Westinghouse Electric Corporation
Distribution and Protection Business Unit
Commercial Division
Sumter, SC 29150

November, 1984
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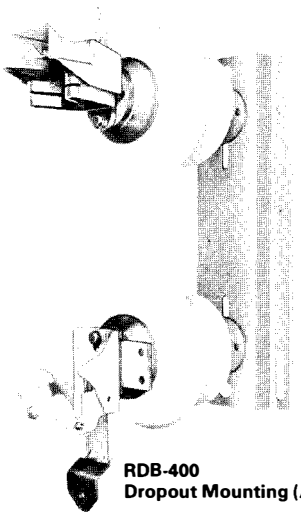
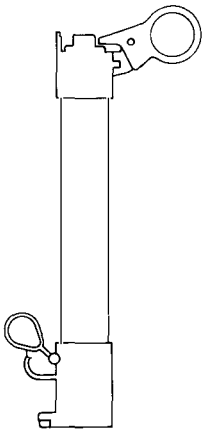
Outdoor Dropout Type
200-400-800
4.8 to 34.5 kV

Type RDB High Voltage Power Fuses and Fuse Mountings



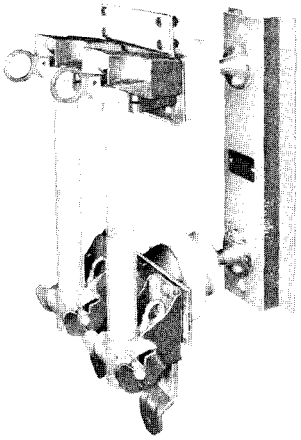
RDB-400
Dropout Mounting (A)



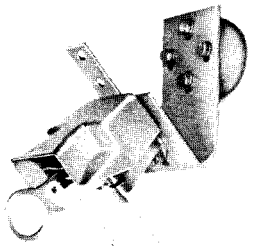
RDB-400
Outdoor Fuse Holder (B)

RDB-400
Fuse Refill (C)

Vertical Mounting

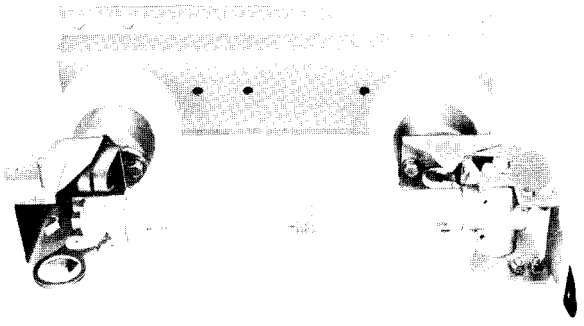


RDB-800
Vertical Mounting



90° Base Type Mounting

45° Base Type
Mounting



Underhung Mounting

Type RDB High Voltage Power Fuses and Fuse Mountings

Application

Type RDB Refillable Dropout Boric Acid power fuses provide effective protection for circuits and equipment which operate on voltages from 2400 to 34,500 volts. They can be used on both electric utility and industrial distribution systems. The fuses are designed for use on:

- Power Transformers
- Feeder Circuit Sectionalizing
- Distribution Transformers
- Potential Transformers
- Station Service Transformers
- High Voltage Capacitors

Description

The outdoor RDB fuse is available as a hookstick operable disconnect dropout type mounting. There are 3 RBA fuse series:

RBA-200 current rating - 10E to 200E standard speed, 20E to 200E time lag.

RBA-400 current rating ½ to 400E standard speed 20E to 400E time lag. Maximum current rating at 25.5 kV and 34.5 kV is 300E amps.

RBA-800 parallels two RDB-400 fuse refills making continuous current ratings of 450, 540, and 720 amperes. At 25.5 and 34.5 kV the available current ratings are 450 and 540 amperes. These current ratings are obtained by paralleling two 250E, 300E or 400E refills. The total of the two refills must be derated by a factor of 10%.

There are 3 basic parts to a RDB installation, the mounting, the holder, and the fuse refill.

