

RENEWAL PARTS

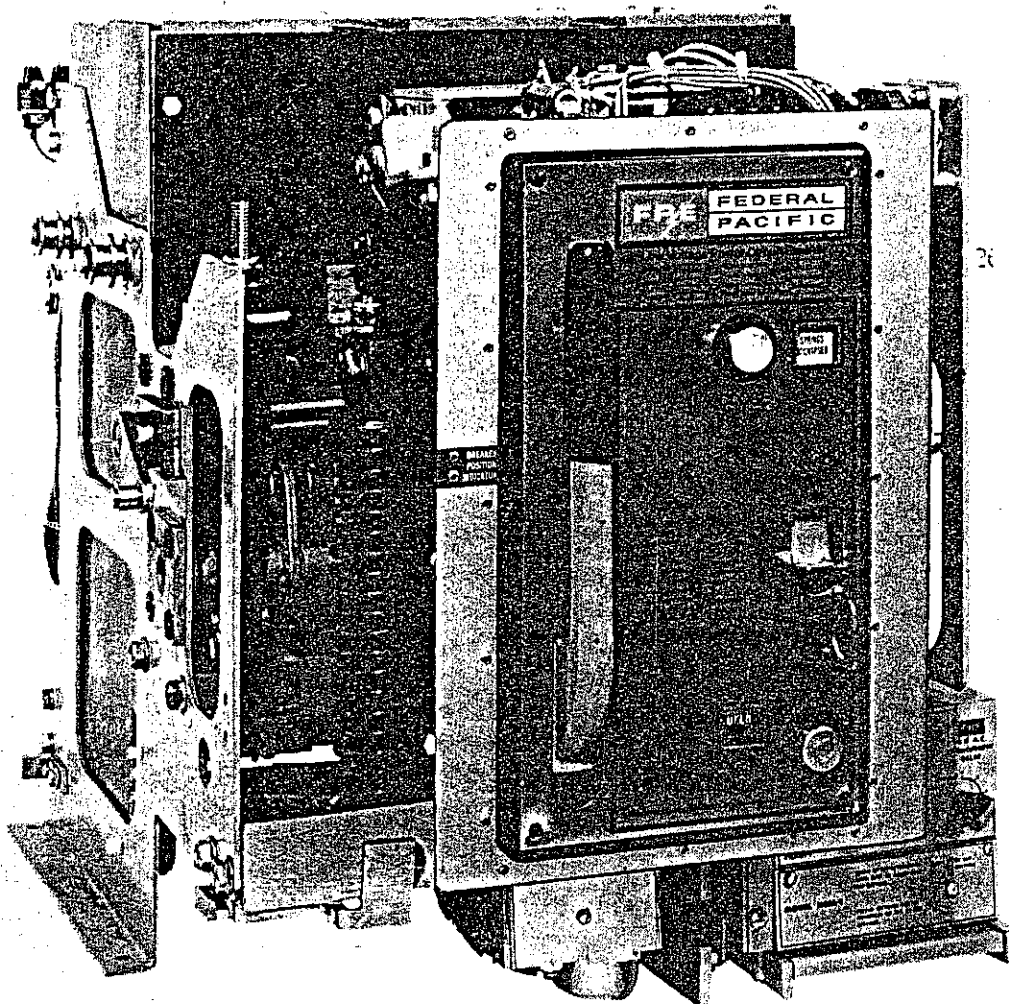
LOW VOLTAGE POWER CIRCUIT BREAKERS

TYPES

FPS4-30-800
FPS4-50-1600

FPS4-50-2000

FMS4-30-800
FMS4-50-1600



FEDERAL PACIFIC ELECTRIC COMPANY
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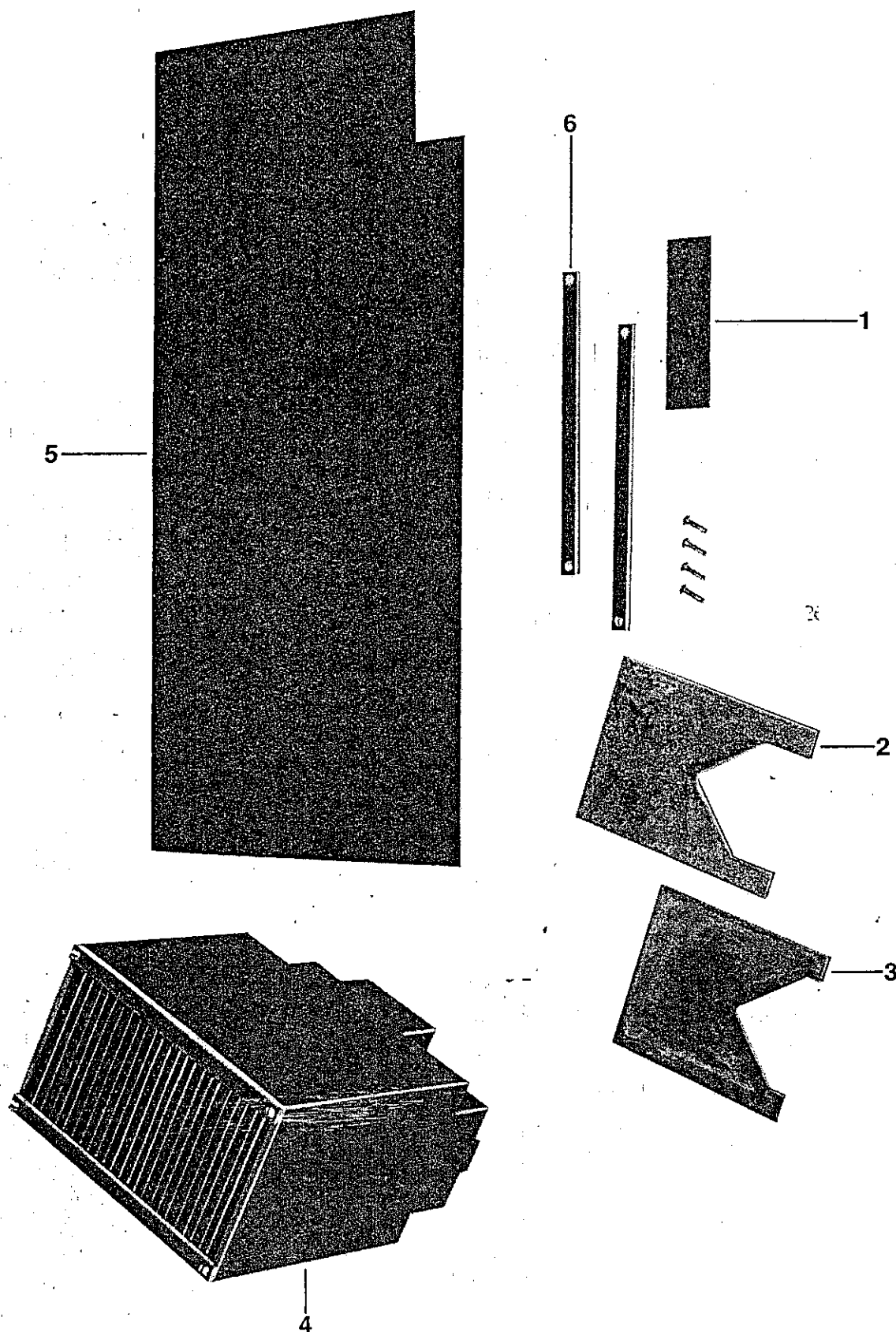
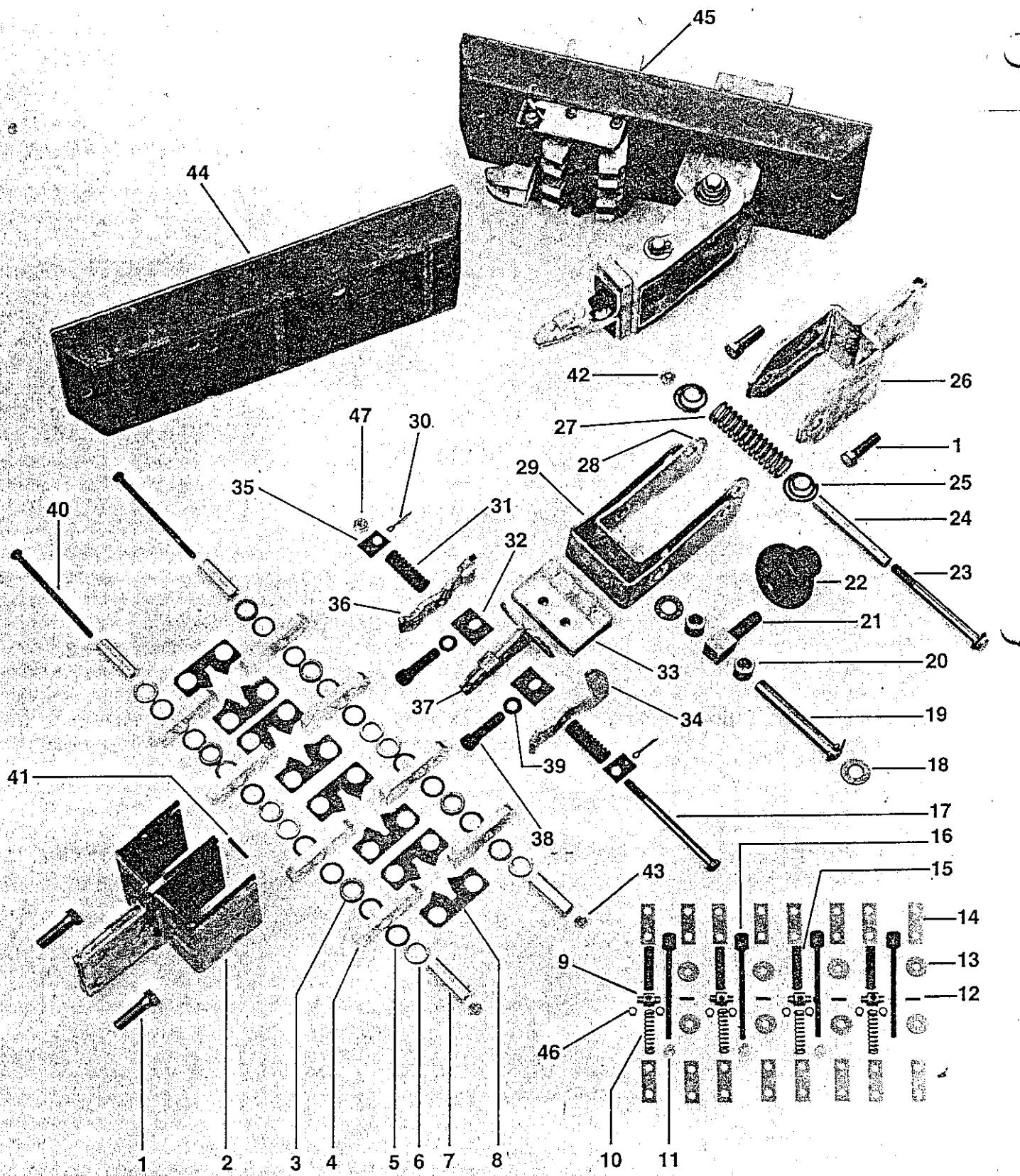


