

# X-Limiter™ hinge-mounted current-limiting fuse



## General

Eaton's Cooper Power™ series X-Limiter™ hinge-mounted fuses are designed to fit Eaton's CMU Cutout.

X-Limiter hinge-mounted fuses are full-range, current-limiting fuses to be used indoors or for metal clad applications, and outdoors for crossarm mounting or substation mounting, for the following:

- Eaton CMU Cutout (CA132065EN)
- S&C Type SM<sup>®</sup>-20 (see pages 5-6)
- S&C SM<sup>®</sup>-4 (see pages 7-8)

The availability of the X-Limiter hinge-mounted fuse makes it easy to convert from expulsion fuses directly to a full-range, current-limiting fuse in the same mounting. The designs utilize standard end fittings (hinge-end and latched-end) to ensure a perfect fit in the mountings. The X-Limiter hinge-mounted fuse's electrical and time current characteristics are identical to the X-Limiter fuse described in *Catalog Section CA132050EN X-Limiter Current-Limiting Fuse*.

## Application

X-Limiter hinge-mounted fuses are rated at phase-to-ground voltage. This is an acceptable practice when:

- Loads are single-phase connected phase-to-ground.
- Three-phase transformers are Y-Y grounded or Delta Y grounded connected and secondary load is at least 50% Y connected. Alternately, three-phase transformers are separately protected on their primary side.
- Three-phase circuits are grounded "Y" connected and lines are single or three conductor shielded with intimate ground return path.
- Single-phase circuits utilize single conductor shielded cable with intimate ground return path.

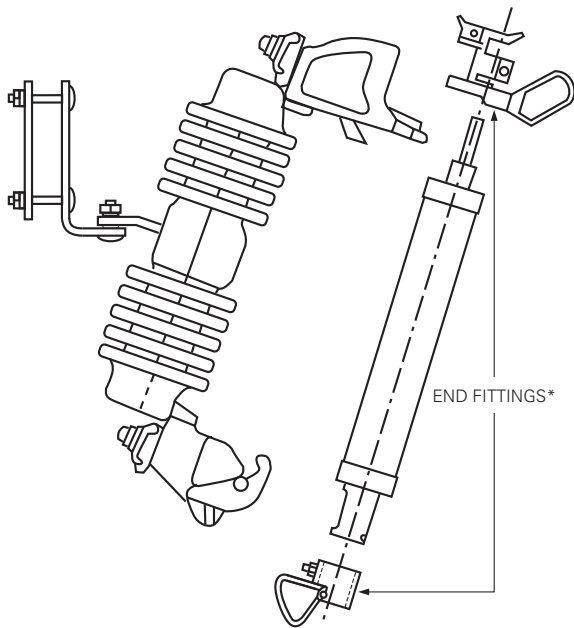
**EATON**

Powering Business Worldwide

**Table 1. Electrical Characteristics**

Fuse Type	Full-range
Maximum Interrupting Current	50,000 A* rms symmetrical

\* Except 17 kV parallel 80 and 100 A fuses are rated at 43 kA rms symmetrical



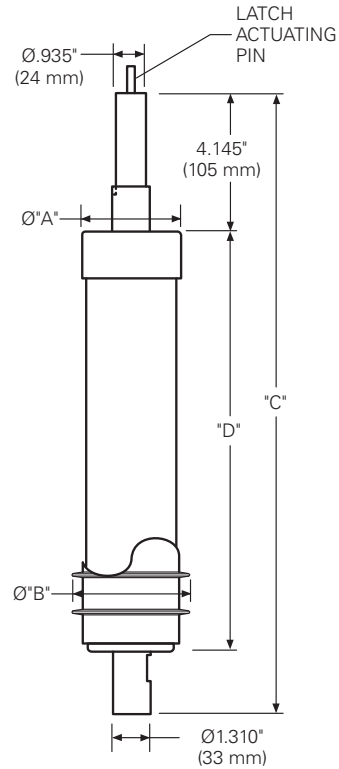
**Figure 1. X-Limiter hinge-mounted fuses with dropout indication.**

\* The X-Limiter hinge-mounted fuse utilizes the upper and lower CMU3095 end fittings.

