Fusing Equipment
Catalog Data
CA132037EN

Effective October 2015
Supersedes 240-63 December 2013

COOPER POWER SERIES

Direct-connected capacitor fuse

General

The use of Eaton's Cooper Power™ series X-Limiter™ fuse (Catalog Section 240-56) as a direct-connected capacitor fuse (particularly for indoor and/or enclosed banks), provides a full-range current-limiting fuse requiring a minimum of mounting space for a smaller low cost package. These units are bus-mounted or mounted directly on the capacitor bushing to minimize space requirements and mounting cost. The fuse incorporates a high view operation indicator to quickly locate failed capacitor units.

Applications

The direct-connected capacitor fuse is ideally suited for:

- High available fault current areas (high interrupting capacity)
- Large capacitor banks (up to 200 A available)
- Areas requiring low noise or non-expulsion reaction (noiseless operation)
- High ambient (no thermal derating required)
- Systems with sensitive protection schemes requiring minimum system disturbance
- Banks having limited electrical spacing (no flying pigtails)
- Indoor or outdoor applications

Powering Business Worldwide

Current rating selection

Individual fuse recommendations are listed in Table 2. Fusing tables are based on the following formulas:

Amperes = kVAR (unit)/kV (unit)

Fuse Amperes = Ampere x 1.5 (protective margin)

Select the next higher standard fuse rating.

The protective margin (1.5) accounts for normal overvoltage, harmonics, and capacitor tolerances as related to fuse melt I^2t. No derating is required for environmental temperatures below 100 °C.

Production tests

Tests are conducted in accordance with Eaton requirements.

- 100% Physical Inspection
- 100% I^2t Testing
- 100% Resistance Testing

Table 1. Electrical Characteristics

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

Features and detailed description

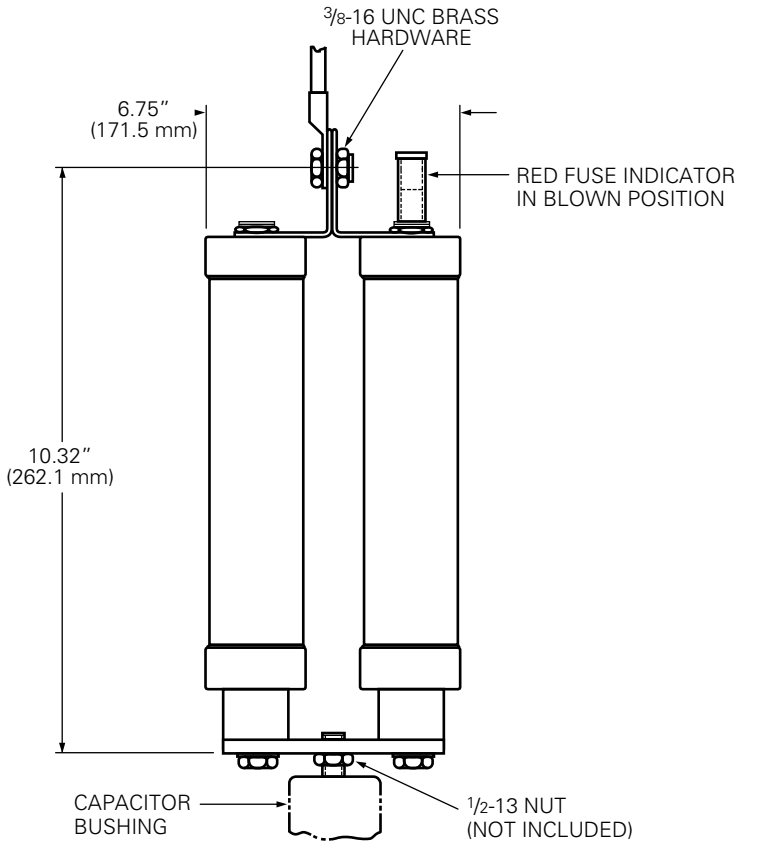
Table 2. Recommended Capacitor Fuse Current Ratings (Amperes)

