

## Time-Current Characteristic Curve Listings

The TripSaver II Cutout-Mounted recloser emulates a wide variety of time-current characteristic (TCC) curves for overhead lateral protection, including fuse link curves, microprocessor and hydraulic recloser curves, as well as ANSI and IEC relay curves.

**Note:** The TCC curves in this publication and the formula used to generate the curves are published in S&C Information Bulletin 461-211, “TripSaver® II Cutout-Mounted Recloser, Time-Current Characteristics Curves: *Installation.*” Deviations, where they exist, are also listed in Information Bulletin 461-211.

Table 1 lists the TCCs of select fuse links available for the TripSaver II Cutout-Mounted Recloser.

**Table 1. TripSaver II Recloser Fuse Link Emulations**

Fuse Links							
K-Speed <sup>①</sup>	T-Speed <sup>②</sup>	QR (QA) <sup>③</sup>	KS <sup>④</sup>	NK (N-Speed Kearney) <sup>⑤</sup>	NE (N-Speed McGraw Edison) <sup>⑥</sup>	ST <sup>⑦</sup>	CO <sup>⑧</sup>
6K	6T	3QR	10KS	5NK	5NE	5ST	101CO
8K	8T	5QR	15KS	7NK	8NE	7ST	102CO
10K	10T	7QR	20KS	10NK	10NE	10ST	103CO
12K	12T	8QR	25KS	15NK	15NE	15ST	
15K	15T	10QR	30KS	20NK	20NE	20ST	
20K	20T	15QR	40KS	25NK	25NE	25ST	
25K	25T	20QR	50KS	30NK	30NE	30ST	
30K	30T	25QR	65KS	40NK	40NE	40ST	
40K	40T	30QR	80KS	50NK	50NE	50ST	
50K	50T	40QR	100KS	65NK	60NE	65ST	
65K	65T	50QR	125KS	80NK	75NE	80ST	
80K	80T	60QR	150KS	100NK	85NE	100ST	
100K	100T	75QR	200KS	125NK	100NE	125ST	
140K	140T	100QR		150NK	125NE	150ST	
200K	200T	125QR		175NK	150NE	200ST	
		150QR		200NK	200NE		
		175QR					
		200QR					

① K-Speed TCC curves emulate S&C K-Speed Positrol® Fuse Links.

② T-Speed TCC curves emulate S&C T-Speed Positrol Fuse Links.

③ QR TCC curves emulate S&C QR-Speed Positrol Fuse Links. (QR-Speed Positrol Fuse Links are similar to QA-Speed Cooper Power™ Series Kearney™ Fuse Links manufactured by the Eaton Corporation.)

④ KS TCC curves emulate KS-Speed Cooper Power Series Kearney Fuse Links manufactured by the Eaton Corporation.

⑤ NK TCC curves emulate Cooper Power Series Kearney N-Speed (Type 200™) Fuse Links manufactured by the Eaton Corporation.

⑥ NE TCC curves emulate Cooper Power™ Edison™ (McGraw-Edison) N-Speed Fuse Links manufactured by the Eaton Corporation.

⑦ ST TCC curves emulate S&C Standard speed Positrol Fuse Links.

⑧ CO TCC curves emulate S&C Coordinating speed Positrol Fuse Links.



## TripSaver® II Cutout-Mounted Recloser

---

Table 2 lists the TCC curves of ABB's Distribution Protection Unit (DPU) 2000R Recloser Control available for the TripSaver II Cutout-Mounted Recloser.

**Table 2. TripSaver II Recloser ABB DPU 2000R Recloser Control Curve Emulations**

ABB DPU 2000R Recloser Control	
Inverse Segment	Definition
ABB INV	ABB Inverse
ABB VI	ABB Very Inverse
ABB EI	ABB Extremely Inverse
ABB STI	ABB Short-Time Inverse
ABB STEI	ABB Short-Time Extremely Inverse

Table 3 lists International Electrotechnical Commission (IEC)-defined standard TCC curves for circuit breakers, relays, and protection technologies.

**Table 3. TripSaver II Recloser IEC Standard Curves**

IEC Standard Curve	
Inverse Segment	Definition
IEC SI	IEC Standard Inverse
IEC VI	IEC Very Inverse
IEC EI	IEC Extremely Inverse

Table 4 lists Institute of Electrical and Electronics Engineers (IEEE)-defined standard TCC curves for circuit breakers, relays, and protection technologies.

**Table 4. TripSaver II Recloser IEEE Standard Curves**

IEEE Standard Curve	
Inverse Segment	Definition
IEEE EI	IEEE Extremely Inverse
IEEE MI	IEEE Moderately Inverse
IEEE VI	IEEE Very Inverse

Table 5 lists the TCCs of select Cooper Power Systems Form 4, 5, 6, and FX Recloser Controls available for the TripSaver II Cutout-Mounted Recloser.