**Production tests**

Tests are conducted in accordance with Eaton requirements.

- 100% Physical Inspection
- 100% I<sup>2</sup>t Testing
- 100% Resistance Testing



**Figure 2. X-Limiter hinge-mounted fuses with dropout indication (latch actuating pin).**

**Table 2. 8.3 kV Type X-Limiter Hinge-Mounted Fuse for Eatons 17.1kV CMU Cutout (Refer to Figures 1 and 2)**

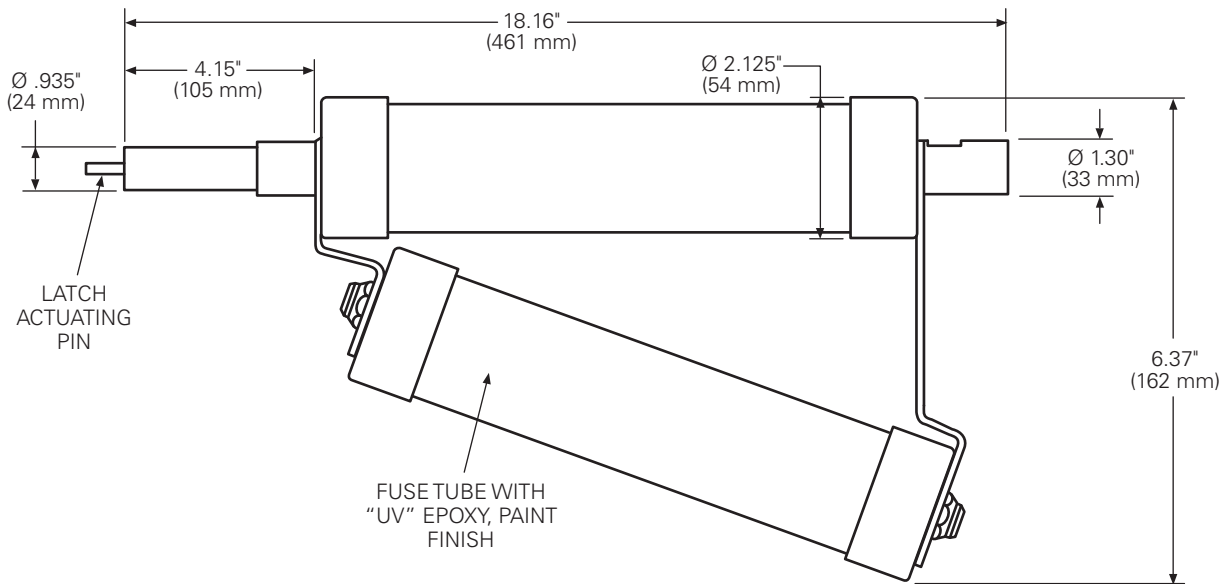
Current Rating (A)	Catalog Number* (Includes Dropout Indication)	Dimensions (Refer to Figure 2)			
		A	B	C	D
10	83F010HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
12	83F012HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
18	83F018HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
20	83F020HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
25	83F025HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
30	83F030HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
40	83F040HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
50	85F050HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
65	83F065HD1A	3.13 (80)	4.40 (112)	18.16 (461)	11.80 (300)
80	83F080HD1A	3.13 (80)	4.40 (112)	18.16 (461)	11.80 (300)
100	83F100HD1A	3.13 (80)	4.40 (112)	18.16 (461)	11.80 (300)
125	83F125HD1A	3.13 (80)	4.40 (112)	18.16 (461)	11.80 (300)
140	83F140HD1A	3.13 (80)	4.40 (112)	18.16 (461)	11.80 (300)

\* Standard fuse surface is "UV" resistant epoxy (A).