FIGURE 1
ARC CHUTE AND PHASE BARRIER

8



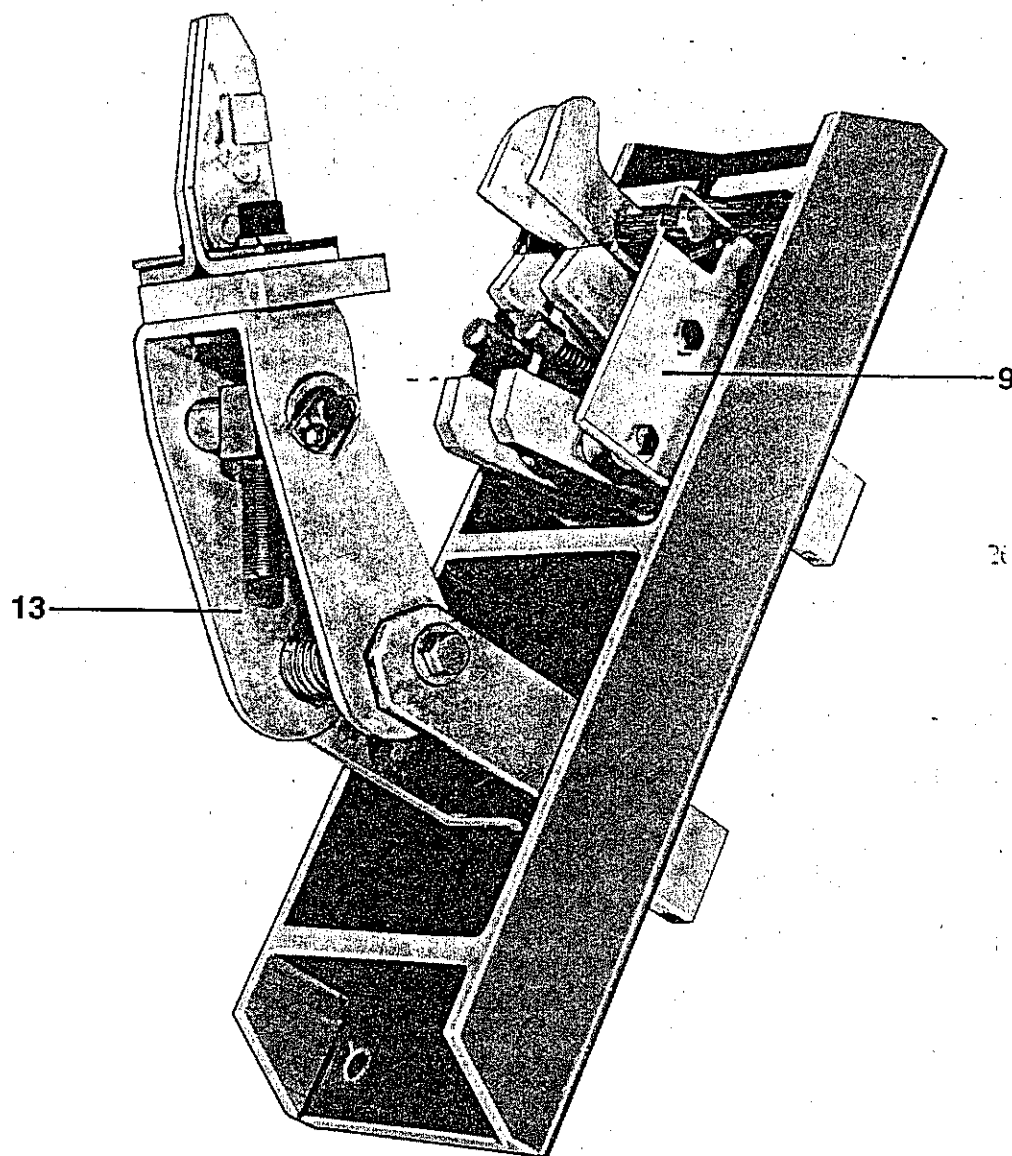


FIGURE 3
CONTACT POLE ASSEMBLY — TYPE FPS4-30 BREAKER

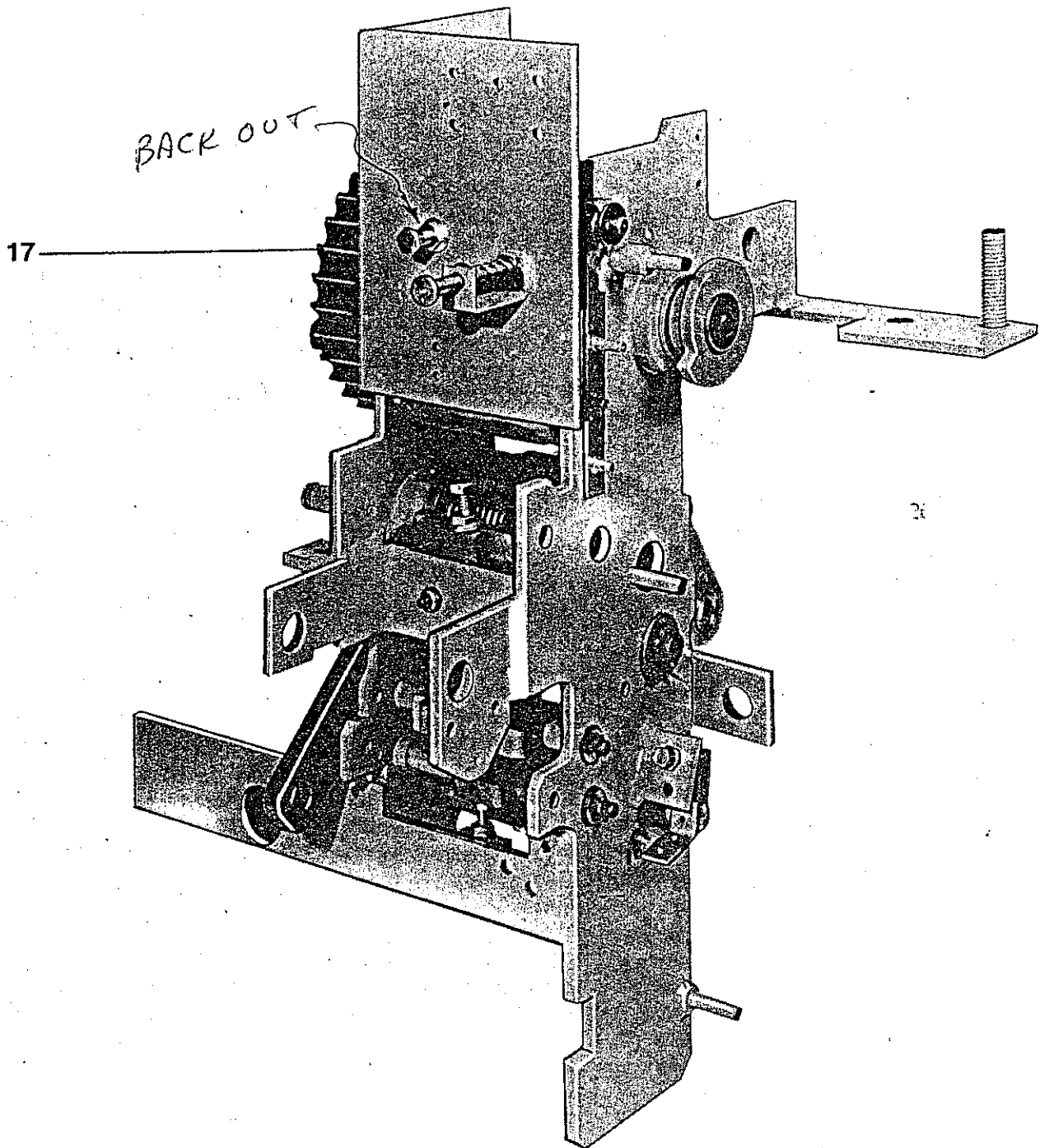


FIGURE 4
MECHANISM ASSEMBLY

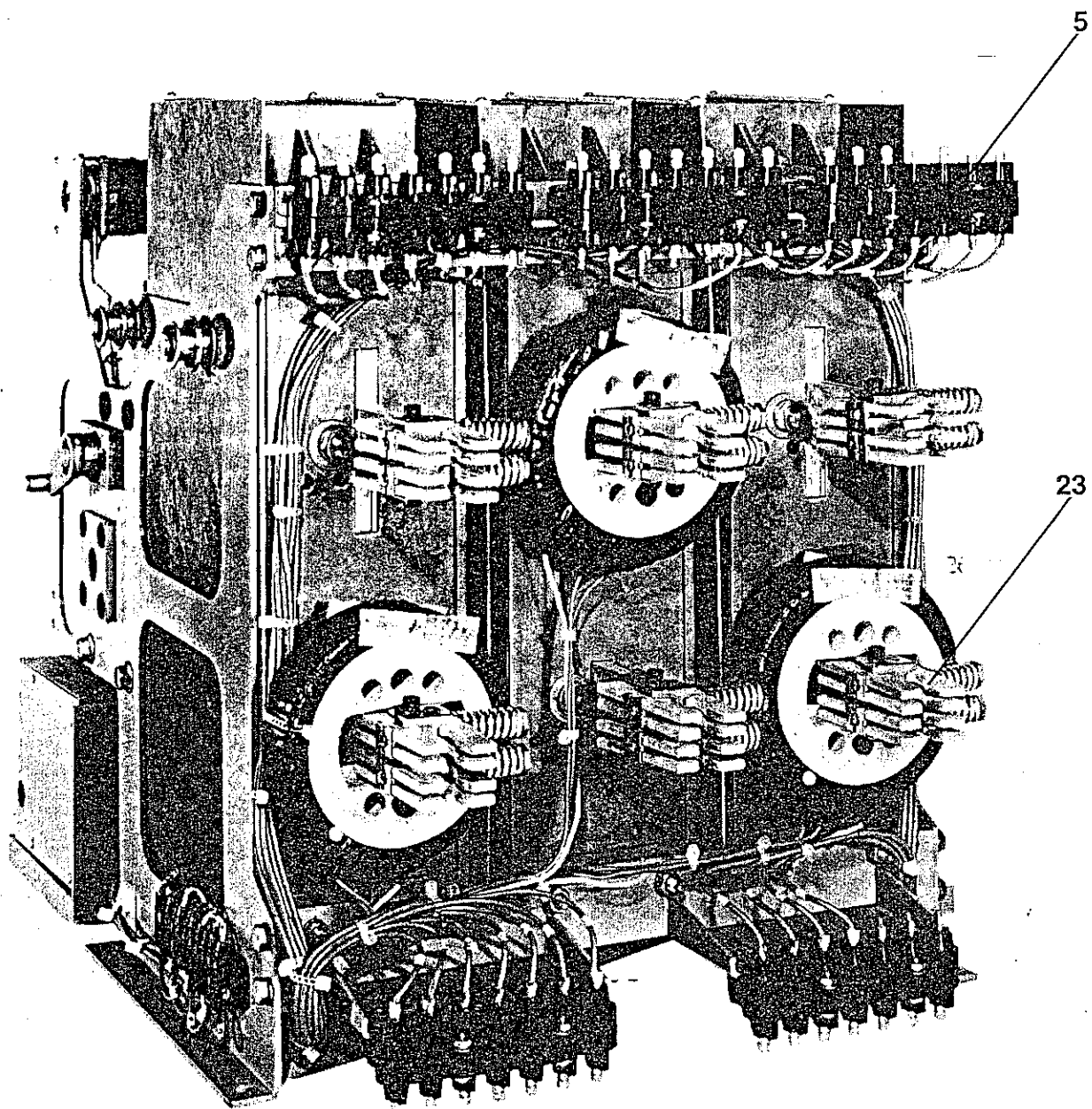


FIGURE 6
REAR VIEW TYPE FPS4-30 BREAKER

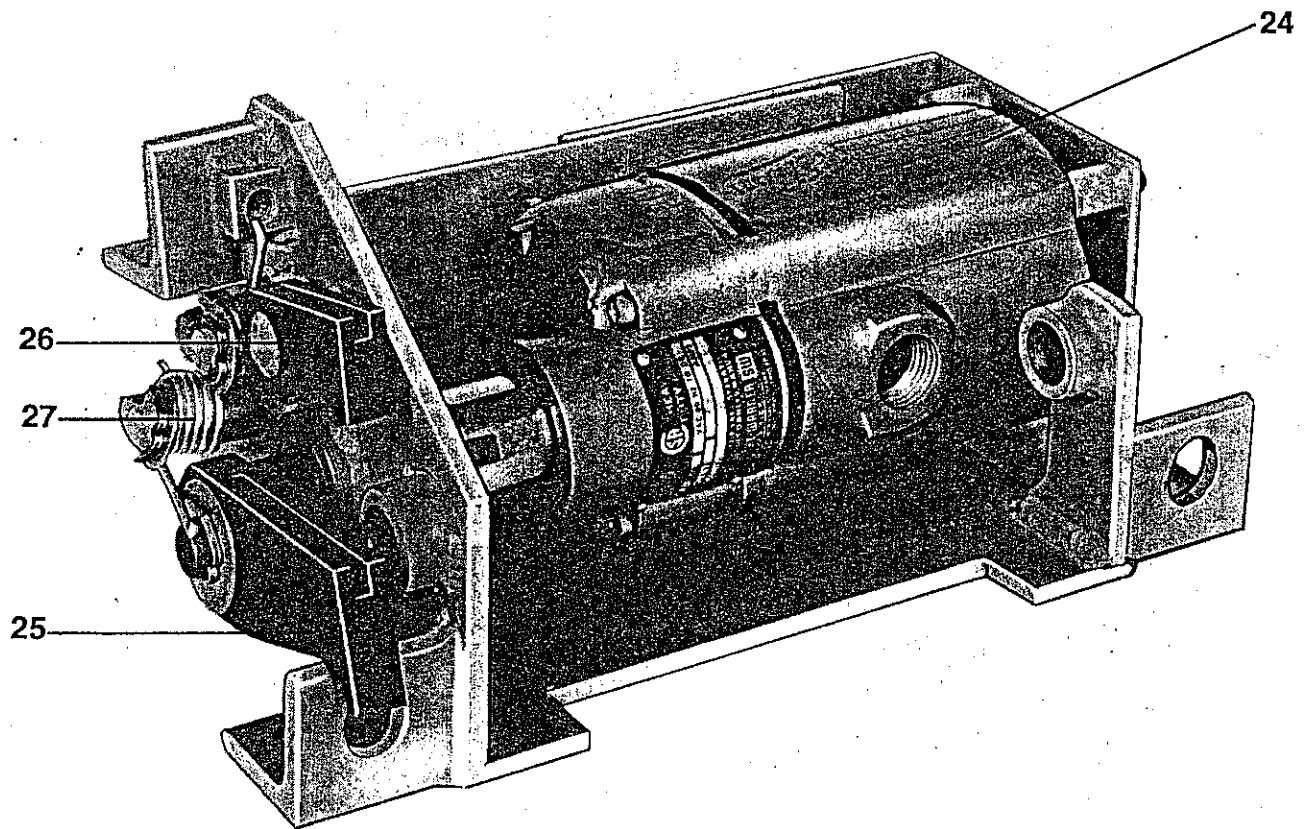


FIGURE 7
SPRING CHARGING MOTOR ASSEMBLY

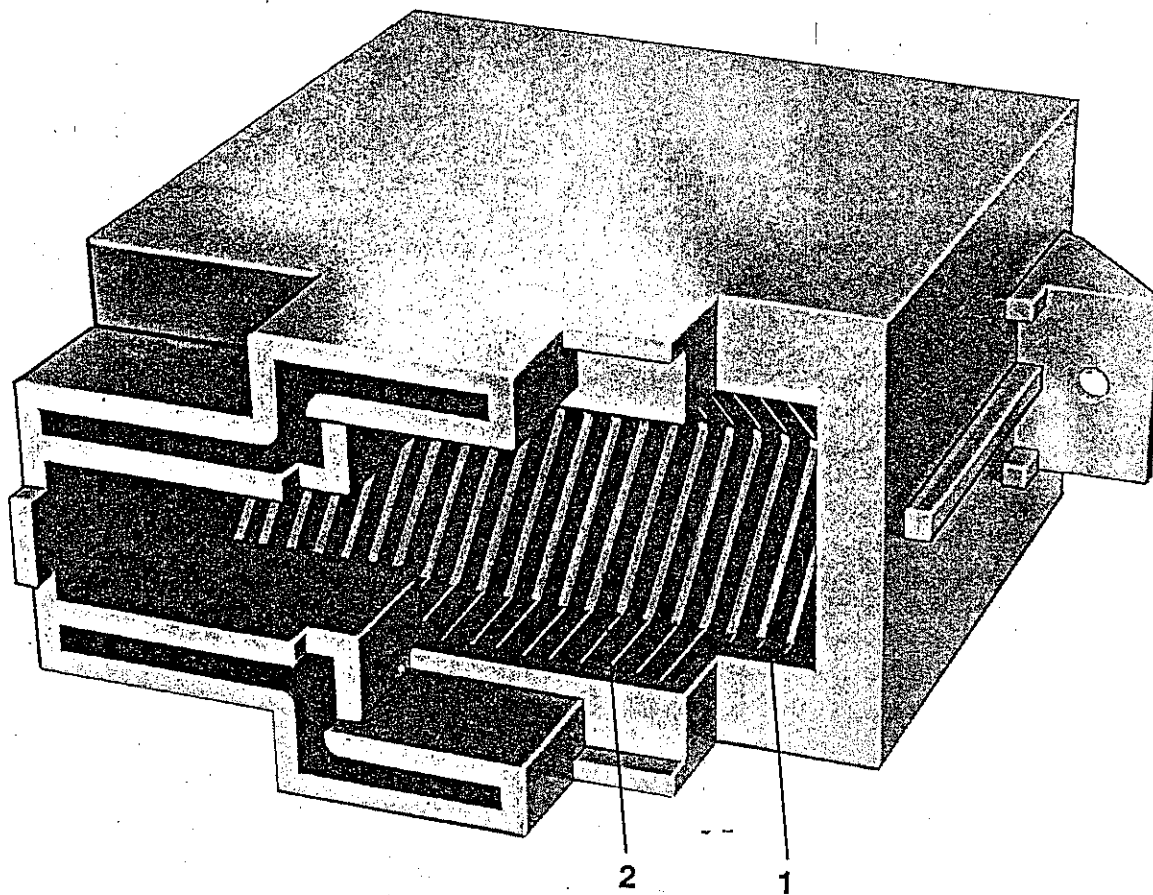


FIGURE 8
ARC CHUTE ASSEMBLY

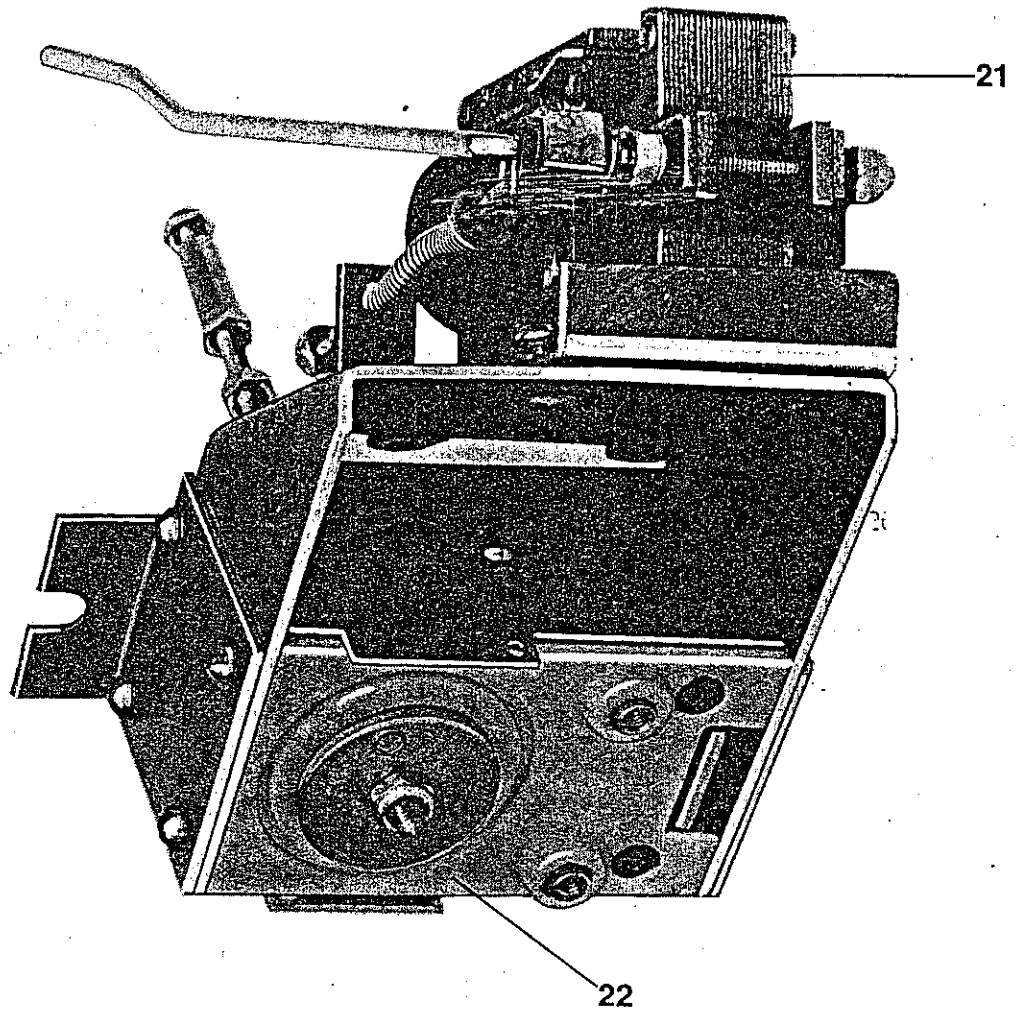


FIGURE 9
FLUX TRIP AND SHUNT TRIP DEVICE ASSEMBLY

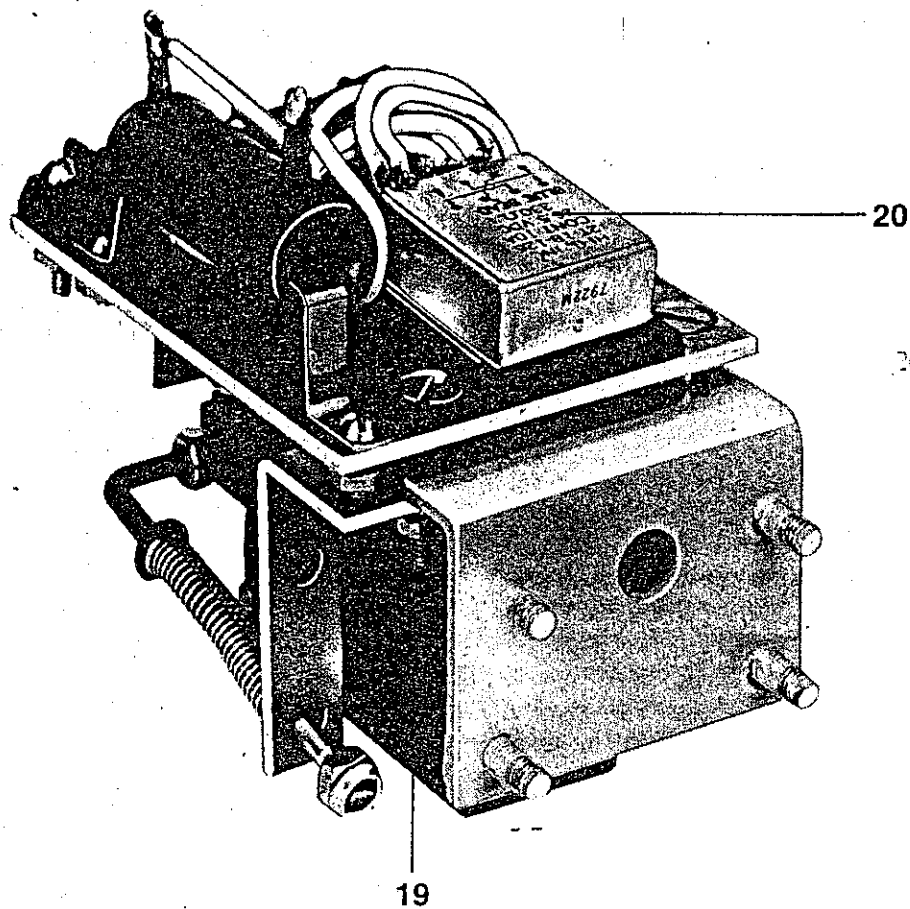


FIGURE 10
SHUNT CLOSE ASSEMBLY

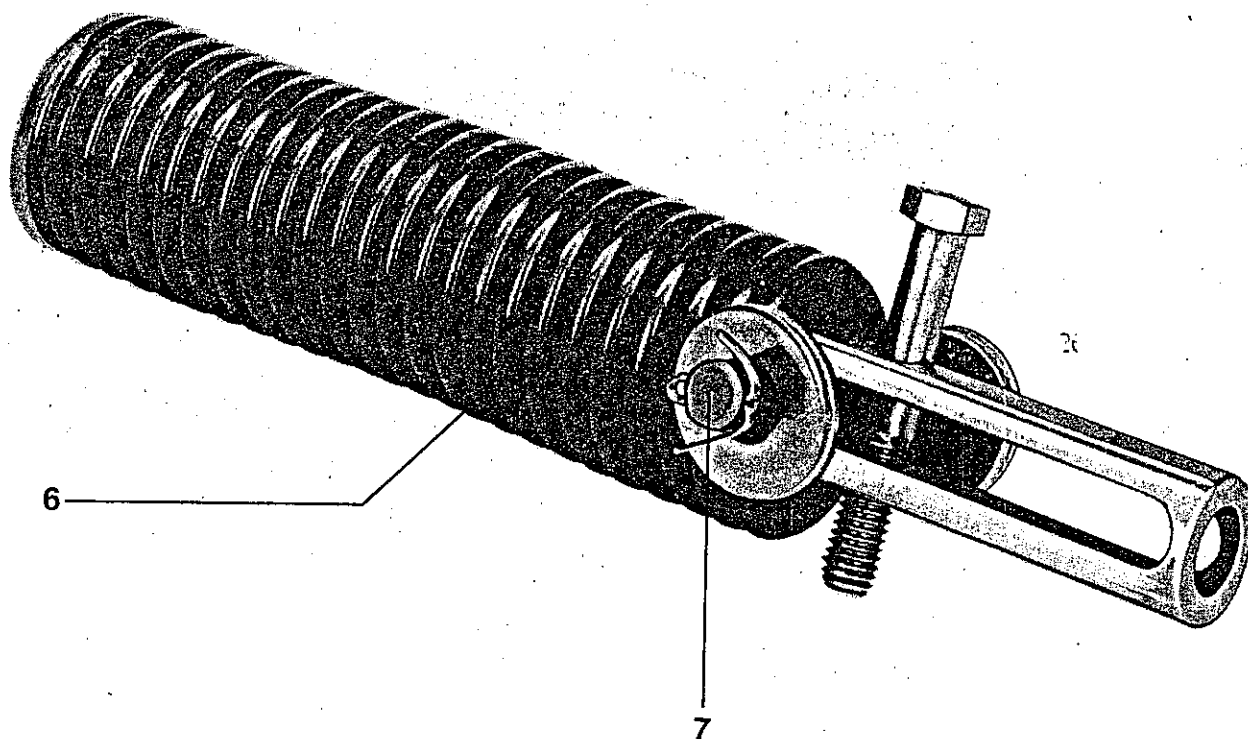


FIGURE 11
CLOSING SPRING

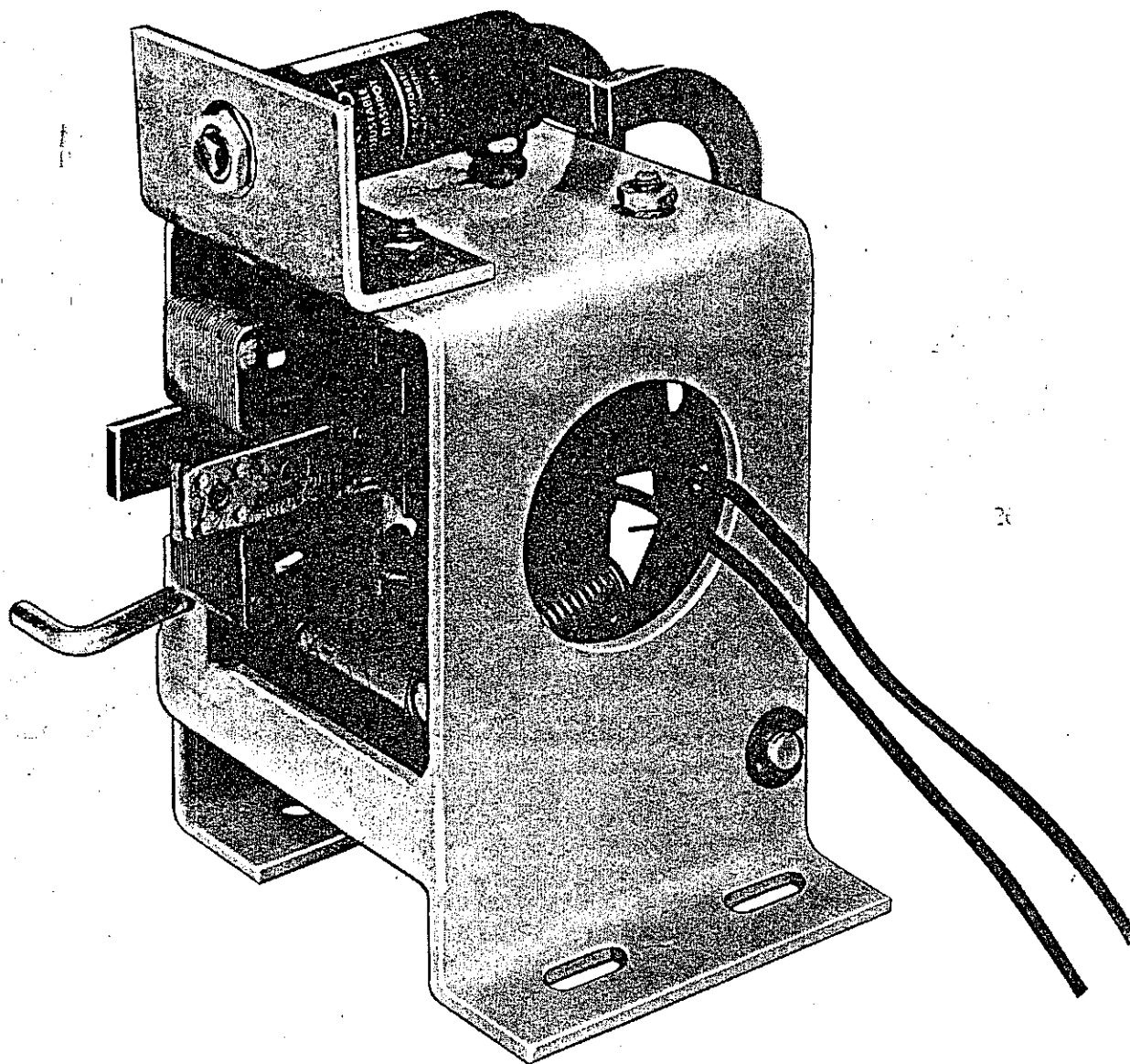


FIGURE 12
UNDervOLTAGE TRIP DEVICE WITH PNEUMATIC TIME DELAY

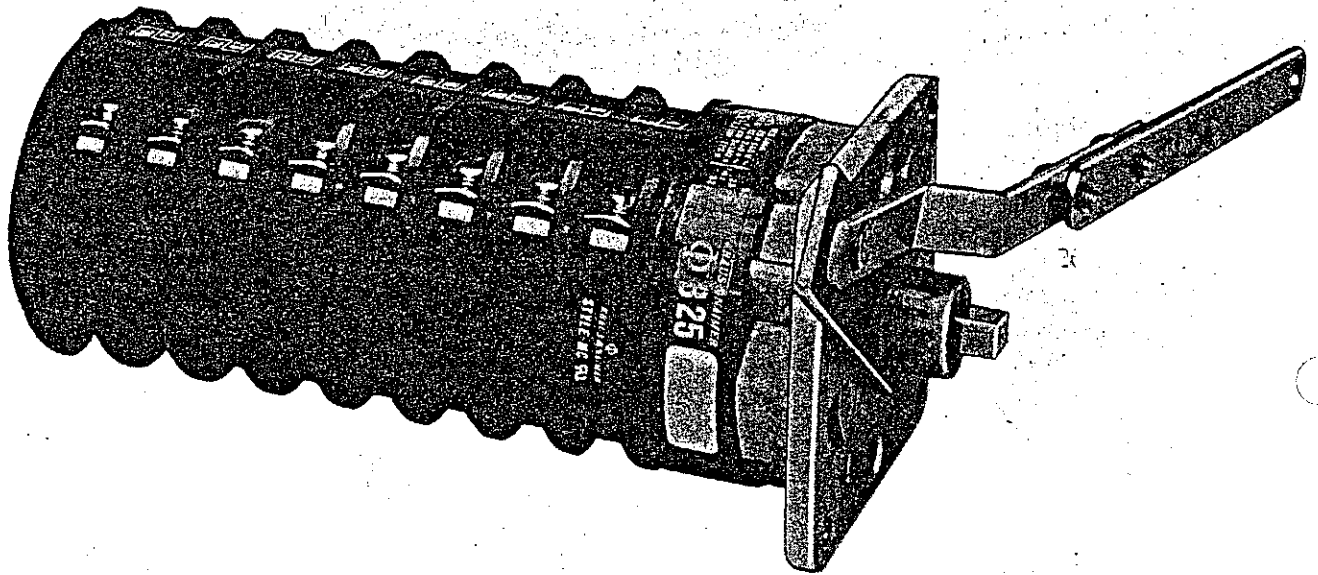


FIGURE 13
AUXILIARY SWITCH

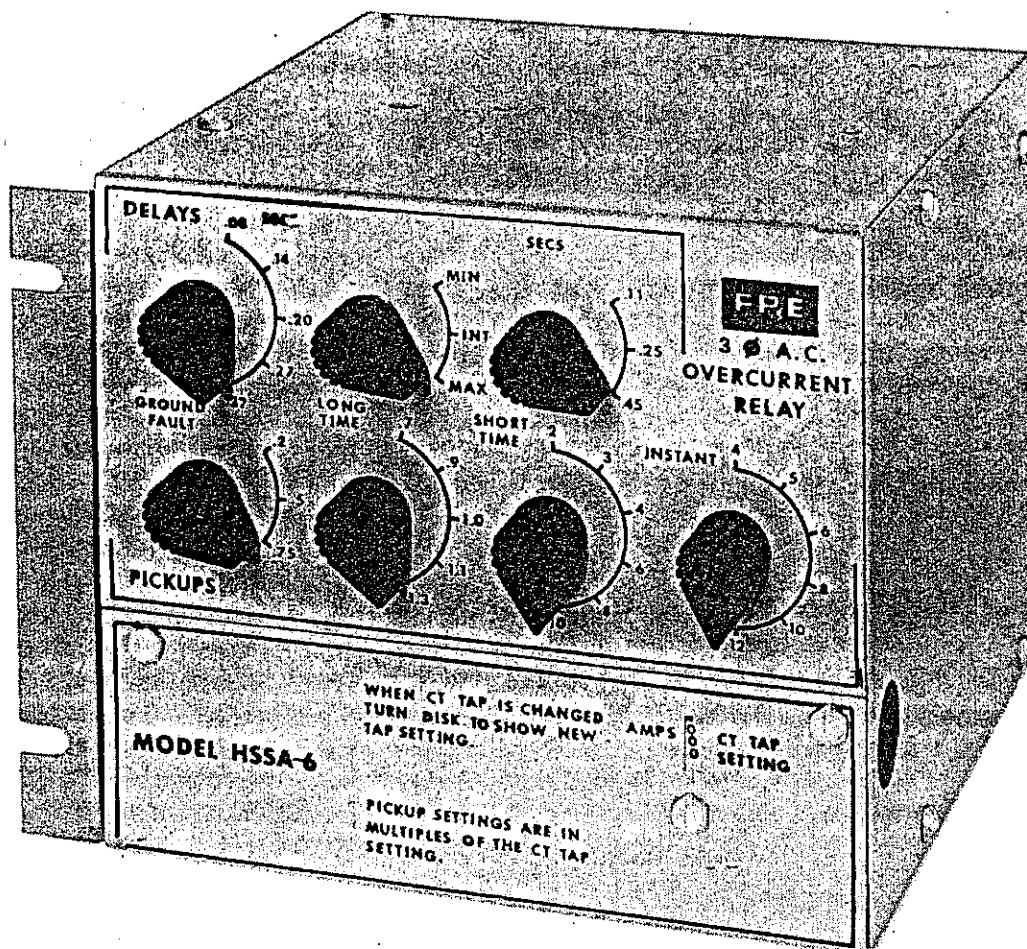


FIGURE 14
OVERCURRENT RELAY

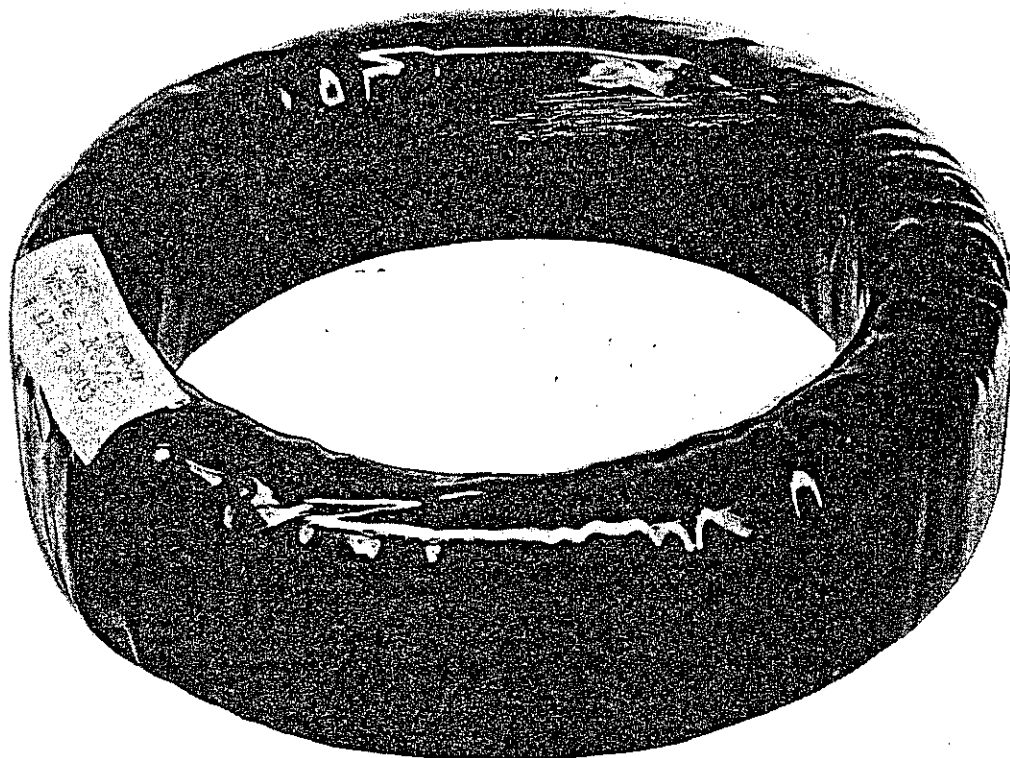


FIGURE 15
CURRENT SENSOR

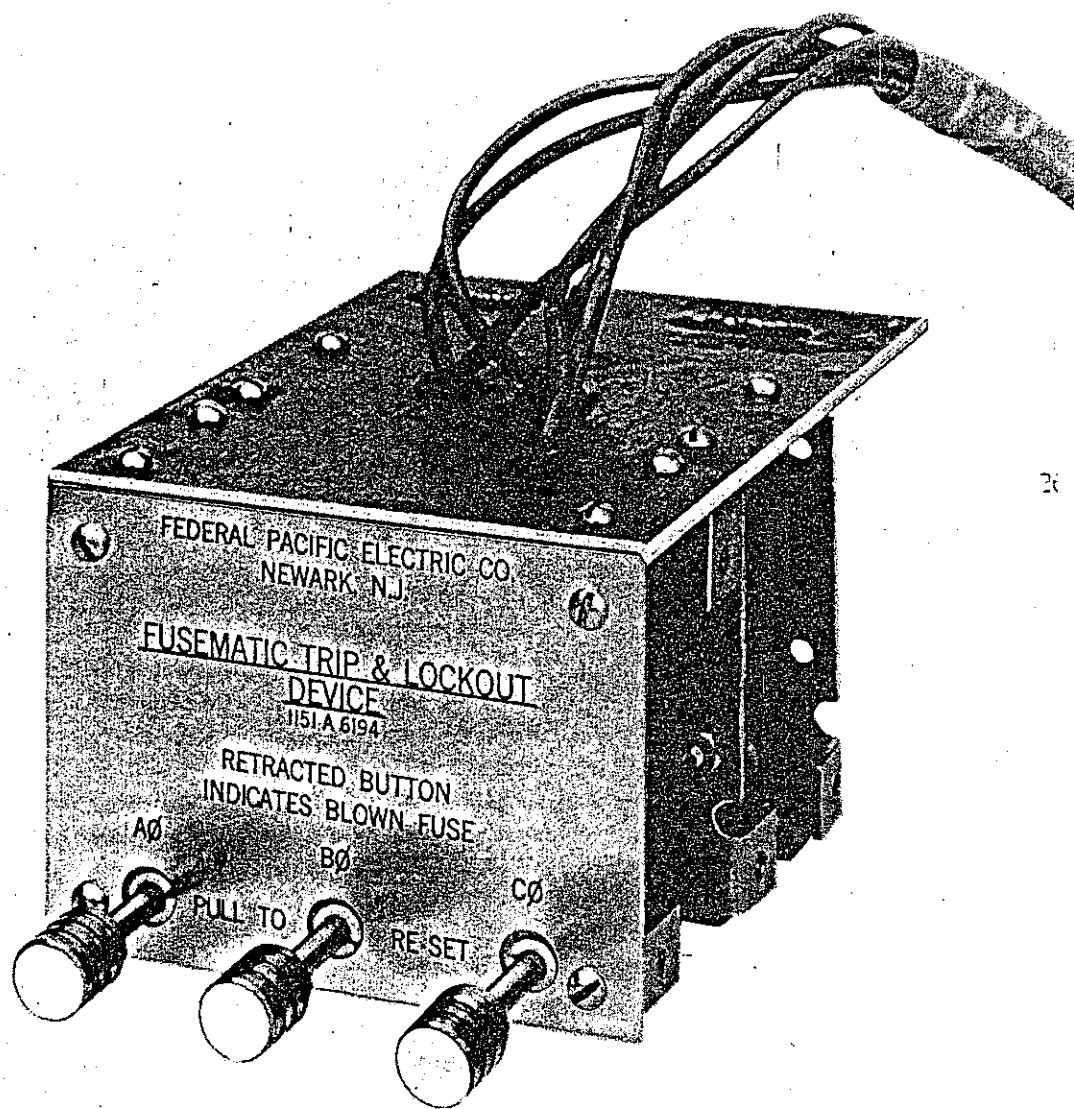


FIGURE 16
ANTI-SINGLE PHASE TRIP DEVICE

