



Cutler-Hammer

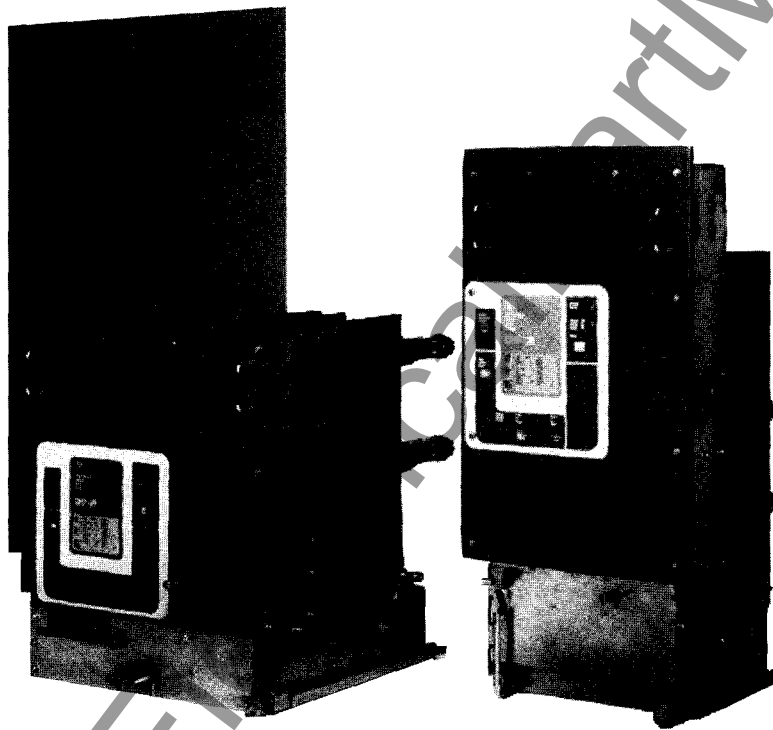
CUTLER-HAMMER
2210 HIGHWAY 72-221 EXT.
GREENWOOD, S.C. 29649 U.S.A.

Renewal Parts Data
32-290

Page 1

June, 1994
New Information
Mailed to: C

**DHP-VR™ Vacuum
Circuit Breaker
7.5 and 15 kV Rating**



**DHP-VR™ Vacuum
Circuit Breaker
5 kV Rating**

DHP-VR™ Vacuum Power Circuit Breakers

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DHP-VR VACUUM REPLACEMENT BREAKER CHART

DHP-VR™ vacuum replacement breakers are designed to replace existing DHP™ air magnetic, and DVP™ vacuum circuit breakers. The chart lists the existing DHP™ or DVP™ breakers and the appropriate DHP-VR™ replacement breaker. The DHP-VR™ breakers listed, are covered by this renewal parts data.

Table 2-1 DHP-VR™ VACUUM CIRCUIT BREAKER AVAILABILITY AND INTERCHANGEABILITY

Nominal Voltage Class (kV)	Existing DHP™ or DVP™ Breaker Type	Rated Continuous Current at 60Hz	DHP-VR™ ^① Replacement Breaker Type	Rated Continuous Current at 60Hz	Rated Voltage Factor K	Rated Withstand Test Voltage		Rated ^④ Short-Circuit Current kA RMS I	Maximum ^⑤ Sym. Interrupting Capability kA RMS	Closing and Latching Capability kA RMS
						Low Freq. kV RMS	Impulse kV Crest			
4.16	50DHP75	1200 Amps	50DHP-VR250 ^⑥	1200 Amps	1.24	19	60	29	36	58
	50DHP250	1200 Amps	50DHP-VR250	1200 Amps	1.24	19	60	29	36	78
	50DHP250	2000 Amps	50DHP-VR250	2000 Amps						
	H50DHP250	1200 Amps	H50DHP-VR250	1200 Amps	1.19	19	60	41	49	78
	H50DHP250	2000 Amps	H50DHP-VR250	2000 Amps						
	50DHP250	1200 Amps	50DHP-VR250U ^⑦	1200 Amps	1.19	19	60	41	49	78
	50DHP250	2000 Amps	50DHP-VR250U ^⑦	2000 Amps						
	50DHP350	1200 Amps	50DHP-VR350	1200 Amps						
	50DHP350	2000 Amps	50DHP-VR350	2000 Amps						
	7.2	75DHP500	1200 Amps	75DHP-VR500	1200 Amps	1.25	36	95	33	41
75DHP500		2000 Amps	75DHP-VR500	2000 Amps						
75DVP500		1200 Amps	75DHP-VR500	1200 Amps						
75DVP500		2000 Amps	75DHP-VR500	2000 Amps						
13.8	150DHP500	1200 Amps	150DHP-VR500	1200 Amps	1.30	36	95	18	23	37
	150DHP500	2000 Amps	150DHP-VR500	2000 Amps						
	150DVP500	1200 Amps	150DHP-VR500	1200 Amps						
	150DVP500	2000 Amps	150DHP-VR500	2000 Amps						
	H150DHP500	1200 Amps	H150DHP-VR500	1200 Amps	1.30	36	95	18	23	58
	H150DHP500	2000 Amps	H150DHP-VR500	2000 Amps						
	150DHP750 ^⑧	1200 Amps	150DHP-VR750	1200 Amps	1.30	36	95	28	36	58
	150DHP750 ^⑧	2000 Amps	150DHP-VR750	2000 Amps						
	150DHP750C ^⑨	1200 Amps	150DHP-VR750C	1200 Amps	1.30	36	95	28	36	77
	150DHP750C ^⑨	2000 Amps	150DHP-VR750C	2000 Amps						
	150DVP750	1200 Amps	150DHP-VR750	1200 Amps						
	150DVP750	2000 Amps	150DHP-VR750	2000 Amps						
	150DHP750	1200 Amps	H150DHP-VR750	1200 Amps	1.30	36	95	28	36	77
	150DHP750	2000 Amps	H150DHP-VR750	2000 Amps						
	150DHP750	1200 Amps	H150DHP-VR750C	1200 Amps						
	150DHP750	2000 Amps	H150DHP-VR750C	2000 Amps						

① Published DHP-VR™ Vacuum Circuit Breaker ratings are per current revision of ANSI C37.06 (symmetrical current basis).

② Existing DHP™ breaker rated per ANSI C37.06-1961 Table 2 (total current basis).