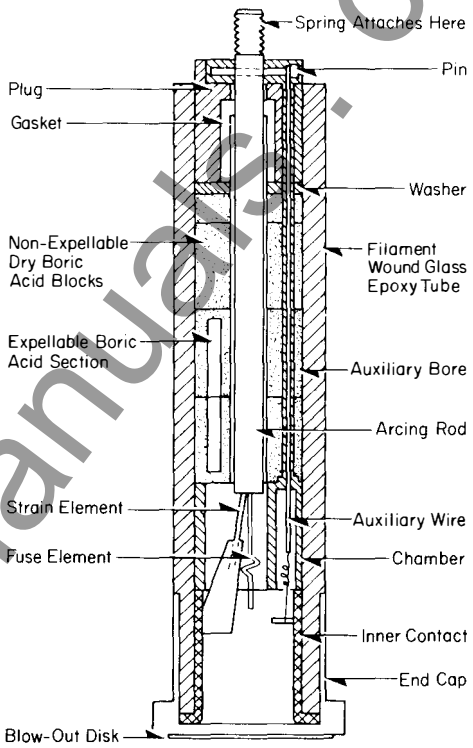
The outdoor RDB mounting is a hookstick disconnect dropout type, which incorporates at the break end a sleet hood shelter cable terminal, and dropout mechanism into one unit. The sleet hood made of aluminum bronze shelters the dropout mechanism against ice and snow to insure proper performance under all conditions. Electrical contact between the sleet hood and main contacts is provided by a bolted connection and high pressure is maintained by the charged ejector spring and spring latch assembly, locking the fuse holder in the main contacts. On the hinge end of the mounting, the cadmium chromium copper spring fingers are compressed by the cam like contact on the fuse holder. The electrical current path is made directly from the fuse holder to the fingers and terminal pad. The hinge end of the mounting has a bumper stop to reduce the swing of the holder after fuse operation. Station post insulators are applied as standard. The conventional vertical type mounting is used for most installations, however several new mountings are available to facilitate the new trends toward low profile substation protection and adding maximum design flexibility.

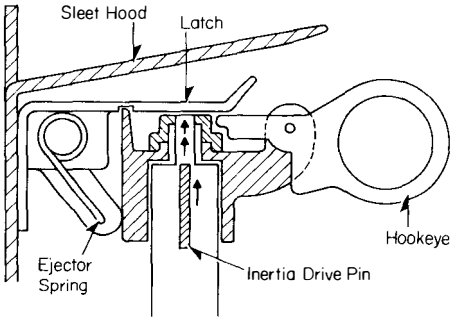
The RDB fuse holder is a coated filament wound glass epoxy tube which encloses the fuse refill and the spring and shunt assembly. Being glass epoxy, the holder is lighter therefore easier to refuse and is dropout providing positive blown fuse indication.

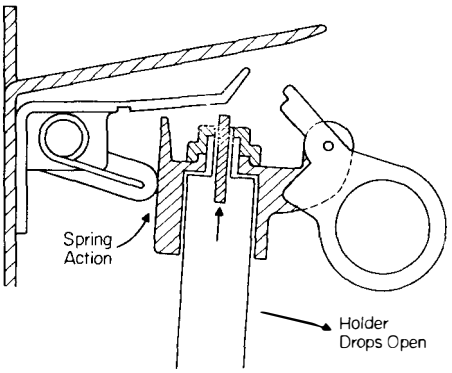
The boric acid refill used in both RDB and RBA fuse holders is designed to interrupt currents of short circuit magnitude within ½ cycle and through its two de-ionizing chambers in parallel have selective operation and interruption for both low and high current faults. Under fault conditions, the fuse element melts, the helical spring in the holder pulls the arcing rod and arc through the boric acid cylinder. Intense heat from the arc, as it strikes decomposes the dry boric acid. On decomposition the boric acid forms water vapor and inert boric anhydride, which blasting through the arc de-ionizes it. This prevents the arc from restriking after a current zero. When a low current fault occurs the main fuse and strain element blow. The auxiliary fuse wire shorts out the main fuse and the arc is extinguished in the small bore. The arcing rod drawing no arc moves to the open position by the spring action. A high fault current blows the main fuse and strain elements and transfers to the auxiliary fuse wire. In the small bore the arc is extinguished but restrikes in the main bore. The arcing rod then draws the arc through the main bore where it is quickly extinguished. RDB fuse refills are ANSI E rated having characteristic curves equivalent or interchangeable to competition.

