



October 1990  
Supersedes Descriptive Bulletin 36-634,  
pages 1-4, dated September 1981  
Mailed to: E, D, C/36-600B

Indoor  
4.8 to 34.5 KV

## RBA Power Fuse Refillable Boric Acid

- High Interrupting Capacity
- Excellent Low Current Interrupting Capabilities
- Wide Variety of E-Ampere Fuse Ratings Available
- Attachments are Available for Fuse Operation in Totally Enclosed Cabinets, Limited Space or Indoor Installations.
- Fuse Refills Installed with Ease
- Shunt Assembly Within Fuse Holder not Damaged by Fuse Operation
- Main Operational Parts can be Separately Purchased
- Fuse Refills Same as in RDB Outdoor Fuse

### Application

Type RBA power fuses provide effective protection for circuits and equipment which operate on voltages from 2400 to 34,500 volts inclusive. They are applicable in utility and industrial power plants for indoor use. The fuses are designated for use on:

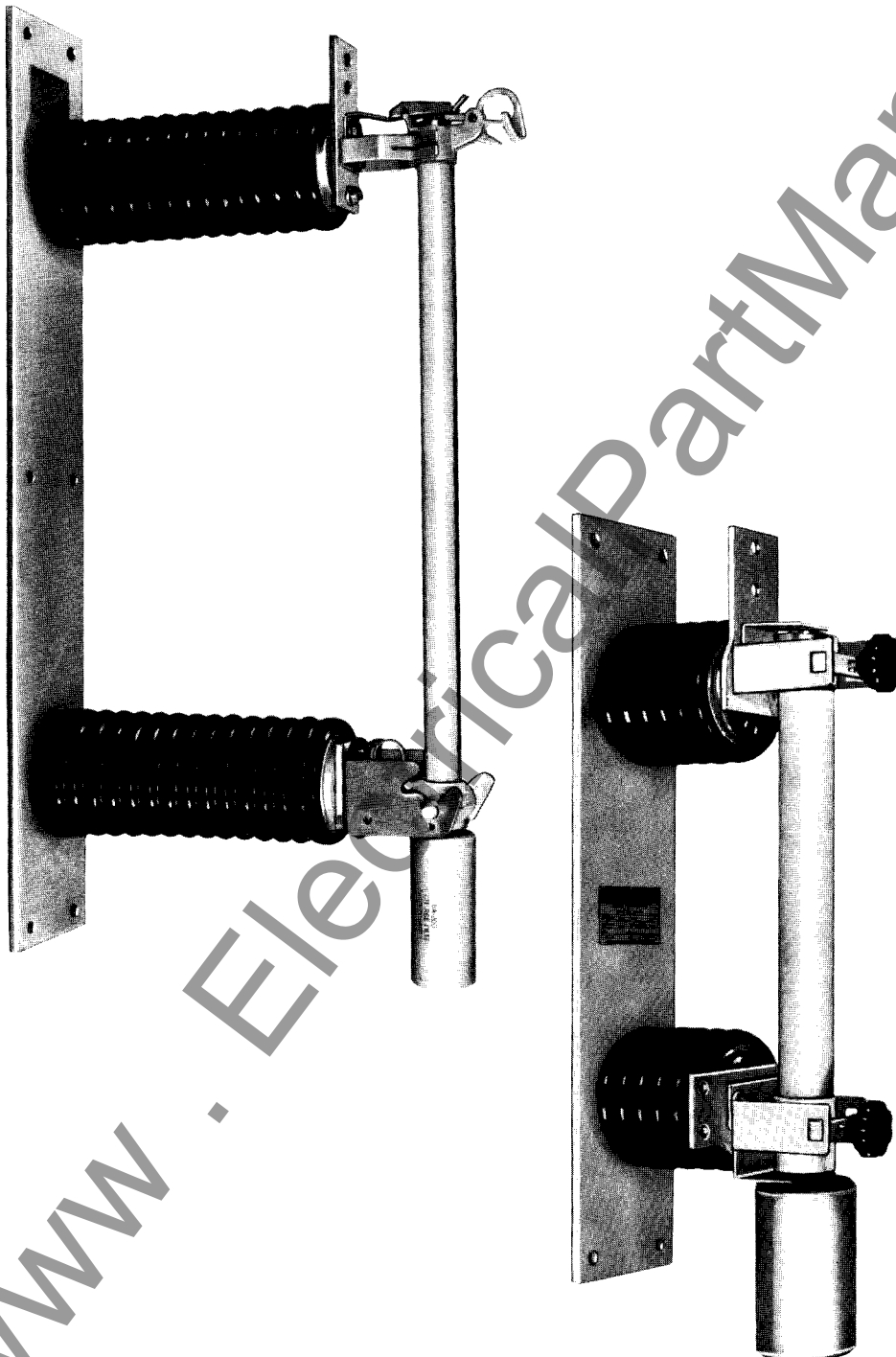
- Power Transformers
- Feeder Circuit Sectionalizing
- High Voltage Capacitors
- Pad Mounted Transformers