③ Existing DHP™ breaker rated post ANSI C37.06-1964 (symmetrical current basis).

④ At rated maximum kV.

⑤ K times rated short circuit current (KI).

⑥ Replaces existing 50DHP75 breaker element with a 250MVA rated element. Contact Cutler-Hammer for the necessary switchgear modifications to achieve 250MVA.

⑦ Replaces existing 50DHP250 breaker element with a 350MVA rated element. Contact Cutler-Hammer for additional bus bracing details.



HOW TO ORDER

- 1.) Identify the part and its' location on the breaker from the photos shown on pages 4 and 5 for 5kV ratings, and pages 6 and 7 for 7.5 and 15 kV ratings.
- 2.) Select the correct part and style number from the tables and photos on pages 8 thru 13.
- 3.) Contact your local sales representative for price and availability.
- 4.) Complete all the information on the form below, and send it to your local distributor/sales office.

DHP-VR RENEWAL PARTS ORDER FORM

Company Name and Address		Purchase Order		Date
Contact Person:		Method of Shipment		
		Phone Number		
REQUIRED INFORMATION				
Shop Order or Style Number of Breaker				
Breaker Type		kV Class	MVA Class	Amp Rating
Breaker Control Close Voltage			Motor Voltage	Trip Voltage
PARTS LIST				
ITEM	QTY	DESCRIPTION	STYLE NUMBER	UNIT PRICE