1Ø Capacitor Application Recommendation

Capacitor Voltage Rating	Fuse Voltage Rating (kV)	50 kVAR	100 kVAR	150 kVAR	200 kVAR	300 kVAR	400 kVAR	500 kVAR
		Fuse Rating (A)						
2400	4.3	35	65	100	130*	200*	–	–
2770		35	65	100	130*	200*	–	–
4160		18	65	65	75	130*	150*	200*
4800	5.5					125 (4)	125 (4)	160 (4)*
4800		18	40	50	65	130*	130*	–
6640	8.3	12	25	40	50	80	100	125
7200		12	25	40	50	65	100	125
7620		12	20	30	40	65	80	100
7960		10	20	30	40	65	80	100
8320		10	18	30	40	65	80	100
9960	15.5	10	18	25	40	50	65	80
12470		–	12	18	25	40	50	65
13280		–	12	18	25	40	50	65
13800		–	12	18	25	40	50	65
14400		–	12	18	25	40	50	65
19920	23.0	–	–	12	18	25	40	40
21600		–	–	12	18	25	30	40

Notes:

1. All fuses meet "safe zone" tank rupture curves for medium voltage, Standard-Duty, Heavy-Duty, and Extreme-Duty capacitors or equal.
2. Fuse application based on 150% of capacitor current.
3. Fuses do not require derating for environment below 100°C.
4. Use 8.3 kV fuse.
5. Asterisk (*) denotes parallel fuse assembly.



Note: Dimensions given are for reference only. Do not use for construction. Contact your Eaton representative for detailed drawings.

Figure 1. BTU design capacitor fuse.

Table 3. Direct-Connected Capacitor Fuse–BTU Design

Voltage Rating (kV)	Current Rating (A)	Catalog Number BTU Design	Weight lb/(kg)
4.3	130	43F130-IVBTU	4.5 (2.0)
	150	43F150-IVBTU	
	200	43F200-IVBTU	
5.5	100	55F100-IVBTU	
	130	55F130-IVBTU	
	150	55F150-IVBTU	

