous 450-amp min trip					
Fuse link	**Curve**					
40K						
50K	660	615	450	450	450	450
65K	970	900	450	450	450	450
80K	1375	1250	450	450	450	450
100K	2075	1950	450	450	450	450
140K	3300	3100	1250	730	2250	810
200K	5250	5000	4250	2000		4250

(Continued)

Table 10 (Cont'd) Coordination ranges between single-phase Types R, RV, RX, VW, VWV, W, WV reclosers and Edison Type K tin fuse links

Fault-current ranges for selective blowing of load-side fuses

	280-amp Continuous 560-amp min trip					
	Curve					
	AR	**AW**	**B**	**C**	**D**	**E**
Fuse link	**amp max**	**amp max**	**amp min**	**amp min**	**amp min**	**amp min**
40K						
50K						
65K	850	770	560	560	560	560
80K	1250	1150	560	560	560	560
100K	2025	1900	560	560	560	560
140K	3300	3050	900	620	1300	620
200K	5250	5000	2450	1500		2000
	400X-amp Continuous 560-amp min trip					
Fuse link	**Curve**					
80K	1250	1125	560	560	560	560
100K	2000	1800	560	560	560	560
140K	3250	3000	740	600	1050	600
200K	5250	5000	2350	1450		1700
	400-amp Continuous 800-amp min trip					
Fuse link	**Curve**					
80K						
100K	1750	1600	800	800	800	800
140K	3200	2900	800	800	800	800
200K	5200	5000	1750	1150	2400	1315

	560X-amp Continuous 750-amp min trip (Type W only)				
	Curve				
Fuse link	**A**	**B**	**C**	**D**	**E**
100K	1625	750	750	750	750
140K	2800	750	750	750	750
200K	4700	1550	1100	2250	1125
	560-amp Continuous 1120-amp min trip (Type W only)				
Fuse link	**Curve**				
100K					
140K	2450	1120	1120	1120	1120
200K	4700	1120	1120	1120	1120

Coordination ranges are based on two fast operations on the A curve and a 120-cycle reclosing interval. Maximum points were established by maintaining the minimum melting time of the fuse link at 135% of the fast clearing time of the recloser. If one fast operation is used, the margin will be 120% because the cumulative temperature rise is insignificant. This will increase the maximum coordination value 5 to 10%. Maximum clearing time of the fuse link is equal to or less than retarded opening time of the back-up recloser at negative 10% variation.

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Coordination of fuse links with oil circuit reclosers

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