**Table 3. 15.5 kV Type X-Limiter Hinge-Mounted Fuse for Eatons 17.1kV CMU Cutout (Refer to Figures 1 and 2)**

Current Rating (A)	Catalog Number* (Includes Dropout Indication)	Dimensions (Refer to Figure 2)			
		A	B	C	D
10	15F010HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
12	15F012HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
18	15F018HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
20	15F020HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
25	15F025HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
30	15F030HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
40	15F040HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)
50	15F050HD1A	2.13 (54)	3.75 (95)	18.16 (461)	11.80 (300)

\* Standard fuse surface is "UV" resistant epoxy (A).



**Figure 3. 17.0 kV X-Limiter hinge-mounted 65-100 A fuse with dropout indication (latch actuating pin) Eatons 17.1kV CMU Cutout.**

\* The X-Limiter hinge-mounted fuse utilizes the upper and lower CMU3095 end fittings

**Table 4. 17.0 kV Type X-Limiter Hinge-Mounted Fuse for Eatons 17.1kV CMU Cutout (Refer to Figure 3)**

Current Rating (A)	Catalog Number (Includes Dropout Indication)
65	15F065HD1A
80	15F080HD1A
100	15F100HD1A

**Table 5. 15.5 kV Type X-Limiter Hinge-Mounted Fuse for Eatons 27.1 kV CMU Cutout (Refer to Figures 1 and 2)**

Current Rating (A)	Catalog Number* (Includes Dropout Indication)	Dimensions (Refer to Figure 2) Inches (mm)			
		A	B	C	D
10	15F010HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
12	15F012HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
18	15F018HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
20	15F020HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
25	15F025HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
30	15F030HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
40	15F040HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
50	15F050HD2A	2.13 (54)	3.75 (95)	21.46 (545)	15.10 (384)
65	15F065HD2A	3.13 (80)	4.40 (112)	21.46 (545)	15.10 (384)
80	15F080HD2A	3.13 (80)	4.40 (112)	21.46 (545)	15.10 (384)
100	15F100HD2A	3.13 (80)	4.40 (112)	21.46 (545)	15.10 (384)
125	15F125HD2A	3.13 (80)	4.40 (112)	21.46 (545)	15.10 (384)

\* Standard fuse surface is "UV" resistant epoxy (A).

**Table 6. 23 kV Type X-Limiter Hinge-Mounted Fuse for Eatons 27.1 kV CMU Cutout (Refer to Figures 1 and 2)**

Current Rating (A)	Catalog Number* (Includes Dropout Indication)	Dimensions (Refer to Figure 2) Inches (mm)			
		A	B	C	D
10	23F010HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
12	23F012HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
18	23F018HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
20	23F020HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
25	23F025HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
30	23F030HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
40	23F040HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)
50	23F050HD2A	2.13 (54)	3.75 (95)	21.46 (545)	14.85 (377)