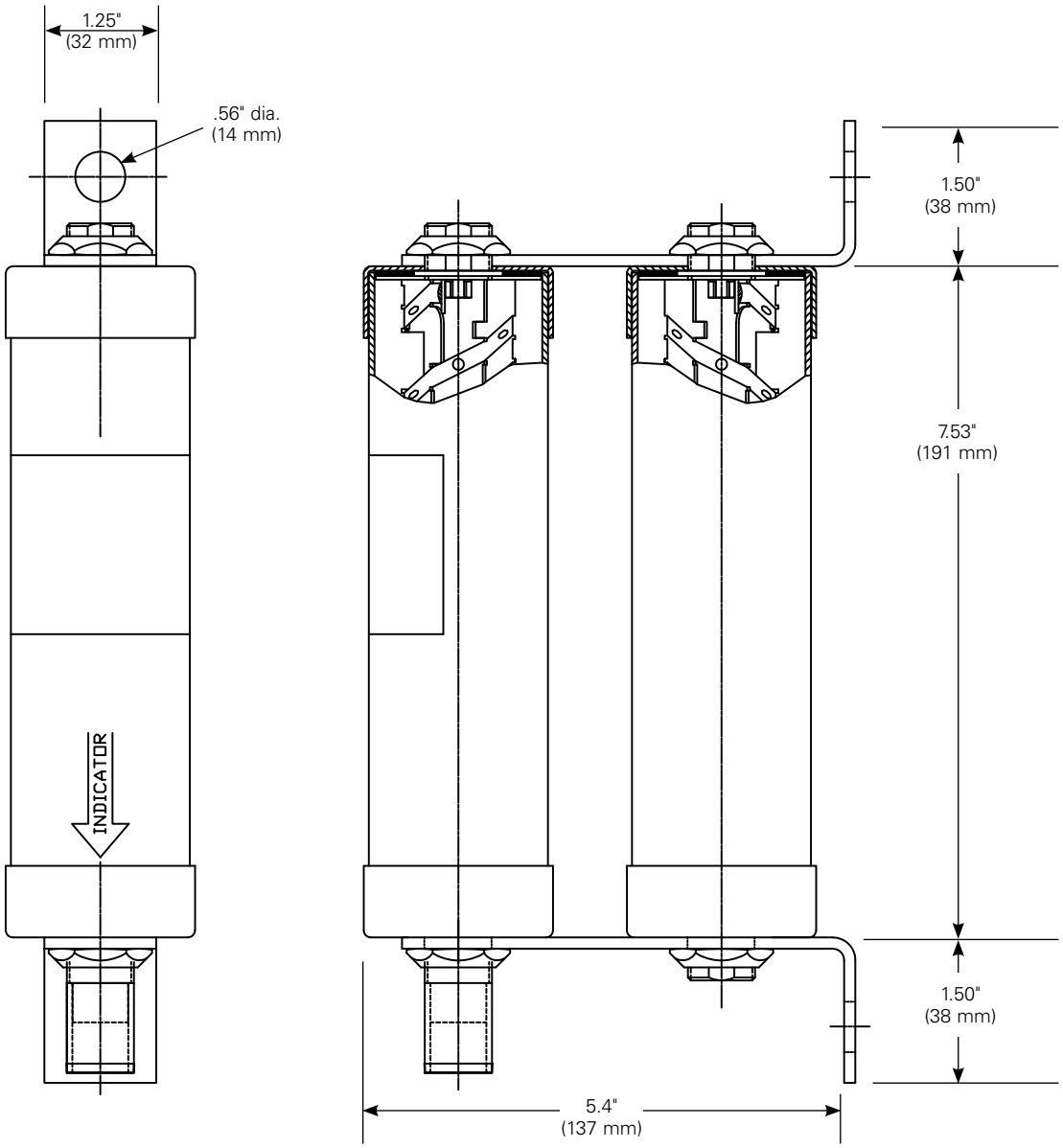


Figure 2. BUS design capacitor fuse.

Table 4. Bussmount Capacitor Fuse–BUS Design

Voltage Rating (kV)	Current Rating (A)	Catalog Number BTU Design	Weight lb/(kg)
4.3	130	43F130-IVBUS	4.5 (2.0)
	200	43F200-IVBUS	

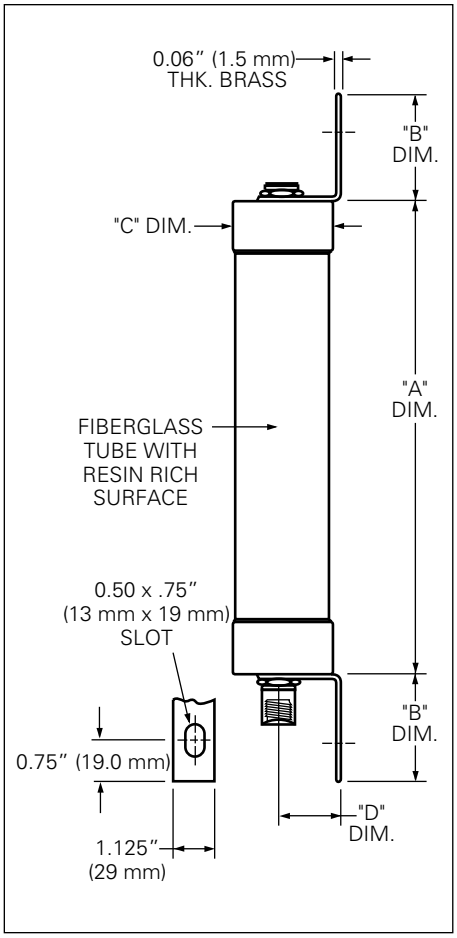


Figure 3. BT design capacitor fuse.