FPS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FPS4 800	FPS4 1600	FPS4 2000		
1	4	3	3	3	1251D0040	Arc-Chute Assembly
1	2	54	54	54	1201A0272	Arc-Chute Plate (Long)
1	3	15	15	15	1202A0272	Arc-Chute Plate (Short)
1	1	69	69	69	1201A0273	Arc-Chute Fibre Plate
1	6	6	6	6	1201A0274	Arc-Chute Plate Holder
1	5	4	4	4	1201B0276	Interphase Barrier
6	5	R	R	R	1251C0326	Movable Secondary Disconnect (7 Points)
		R	R	R	1951C0017	Stationary Sec. Disconnect (7 Points—Mounted in cell)
4		1	1	1	1251E0030	Mechanism Assembly Electrical Breaker
4		1	1	1	1253E0030	Mechanism Assembly Manual Breaker
11	6	—	1	1	1201A0076	Closing Spring
11	6	1	—	—	1202A0076	Closing Spring
		—	1	1	1201A0280	Closing Spring Spacer
11	7	1	1	1	1201A0279	Closing Spring Pin
5	8	1	1	1	1205A0076	Opening Spring
3	9	—	—	3	1251D0011	Upper Main Contact Assembly 2000 Amp
3	9	—	3	—	1252D0011	Upper Main Contact Assembly 1600 Amp
3	9	3	—	—	1253D0011	Upper Main Contact Assembly 800 Amp
2	34	3	3	3	1251B0169	Stationary Arcing Contact (L.H.)
2	36	3	3	3	1252B0169	Stationary Arcing Contact (R.H.)
2	31	—	6	6	1207A0076	St. Arc. Cont. Spring (1600 & 2000 Amp.)
