RENEWAL PARTS

GEF-6000

HIGH CAPACITY OIL-BLAST CIRCUIT BREAKERS

Types FK121 and FK145

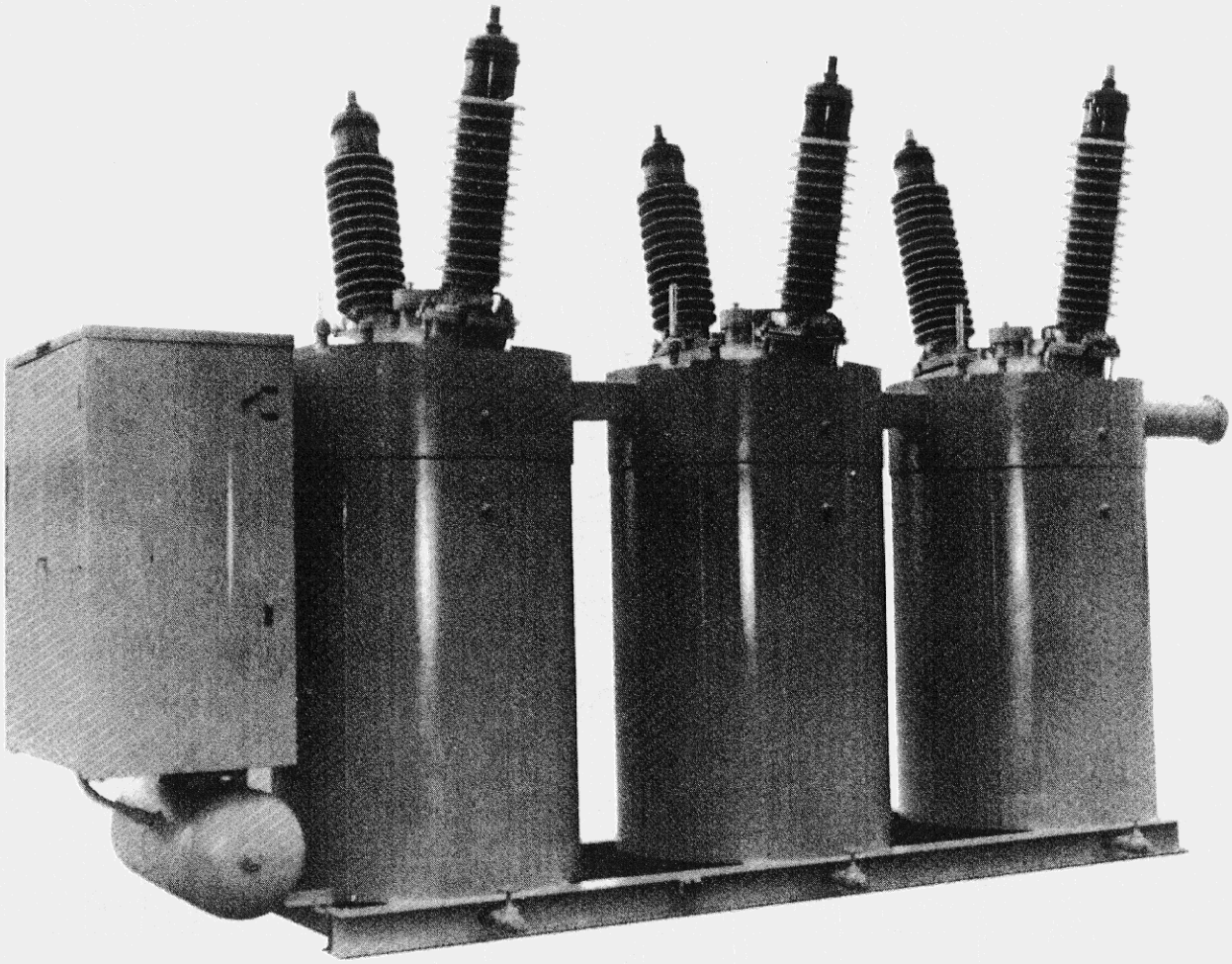

Fig. 1. Type FK Oil blast circuit breaker

ORDERING INSTRUCTIONS

1. Always specify the complete nameplate data of both the breaker and the mechanism.
2. Specify the quantity, catalog number (if listed), reference number (if listed), and description of each part ordered, and this bulletin number.
3. Standard hardware, such as screws, bolts, nuts, washers, etc., is not listed in this bulletin. Such items should be purchased locally.
4. For prices, refer to the nearest office of the General Electric Company.