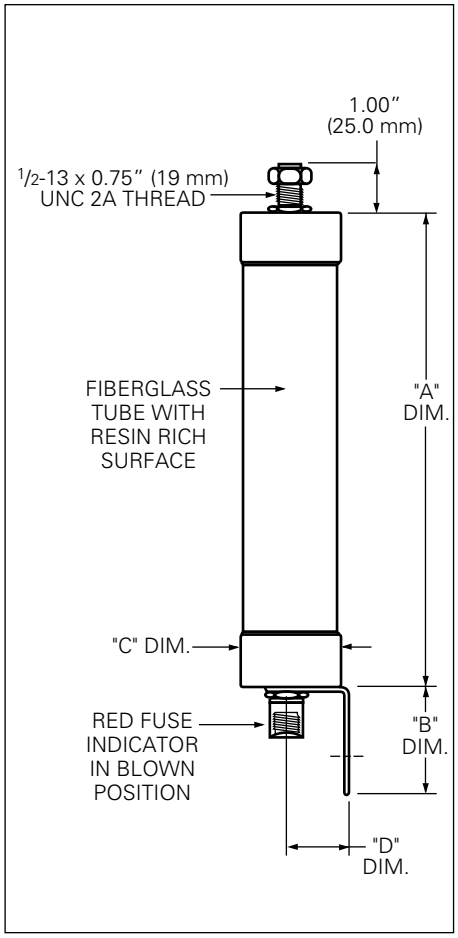


Figure 4. BTS design capacitor fuse.

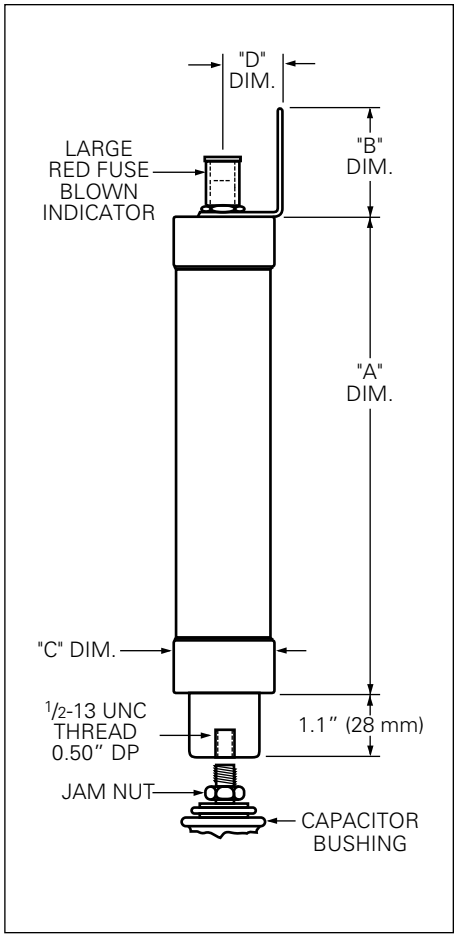


Figure 5. BTB design capacitor fuse.

Note: Dimensions given are for reference only. Do not use for construction. Contact your Eaton representative for detailed drawings.