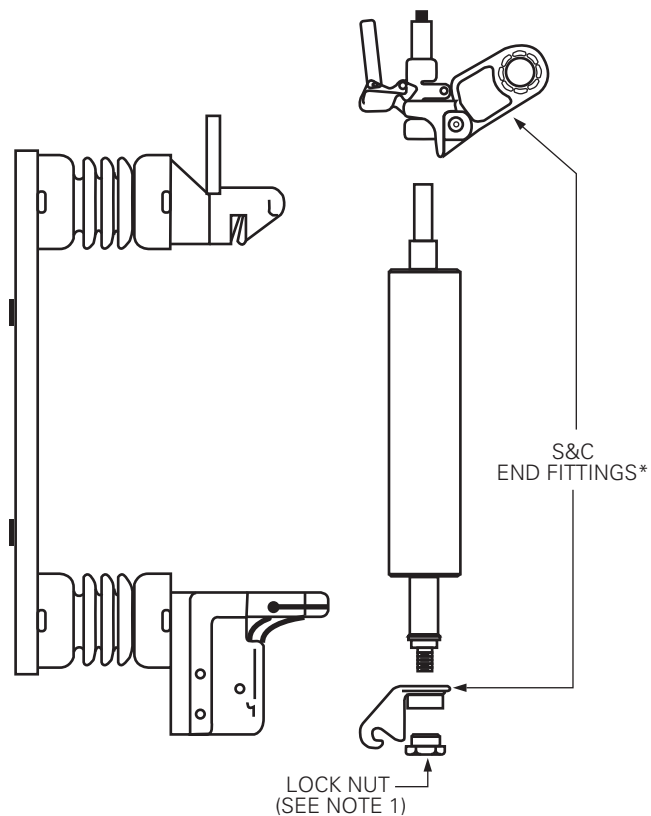
\* Standard fuse surface is "UV" resistant epoxy (A).

**Table 7. 23 kV Type X-Limiter Hinge-Mounted Fuse for S&C 34.5 kV (38.0 kV) Type SMD-20 Outdoor Mount (Refer to Figures 1 and 2)**

Current Rating (A)	Catalog Number* (Includes Dropout Indication)	Dimensions (Refer to Figure 2) Inches (mm)			
		A	B	C	D
10	23F010HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
12	23F012HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
18	23F018HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
20	23F020HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
25	23F025HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
30	23F030HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
40	23F040HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)
50	23F050HD3A	2.13 (54)	3.75 (95)	27.60 (701)	14.85 (377)

\* Standard fuse surface is "UV" resistant epoxy (A).

**Fuses for S&C Type SM-20 indoor mounts**



**Figure 4. X-Limiter hinge-mounted fuse for S&C Type SM-20 indoor mount.**

\* The X-Limiter hinge-mount fuse utilizes the upper and lower S&C end fittings. Typical S&C end fittings for the SM-20 indoor mount is S&C #5040, locknut included.

**Table 8. 8.3 kV Type X-Limiter Hinge-Mounted Fuse to fit S&C 13.8 kV (17.0 kV) Type SM-20 Indoor Mounting\***

Current Rating (A)	Catalog Number SM-20	Dimensions (Refer to Figure 5) Inches (mm)		
		A	B	C
10	83F010HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
12	83F012HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
18	83F018HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
20	83F020HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
25	83F025HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
30	83F030HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
40	83F040HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
50	83F050HC1AN	2.13 (54)	7.77 (197)	17.71 (450)
65	83F065HC1AN	3.13 (80)	10.68 (271)	17.71 (450)
80	83F080HC1AN	3.13 (80)	10.68 (271)	17.71 (450)

\*Typical S&C Mounting CAT #90412

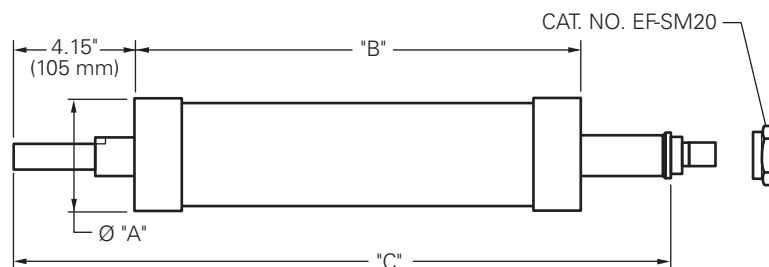
**Table 9. 15.5 kV Type X-Limiter Hinge-Mounted Fuse to fit S&C 25 kV (27 kV) Type SM-20 Indoor Mounting\***