When ordering renewal parts, give quantity, catalog number, description of each item required, and complete nameplate reading.

GENERAL ELECTRIC

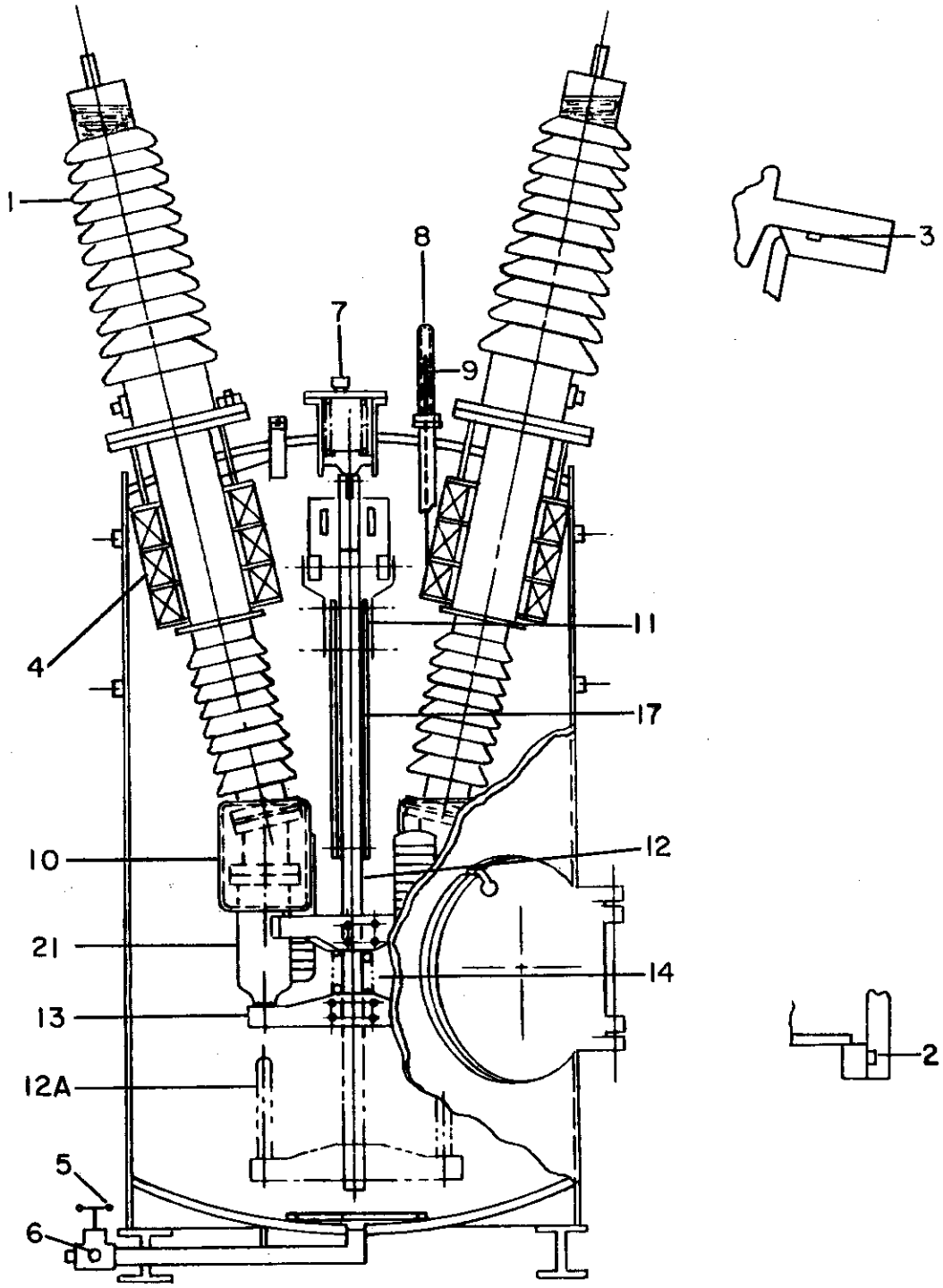

Fig. 2. Single-pole unit

SINGLE POLE UNIT (See Fig. 2)