DHP-VR 5 kV CIRCUIT BREAKER

Front Faceplate Removed

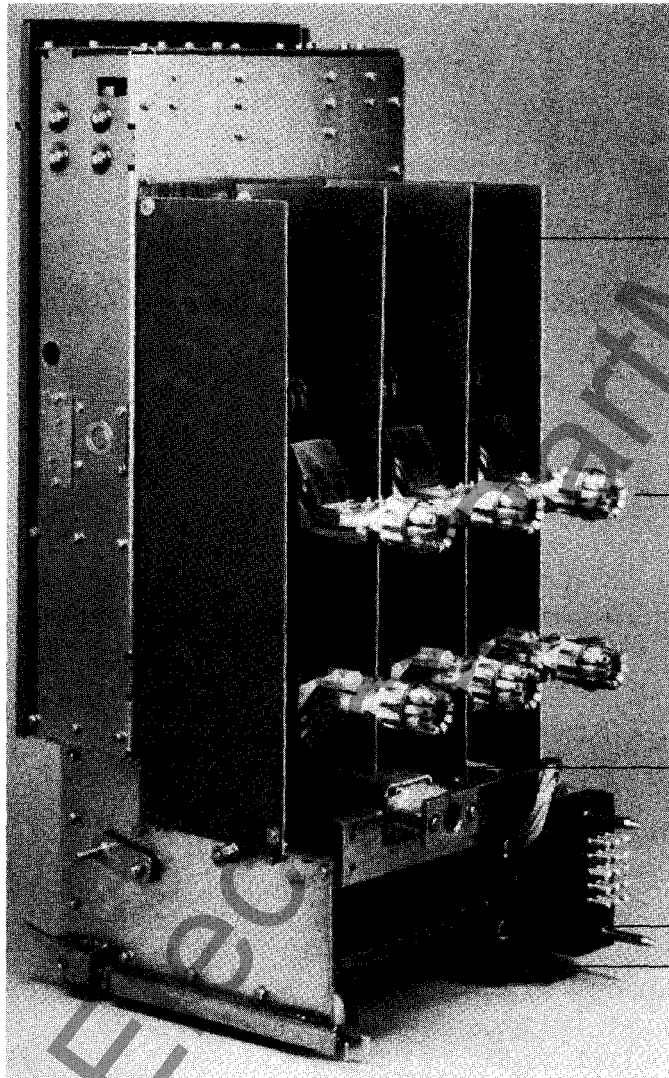


Figure 4.1



DHP-VR 5kV CIRCUIT BREAKER

Rear View



PHASE BARRIER

PRIMARY DISCONNECT CONTACT

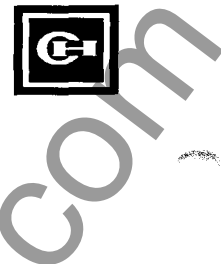
LEVERING-IN NUT HOUSING

SECONDARY DISCONNECT CONTACT

GROUND DISCONNECT CONTACT

Figure 5.1

June, 1994



DHP-VR 7.5 and 15 kV CIRCUIT BREAKER

Front Faceplate Removed

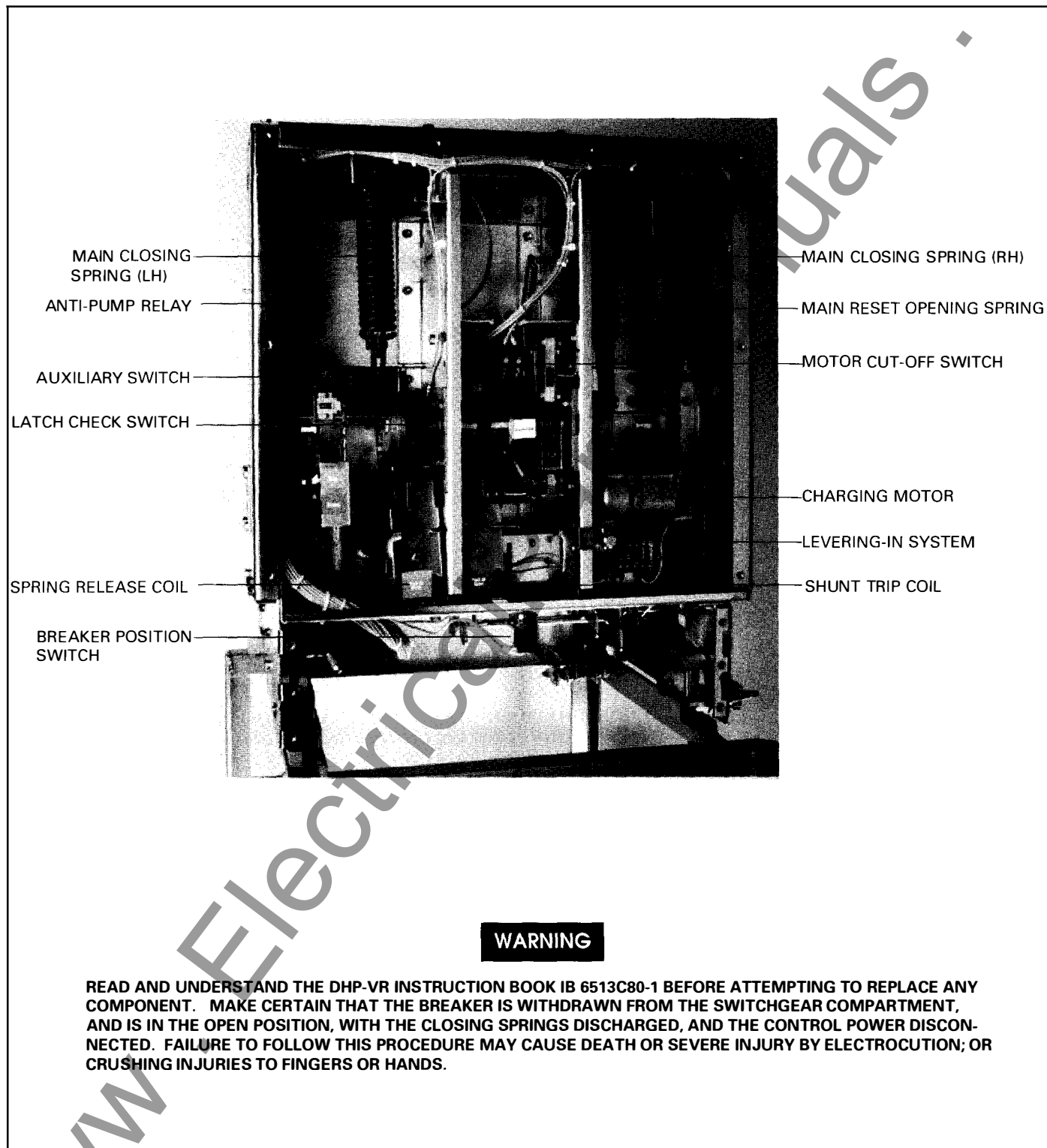


Figure 6.1



DHP-VR 7.5 and 15kV CIRCUIT BREAKER

Rear View

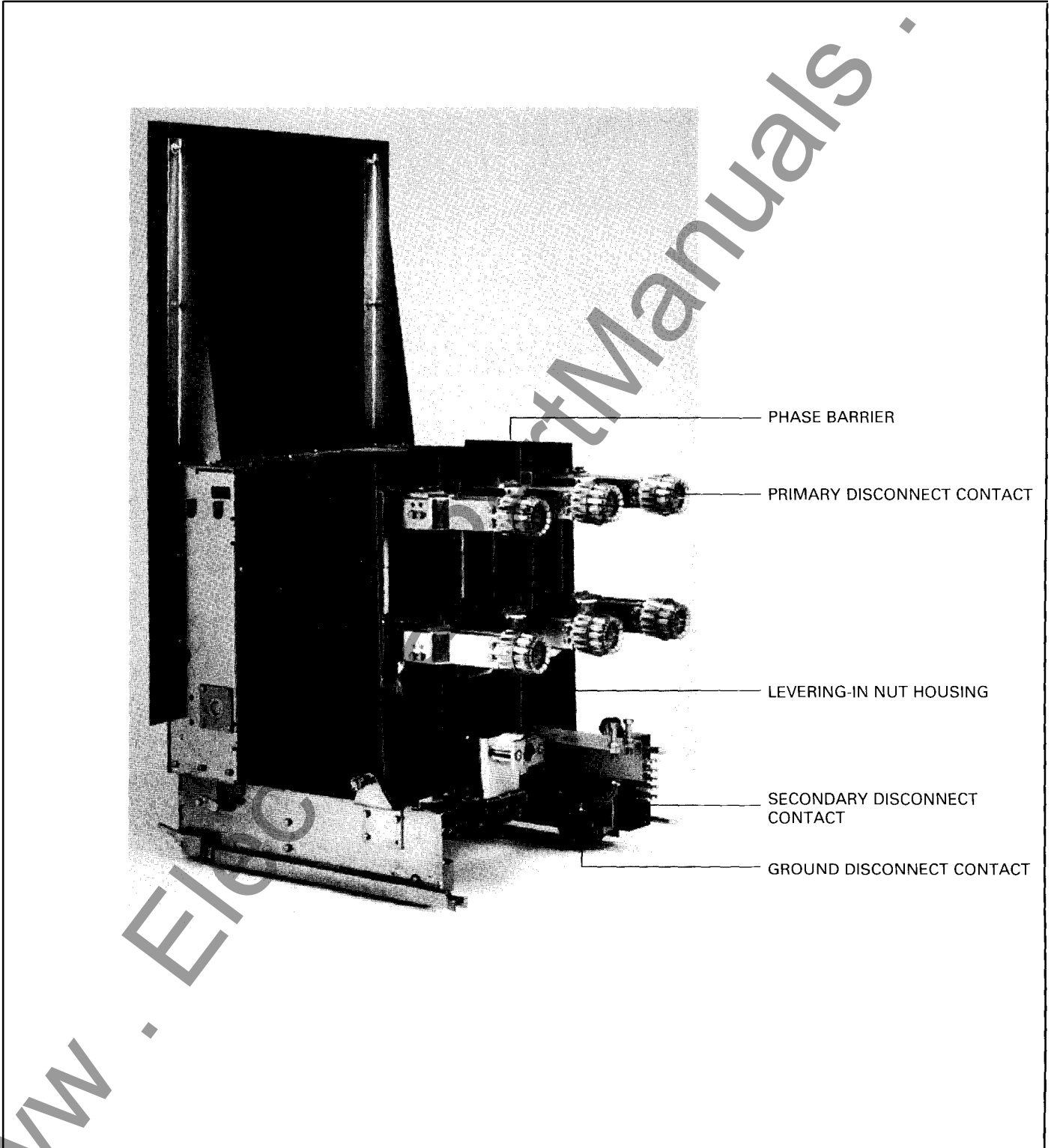


Figure 7.1



POWER PARTS

Pole Unit Assembly

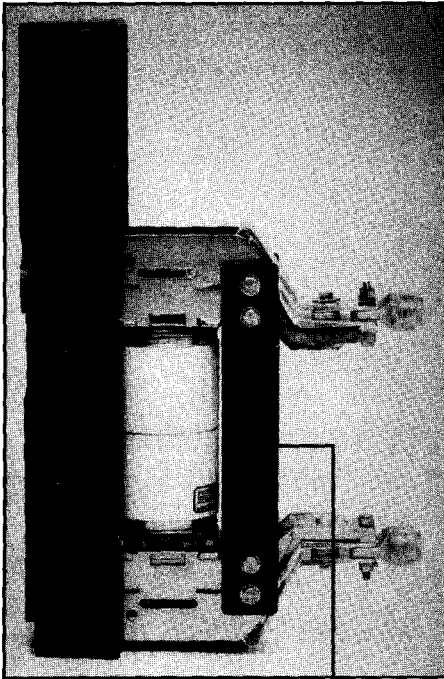


Figure 8.1 5 kV

Tie Bar

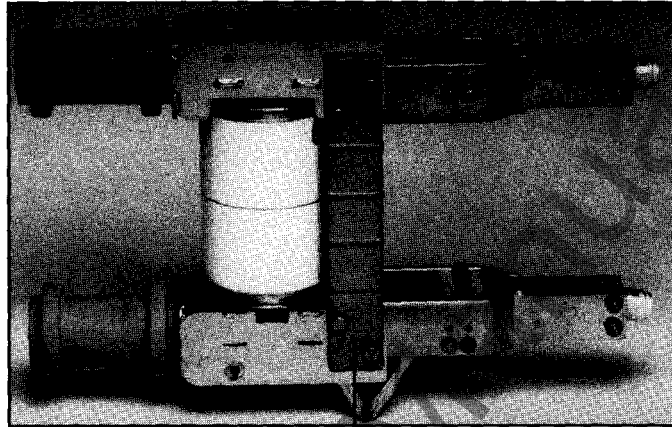


Figure 8.2 7.5 and 15kV

Tie Bar

The pole unit assembly is a jig fitted assembly and must be replaced as a complete unit. Because it is jig fitted and necessary for breaker alignment and operation, separate renewal parts are not available (except for the tie bar).

The pole unit assembly includes the vacuum interrupter, primary insulators, tie bars, and line and load conductors as shown in Fig 8.1 and 8.2. Primary disconnecting contacts are not included, but can be ordered separately as required. Refer to page 9.

Description Of Part	Fig No.	Breaker Type	Rated Continuous Current at 60 Hz	Style Number
