The enclosure and insulating-barrier dimensions listed in this document have been determined using the *minimum* clearances (shown in Note 5 on page 3) recommended to facilitate fuse handling and to maintain the inherent electrical ratings of S&C Type SM-20, SM-4Z, SM-5S, and SM-5SS Power Fuses when installed in metal enclosures. These clearances are sufficient provided normal consideration has been given to avoidance of point-gap configurations. When installing bus or cable connections and cable terminations, these clearances should be observed.

Note: Lesser clearances than those shown are acceptable only if substantiated by impulse testing of the complete assembly consisting of enclosure, power fuses, barriers, bus, connectors, terminators, etc.

In addition, enclosure dimensions should be sufficient–or barriers should be provided to ensure a minimum clearance between the metal parts of a hookstick and ground during opening and closing operations as follows:

- 1 inch (25 mm) for system voltages through 15.5 kV
- 2 inches (51 mm) for system voltages greater than 15.5 kV but not exceeding 27 kV
- 3 inches (76 mm) for system voltages greater than 27 kV but not exceeding 38 kV

For enclosures where S&C Power Fuses are to be combined with interrupter switches in a "switch-overfuse" configuration, recommended minimum clearances described in Note 5 on page 3 should be observed for both the switch and fuses when determining the enclosure dimensions. For enclosures where S&C Power Fuses are to be combined in a "fuse-overswitch" configuration, consult the nearest S&C Sales Office.

Enclosures containing S&C Power Fuses should be key or mechanically interlocked with a source-side interrupter switch to guard against each of the following:

- Opening the enclosure door with the switch closed and the fuse carrying load current
- Closing the interrupter switch with the fuse enclosure door open (There are no requirements for special reinforcement of enclosures, provided the enclosures reflect adequate consideration of environmental factors, such as controlled access, tamper resistance, and sealing against ingress of rodents, insects, and weeds.)

★ Not applicable to submersible enclosures.

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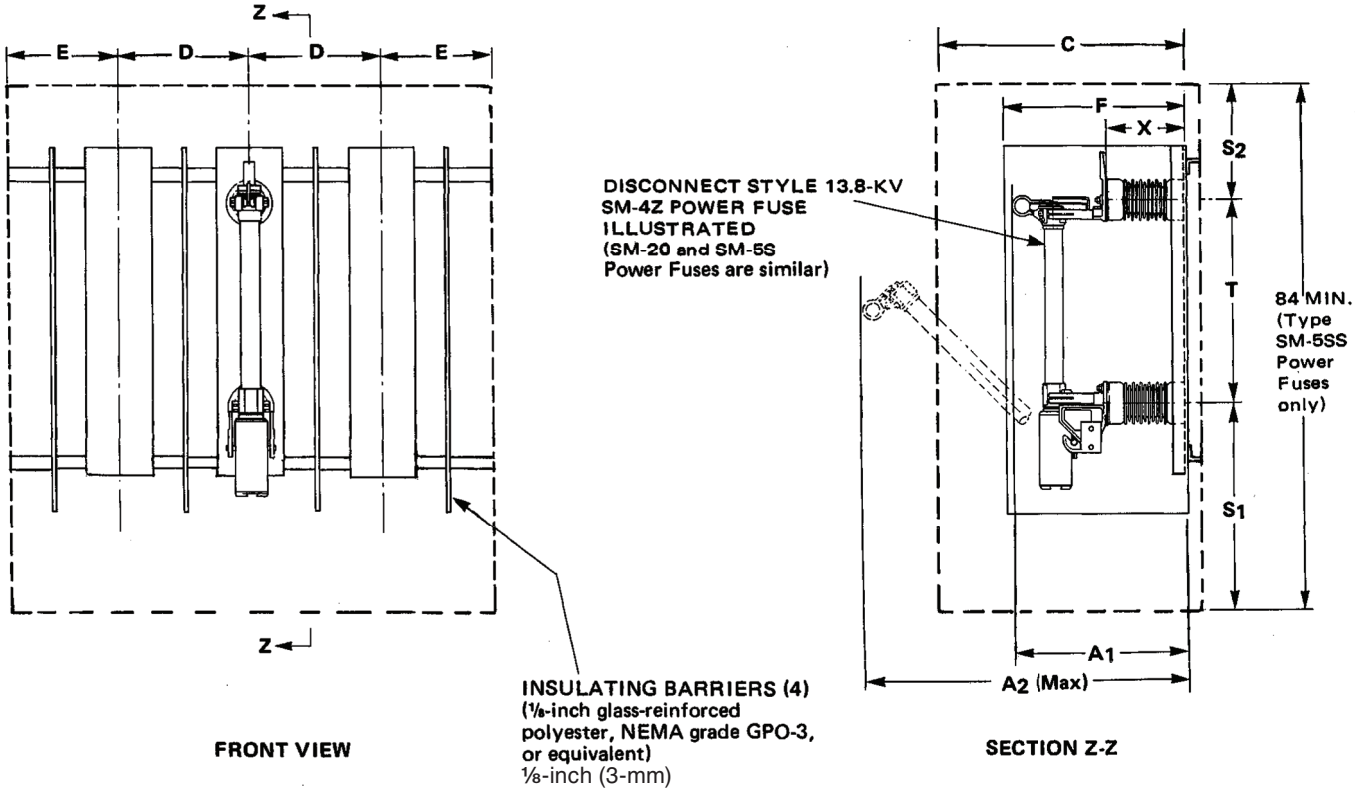
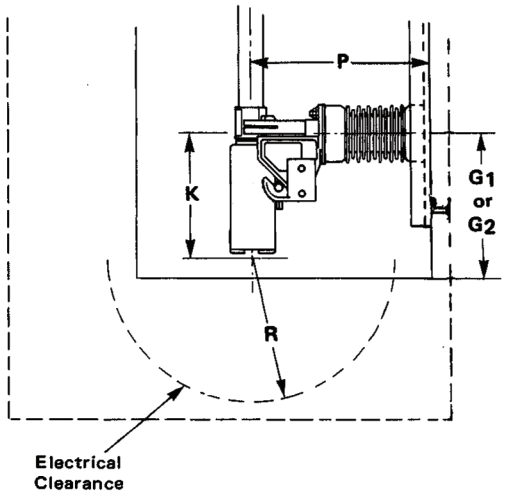
See Tables 2 and 3 on pages 4 and 5 for the dimensions noted in letters in the diagrams.