These fuses can also be used in combination with various types of load break switches to provide a non-automatic load interrupter with high short circuit protection, or can be placed in fuse cabinets for indoor or outdoor use.

### Comparison of Expulsion Fuse Interrupting Ratings

kV	Westinghouse	S&C
	RBA-200	SM-4
4.16	19000	17200
7.2	16600	17200
14.4	14400	12500
25.0	10500	9400
34.5	6900	6250
	RBA-400	SM-5
4.16	37500	37500
7.2	29400	28000
13.8	36000	34000
14.4	29400	25000
25.0	21000	20000
34.5	16800	17500

Above values are symmetrical amps.





**Description**

The indoor RBA fuse is available in the hookstick operated disconnect, or non-disconnect type. The complete fuse consists of the following components (a) mounting, (b) fuse holder, (c) refill, (d) discharge filter or condenser.

- The RBA-200 series fuse refills are available in current ratings of 10E to 200E amperes (standard speed) and 20E to 200E (time lag)
- The RBA-400 series fuse refills are available in current ratings of 1/2E to 400E amperes (standard speed) and 34.5 KV the maximum 1/2E to 300E at 23.0 and 34.5 KV.
- The RBA-800 series parallels two RBA-400 fuse holders making available continuous current ratings of 450, 540, and 720 am-

peres. At 25.5 and 34.5 KV the available current ratings are 450 and 540 amperes. These ratings are obtained by using two 250E, 300E, or 400E ampere fuses in parallel and applying the derating factor 10% of the total.

**Mountings**

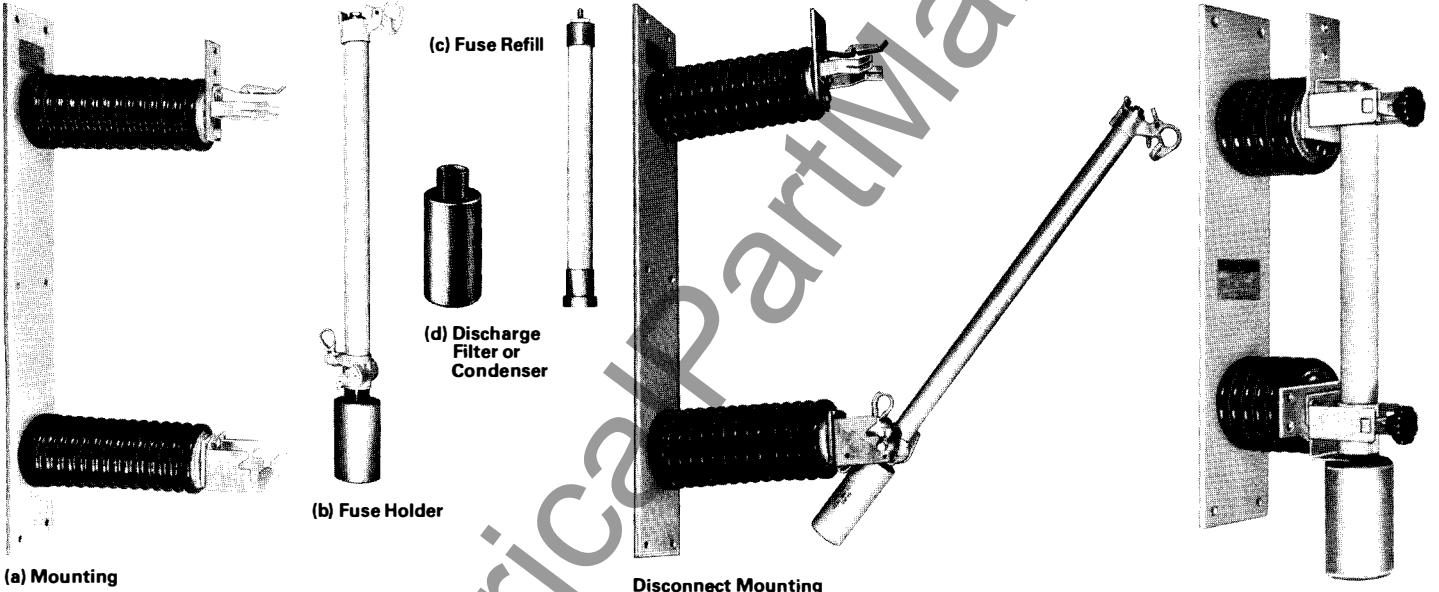
Disconnect and Non-disconnect are both available for the RBA indoor fuse.