Pole Unit Assembly	8.1	50DHP-VR250	1200 Amps	3A75650G01
	8.1	50DHP-VR250	2000 Amps	3A75650G02
	8.1	H50DHP-VR250	1200 Amps	3A75650G03
	8.1	H50DHP-VR250	2000 Amps	3A75650G04
	8.1	50DHP-VR250U	1200 Amps	3A75650G05
	8.1	50DHP-VR250U	2000 Amps	3A75650G06
	8.1	50DHP-VR350	1200 Amps	3A75650G07
	8.1	50DHP-VR350	2000 Amps	3A75650G08
	8.2	75DHP-VR500	1200 Amps	3A75650G10
	8.2	75DHP-VR500	2000 Amps	3A75650G11
	8.2	150DHP-VR500	1200 Amps	3A75650G13
	8.2	150DHP-VR500	2000 Amps	3A75650G14
	8.2	H150DHP-VR500	1200 Amps	3A75650G16
	8.2	H150DHP-VR500	2000 Amps	3A75650G17
	8.2	150DHP-VR750	1200 Amps	3A75650G19
	8.2	150DHP-VR750	2000 Amps	3A75650G20
	8.2	150DHP-VR750C	1200 Amps	3A75650G22
	8.2	150DHP-VR750C	2000 Amps	3A75650G23
	8.2	H150DHP-VR750	1200 Amps	3A75650G25
	8.2	H150DHP-VR750	2000 Amps	3A75650G26
8.2	H150DHP-VR750C	1200 Amps	3A75650G28	
8.2	H150DHP-VR750C	2000 Amps	3A75650G29	
Tie Bar 5kV	8.1	All Types,	1200, 2000A	690C818H01
Tie Bar 7.5 and 15kV	8.2	All Types	1200, 2000A	691C271H01



POWER PARTS

Primary Disconnect

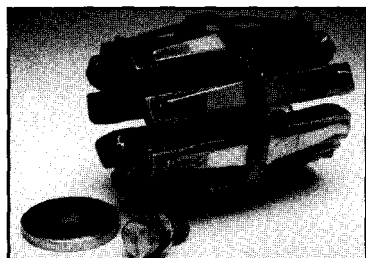


Figure 9.1 1200 Amps

Primary Disconnect

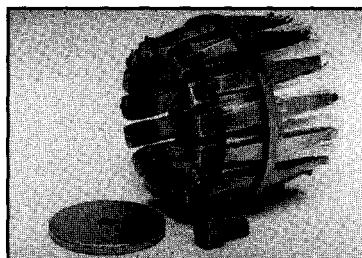


Figure 9.2 2000 Amps

Ground Disconnect



Figure 9.3

Phase Barrier Kit (5kV)

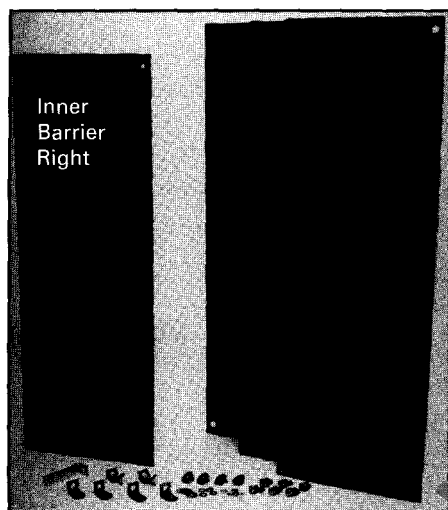


Figure 9.4

Phase Barrier Kit (7.5kV and 15kV)