		6	—	—	1208A0076	St. Arc. Cont. Spring (800 Amp.)
		6	12	12	1251B1003	Main Contact Finger Assembly
3		—	—	3	1251D0149	Main Disconnect & Insul. Ass'y. 2000 Amp
3		—	3	—	1252D0149	Main Disconnect & Insul. Ass'y. 1600 Amp.
3		3	—	—	1253D0149	Main Disconnect & Insul. Ass'y. 800 Amp.
3	13	—	—	3	1251C0172	Moving Contact Ass'y. 2000 Amp.
3	13	—	3	—	1252C0172	Moving Contact Ass'y. 1600 Amp.
3	13	3	—	—	1253C0172	Moving Contact Ass'y. 800 Amp.
2	37	3	3	3	1251A0178	Moving Arcing Contact Ass'y.
2	33	—	3	3	1251A0176	Main Moving Cont. Block Ass'y. 1600 & 2000 Amp.
2	33	3	—	—	1251A0185	Main Moving Cont. Block Ass'y. 800 Amp.
4	17	1	1	1	1251B0069	Ratchet Assembly
5	18	1	1	1	1251A0390	Motor Cut Off Switch Ass'y.
10	19	1	1	1	1201B0488	Closing Solenoid 48V DC
10	19	1	1	1	1202B0488	Closing Solenoid 115V AC/125V DC
10	19	1	1	1	1203B0488	Closing Solenoid 230V AC/250V DC
10	20	1	1	1	1251B0222	Y-Relay Assembly 48V DC
10	20	1	1	1	1252B0222	Y-Relay Assembly 125V DC
10	20	1	1	1	1253B0222	Y-Relay Assembly 250V DC
10	20	1	1	1	1254B0222	Y-Relay Assembly 115V AC
10	20	1	1	1	1255B0222	Y-Relay Assembly 230V AC