The RBA disconnect mounting is hookstick operable and allows ease of fuse replacement. Special disconnect mountings are available for use with a load break tool. Positive electrical connections are maintained at both ends of the mounting by the use of cadmium chromium copper spring fingers at the

hinge end and clip type contacts on the break end. The spring fingers are compressed on closing of the fuse holder, the current path made directly from the terminal pad to the fingers and fuse holder. The upper end of the fuse holder is locked into position by a stainless steel latch.

A latch and gate assembly and a silicon bronze screw with a bakelite head assure stability and proper contact on the non-disconnect mounting.

The RBA-800 non-disconnect piggyback mounting utilizes a bolted connection between the terminal pad and fuse holder.



(a) Mounting

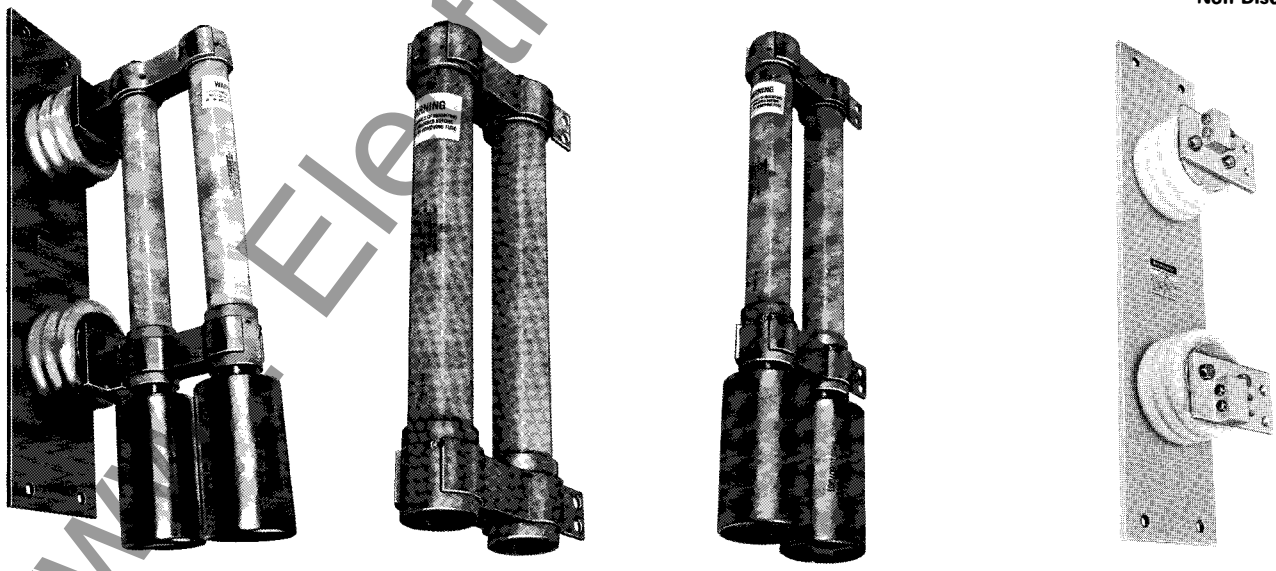
(b) Fuse Holder

(c) Fuse Refill

(d) Discharge Filter or Condenser

Disconnect Mounting

Non-Disconnect Mounting



RBA-800 Non-Disconnect Mounting Piggyback Mounting with Fuse Holder, Discharge Filters.