Current Rating (A)	Catalog Number SM-20	Dimensions (Refer to Figure 5) Inches (mm)		
		A	B	C
10	15F010HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
12	15F012HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
18	15F018HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
20	15F020HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
25	15F025HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
30	15F030HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
40	15F040HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
50	15F050HC2AN	2.13 (54)	12.08 (307)	21.28 (541)
65	15F065HC2AN	3.13 (80)	14.25 (362)	21.28 (541)
80	15F080HC2AN	3.13 (80)	14.25 (362)	21.28 (541)

\*Typical S&C Mounting CAT #90413

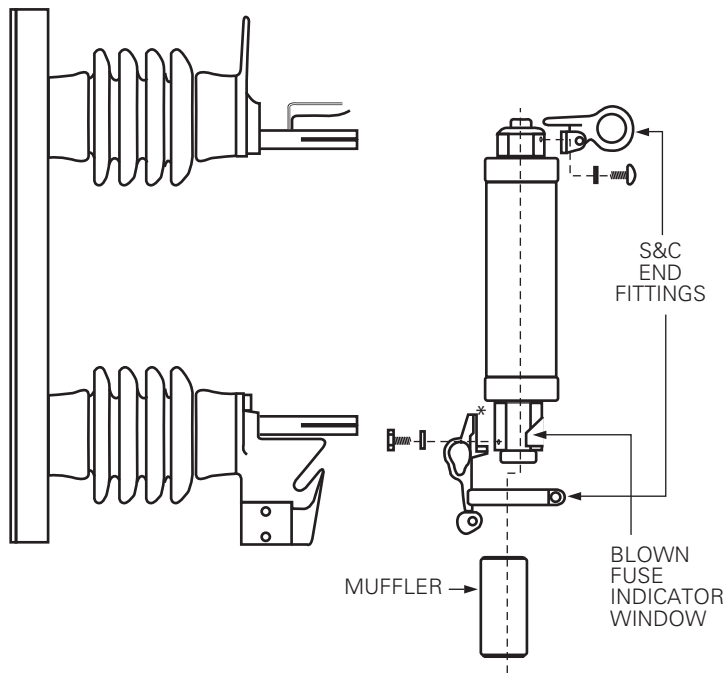
Notes for Tables 8 and 9 and Figure 4 and 5:

1. Add the letter "N" to the catalog number to have the locknut furnished with the fuse (Example: 83F010HC1N)



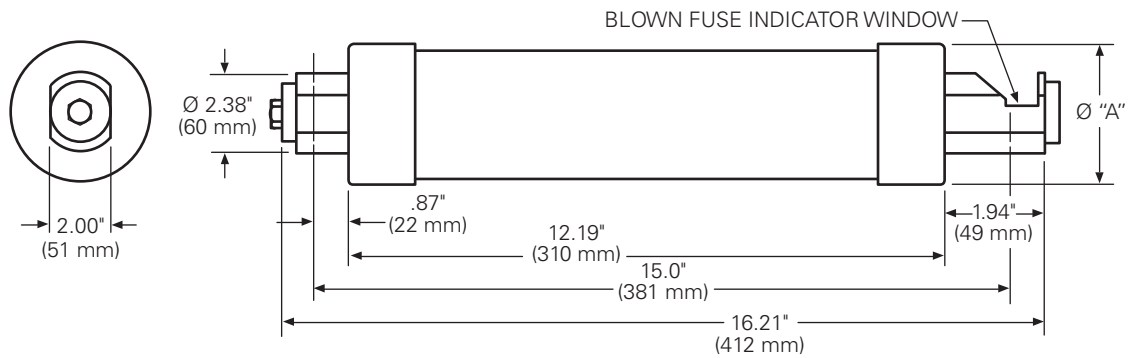
**Figure 5. X-Limiter hinge-mounted fuse for S&C Type SM-20 indoor mount, locknut included.**

**Fuses for S&C type SM-4 indoor mount**



**Figure 6. X-Limiter hinge-mounted fuse for S&C Type SM-4 indoor mount.**

\* The X-Limiter hinge-mounted fuse utilizes the upper and lower S&C end fittings. Typical S&C end fittings for the SM-4 indoor mount is S&C #87119.