14		1	1	1	1201A0445	FPS4 Overcurrent Relay Long Delay & Inst.
14		1	1	1	1202A0445	FPS4 Overcurrent Relay Long & Short Delay
14		1	1	1	1203A0445	FPS4 Overcurrent Relay Long & Short Delay & Inst.
14		1	1	1	1204A0445	FPS4 Overcurrent Relay Long Delay & Inst. & Gr.F.T.
14		1	1	1	1205A0445	FPS4 Overcurrent Relay Long & Short Delay & Gr.F.T.
14		1	1	1	1206A0445	FPS4 Overcurrent Relay Long & Short Delay & Inst & Gr.F.T.
9	21	1	1	1	1201B0489	Trip Solenoid 48V DC
9	21	1	1	1	1202B0489	Trip Solenoid 115V AC/125V DC
9	21	1	1	1	1203B0489	Trip Solenoid 230V AC/250V DC

R—Quantity varies according to wiring—Maximum 5 per breaker.

FPS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FPS4 800	FPS4 1600	FPS4 2000		
9	22	1	1	1	1251B0263	Flux Trip Device Ass'y.
13		1	1	1	1251A0070	Auxiliary Switch 3 Stages—12 Contacts
13		1	1	1	1252A0070	Auxiliary Switch 4 Stages—16 Contacts
13		1	1	1	1253A0070	Auxiliary Switch 5 Stages—20 Contacts
13		1	1	1	1254A0070	Auxiliary Switch 6 Stages—24 Contacts
13		1	1	1	1255A0070	Auxiliary Switch 7 Stages—28 Contacts
13		1	1	1	1256A0070	Auxiliary Switch 8 Stages—32 Contacts
12		1	1	1	1251C0380	Undervoltage Ass'y. 115V AC