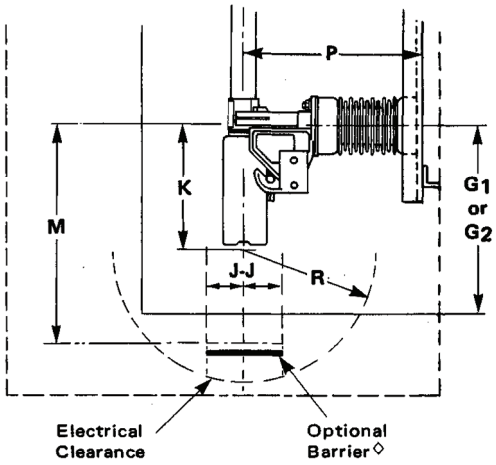


FRONT VIEW

SECTION Z-Z



DETAIL OF BARRIER AND CLEARANCE REQUIREMENTS FOR TYPE SM-20 AND SM-4Z POWER FUSES



DETAIL OF BARRIER AND CLEARANCE REQUIREMENTS FOR TYPE SM-5S AND SM-5SS POWER FUSES

● Surge arresters, potheads, terminators, or bus insulators may be located beneath cylindrical space "J-J" and within electrical clearance (radius "R") only when an insulating barrier is installed at or below the position indicated by dimension "M" (SM-5S only).

Notes

1. The enclosure and insulating-barrier dimensions listed in Tables 2 and 3 on pages 4 and 5 have been determined using the minimum clearances (shown in Note 5) recommended to facilitate fuse handling and to maintain the inherent electrical ratings of S&C Type SM-20, SM-4Z, SM-5S, and SM-5SS Power Fuses when installed in metal enclosures. These clearances are sufficient provided normal consideration has been given to avoidance of point-gap configurations. When installing bus or cable connections and cable terminations, these clearances should be observed. In addition, enclosure dimensions should be sufficient, or barriers should be provided, to ensure a minimum clearance between the metal parts of a hookstick and ground during opening and closing operations as follows:
   - 1 inch (25 mm) for system voltages through 15.5 kV
   - 2 inches (51 mm) for system voltages greater than 15.5 kV but not exceeding 27 kV
   - 3 inches (76 mm) for system voltages greater than 27 kV but not exceeding 38 kV
2. For enclosures where S&C Power Fuses are to be combined with interrupter switches in a "switch-over-fuse" configuration, recommended minimum clearances set forth in Note 5 should be observed for both the switch and fuses when determining the enclosure dimensions.
3. For enclosures where S&C Power Fuses are to be combined with interrupter switches in a "fuse-over-switch" configuration, consult the nearest S&C Sales Office.
4. Enclosures containing S&C Power Fuses should be key or mechanically interlocked with a source-side interrupter switch to guard against each of the following:
   - Opening the enclosure door with the switch closed and the fuse carrying load current
   - Closing the interrupter switch if the enclosure door is open
5. If the complete assembly consisting of enclosure, power fuses, barriers, bus, connectors, terminators, etc., is not impulse-tested to verify it will fully meet its assigned BIL rating, the assembly should be checked to ensure the minimum recommended clearances have been met or exceeded. See Table 1. Greater clearances may be required if corners, edges, or small-radius points exist.