RBA-800 Non-Disconnect Fuse Holder

RBA-800 Non-Disconnect Fuse Holder with Discharge Filters (Piggyback)

RBA-800 Non-Disconnect Mounting (Piggyback)



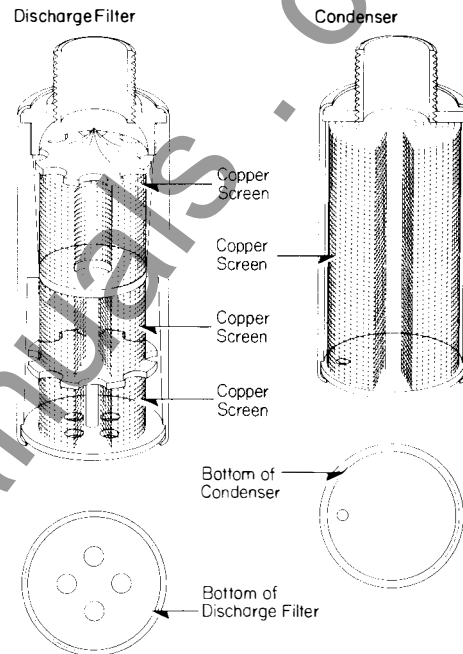
**RBA Fuse Refills**

The boric acid refill is designed to interrupt currents of short circuit magnitude within 1/2 cycle and through its two de-ionizing chambers in parallel, have selective operation and interruption for both low current and high current faults. Under fault conditions, the fuse element melts, the helical spring pulls the arcing rod and arc through the 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 re-striking after a current zero. When a low current fault occurs, the main fuse and strain elements 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 creates a high voltage so it restrikes in the main bore. The arcing rod then draws the arc through the main bore where it is quickly extinguished. RBA fuse refills are ANSI 'E' rated having curves equivalent or interchangeable to competition.

**Discharge Filter-Condenser**

In cases where installations clearances are small, the attachment of a discharge filter or condenser will minimize the noise and contain the arc within the fuse. The discharge filter and condenser are metallic containers with copper screen to absorb and dissipate arc heat and to condense the steam to water.

Although the inner and outer metals of the discharge filter and condenser are similar, the internal design and method of venting give the discharge filter a higher interrupting rating than the condenser. The condenser in its design fully restricts the discharge of steam lowering the interrupting rating.

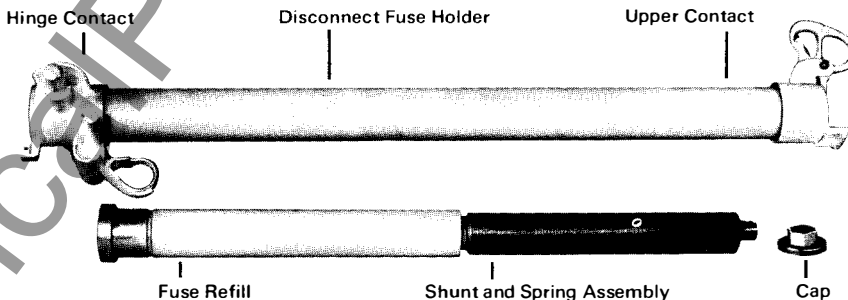
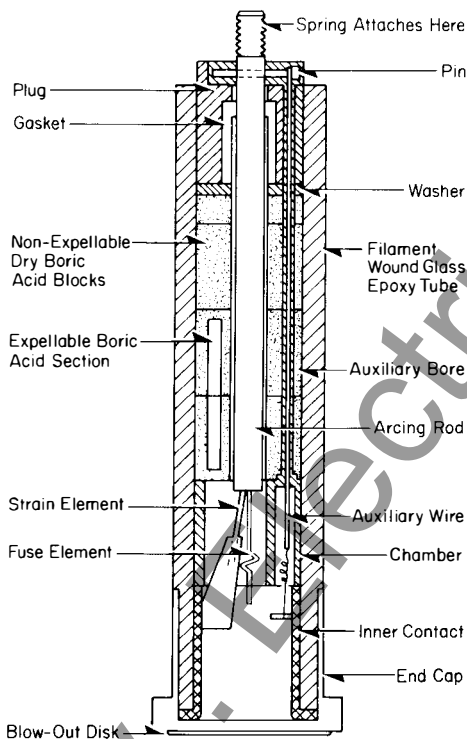


**Fuse Holders**

The RBA fuse holders are filament wound glass epoxy tubes which enclose the fuse and operating spring and shunt assembly. Non-disconnect RBA fuse holders are similar in design to the disconnect except for the main upper and lower contacts of the fuse holder tube.