12		1	1	1	1252C0380	Undervoltage Ass'y. 230V AC
12		1	1	1	1253C0380	Undervoltage Ass'y. 480V AC
6	23	—	—	6	1251C0050	Cluster Assembly 2000 Amp.
6	23	—	6	—	1252C0050	Cluster Assembly 1600 Amp.
6	23	6	—	—	1253C0050	Cluster Assembly 800 Amp.
7	24	1	1	1	1201A0446	Charging Motor 48V DC
7	24	1	1	1	1202A0446	Charging Motor 115V AC/125V DC
7	24	1	1	1	1203A0446	Charging Motor 230V AC/250V DC
7	25	1	1	1	1251A0078	Charging Pawl Ass'y.
7	26	1	1	1	1201A0475	Stop Pawl
7	27	2	2	2	1201A0253	Pawl Torsion Spring
5	28	1	1	1	1101A5686	Bell Alarm W Type PR Switch
		1	1	1	1201C0075	Draw-out Racking Handle
		1	1	1	1251D0142	Insulation Plate Ass'y.
		1	1	1	1201A0393	Slow Close Spring Blocking Pin
		1	1	1	1201A0383	Modif. Solenoid for Undervolt. 115V AC
		1	1	1	1202A0383	Modif. Solenoid for Undervolt. 230V AC
		1	1	1	1203A0383	Modif. Solenoid for Undervolt. 480V AC
		1	1	1	1251C0394	FP4 Breaker Lifting Device
		1	1	1	1251D0370	Front Escutcheon Ass'y.
15		3	—	—	1251C0001	Current Transformer Rating: 500-600-800
15		3	—	—	1252C0001	Current Transformer Rating: 300-350-400