**Figure 7. 15.5 kV X-Limiter hinge-mounted fuse for S&C 14.4 kV (17.0 kV) Type SM-4 indoor mount.**

**Table 10. 15.5 kV X-Limiter Hinge-Mounted Fuse for S&C 14.4 kV (17.0 kV) Type SM-4 Indoor Mount (Refer to Figure 7)**

Current Rating (A)	Catalog Number	Dimensions A inches (mm)
20	15F020VHA1A	2.13 (54)
25	15F025VHA1A	2.13 (54)
30	15F030VHA1A	2.13 (54)
40	15F040VHA1A	2.13 (54)
50	15F050VHA1A	2.13 (54)
65	15F065VHA1A	3.12 (79)
80	15F080VHA1A	3.12 (79)

Notes for Table 10:

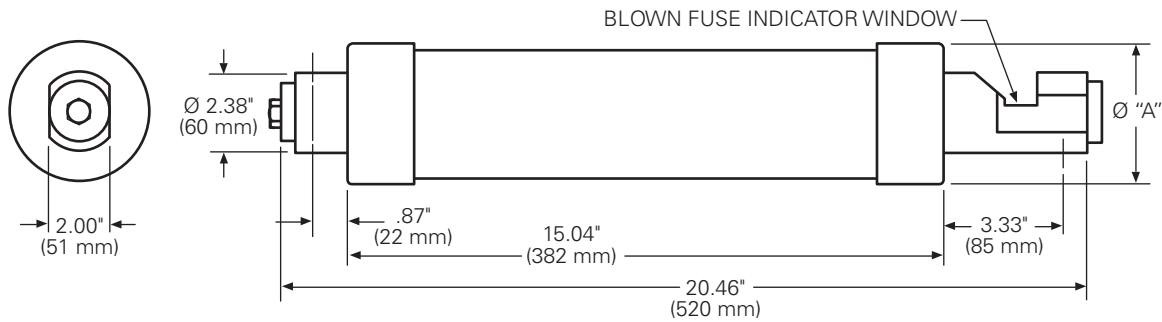
1. S&C fuse is a boric acid expulsion devices use a muller to control expulsion forces. Use of muller is not required with current-limiting fuses but may be desirable to limit opening.

**Table 11. 15.5 kV X-Limiter Hinge-Mounted Fuse for S&C 25 kV (27 kV) Type SM-4 Indoor Mount (Refer to Figure 8)**

Current Rating (A)	Catalog Number	Dimensions A inches (mm)
20	15F020VHA2A	2.13 (54)
25	15F025VHA2A	2.13 (54)
30	15F030VHA2A	2.13 (54)
40	15F040VHA2A	2.13 (54)
50	15F050VHA2A	2.13 (54)
65	15F065VHA2A	3.12 (79)
80	15F080VHA2A	3.12 (79)

Notes for Table 11:

- S&C fuse is a boric acid expulsion devices use a muffler to control expulsion forces. Use of muffler is not required with current-limiting fuses but may be desirable to limit opening.



**Figure 8. 15.5 kV X-Limiter hinge-mounted fuse for S&C 25 kV (27 kV) Type SM-4 indoor mount.**

**Eaton**  
 1000 Eaton Boulevard  
 Cleveland, OH 44122  
 United States  
 Eaton.com

**Eaton's Power Systems Division**  
 2300 Badger Drive  
 Waukesha, WI 53188  
 United States  
 Eaton.com/cooperpowerseries

© 2019 Eaton  
 All Rights Reserved  
 Printed in USA  
 Publication No. CA132054EN

Eaton is a registered trademark.  
 All other trademarks are property  
 of their respective owners.

For Eaton's Cooper Power series product  
 information call 1-877-277-4636 or visit:  
[www.eaton.com/cooperpowerseries](http://www.eaton.com/cooperpowerseries).