**Non-Disconnect Fuse Holder**



**RBA Interrupting Ratings**

Voltage KV	With Discharge Filter				With Condenser			
	Normal	Max Design	Sym Amps	Asym Amps	3-Phase Sym MVA	Sym Amps	Asym Amps	3-Phase Sym MVA
<b>RBA-200</b>								
2.4	2.75	19000	30000	80	10000	16000	42	
4.16	4.8	19000	30000	137	10000	16000	72	
4.8	5.5	19000	30000	158	10000	16000	83	
7.2	8.25	16600	26500	205	10000	16000	125	
13.8	14.4	14400	23000	345	8000	12800	191	
14.4	15.5	14400	23000	360	8000	12800	200	
23.0	25.5	10500	16800	420	6300	10100	250	
34.5	38.0	6900	11100	410	5000	8000	300	
<b>RBA-400 and RBA-800</b>								
2.4	2.75	37500	60000	150	20000	32000	84	
4.16	4.8	37500	60000	270	20000	32000	144	
4.8	5.5	37500	60000	310	20000	32000	166	
7.2	8.25	29400	47000	365	16000	25600	200	
13.8	14.4	29400	47000	700	12500	20000	300	
14.4	15.5	29400	47000	730	12500	20000	312	
23.0	25.5	21000	33500	840	10000	16000	400	
34.5	38.0	16800	26800	1000	10000	16000	600	



**Table A, Continued: Standard RBA-RDB-200 Fuse Refill  
Minimum Order Quantity (3) (No Returns)**

kV Rating	Amps	Style Number	Ramada
34.5	25E	423D814A68	15302
Continued	30E	423D814A69	15303
	40E	423D814A70	15305
	50E	423D814A71	15308
	65E	423D814A72	15309
	80E	423D814A73	15310
	100E	423D814A74	15311
	125E	423D814A75	15313
	150E	423D814A76	15317
	200E	423D814A78	15318
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

**Standard RBA-RDB-400 Fuse Refill  
Minimum Order Quantity (3) (No Returns)**

kV Rating	Amps	Style Number	Ramada
34.5	25E	423D815A83	15417
Continued	30E	423D815A84	73793
	40E	423D815A85	73794
	50E	423D815A86	73795
	65E	423D815A87	15418
	80E	423D815A88	15419
	100E	423D815A89	15422
	125E	423D815A90	15424
	150E	423D815A91	15426
	200E	423D815A93	15427
	250E	423D815A94	15429
	300E	423D815A95	15430+
	400E	None	

**Table B: Time-Lag RBA-RDB-200 Fuse Refills (Min. Order Qty. - 3)  
(No Return)**

kV Rating	Amps	Style Number	Ramada	
7.2	20E	449D671A07	58544	
	25E	449D671A08	58546	
	30E	449D671A09	59098	
	40E	449D671A10	59102	
	50E	449D671A11	59104	
	65E	449D671A12	15432	
	80E	449D671A13	15433	
	100E	449D671A14	59105	
	125E	449D671A15	59108	
	150E	449D671A16	59109	
	200E	449D671A18	15434	
	14.4	20E	449D671A27	15438
		25E	449D671A28	59110
30E		449D671A29	15439	
40E		449D671A30	15442	
50E		449D671A31	15444	
65E		449D671A32	15446	
80E		449D671A33	59112	
100E		449D671A34	15447	
125E		449D671A35	59113	
150E		449D671A36	59114	
200E		449D671A38	15449	
23.0		20E	449D671A47	59116
		25E	449D671A48	59118
	30E	449D671A49	59119	
	40E	449D671A50	59120	
	50E	449D671A51	59121	
	65E	449D671A52	59122	
	80E	449D671A53	59123	
	100E	449D671A54	59125	
	125E	449D671A55	59128	
	150E	449D671A56	59129	
	200E	449D671A58	59130	
	34.5	20E	449D671A67	59131
		25E	449D671A68	59133
30E		449D671A69	59134	
40E		449D671A70	59137	
50E		449D671A71	59138	
65E		449D671A72	59140	
80E		449D671A73	59144	
100E		449D671A74	59149	
125E		449D671A75	59150	
150E		449D671A76	59151	
200E		449D671A78	59153	