15		3	—	—	1253C0001	Current Transformer Rating: 200-225-250
15		3	—	—	1254C0001	Current Transformer Rating: 125-150-175
15		3	—	—	1255C0001	Current Transformer Rating: 70-90-100
15		—	3	—	1251C0002	Current Transformer Rating: 1000-1200-1600
15		—	3	—	1252C0002	Current Transformer Rating: 500-600-800
15		—	3	—	1253C0002	Current Transformer Rating: 300-350-400
15		—	3	—	1254C0002	Current Transformer Rating: 200-225-250
15		—	3	—	1255C0002	Current Transformer Rating: 125-150-175
15		—	3	—	1256C0002	Current Transformer Rating: 100
15		—	—	3	1251B0003	Current Transformer Rating: 2000
2	1	12	12	12	19S438-24	7/16-14x1.50 Lg. Hex. Hd. Bolt
2	2	3	3	3	1251C0153	Upper Main Contact Terminal 2000 Amp.
2	2	3	3	3	1251C0161	Upper Main Contact Terminal 1600 Amp.
2	2	3	3	3	1251C0165	Upper Main Contact Terminal 800 Amp.
2	3	—	12	12	1203A0164	Spacer (Aluminum)
2	4	12	24	24	1251A0151	Main Contact Finger
2	5	24	48	48	1201A0164	Spacer (Aluminum)
2	6	12	24	24	1202A0164	Spacer (Aluminum)
2	7	—	12	12	1204A0164	Spacer (Copper) 2000 & 1600 Amp.
2	7	12	—	—	1206A0164	Spacer (Copper) 800 Amp.
2	8	12	24	24	1201B0159	Main Contact Center Pin Guide