Table 5. Direct-Connected Capacitor Fuses–BT, BTS, and BTB Designs

Voltage Rating (kV)	Current Rating (A)	Catalog Number BT Design*	Catalog Number BTS Design*	Catalog Number BTB Design*	A in (mm)	B in (mm)	C in (mm)	D in (mm)	Weight lb (kg)
4.3**	18	43F018-IVBT	43F018-IVBTS	43F018-IVBTB	7.5 (191)	2.75 (70)	2.13 (54)	1.125 (29)	2.0 (.9)
	25	43F025-IVBT	43F025-IVBTS	43F025-IVBTB					
	35	43F035-IVBT	43F035-IVBTS	43F035-IVBTB					
	45	43F045-IVBT	43F045-IVBTS	43F045-IVBTB					
	50	43F050-IVBT	43F050-IVBTS	43F050-IVBTB					
	65	43F065-IVBT	43F065-IVBTS	43F065-IVBTB					
	75	43F075-IVBT	43F075-IVBTS	43F075-IVBTB					
	100	43F100-IVBT	43F100-IVBTS	43F100-IVBTB					
5.5**	18	55F018-IVBT	55F018-IVBTS	55F018-IVBTB	7.5 (191)	2.75 (70)	2.13 (54)	1.125 (29)	2.0 (.9)
	20	55F020-IVBT	55F020-IVBTS	55F020-IVBTB					
	25	55F025-IVBT	55F025-IVBTS	55F025-IVBTB					
	30	55F030-IVBT	55F030-IVBTS	55F030-IVBTB					
	40	55F040-IVBT	55F040-IVBTS	55F040-IVBTB					
	50	55F050-IVBT	55F050-IVBTS	55F050-IVBTB					
	65	55F065-IVBT	55F065-IVBTS	55F065-IVBTB					
	75	55F075-IVBT	55F075-IVBTS	55F075-IVBTB					
8.3	10	83F010-IVBT	83F010-IVBTS	83F010-IVBTB	7.5 (191)	2.75 (70)	2.13 (54)	1.125 (29)	2.0 (.9)
	12	83F012-IVBT	83F012-IVBTS	83F012-IVBTB					
	18	83F018-IVBT	83F018-IVBTS	83F018-IVBTB					
	20	83F020-IVBT	83F020-IVBTS	83F020-IVBTB					
	25	83F025-IVBT	83F025-IVBTS	83F025-IVBTB					
	30	83F030-IVBT	83F030-IVBTS	83F030-IVBTB					
	40	83F040-IVBT	83F040-IVBTS	83F040-IVBTB					
	50	83F050-IVBT	83F050-IVBTS	83F050-IVBTB	11.80 (300)	1.83 (47)	3.16 (80)	1.75 (45)	5.5 (2.5)
	65	83F065-IVBT	83F065-IVBTS	83F065-IVBTB					
	80	83F080-IVBT	83F080-IVBTS	83F080-IVBTB					
	100	83F100-IVBT	83F100-IVBTS	83F100-IVBTB					
	125	83F125-IVBT	83F125-IVBTS	83F125-IVBTB					
	140	83F140-IVBT	83F140-IVBTS	83F140-IVBTB					
15.5	10	155F010-IVBT	155F010-IVBTS	155F010-IVBTB	11.80 (300)	2.75 (70)	2.13 (54)	1.125 (29)	2.0 (.9)
	12	155F012-IVBT	155F012-IVBTS	155F012-IVBTB					
	18	155F018-IVBT	155F018-IVBTS	155F018-IVBTB					
	20	155F020-IVBT	155F020-IVBTS	155F020-IVBTB					
	25	155F025-IVBT	155F025-IVBTS	155F025-IVBTB					
	30	155F030-IVBT	155F030-IVBTS	155F030-IVBTB					
	40	155F040-IVBT	155F040-IVBTS	155F040-IVBTB					
	50	155F050-IVBT	155F050-IVBTS	155F050-IVBTB	14.60 (371)	1.83 (47)	3.16 (80)	1.75 (45)	8.0 (3.6)
	65	155F065-IVBT	155F065-IVBTS	155F065-IVBTB					
	80	155F080-IVBT	155F080-IVBTS	155F080-IVBTB					
	100	155F100-IVBT	155F100-IVBTS	155F100-IVBTB					
	125	155F125-IVBT	155F125-IVBTS	155F125-IVBTB					
23	10	23F010-IVBT	23F010-IVBTS	23F010-IVBTB	14.64 (372)	2.75 (70)	2.13 (54)	1.125 (29)	4.0 (1.8)
	12	23F012-IVBT	23F012-IVBTS	23F012-IVBTB					
	18	23F018-IVBT	23F018-IVBTS	23F018-IVBTB					
	20	23F020-IVBT	23F020-IVBTS	23F020-IVBTB					
	25	23F025-IVBT	23F025-IVBTS	23F025-IVBTB					
	30	23F030-IVBT	23F030-IVBTS	23F030-IVBTB					
	40	23F040-IVBT	23F040-IVBTS	23F040-IVBTB					
	50	23F050-IVBT	23F050-IVBTS	23F050-IVBTB					

* To specify a fuse for outdoor use, change the "I" to an "O". Example: 155F050-OVBT. (Only valid for 8.3 kV, 15.5 kV, and 23 kV rated fuses.)

** For higher ratings (parallel fuses) see Tables 3 and 4.

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