Table 1. Recommended Clearances

Fuse Rating, kV, BIL	Minimum Recommended Clearances, Inches (mm)		
	Metal-to-Metal① (phase-to-phase or phase-to-ground)	Energized Part-to-Barrier	Barrier-to-Ground (In vicinity of energized parts)
60	3½ (89)	½ (13)	½ (13)
95	6 (152)	1 (25)	1 (25)
125	8½ (216)	2¼ (57)	2¼ (57)
150	10½ (267)	3¼ (83)	3¼ (83)
200	15 (381)	4¾ (121)	4¾ (121)

① Where insulating barriers are provided, metal-to-metal distances should be measured around the edge of the barrier.

6. Dimensions "D" and "E" provide a minimum of 2 inches (51 mm) adjacent to the hinge in which to make cable or bus connections and still maintain the recommended clearance to barriers.
7. Clearance from holder (or fuse unit) in the closed position to any grounded part should not be less than the minimum recommended metal-to-metal clearances listed in Note 5.

Table 2. Enclosure and Insulating Barrier Dimensions–Disconnect Style Fuses

Fuse Type	Rating				Minimum Dimensions, Inches (mm)															
	Amps, Max	kV			$A_1$①	$A_2$①	C②	D	E③	F	G1④	G2⑤	K	P①	S1	J⑥	M⑥	R⑦	S_2	T①	X①
		Nom	Max Des.	BIL																	
SM-20	200K or 200E	13.8	17.0	95	17¼ (438)	31½ (800)	23¼ (591)	9¼ (235)	7¼ (184)	17¼ (438)	10 (254)	10 (254)	9 (229)	12½ (318)	17 (432)	–	–	8 (203)	9½ (241)	18 (457)	7 (178)
		25	27	125	18½ (470)	34½ (876)	27 (686)	11¼ (286)	9¾ (248)	18½ (470)	11 (279)	11 (279)	9 (229)	13¾ (349)	19½ (495)	–	–	10½ (267)	12 (305)	22¼ (565)	8¼ (210)
		34.5	38	150	21 (533)	42 (1067)	31½ (800)	13¼ (337)	11¼ (286)	21 (533)	12 (305)	12 (305)	9 (229)	16¼ (413)	21½ (546)	–	–	12½ (318)	14 (356)	28¼ (718)	10¾ (273)
SM-4Z	200E	4.8	5.5	60	13¼ (337)	25½ (648)	17¼ (438)	7⅞ (200)	5⅞ (149)	13¼ (337)	9 (229)	9 (229)	9 (229)	9¾ (248)	14½ (368)	–	–	5½ (140)	8¾ (222)	12½ (318)	5¼ (133)
	200E	13.8	17.0	95	16¼ (413)	30⅞ (784)	22¼ (565)	9⅜ (238)	7⅜ (187)	16¼ (413)	10 (254)	10 (254)	9 (229)	12¼ (311)	17 (432)	–	–	8 (203)	11¼ (286)	16½ (419)	7¾ (197)
	200E	25	27	125	18¼ (464)	35¾ (908)	26¾ (679)	11⅜ (289)	9⅞ (251)	18¼ (464)	11 (279)	11 (279)	9 (229)	14¼ (362)	19½ (495)	–	–	10½ (267)	13¾ (349)	20¾ (527)	9⅝ (244)
	200E	25	27	150	22⅞ (581)	41 (1041)	33⅜ (848)	14½ (368)	11⅜ (289)	23¼ (591)	12 (305)	12 (305)	9 (229)	19⅜ (492)	21½ (546)	–	–	12½ (318)	15¾ (400)	20¾ (527)	14¼ (362)
	200E	34.5	38	200	24¾ (629)	48 (1219)	39¾ (1010)	17⅜ (441)	14⅜ (365)	25⅛ (638)	14 (356)	14 (356)	9 (229)	20½ (521)	26 (660)	–	–	17 (432)	20¼ (514)	28 (711)	6 (152)
SM-5S	400E	4.8	5.5	60	15¼ (387)	29¼ (743)	18¾ (476)	8⅞ (225)	6⅜ (162)	15 (381)	14 (356)	16 (406)	12● (305)	10¼ (260)	18● (457)	4 (102)	19 (483)	6 (152)	8¾ (222)	12½ (318)	5¼ (133)
	720E	4.8	5.5	60	15½ (394)	29⅝ (752)	19 (483)	12½ (318)	8⅞ (225)	15 (381)	14 (356)	16 (406)	12● (305)	10½ (267)	18● (457)	4 (102)	19 (483)	6 (152)	8¾ (222)	12½ (318)	5¼ (133)
	400E	13.8	17.0	95	17¾ (451)	34½ (876)	23¾ (603)	10⅜ (264)	7⅞ (200)	21 (533)	15 (381)	18 (457)	12● (305)	12¾ (324)	20½● (521)	4 (102)	19 (483)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)
	720E	13.8	17.0	95	18 (457)	35⅜ (899)	24 (610)	14⅜ (365)	8⅞ (225)	21 (533)	15 (381)	18 (457)	12● (305)	13 (330)	20½● (521)	4 (102)	19 (483)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)
	300E	25	27	150	24¼ (616)	44⅛ (1121)	34¾ (883)	14½ (368)	11⅜ (289)	28⅜ (721)	15 (381)	20 (508)	12● (305)	19¼ (489)	23● (584)	4 (102)	19 (483)	11 (279)	15¾ (400)	20¾ (527)	14¼ (362)
	300E	34.5	38	200	26⅛ (664)	50⅞ (1292)	41⅞ (1064)	17⅜ (441)	14⅜ (365)	30⅜ (772)	24 (610)	–	12● (305)	21 (533)	29½● (749)	4 (102)	19 (483)	17½ (445)	20¼ (514)	28 (711)	16 (406)
SM-5SS	400E	13.8	15.5	95	–	–	–	–	–	–	–	–	–	–	–	5 (127)	25 (635)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)