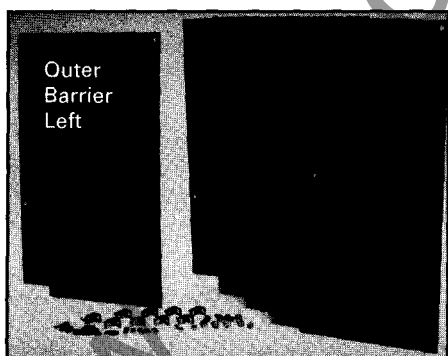


Figure 9.5

Description Of Part	Fig No.	kV/MVA Class	Style Number
Primary Disconnect 1200Amps	9.1	All Ratings	502A851G01
Primary Disconnect 2000Amps	9.2	All Ratings	502A852G01
Ground Disconnect	9.3	All Ratings	310C665G01
Primary Disconnect Kit ② 1200 Amps (Set of 6)	9.1	All Ratings	502A851G11
Primary Disconnect Kit ② 2000 Amps (Set of 6)	9.2	All Ratings	502A852G11
Outer Phase Barrier Left	9.4	5kV(250, 250U)	690C846H01
Inner Phase Barrier Left	9.4		690C846H01
Inner Phase Barrier Right	9.4		690C847H01
Outer Phase Barrier Right	9.4		690C846H01
Outer Phase Barrier Left	9.4	5kV(350)	8829C15H01
Inner Phase Barrier Left	9.4		8829C15H01
Inner Phase Barrier Right	9.4		8829C14H01
Outer Phase Barrier Right	9.4		8829C15H01
Phase Barrier Kit ② (Includes 4 barriers and mtg hardware; The total req'd for 1 breaker)	9.4	5kV(250, 250U)	3A75652G03
	9.4	5kV(350)	3A75652G09
Outer Phase Barrier Left	9.5	7.5 and 15kV	691C176H02
Inner Phase Barrier Left	9.5		690C176H01
Inner Phase Barrier Right	9.5		691C176H01 ^①
Outer Phase Barrier Right	9.5		691C176H01
Phase Barrier Kit ② (Includes 5 barriers and mtg hardware; The total req'd for 1 breaker)	9.5	7.5 and 15kV	3A75652G15

① Two of these barriers are required. One on each side of the levering in shaft.

② Cost savings are realized when ordering kits instead of individual items.

Note: References to left and right are when viewing the breaker from the front.



MECHANISM

Push Rod Assembly Kit

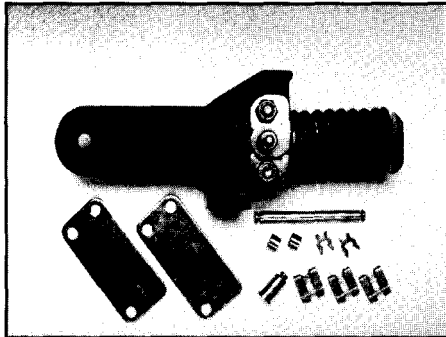


Figure 10.1 5kV

Push Rod Assembly Kit

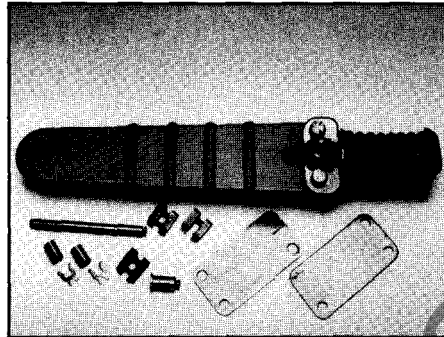


Figure 10.2 7.5 and 15kV

Opening Trip Latch Assembly (Hatchet)

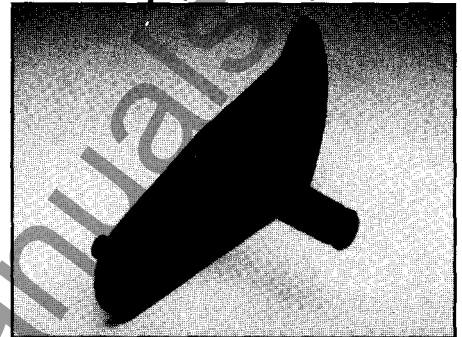


Figure 10.3

Trip Shaft Assembly

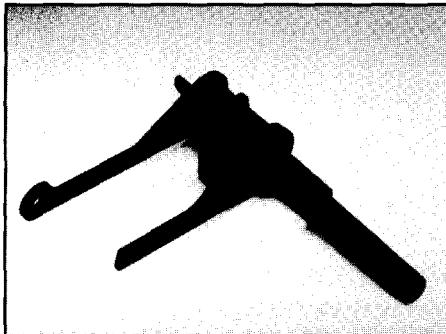


Figure 10.4

Description Of Part	Fig. No.	kV/MVA Class	Style Number
Push Rod Assembly (with hardware) 50DHP-VR 1200A Blue Spring	10.1	5kV (250)	3A75653G01
Push Rod Assembly (with hardware) 50DHP-VR 2000A Blue Spring	10.1	5kV (250)	3A75653G02
Push Rod Assembly (with hardware) 50DHP-VR 1200, 2000A Red Spring	10.1	5kV (250H, 250U)	3A75653G03
Push Rod Assembly (with hardware) 50DHP-VR 1200, 2000A Red Spring	10.1	5kV (350)	3A75653G04
Push Rod Assembly (with hardware) 75DHP-VR 1200, 2000A 150DHP-VR 2000A Blue Spring	10.2	7.5 & 15kV (500H, 750C, 750)	3A75653G05
Push Rod Assembly (with hardware) 150DHP-VR 1200A White Spring	10.2	15kV (500)	3A75653G06
Push Rod Assembly (with hardware) 150DHP-VR 1200A Blue Spring	10.2	15kV (500H, 750, 750C)	3A75653G07
Opening Trip Latch Assembly (Hatchet)	10.3	All Ratings	699B040G01
Trip Shaft Assembly	10.4	All Ratings	694C638G01