Ref. No.	Quantity Required per Breaker												Catalog Number	Description
	FK-121-20, 000-4 1200 Amp.	FK-121-40, 000-8 1600 Amp.	FK-121-40, 000-7 2000 Amp.	FK-121-40, 000-2 3000 Amp.	FK-121-63, 000-2 2000 Amp.	FK-121-63, 000-2 3000 Amp.	FK-145-20, 000-4 1200 Amp.	FK-145-40, 000-16 1600 Amp.	FK-145-40, 000-5 2000 Amp.	FK-145-40, 000-5 3000 Amp.	FK-145-63, 000-2 2000 Amp.	FK-145-63, 000-3 3000 Amp.		
Δ1	6	6	-	-	-	-	-	-	-	-	-	-	11B401BB	Bushing
Δ1	-	-	6	-	6	-	-	-	-	-	-	-	11B568BB	Bushing
Δ1	-	-	-	6	-	6	-	-	-	-	-	-	11B404BB	Bushing
Δ1	-	-	-	-	-	-	6	6	-	-	-	-	11B409BB	Bushing
Δ1	-	-	-	-	-	-	-	-	6	-	6	-	11B408BB	Bushing
Δ1	-	-	-	-	-	-	-	-	-	6	-	6	11B406BB	Bushing
*Δ2	3	3	3	3	3	3	3	3	3	3	3	3	173A9024P8	Gasket for manhole cover
*Δ3	6	6	6	6	6	6	6	6	6	6	6	6	182V937P1	Gasket between breaker and bushing
4	-	-	-	-	-	-	-	-	-	-	-	-	ø	Bushing current transformer
5	3	3	3	3	3	3	3	3	3	3	3	3	368A827P1	Drain valve
6	3	3	3	3	3	3	3	3	3	3	3	3	183V933P1	Sampling device
7	3	3	3	3	3	3	3	3	3	3	3	3	182V804P1	Oil tank breather
Δ8	3	3	3	3	3	3	3	3	3	3	3	3	275A3420P1	Oil gage sight glass
*Δ†8A	3	3	3	3	3	3	3	3	3	3	3	3	275A3480P1	Gasket for oil gage
9	3	3	3	3	3	3	3	3	3	3	3	3	286B468G36	Oil level indicator
Δ10	6	6	6	6	6	6	6	6	6	6	6	6	172C4152P1	Interrupter shield
Δ11	3	3	3	3	3	3	3	3	3	3	3	3	184B6848G1	Lift rod guide assembly
Δ12	3	-	-	-	-	-	3	-	-	-	-	-	184B6888G2	Moving contact assembly
Δ12	-	3	3	-	-	-	-	3	3	-	-	-	184B6888G3	Moving contact assembly
Δ12	-	-	-	3	3	3	-	-	-	3	3	3	184B6888G1	Moving contact assembly
*Δ12A	6	6	6	-	-	-	6	6	6	-	-	-	275A6233P2	Contact rods
*Δ12A	-	-	-	6	6	6	-	-	-	6	6	6	275A6233P1	Contact rods
13	3	6	6	6	6	6	3	6	6	6	6	6	172C4147P1	Cross arm
14	-	3	3	3	3	3	-	3	3	3	3	3	273A8965P1	Spring
†15	-	6	6	6	6	6	-	6	6	6	6	6	275A6266G1	Contact stud assembly for top cross arm
†16	6	6	6	6	6	6	6	6	6	6	6	6	6370567P7	Bushing for top cross arm
*Δ17	3	3	3	3	3	3	3	3	3	3	3	3	184B6837G2	Lift rod assembly only
†18	3	3	3	3	3	3	3	3	3	3	3	3	¶	Rod for lift rod assembly
†19	3	3	3	3	3	3	3	3	3	3	3	3	¶	Coupling for lift rod assembly
†20	3	3	3	3	3	3	3	3	3	3	3	3	¶	Plug for lift rod assembly
Δ21	6	-	-	-	-	-	6	-	-	-	-	-	172C4112G5	Interrupter complete (see Fig. 4)
Δ21	-	6	6	6	-	-	-	-	-	-	-	-	172C4112G3	Interrupter complete (see Fig. 4)
Δ21	-	-	-	-	6	6	-	-	-	-	-	-	172C4112G1	Interrupter complete (see Fig. 4)
Δ21	-	-	-	-	-	-	-	6	6	-	-	-	172C4112G4	Interrupter complete (see Fig. 4)
Δ21	-	-	-	-	-	-	-	-	-	6	6	6	172C4112G2	Interrupter complete (see Fig. 4)