Dropout Operation

The RDB fuse is of the dropout type providing positive indication of fuse operation. On closing the fuse holder with a hookstick, the ejector spring is charged while locking the fuse holder into the latch mechanism. Under fault conditions, the fuse element melts, the helical spring pulls the arcing rod and arc through the cylinder. The top portion of the helical spring assembly contains a free moving inertia drive pin. The upward movement of the spring sets in motion the inertia drive pin which drives through the small hole located in the cap on the fuse holder and strikes the latch mechanism. The latch releases the fuse holder while the ejector spring action forces the holder outward to swing into a dropout position. This dropout action provides immediate visual indication that the fuse has operated. A simple downward tug on the hookeye with a hookstick will release the holder when the fuse is not blown.







Type RDB High Voltage Power Fuses and Fuse Mountings

RBA or RDB Fuse Refills

Table A: Standard and Time Lag Fuses

Minimum Order Quantity: Three (3) No Returns

kV Rating	Amps	Standard RBA – RDB 200 Style Number	Standard RBA – RDB 400 Style Number	Time Lag RBA – RDB 200 Style Number	Time Lag RBA – RDB 400 Style Number
① 7.2	½E	None	423D815A01	449D671A07	449D672A07
	3E	None	423D815A02	449D671A08	449D672A08
	5E	None	423D815A03	449D671A09	449D672A09
	7E	None	423D815A04	449D671A10	449D672A10
	10E	423D814A05	423D815A05	449D671A11	449D672A11
	15E	423D814A06	423D815A06	449D671A12	449D672A12
	20E	423D814A07	423D815A07	449D671A13	449D672A13
	25E	423D814A08	423D815A08	449D671A14	449D672A14
	30E	423D814A09	423D815A09	449D671A15	449D672A15
	40E	423D814A10	423D815A10	449D671A16	449D672A16
	50E	423D814A11	423D815A11	449D671A18	449D672A18
	65E	423D814A12	423D815A12	....	449D672A19
	80E	423D814A13	423D815A13	....	449D672A20
	100E	423D814A14	423D815A14	....	449D672A21
	125E	423D814A15	423D815A15		
	150E	423D814A16	423D815A16		
	200E	423D814A18	423D815A18		
	250E	....	423D815A19		
	300E	....	423D815A20		
	400E	....	423D815A22		
14.4	½E	None	423D815A26	449D671A27	449D672A32
	3E	None	423D815A27	449D671A28	449D672A33
	5E	None	423D815A28	449D671A29	449D672A34
	7E	None	423D815A29	449D671A30	449D672A35
	10E	423D814A25	423D815A30	449D671A31	449D672A36
	15E	423D814A26	423D815A31	449D671A32	449D672A37
	20E	423D814A27	423D815A32	449D671A33	449D672A38
	25E	423D814A28	423D815A33	449D671A34	449D672A39
	30E	423D814A29	423D815A34	449D671A35	449D672A40
	40E	423D814A30	423D815A35	449D671A36	449D672A41
	50E	423D814A31	423D815A36	449D671A38	449D672A43
	65E	423D814A32	423D815A37	....	449D672A44
	80E	423D814A33	423D815A38	....	449D672A45
	100E	423D814A34	423D815A39	....	449D672A46
	125E	423D814A35	423D815A40		
	150E	423D814A36	423D815A41		
	200E	423D814A38	423D815A43		
	250E	....	423D815A44		
	300E	....	423D815A45		
	400E	....	423D815A47		
23.0	½E	None	423D815A51	449D671A47	449D672A57
	3E	None	423D815A52	449D671A48	449D672A58
	5E	None	423D815A53	449D671A49	449D672A59
	7E	None	423D815A54	449D671A50	449D672A60
	10E	423D814A45	423D815A55	449D671A51	449D672A61
	15E	423D814A46	423D815A56	449D671A52	449D672A62
	20E	423D814A47	423D815A57	449D671A53	449D672A63
	25E	423D814A48	423D815A58	449D671A54	449D672A64
	30E	423D814A49	423D815A59	449D671A55	449D672A65
	40E	423D814A50	423D815A60	449D671A56	449D672A66
	50E	423D814A51	423D815A61	449D671A58	449D672A68
	65E	423D814A52	423D815A62	....	449D672A69
	80E	423D814A53	423D815A63	....	449D672A70
	100E	423D814A54	423D815A64		
	125E	423D814A55	423D815A65		
	150E	423D814A56	423D815A66		
	200E	423D814A58	423D815A68		
	250E	....	423D815A69		
	300E	....	423D815A70		
	400E	....	None		
34.5	½E	None	423D815A76	449D671A67	449D672A82
	3E	None	423D815A77	449D671A68	449D672A83
	5E	None	423D815A78	449D671A69	449D672A84
	7E	None	423D815A79	449D671A70	449D672A85
	10E	423D814A65	423D815A80	449D671A71	449D672A86
	15E	423D814A66	423D815A81	449D671A72	449D672A87
	20E	423D814A67	423D815A82	449D671A73	449D672A88
	25E	423D814A68	423D815A83	449D671A74	449D672A89
	30E	423D814A69	423D815A84	449D671A75	449D672A90
	40E	423D814A70	423D815A85	449D671A76	449D672A91
	50E	423D814A71	423D815A86	449D671A78	449D672A93
	65E	423D814A72	423D815A87	....	449D672A94
	80E	423D814A73	423D815A88	....	449D672A95
	100E	423D814A74	423D815A89		
	125E	423D814A75	423D815A90		
	150E	423D814A76	423D815A91		
	200E	423D814A78	423D815A93		
	250E	....	423D815A94		
	300E	....	423D815A95		
	400E	....	None		

