Fusing Equipment
Catalog Data
CA132047EN

Effective February 2019
Supersedes November 2015

COOPER POWER SERIES

NXC™ full-range current-limiting capacitor fuse

General

Greater latitude in capacitor bank design is now possible with Eaton's Cooper Power series NXC™ outdoor, current-limiting capacitor fuse. It allows safe fusing of at least 50,000 joules of parallel connected energy. Available in voltage ratings of 8.3, 15.5, and 23 kV the NXC fuse offers positive leader wire ejection for reliable interruption and elimination of electrical stress to circuit apparatus. The top end cap has provision for convenient bus bar mounting.

Fast, full-range clearing capability, inherent advantage of the NX™ current-limiting fuse line, allows the NXC fuse to perform effectively under both high and low fault currents.

Typical applications include use in high fault areas, fusing of individual capacitors, capacitive circuits requiring positive isolation, circuits where let-through current must be restricted, areas where burning debris cannot be tolerated and where high noise levels are undesirable.

The NXC fuse makes use of an automatic leader wire ejection feature for positive interruption and capacitor isolation. Another feature is the visible indication of a sensed fault. Both clearing and indicating operations take place without the functioning of hinges, flippers or other mechanical devices. See Table 1 for fusing recommendations.

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Application

Table 1 lists the individual fusing recommendations for applying NXC fuses in outdoor capacitor banks.
The fusing tables are based on the following:

$$I_{Capacitor} = \frac{kVar\ unit}{kV\ unit}$$

$I_{Fuse} = I_{Capacitor}$ X 1.35 Protective Margin

The protective margin accounts for normal overvoltages, harmonics, capacitor tolerances and a 25°C ambient.

Temperature derating

Temperature derating is required when NXC fuses are applied in ambient conditions exceeding 25°C. The derating formula is:

$A_T = A_{25}$ [1 - .0065 (T-25)]

A_T = Amp rating of fuse at "T"°C

A_{25} = Amp rating of fuse at 25°C

T = Temperature of maximum ambient the fuse will be subjected to at any time.

Example:

Select proper fuse rating for a 7200 V 200 kVar capacitor to be used in an enclosed bank with maximum ambient of 55°C.

$$I_{Capacitor} - \frac{kVar\ unit}{kV\ unit} = \frac{200}{7.2} = 27.7\ A$$

$I_{Fuse} = I_{Capacitor}$ X 1.35=27.7 X 1.35 = 37.39 A

Choose 40 A NXC and derate for 55°C ambient

$A_T = A_{25}$ [1-.0065 (T-25)]

A_{55} = 40 [1-.0065 (55-25)]

A_{55} = 40 [.805]

A_{55} = 32.2

32.2 is less than required 37.39. The fuse is not adequate.

Choose 45 A NXC and derate for 55°C ambient.

A_{55} = 45 [.805] = 36.23

36.23 is less than required 37.39. The 45 A NXC fuse is not adequate.

Choose 65 A NXC fuse and derate for 55°C ambient.

A_{55} = 65 {.805} = 52.32

52.32 exceeds 37.38 amps. 65 A NXC fuse is proper choice.

Table 1. Fusing recommendations

Capacitor or Unit Voltage rating	Fuse voltage rating (kV)	50 kVar*	100 kVar	150 kVar	200 kVar	300 kVar	400 kVar
2400	8.3	30	65	90**	–	–	–
2770	8.3	25	65	80**	–	–	–
4160	8.3	18	40	65	65	–	–
4800	8.3	18	30	45	65	–	–
6640	8.3	18	25	40	45	65	90**
7200	8.3	18	25	30	40	65	80**
7620	8.3	18	18	30	40	65	80**
7960	8.3	18	18	30	40	65	80**
8320	15.5	10	18	25	35	50**	70**
9960	15.5	10	18	25	30	50**	60**
12470	15.5	–	12	18	25	35	50**
13280	15.5	–	12	18	25	35	50**
13800	15.5	–	10	18	25	30	50**
14400	15.5	–	10	18	25	30	50**
19920	23.0	–	12	12	18	25	36**
21600	23.0	–	12	12	18	25	25

* For 50 kVar capacitors, it is difficult to choose reasonably sized fuses which will withstand the I^2t outrush. This occurs due to the fact that I^2t withstand goes down exponentially with fuse link rating rather than linearly. Consequently, the 50 kVar capacitor fusing recommendations only cover those units with voltages up to 9960 V.