**Table 5. TripSaver II Recloser Cooper Power Systems Form 4, 5, 6, and FX Recloser Control Curve Emulations<sup>①</sup>**

Cooper Microprocessor Form 4, 5, 6, and FX	
Inverse Segment	Definition
S&C 101	Cooper 101
S&C 102	Cooper 102
S&C 103	Cooper 103
S&C 104	Cooper 104
S&C 105	Cooper 105
S&C 106	Cooper 106
S&C 107	Cooper 107
S&C 111	Cooper 111
S&C 112	Cooper 112
S&C 113	Cooper 113
S&C 115	Cooper 115
S&C 116	Cooper 116
S&C 117	Cooper 117
S&C 118	Cooper 118
S&C 119	Cooper 119
S&C 120	Cooper 120
S&C 132	Cooper 132
S&C 133	Cooper 133
S&C 134	Cooper 134
S&C 135	Cooper 135
S&C 137	Cooper 137
S&C 138	Cooper 138
S&C 142	Cooper 142
S&C 151	Cooper 151
S&C 161	Cooper 161
S&C 162	Cooper 162
S&C 163	Cooper 163
S&C 165	Cooper 165
S&C 201	Cooper 201
S&C 202	Cooper 202

<sup>①</sup> Cooper Power Systems, LLC. reclosers and recloser controls are manufactured by the Eaton Corporation.

## TripSaver® II Cutout-Mounted Recloser

Table 6 lists the TCCs of Schweitzer Engineering Laboratories (SEL) recloser controls available for the TripSaver II Cutout-Mounted Recloser.

**Table 6. TripSaver II Recloser Schweitzer Engineering Laboratories (SEL) Recloser Control Curve Emulations**

SEL 351R/651R Recloser Control	
Inverse Segment	Definition
SEL U1	SEL U1 Moderately Inverse
SEL U2	SEL U2 Inverse
SEL U3	SEL U3 Very Inverse
SEL U4	SEL U4 Extremely Inverse
SEL U5	SEL U5 Short-Time Inverse
SEL C1	SEL C1 Standard Inverse
SEL C2	SEL C2 Very Inverse
SEL C3	SEL C3 Extremely Inverse
SEL C4	SEL C4 Long-Time Inverse
SEL C5	SEL C5 Short-Time Inverse

Tables 7 through 13 list the TCCs of Cooper Power Series (McGraw Type) Hydraulic Reclosers available for the TripSaver II Cutout-Mounted Recloser.

**Table 7. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser, Types V4L and V4E Emulations<sup>①</sup>**

Types V4L and V4E		
Inverse Segment	Definition	Coil Rating
V4L(E)-A <sup>②</sup>	Type V4L or Type V4E, A curve	15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
V4L(E)-B	Type V4L or Type V4E, B curve	15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
V4L(E)-C	Type V4L or Type V4E, C curve	15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A

<sup>①</sup> Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

<sup>②</sup> Emulates Cooper Power Series reclosers' maximum and average clearing times.

**Table 8. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type E Emulations<sup>①</sup>**

Type E		
Inverse Segment	Definition	Coil Rating
E-A <sup>②</sup>	Type E, A curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A
E-B	Type E, B curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A
E-C	Type E, C curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A
E-D	Type E, D curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A

<sup>①</sup> Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

<sup>②</sup> Emulates Cooper Power Series recloser's maximum and average clearing times.

**Table 9. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type 4E Emulations<sup>①</sup>**

Type 4E		
Inverse Segment	Definition	Coil Rating
4E-A <sup>②</sup>	Type 4E, A curve	50 A, 70 A, 100 A, 140 A, 200 A
4E-B	Type 4E, B curve	50 A, 70 A, 100 A, 140 A, 200 A
4E-C	Type 4E, C curve	50 A, 70 A, 100 A, 140 A, 200 A
4E-D	Type 4E, D curve	50 A, 70 A, 100 A, 140 A, 200 A

<sup>①</sup> Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

<sup>②</sup> Emulates Cooper Power Series recloser's maximum and average clearing times.

**Table 10. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type DV Emulations<sup>①</sup>**

Type DV		
Inverse Segment	Definition	Coil Rating
DV-A <sup>②</sup>	Type DV, A curve	100 A, 140 A
DV-B	Type DV, B curve	100 A, 140 A
DV-C	Type DV, C curve	100 A, 140 A
DV-D	Type DV, D curve	100 A, 140 A
DV-E	Type DV, E curve	100 A, 140 A

① Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

② Emulates Cooper Power Series recloser's maximum and average clearing times.

**Table 11. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type 4H, V4H Emulations<sup>①</sup>**

Type 4H, V4H		
Inverse Segment	Definition	Coil Rating
(V)4H-A <sup>②</sup>	Type 4H or Type V4H, A curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
(V)4H-B	Type 4H or Type V4H, B curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
(V)4H-C	Type 4H or Type V4H, C curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A

① Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

② Emulates Cooper Power Series recloser's maximum and average clearing times.

**Table 12. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type H Emulations<sup>①</sup>**

Type H		
Inverse Segment	Definition	Coil Rating
H-A <sup>②</sup>	Type H, A curve	5 A, 10 A, 15 A, 25 A, 35A, 50A
H-B	Type H, B curve	5 A, 10 A, 15 A, 25 A, 35A, 50A
H-C	Type H, C curve	5 A, 10 A, 15 A, 25 A, 35 A, 50 A

① Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

② Emulates Cooper Power Series recloser's maximum and average clearing times.

**Table 13. TripSaver II Recloser Cooper Power Series (McGraw Type) Hydraulic Recloser Type L Emulations<sup>①</sup>**

Type L		
Inverse Segment	Definition	Coil Rating
L-A <sup>②</sup>	Type L, A curve	25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
L-B	Type L, B curve	25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
L-C	Type L, C curve	25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A
L-D	Type L, D curve	25 A, 35 A, 50 A, 70 A, 100 A, 140 A, 200 A

① Cooper Power Series (McGraw-Edison) hydraulic reclosers are manufactured by the Eaton Corporation.

② Emulates Cooper Power Series recloser's maximum and average clearing times.