MECHANISM

Levering-In Assembly Kit

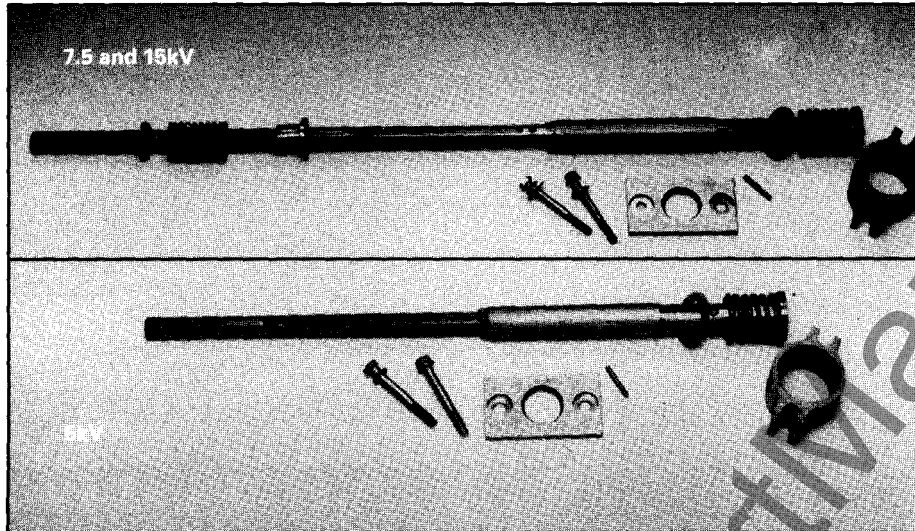


Figure 11.1

Levering-In Tube and Nut Assembly

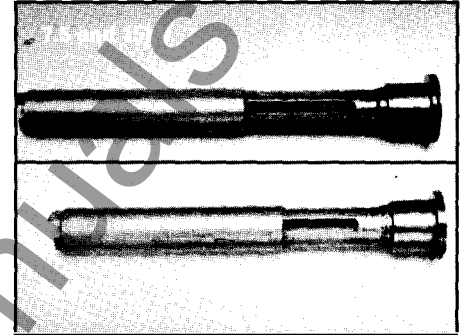


Figure 11.2

Description of part	Voltage Class	Fig No.	Breaker Type	Style Number
Levering-in Assembly Kit	5kV	11.1	50DHP-VR250 50DHP-VR350	3A75656G01 3A75656G02
	7.5 and 15kV	11.1	All Others	3A75656G03
Tube and Nut Assembly	5kV	11.2	50DHP-VR250	8252A34G01
	7.5 and 15kV	11.2	All Others	8252A35G01



CONTROL COMPONENTS

Anti-Pump (Y) Relay

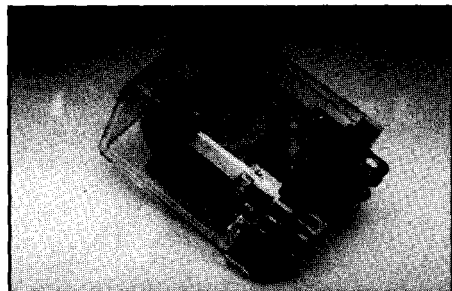


Figure 12.1

Anti-Pump Relay Base

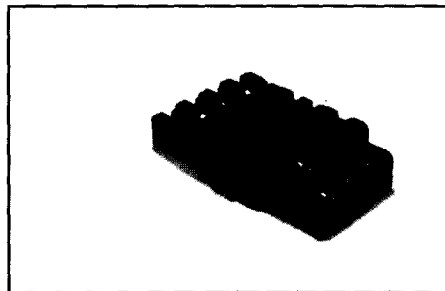


Figure 12.2

Breaker Auxiliary Switch

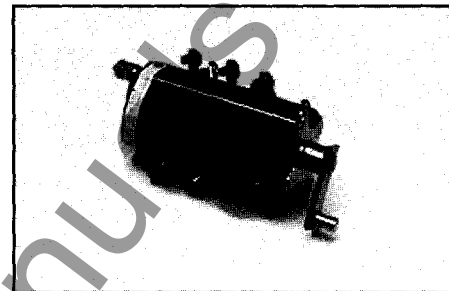


Figure 12.3

Motor Brush Kit

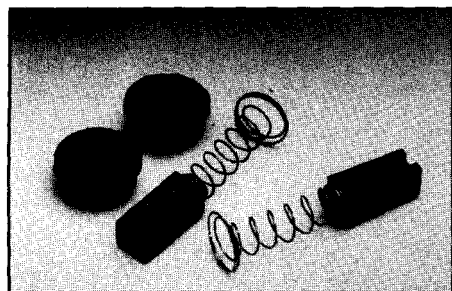


Figure 12.4

Rectifier

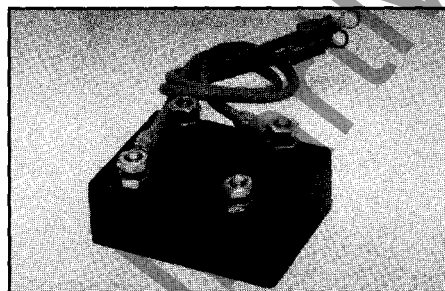


Figure 12.5

Spring Charging Motor

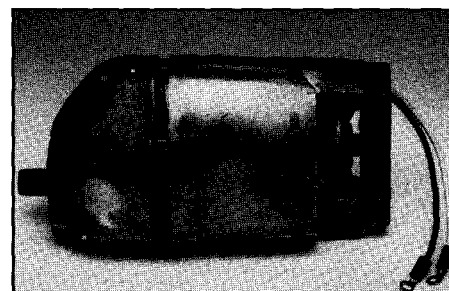


Figure 12.6

Description Of Part	Fig. No.	Voltage	Style Number
Anti-Pump (Y) Relay	12.1	48VDC 125VDC 250VDC 120VAC 240VAC	8237A27H03 8237A27H05 8237A27H04 8237A27H01 8237A27H02
Anti-pump Relay Base	12.2	All	8237A28H01
Breaker Auxiliary Switch	12.3	All Voltages	5697B02G02
Motor Brush Kit	12.4	All Voltages	8063A77G01
Rectifier	12.5	120 VAC/240 VAC	3759A79G02
Spring Charging Motor	12.6	48 VDC 125 VDC/120 VAC 250 VDC/240 VAC	699B196G06 699B196G04 699B196G05
Spring Release, Shunt Trip or UV Trip Coil	12.7	24 VDC 48 VDC 125 VDC/120 VAC ^① 250 VDC/240 VAC ^①	3759A76G14 3759A76G11 3759A76G12 3759A76G13