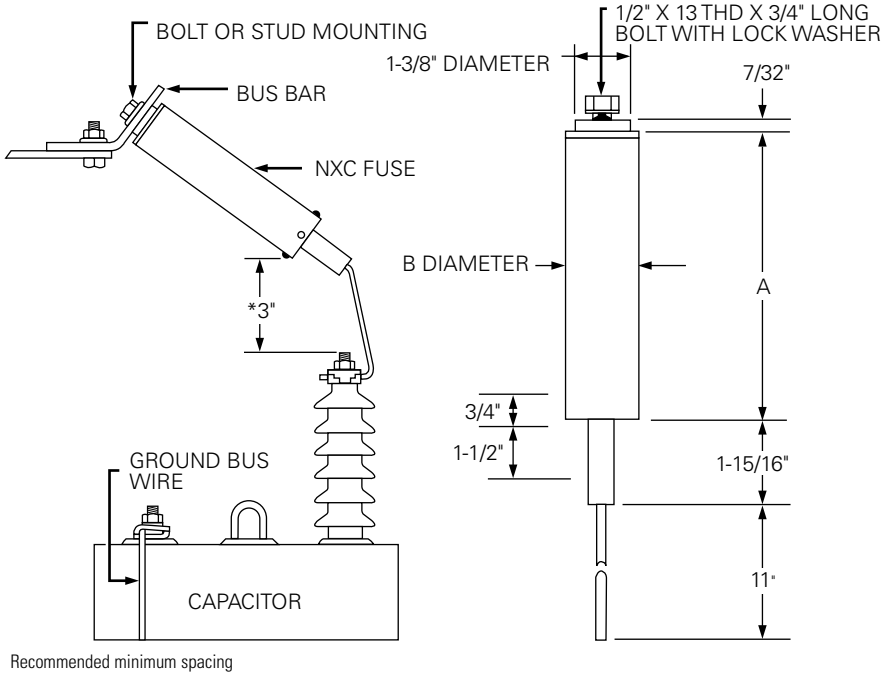
** Indicates 2 fuses in parallel.

Table 2. Ratings and ordering information

Voltage (kV)	Continuous current (amps)	Interrupting symmetrical (amps)	Catalog number	Dimensions (in.)		Approx weight (lb)
				A	B	
8.3	10	50,000	FA5J10	8	2-1/8	2.5
	18		FA5J18	8	2-1/8	2.5
	25		FA5J25	8	2-1/8	2.5
	30		FA5J30	8	2-1/8	2.5
	40		FA5J40	8	2-1/8	2.5
	45		FA5J45*	8	2-1/8	2.5
	65		FA5J65*	9-3/16	3-9/16	7.8
15.5	10	50,000	FA6J10	12-11/32	2-1/8	3.4
	12		FA6J12	12-11/32	2-1/8	3.4
	18		FA6J18	12-11/32	2-1/8	3.4
	25		FA6J25	12-11/32	2-1/8	3.4
	30		FA6J30	12-11/32	2-1/8	3.4
	35		FA6J35*	13-11/32	2-1/8	4.3
	43		FA6J43*	13-11/32	2-1/8	4.3
23	12	50,000	FA7J12*	15-5/32	2-1/8	3.9
	18		FA7J18	15-5/32	2-1/8	3.9
	25		FA7J25*	18-3/16	2-1/8	5.3

* Contact your Eaton representative for information on pricing and availability.

Dimensions



* Recommended minimum spacing

Figure 1. Typical installation.

Additional information

Eaton offers a variety of additional literature and reference material on NXC fuses to assist in application and coordination.

TD132005EN I^2t Testing of Current-Limiting Fuses

R240-91-37 8.3 kV NXC Capacitor Fuse TCC Curves

R240-91-38 15.5 kV NXC Capacitor Fuse TCC Curves

R240-91-39 23 kV NXC Capacitor Fuse TCC Curves

MN132014EN NXC Current-Limiting Fuse Installation Instructions

Contact your Eaton representative for further information or other applications.

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For Eaton's Cooper Power series NXC capacitor fuse product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.