① Where complete S&C mountings are furnished, these dimensions are inherent to the fuses and are thus invariable. Where insulators or bases of greater height are used (as may be the case where live parts are furnished separately), these dimensions, as well as dimensions "C" and "F," must be adjusted accordingly.

② This dimension provides full BIL clearance from the fuse unit or holder to the enclosure door or panel, with the fuse unit or holder in the **Closed** position only.

③ Add 1 inch (25 mm) to dimensions "D" and "E" if fuse mounting is equipped with the optional S&C ground stud.

④ Applies when incoming (source- or line-side) connection is made at upper end of fuse. **Note**: Type SM-5S Power Fuses rated 34.5 kV and Type SM-5SS Power Fuses rated 13.8 kV must have an incoming (source- or line-side) connection made at the upper end of the fuse.

⑤ Applies when incoming (source- or line-side) connection is made at lower end of fuse.

⑥ The cylindrical space described by dimensions "J" and "M" must contain no switchgear components or terminators (SM-5S and SM-5SS only).

⑦ Minimum distance to nearest switchgear component other than bus or cable of same phase.

● Add 3 inches (76 mm) to the dimension shown when an incoming (source- or line-side) connection is made at the lower end of the fuse.

Table 3. Enclosure and Insulating Barrier Dimensions–Non-Disconnect Style

Fuse Type	Rating				Minimum Dimensions, Inches (mm)																
	Amps, Max	kV			A1①	C②	D	E③	F	G1④	G2⑤	K	P①	S1	J⑥	M⑥	R⑦	S_2	T①	X①
		Nom	Max Des.	BIL																
SM-20	200K or 200E	13.8	17	95	–	–	–	–	–	–	–	–	–	–	–	–	8 (203)	9½ (241)	18 (457)	7 (178)
		25	27	125	–	–	–	–	–	–	–	–	–	–	–	–	10½ (267)	12 (305)	22¼ (565)	8¼ (210)
		34.5	38	150	–	–	–	–	–	–	–	–	–	–	–	–	12½ (318)	14 (356)	28¼ (718)	10¾ (273)
SM-4Z	200E	4.8	5.5	60	13 (330)	16½ (419)	7⅞ (200)	5⅞ (149)	13¼ (337)	10 (254)	10 (254)	9 (229)	8½ (216)	14½ (368)	–	–	5½ (140)	8¾ (222)	12½ (318)	5¼ (133)
	200E	13.8	17	95	15½ (394)	21½ (546)	9⅜ (238)	7⅜ (187)	16¼ (413)	11 (279)	11 (279)	9 (229)	11 (279)	17 (432)	–	–	8 (203)	11¼ (286)	16½ (419)	7¾ (197)
	200E	25	27	125	17⅜ (441)	25⅞ (657)	11⅜ (289)	9⅞ (251)	18¼ (464)	12 (305)	12 (305)	9 (229)	12⅞ (327)	19½ (495)	–	–	10½ (267)	13¾ (349)	20¾ (527)	9⅝ (244)
	200E	25	27	150	22 (559)	32½ (826)	14½ (368)	11⅜ (289)	23¼ (591)	13 (330)	13 (330)	9 (229)	17⅝ (448)	21½ (546)	–	–	12½ (318)	15¾ (400)	20¾ (527)	14¼ (362)