Table B: Outdoor RDB Dropout Type Fuse Holders (No Returns)

Type	kV	Max. Amps	Style Number
RDB-200-A	4.8/7.2	200	309C558G05
RDB-200-B	14.4	200	309C558G06
RDB-200-C	23.0	200	309C558G07
RDB-200-D	34.5	200	309C558G08
RDB-400-A	4.8/7.2	400	310C131G01
RDB-400-B	14.4	400	310C131G02
RDB-400-C	23.0	300	310C131G03
RDB-400-D	34.5	300	310C131G04
RDB-800-A	4.8/7.2	720	②310C131G01
RDB-800-B	14.4	720	②310C131G02
RDB-800-C	23.0	540	②310C131G03
RDB-800-D	34.5	540	②310C131G04

① Use these refills for 2.5 and 4.8 kV
② RDB-800 requires two (2) fuse holders and E-ampere rating of refills must be derated 10%.

Note: When refills are used in conjunction with RBA-RDB-800 fuse holders the E-ampere rating must be derated by 10%.

RDB Interrupting Ratings

Voltage kV		RDB-200			RDB-400		
Nominal	Max. Design	Sym Amps	Asym Amps	3-Phase Sym MVA	Sym Amps	Asym Amps	3-Phase Sym MVA
2.4	2.75	19000	30000	80	37500	60000	150
4.16	4.8	19000	30000	137	37500	60000	270
4.8	5.5	19000	30000	158	37500	60000	310
7.2	8.25	16600	26500	205	29400	47000	365
13.8	14.4	14400	23000	345	29400	47000	700
14.4	15.5	14400	23000	360	29400	47000	730
23.0	25.5	10500	16800	420	21000	33500	840
34.5	38.0	6900	11100	410	16800	26800	1000