**Spring Release (Close Coil),
Shunt Trip or UV Trip Coil**

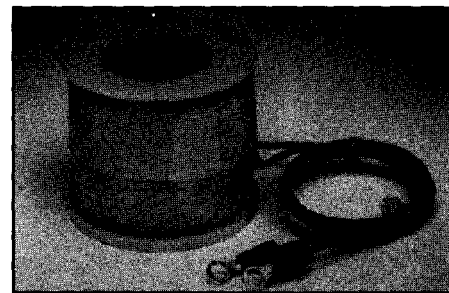


Figure 12.7

^①These Coils can be used in a capacitor trip circuit



CONTROL COMPONENTS

Motor Cutoff Switch

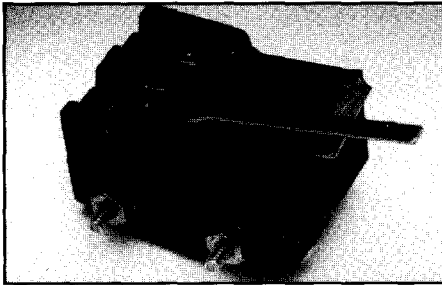


Figure 13.1

Style Number 699B199G04

Latch Check Switch

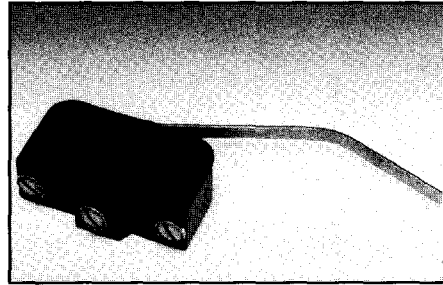


Figure 13.2

Style Number 699B147H04

Breaker Position Switch

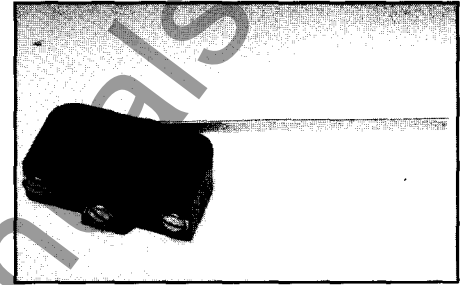


Figure 13.3

Style Number 699B147H01

Secondary Disconnect Contact

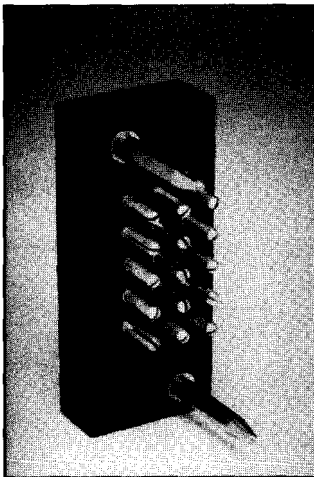


Figure 13.4

Style Number 792A086G01

Control Components Kit



Figure 13.5

The control components kit includes the most commonly replaced control items in a single kit; matched to the breaker control voltage. Included are one each of the following items: spring charge motor, shunt trip coil, spring release coil (close coil), anti-pump relay, anti pump relay base, motor cutoff switch, latch check switch, breaker position switch, and the breaker auxiliary switch. (Kits for AC close breakers also include the rectifier shown in figure 12.4).

Control Components Kits

Control Voltage		Figure Number	Style Number
Close and Motor	Trip		
48VDC	48VDC	13.5	3A75659G01
125VDC	125VDC	13.5	3A75659G02
250VDC	250VDC	13.5	3A75659G03
120VAC	48VDC	13.5 and 12.4	3A75659G04
240VAC	48VDC	13.5 and 12.4	3A75659G05
120VAC	Cap Trip (120VAC)	13.5 and 12.4	3A75659G06
240VAC	Cap Trip (240VAC)	13.5 and 12.4	3A75659G07