**Time-Lag RBA-RDB-400 Fuse Refills (Min. Order Qty. - 3)  
(No Return)**

kV Rating	Amps	Style Number	Ramada
7.2	20E	449D672A07	59154
	25E	449D672A08	59156
	30E	449D672A09	59157
	40E	449D672A10	59158
	50E	449D672A11	59159
	65E	449D672A12	59160
	80E	449D672A13	59161
	100E	449D672A14	59162
	125E	449D672A15	59163
	150E	449D672A16	15450
	200E	449D672A18	15451
	250E	449D672A19	42307
	300E	449D672A20	42308
400E	449D672A21	42309	
14.4	20E	449D672A32	59164
	25E	449D672A33	59165
	30E	449D672A34	59166
	40E	449D672A35	59167
	50E	449D672A36	59170
	65E	449D672A37	59174
	80E	449D672A38	59178
	100E	449D672A39	59179
	125E	449D672A40	59182
	150E	449D672A41	59709
	200E	449D672A43	59711
	250E	449D672A44	42310
	300E	449D672A45	42312
400E	449D672A46	42314	
23.0	20E	449D672A57	59713
	25E	449D672A58	59714
	30E	449D672A59	59715
	40E	449D672A60	59716
	50E	449D672A61	59717
	65E	449D672A62	59718
	80E	449D672A63	59720
	100E	449D672A64	59721
	125E	449D672A65	59724
	150E	449D672A66	59725
	200E	449D672A68	59726
	250E	449D672A69	42315
	300E	449D672A70	42317
34.5	20E	449D672A82	59727
	25E	449D672A83	59728
	30E	449D672A84	59729
	40E	449D672A85	59731
	50E	449D672A86	59732
	65E	449D672A87	59733
	80E	449D672A88	59734
	100E	449D672A89	59735
	125E	449D672A90	59736
	150E	449D672A91	59738
	200E	449D672A93	59739
	250E	449D672A94	42319
	300E	449D672A95	42320

Use these refills for 2.5 and 4.8 kV.

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

**Instructions for Replacing RBA Refills**

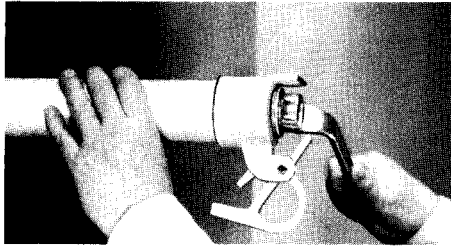


Figure 1

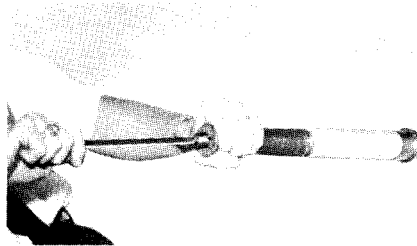


Figure 4



Figure 7

**Step 1:** Loosen cap nut with wrench and remove from top of fuse holder. (Fig. 1.)

**Step 2:** Unscrew discharge filter or condenser from bottom of fuse holder. (Fig. 2.)

**Step 3:** Remove shunt and spring assembly (Fig. 3), and unscrew used refill.

**Step 4:** Remove the thin plastic disc from the bottom of the fuse refill.

Screw new refill unit to the bottom of the spring and shunt assembly, hand tighten. (Fig. 4.) (Caution: Do not use any type of tool to tighten refill.) Screw refill tool into top of spring and shunt assembly, and slide complete unit into the fuse holder, (Fig. 5.)

**Step 5:** Grasp refill tool, pull upward to stretch spring, turn assembly to right or left so that the pin at the top of the shunt assembly fits into slot provided at the top of the fuse holder (Fig. 6.) Remove tool, screw on cap nut and tighten with wrench (Fig. 7.)

**Step 6:** Screw discharge filter or condenser into bottom of fuse holder until it is tight, (Fig. 2) up against the fuse refill.