FPS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FPS4 800	FPS4 1600	FPS4 2000		
2	9	6	12	12	1201A0066	Main Contact Center Pin
2	10	6	12	12	1208A0009	Compression Spring
2	11	6	12	12		#10 Molden Nylon Bushing
2	12	6	12	12	.094 dia.x.38 Lg.	Roll Pin
2	13	36	72	72	1201A0048	St. Steel Washer
2	14	24	48	48	1201A0158	Main Contact Link
2	15	6	12	12	1206A0076	Compression Spring
2	16	6	12	12	1251A0079	Main Contact Rod Ass'y.
2	17	—	3	3	19S312-72	5/16-18 x 4.50 Lg. Hex. Hd. Bolt
2	17	3	—	—	19S312-58	5/16-18 x 3.62 Lg. Hex. Hd. Bolt
2	18	6	6	6	W500	500 dia. Flat Washed
2	19	—	—	1	1201A0199	Pin
2	19	—	1	—	1202A0199	Pin
2	19	1	—	—	1203A0199	Pin
2	20	6	—	6	1202A0059	Spacer
2	20	—	6	—	1201A0059	Spacer
2	21	3	3	3	1201A0197	Adjustable Rod End
2	22	3	3	3	1251A0195	Insulator Assembly
2	23	—	3	3	19S375-72	3/8-16 x 4.50 Lg. Hex. Hd. Bolt
2	23	3	—	—	19S375-56	3/8-16 x 3.50 Lg. Hex. Hd. Bolt
2	24	—	—	3	1201A0187	Tubing-Spacer
2	24	—	3	—	1202A0187	Tubing-Spacer
2	24	3	—	—	1203A0187	Tubing-Spacer
2	25	—	6	6	1201A0186	Conical Spring
2	26	—	—	3	1251A0188	Lower Stud Assembly
2	26	—	3	—	1251A0190	Lower Stud Assembly
2	26	3	—	—	1251A0192	Lower Stud Assembly
2	27	3	3	3	1209A0009	Compression Spring
2	28	3	—	3	1251B0174	Moving Contact Ass'y.
2	28	—	3	—	1251B0183	Moving Contact Ass'y.
2	29	—	—	3	1201B0173	Moving Contact
2	29	—	3	—	1201B0182	Moving Contact
2	30	6	6	6		.12 dia. x .75 Lg. Cotter Pin
2	31	—	6	6	1207A0076	Compression Spring
2	31	6	—	—	1208A0076	Compression Spring
2	32	6	6	6	1201A0181	Moving Arcing Cont. Plate
2	33	—	3	3	1251A0176	Main Moving Contact Ass'y.
2	33	3	—	—	1251A0185	Main Contact Block Ass'y.
2	34	3	3	3	1251B0169	L.H. Stationary Arc. Cont. Ass'y.
2	35	6	6	6	1201A0168	Retainer
2	36	3	3	3	1252B0169	R.H. Stationary Arc. Cont. Ass'y.
2	37	3	3	3	1251A0178	Arcing Contact Assembly
2	38	—	6	6		3/8-16 x 1.75 Lg. Socket Hd. Cap Screw
2	38	6	—	—		3/8-16 x 1.50 Lg. Socket Hd. Cap Screw
2	39	6	6	6	1W375	.38 dia. Lock Washer
2	40	—	6	6	19S250-70	1/4-20 x 4.38 Lg. Hex. Hd. Bolt
2	40	6	—	—	19S250-56	1/4-20 x 3.50 Lg. Hex. Hd. Bolt
2	41	3	3	3		.156 dia. x 1.00 Lg. Roll Pin
2	42	3	3	3	N375	3/8-16 Hex. Lock Nut
2	43	6	6	6	N250	1/4-20 Hex. Flex Lock Nut
2	44	—	—	3	1201C0150	Insulator
2	44	—	3	—	1202C0150	Insulator
2	44	3	—	—	1203C0150	Insulator

FPS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FPS4 800	FPS4 1600	FPS4 2000		
2	45	—	—	3	1251D0149	Main Disconnect & Insulator Ass'y.
2	45	—	3	—	1252D0149	Main Disconnect & Insulator Ass'y.
2	45	3	—	—	1253D0149	Main Disconnect & Insulator Ass'y.
2	46	36	72	72	Waldes Truarc	5100-25 Retaining Ring
2	47	3	3	3	N312	5/16-18 Hex. Flex Lock Nut

FMS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FMS4 800	FMS4 1600	FMS4 2000		
		3	3	3	1254D0149	Main Disconnect & Insul. Ass'y. Fusematic—Upper 2000 Amp
		3	3	3	1255D0149	Main Disconnect & Insul. Ass'y. Fusematic—Upper 1600 Amp
		3	3	3	1256D0149	Main Disconnect & Insul. Ass'y. Fusematic—Upper 800 Amp
		3	3	3	1257D0149	Main Disconnect & Insul. Ass'y. Fusematic—Lower 2000 Amp
		3	3	3	1258D0149	Main Disconnect & Insul. Ass'y. Fusematic—Lower 1600 Amp
		3	3	3	1259D0149	Main Disconnect & Insul. Ass'y. Fusematic—Lower 800 Amp
		3	3	3	1254D0011	Upper Main Contact Ass'y. Fusematic—2000 Amp
		3	3	3	1255D0011	Upper Main Contact Ass'y. Fusematic—1600 Amp
		3	3	3	1256D0011	Upper Main Contact Ass'y. Fusematic—800 Amp
		3	3	3	1254C0171	Lower Main Contact Ass'y. Fusematic—2000 Amp
		3	3	3	1255C0171	Lower Main Contact Ass'y. Fusematic—1600 Amp
		3	3	3	1256C0171	Lower Main Contact Ass'y. Fusematic—800 Amp
		—	3	3	LCL3000AMP	Econolim Fuse Type "L"
		—	3	3	LCL2500AMP	Econolim Fuse Type "L"
		3	3	3	LCL2000AMP	Econolim Fuse Type "L"
		3	3	3	LCL1600AMP	Econolim Fuse Type "L"
		3	3	3	LCL1200AMP	Econolim Fuse Type "L"
		3	3	3	LCL1000AMP	Econolim Fuse Type "L"
		3	3	3	LCL800AMP	Econolim Fuse Type "L"
		3	3	3	JCL600AMP	Econolim Fuse Type "J"
		—	3	3	JCL500AMP	Econolim Fuse Type "J"
		3	3	3	JCL400AMP	Econolim Fuse Type "J"
		3	—	—	1201A2027	Fuse Adapter
		3	—	—	1201A2028	Fuse Adapter
		—	3	—	1201A2029	Fuse Adapter
		—	3	—	1201A2030	Fuse Adapter
		—	—	3	1201A2031	Fuse Adapter
		—	—	3	1201A2032	Fuse Adapter
		—	—	3	1201A2033	Fuse Adapter
		—	—	3	1201A2054	Fuse Adapter
		—	3	—	1201A2055	Fuse Adapter
		3	—	—	1201A2056	Fuse Adapter

FMS4 BREAKER RENEWAL PARTS LIST

FIG. NO.	REF. NO.	QUANTITY/BREAKER			PART NO.	DESCRIPTION
		FMS4 800	FMS4 1600	FMS4 2000		
		3	3	3	1201A2022	Angle Bracket
		—	—	3	1202A2022	Angle Bracket
		—	3	—	1203A2022	Angle Bracket
		3	—	—	1204A2022	Angle Bracket
		—	1	1	1201A2024	Adapter Support Angle
		—	1	—	1202A2029	Adapter Support Angle
		—	1	1	1202A2025	Adapter Support Angle
		1	1	1	1202A2026	Adapter Support Angle
		2	2	2	1201A2021	Support Clip
		2	2	2	1201A2020	Support Rod
		2	2	2	1202A2020	Support Rod
16		1	1	1	1251C2034	Anti-Single Phase Trip Device
		1	—	—	1202A2024	Adapter Support Angle

RECOMMENDED SPARE PARTS FOR NORMAL MAINTENANCE

PART NO.	QUANTITY	DESCRIPTION
1251D0040	3	Arc Chute
1251C0326	4	Movable Sec. Disconnect (7 points)
1951C0017	4	Stationary Sec. Disconnect (7 points—mounted in cell)
See Ref. No. 9 of Parts List	1	Upper Main Contact Assembly
1251B0169	3	Stationary Arcing Contact (L.H.)
1252B0169	3	Stationary Arcing Contact (R.H.)
1251A0178	3	Moving Arcing Contact
1201A0181	3	Moving Arcing Contact Plate
See Ref. No. 33	3	Main Moving Contact
1251B0069	1	Ratchet Assembly
1251A0390	1	Motor Cut-off Switch Assembly
See Ref. No. 24	1	Charging Motor
1251A0078	1	Charging Pawl Assembly
1201A0475	1	Stop Pawl
1201A0253	2	Pawl Torsion Spring
See Ref. No. 23	2	Cluster Assembly
See Ref. No. 19	1	Closing Solenoid
See Ref. No. 20	1	Y-Relay Assembly
See Ref. No. 21	1	Trip Solenoid
See Fig. No. 13 of Parts List	1	Auxiliary Switch

Ref. — 1251E2057 — Upper Fuse Mounting
 1251E2058 — Lower Fuse Mounting