ACCESSORIES and OTHER PARTS

Fastener Kit

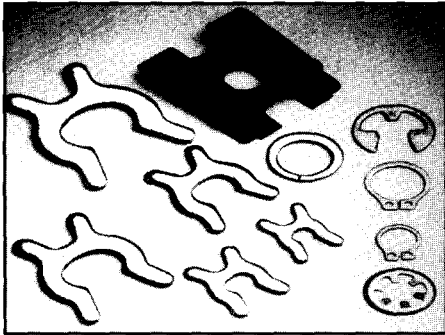


Figure 14.1

Label Kit

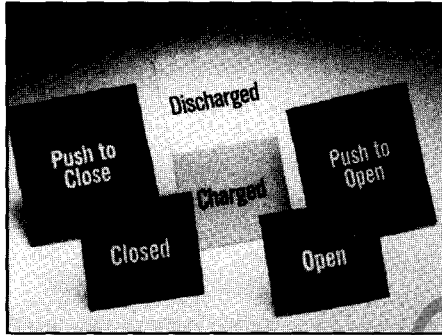


Figure 14.2

Wheels

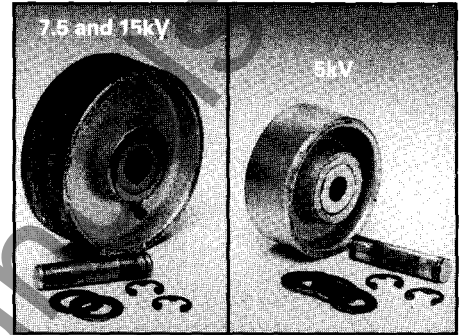


Figure 14.3

Manual Charging Tool

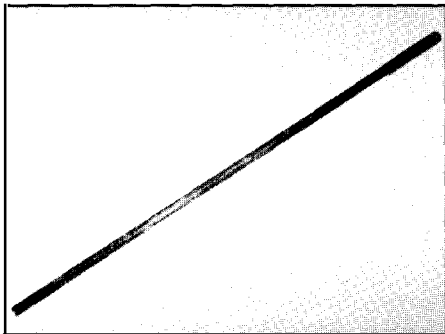


Figure 14.4

Test Cabinet

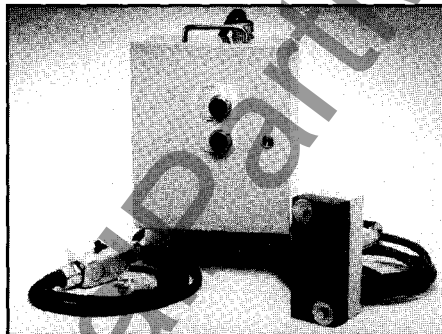


Figure 14.5

Test Cable

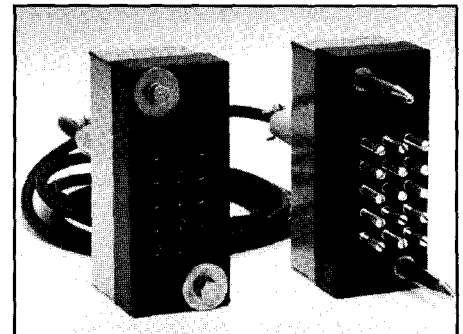


Figure 14.6

Turning Dolly

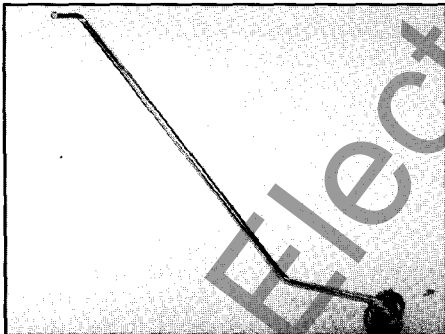


Figure 14.7

Levering-in Hand Crank

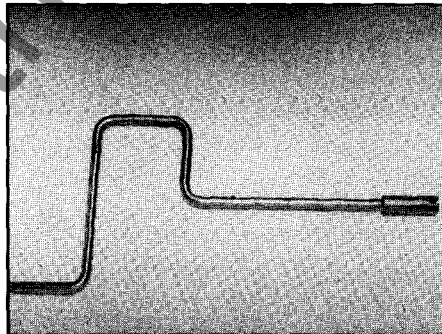


Figure 14.8

Small Spring Kit

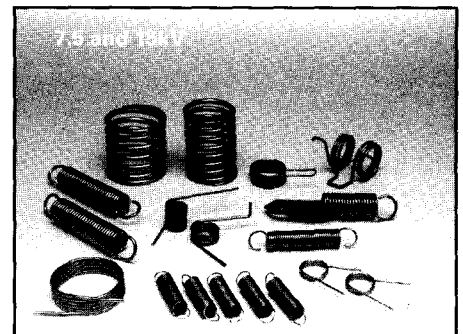
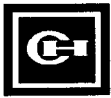


Figure 14.9



ACCESSORIES and OTHER PARTS

Description of Part	Fig. No.	Use	Application	Style Number
Fastener Kit	14.1	Replaces misc. breaker retaining rings	All breaker ratings	8061A01G01
Label kit	14.2	Replaces brkr face plate indication labels	All breaker ratings	8295A45G01
Wheel w/hardware	14.3	Replaces existing wheel when needed	5kV ratings	3A75674G01
			7.5 and 15kV ratings	3A75674G02
Wheel Kit Set of 4 with hardware	14.3	Replaces all 4 Wheels	5kV ratings	3A75674G03
			7.5 and 15kV ratings	3A75674G04
Manual Charging Tool	14.4	Manually charges the breaker stored energy mechanism	All breaker ratings	8064A02G01
Test Cabinet with jumper	14.5	Electrically operates the breaker remote from the cell	All bkr ratings, Any D.C	8346A28G09
			All bkr ratings, Any A.C Close, standard D.C. trip	8346A28G10
			All bkr ratings, stored energy, Any A.C. close capacitor trip	8346A28G11
Test Cable	14.6	Electrically operates the breaker using control power from the switchgear cell	All breaker ratings	449D205G01
Turning Dolly	14.7	Maneuvers the breaker when out of the cell	All breakers	677C889G01
Levering-in Hand Crank	14.8	To lever the breaker between the test and the connected position	All breaker ratings	509A931G01
Small Spring Kit	14.9	Replace all Springs	5kV ratings	3A75671G01
			7.5 and 15kV ratings	3A75671G02



General Information

Direct Roll In Replacement

The DHP-VR™ Vacuum Circuit Breaker is a direct roll in replacement for DHP™ Air Magnetic and DVP™ Vacuum Circuit Breakers. It is wheel mounted for ease of handling and installation and rolls in and out of the cell on the floor exactly like a DHP™ (or DVP™) Circuit Breaker.

The DHP-VR™ Vacuum Circuit Breaker correctly interfaces with compartment cell switches (MOC and TOC). Circuit breaker coding plates are maintained to prevent a non rated circuit breaker from being installed in the switchgear.

Safety interlocks, inherent in the original switchgear design and required by ANSI standards, are also maintained.

A Brand New Replacement Vacuum Circuit Breaker ... Not A Retrofit

The DHP-VR™ Vacuum Circuit Breaker is a brand new, factory design and tested replacement circuit breaker. It is not a retrofit circuit breaker.

Complete Factory and ANSI Design Testing

All DHP-VR™ Vacuum Circuit Breakers meet or exceed applicable ANSI standards. Tests include: mechanical endurance, power interruption, momentary current, and BIL. Certification to the applicable design tests are available from Westinghouse upon request. Certified factory production test reports are also available.

Warranty

DHP-VR™ Vacuum Circuit Breakers and genuine DHP-VR™ renewal parts are covered under the standard Cutler-Hammer warranty. Contact Cutler-Hammer for details.

Parts Identification

The illustrations in this Renewal Parts Data show parts and sub-assemblies which are identified by name and style number in the associated tabulations. Additional information and illustrations are shown in the figures in I.B. 6513C80-1, which show many sub-assemblies and detail parts to illustrate their function and location in the assembly. Some of the detail parts as shown in the instruction book are recommended only as part of a sub-assembly to facilitate their replacement or installation in the field. The availability of parts and sub-assemblies is indicated by style number within this RPD.

If the item in question cannot be identified by style number, refer to the figure number, name and item number as shown in the RPD along with the breaker type and its shop order number or style number as shown on the nameplate on the front of the breaker mechanism panel.

Recommended Spare Parts

An adequate stock of spare parts will help minimize emergency situations and can substantially reduce production down time.

Ordering Information

1. Name item and give its style number. Specify quantity desired.
2. State breaker shop order number or style number.
3. State method of shipment desired.
4. Send all orders or correspondence to nearest Cutler-Hammer Sales Office.

Notice for Commercial Grade Components

THE DESCRIPTION AND SPECIFICATIONS FOR THE PRODUCTS DESCRIBED HEREIN ARE PROVIDED FOR GENERAL COMMERCIAL USE AND NOT APPLICABLE FOR USE IN A NUCLEAR POWER PLANT. ADDITIONAL CERTIFICATION MAY BE AVAILABLE UPON REQUEST TO QUALIFY THESE PRODUCTS FOR USE IN SAFETY-RELATED APPLICATIONS IN A NUCLEAR FACILITY.

Recommended Spare Parts For Stock

The quantities listed are recommended for 5 breakers of the same rating. **Complete the style numbers**; as required for your application; and forward to your local sales representative.

Item	Recommended Quantity For Stock	Description	Style Number
1	1	Pole Unit Assembly	3A75650G __
2	2	Primary Disconnect	502A851G __
3	1	Secondary Disconnect	792A086G01
4	1	Push Rod Assembly	3A75653G __
5	1	Control Components Kit	3A75659G __
6	1	Fastener Kit	8061A01G01
7	1	Label Kit	8295A45G01

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