	200E	34.5	38	200	23¾ (603)	38¾ (984)	17⅜ (441)	14⅜ (365)	25⅛ (638)	15 (381)	15 (381)	9 (229)	19⅜ (492)	26 (660)	–	–	17 (432)	20¼ (514)	28 (711)	6 (152)
SM-5S	400E	4.8	5.5	60	15½ (394)	19 (483)	8⅞ (225)	6⅜ (162)	15 (381)	14 (356)	16 (406)	13● (330)	10¼ (260)	19● (483)	4 (102)	19 (483)	6 (152)	8¾ (222)	12½ (318)	5¼ (133)
	720E	4.8	5.5	60	–	–	–	–	–	–	–	–	–	–	4 (102)	19 (483)	6 (152)	8¾ (222)	12½ (318)	5¼ (133)
	400E	13.8	17	95	18 (457)	24 (610)	10⅜ (264)	7⅞ (200)	21 (533)	15 (381)	18 (457)	13● (330)	12¾ (324)	21½● (546)	4 (102)	19 (483)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)
	720E	13.8	17	95	–	–	–	–	–	–	–	–	–	–	4 (102)	19 (483)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)
	300E	25	27	150	24⅝ (625)	35⅛ (892)	14½ (368)	11⅜ (289)	28⅜ (721)	15 (381)	20 (508)	13● (330)	19 (483)	24● (610)	4 (102)	19 (483)	11 (279)	15¾ (400)	20¾ (527)	14¼ (362)
	300E	34.5	38	200	26¼ (667)	41¼ (1048)	17⅜ (441)	14⅜ (365)	30⅜ (772)	24 (610)	–	13● (330)	20⅞ (530)	30½● (775)	4 (102)	19 (483)	17½ (445)	20¼ (514)	28 (711)	16 (406)
SM-5SS	400E	13.8	15.5	95	18 (457)	24 (610)	10⅜ (264)	7⅞ (200)	21 (533)	18 (457)	–	14½ (368)	12¾ (324)	23 (584)	5 (127)	25 (635)	8½ (216)	11¼ (286)	16½ (419)	7¾ (197)

① Where complete S&C mountings are furnished, these dimensions are inherent to the fuses and are thus invariable. Where insulators or bases of greater height are used (as may be the case where live parts are furnished separately), these dimensions, as well as dimensions "C" and "F," must be adjusted accordingly.

② This dimension provides full BIL clearance from the fuse unit or holder to the enclosure door or panel-with the fuse unit or holder in the closed position only.

③ Add 1 inch (25 mm) to dimensions "D" and "E" if fuse mounting is equipped with the optional S&C ground stud.

④ Applies when incoming (source- or line-side) connection is made at upper end of fuse. **Note**: Type SM-5S Power Fuses rated 34.5 kV and Type SM-5SS Power Fuses rated 13.8 kV must have an incoming (source- or line-side) connection made at the upper end of the fuse.

⑤ Applies when incoming (source- or line-side) connection is made at lower end of fuse.

⑥ The cylindrical space described by dimensions "J" and "M" must contain no switchgear components or terminators (SM-5S and SM-5SS only).

⑦ Minimum distance to nearest switchgear component other than bus or cable of same phase.

● Add 3 inches (76 mm) to the dimension shown when an incoming (source- or line-side) connection is made at the lower end of the fuse.