Type RDB High Voltage Power Fuses and Fuse Mountings

RBD Fuse Mountings and Live Parts

Table C: RDB (Outdoor) Dropout Type Mountings①

Use With Fuseholder Type	kV			Mounting Type			
	Nom.	Max	BIL	Vertical	45°	90°	Underhung
				Style Number	Style Number	Style Number	Style Number
RDB-200-A	7.2	8.2	95	140D340G11	151D871G06	151D872G06	140D349G11
	7.2	8.2	110	140D340G16			140D349G16
RDB-200-B	14.4	15.5	110	140D340G12	151D871G07	151D872G07	140D349G12
	14.4	15.5	150	140D340G17			140D349G17
RDB-200-C	23.0	25.8	150	140D340G13	151D871G08	151D872G08	140D349G13
	23.0	25.8	200	140D340G18			140D349G18
RDB-200-D	34.5	38.0	200	140D340G14	151D871G09	151D872G09	140D349G14
	34.5	38.0	250	140D340G19			140D349G19
RDB-400-A	7.2	8.2	95	140D341G11	151D871G16	151D872G16	140D346G11
	7.2	8.2	110	140D341G16			140D346G16
RDB-400-B	14.4	15.5	110	140D341G12	151D871G17	151D872G17	140D346G12
	14.4	15.5	150	140D341G17			140D346G17
RDB-400-C	23.0	25.0	150	140D341G13	151D871G18	151D872G18	140D346G13
	23.0	25.8	200	140D341G18			140D346G18
RDB-400-D	34.5	38.0	200	140D341G14	151D871G19	151D872G19	140D346G14
	34.5	38.0	250	140D341G19			140D346G19
RDB-800-A	7.2	8.2	95	140D342G11	.....	.....	140D354G11
	7.2	8.2	110	140D342G16	.....	.....	140D354G16
RDB-800-B	14.4	15.5	110	140D342G12	.....	.....	140D354G12
	14.4	15.5	150	140D342G17	.....	.....	140D354G17
RDB-800-C	23.0	25.8	150	140D342G13	.....	.....	140D354G13
	23.0	25.8	200	140D342G18	.....	.....	140D354G18
RDB-800-D	34.5	38.0	200	140D342G14	.....	.....	140D354G14
	34.5	38.0	250	140D342G19	.....	.....	140D354G19

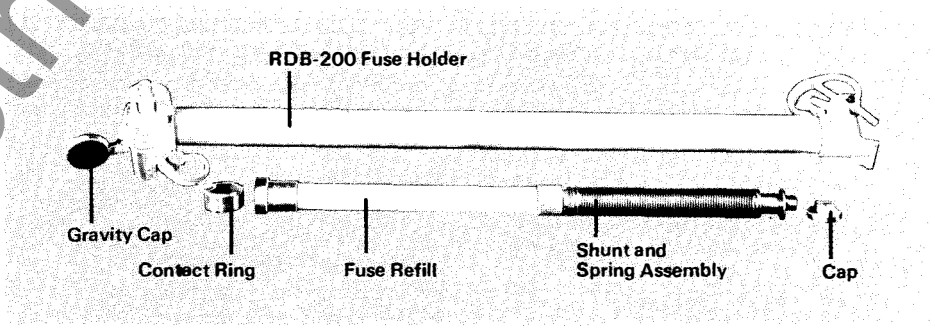
Table D: RDB Live Parts

Fuse Type	kV	Mounting Type			
		Vertical	45°	90°	Underhung
		Style Number	Style Number	Style Number	Style Number
RDB-200	7.2-34.5	140D340G20	140D340G20	151D872G10	140D349G20
RDB-400	7.2-34.5	140D341G20	140D341G20	151D872G20	140D346G20
RDB-800	7.2-34.5	140D342G20	.....	.....	140D354G20

① These mountings have a NEMA two (2) hole terminal pad. Terminals not included.

Further Information

Application: AD 36-635
Dimensions: TCS 36-631
Prices: PL 36-609



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