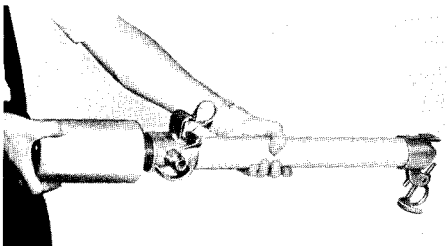


Figure 2

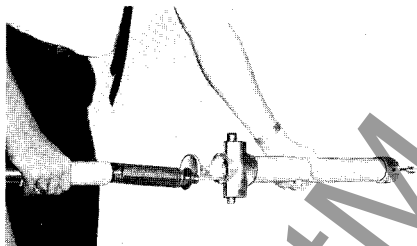


Figure 5

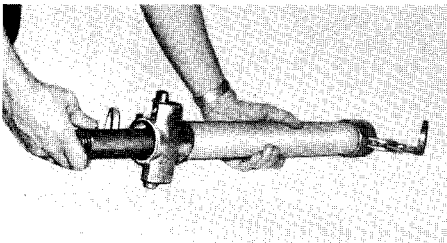


Figure 3

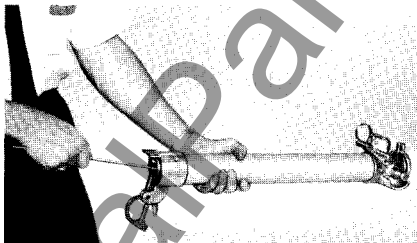


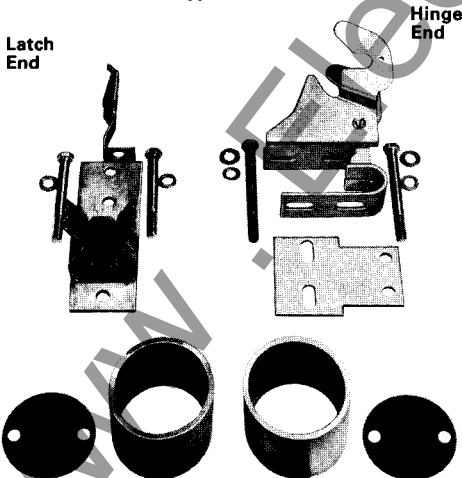
Figure 6

**RBA Live Parts**

For existing mountings, the live parts above the insulators are available. This includes only hinge and break jaw assemblies, some of the available assemblies are shown.

**RBA Disconnect Type**

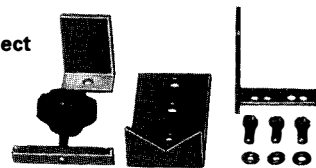
Latch End



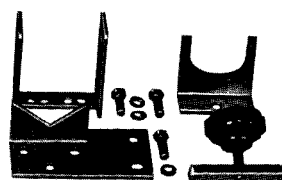
Hinge End

**RBA Non-Disconnect Type**

Top End

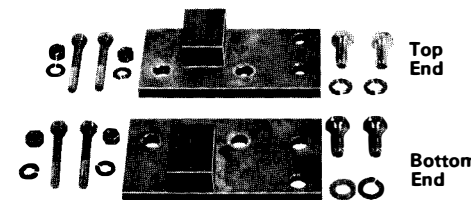


Bottom End



**RBA-800 Non-Disconnect Type**

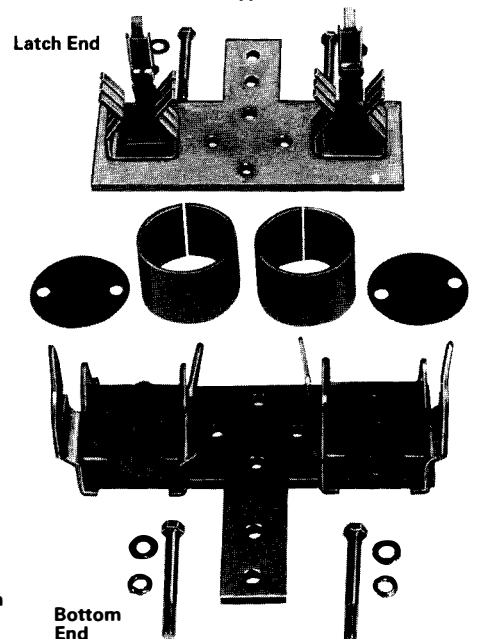
Top End



Bottom End

**RBA-800 Disconnect Type**

Latch End



Bottom End



**Table A: Standard RBA-RDB-200 Fuse Refill  
Minimum Order Quantity (3) (No Returns)**

kV Rating	Amps	Style Number	Ramada
7.2	1/2E	None	
	3E	None	
	5E	None	
	7E	None	
	10E	423D814A05	15239
	15E	423D814A06	15240
	20E	423D814A07	15242
	25E	423D814A08	15243
	30E	423D814A09	15244
	40E	423D814A10	15245
	50E	423D814A11	15246
	65E	423D814A12	15247
	80E	423D814A13	15248
	100E	423D814A14	15250
	125E	423D814A15	15251
	150E	423D814A16	15252
	200E	423D814A18	15253
	.....	.....	
	.....	.....	
	.....	.....	
14.4	1/2E	None	
	3E	None	
	5E	None	
	7E	None	
	10E	423D814A25	15254
	15E	423D814A26	15255
	20E	423D814A27	15256
	25E	423D814A28	15259
	30E	423D814A29	15260
	40E	423D814A30	15261
	50E	423D814A31	15263
	65E	423D814A32	15264
	80E	423D814A33	15268
	100E	423D814A34	15269
	125E	423D814A35	15271
	150E	423D814A36	15272
	200E	423D814A38	15276
	.....	.....	
	.....	.....	
	.....	.....	
23.0	1/2E	None	
	3E	None	
	5E	None	
	7E	None	
	10E	423D814A45	15277
	15E	423D814A46	15278
	20E	423D814A47	15279
	25E	423D814A48	15280
	30E	423D814A49	15284
	40E	423D814A50	15285
	50E	423D814A51	15286
	65E	423D814A52	15287
	80E	423D814A53	15288
	100E	423D814A54	15292
	125E	423D814A55	15293
	150E	423D814A56	15294
	200E	423D814A58	15295
	.....	.....	
	.....	.....	
	.....	.....	
34.5	1/2E	None	
	3E	None	
	5E	None	
	7E	None	
	10E	423D814A65	15296
	15E	423D814A66	73441
20E	423D814A67	15297	

**Standard RBA-RDB-400 Fuse Refill  
Minimum Order Quantity (3) (No Returns)**

kV Rating	Amps	Style Number	Ramada
7.2	1/2E	423D815A01	15319
	3E	423D815A02	15320
	5E	423D815A03	15324
	7E	423D815A04	15327
	10E	423D815A05	15332
	15E	423D815A06	15334
	20E	423D815A07	15335
	25E	423D815A08	15337
	30E	423D815A09	15340
	40E	423D815A10	15341
	50E	423D815A11	15343
	65E	423D815A12	15344
	80E	423D815A13	15348
	100E	423D815A14	15351
	125E	423D815A15	15352
	150E	423D815A16	15356
	200E	423D815A18	15358
	250E	423D815A19	15359
	300E	423D815A20	15360
	400E	423D815A22	15362
14.4	1/2E	423D815A26	15364
	3E	423D815A27	15367
	5E	423D815A28	15368
	7E	423D815A29	15369
	10E	423D815A30	15370
	15E	423D815A31	15371
	20E	423D815A32	15372
	25E	423D815A33	15375
	30E	423D815A34	15376
	40E	423D815A35	15377
	50E	423D815A36	15381
	65E	423D815A37	15383
	80E	423D815A38	15384
	100E	423D815A39	15385
	125E	423D815A40	15386
	150E	423D815A41	15388
	200E	423D815A43	15389
	250E	423D815A44	15391
	300E	423D815A45	15392
	400E	423D815A47	15394
23.0	1/2E	423D815A51	15396
	3E	423D815A52	73783
	5E	423D815A53	15397
	7E	423D815A54	46144
	10E	423D815A55	15398
	15E	423D815A56	73787
	20E	423D815A57	73788
	25E	423D815A58	15399
	30E	423D815A59	15400
	40E	423D815A60	15401
	50E	423D815A61	15402
	65E	423D815A62	15403
	80E	423D815A63	15404
	100E	423D815A64	15405
	125E	423D815A65	15406
	150E	423D815A66	15407
	200E	423D815A68	15408
	250E	423D815A69	15410
	300E	423D815A70	15412
	400E	None	
34.5	1/2E	423D815A76	15413
	3E	423D815A77	73789
	5E	423D815A78	15414
	7E	423D815A79	73790
	10E	423D815A80	73791
	15E	423D815A81	15416
20E	423D815A82	73792	

Ⓞ Use these refills for 2.4 and 4.9 kV.

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

(Continued on Page 6)