ø Order by description and give serial number of breaker. Quantity depends on individual application.
† Not shown.
* Recommended for stock for normal maintenance.
Δ Recommended for stock for normal maintenance for customers in foreign countries and domestic customers in critical locations.
¶ Reference 18, 19, and 20 included in reference 17 and not furnished separately.

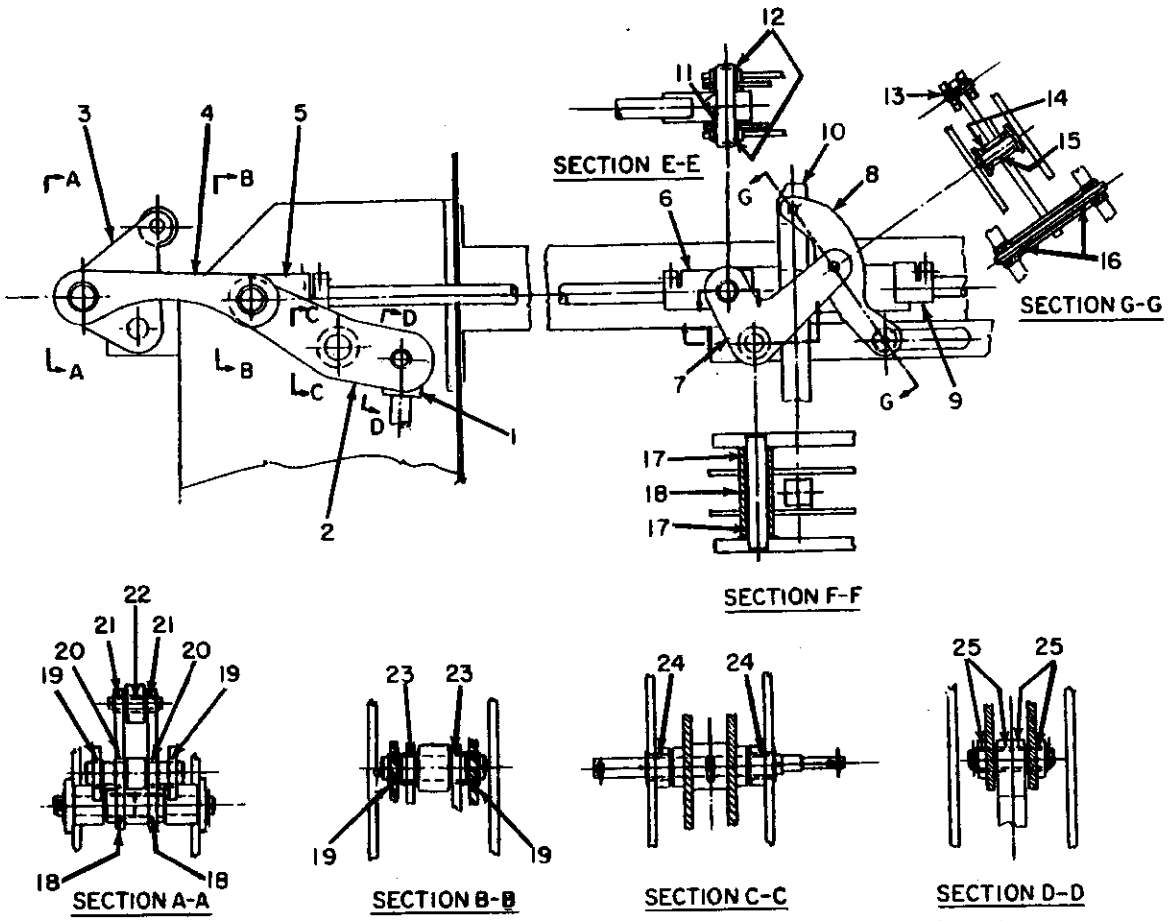

Fig. 3. Breaker bearing location (for all ratings of breakers)

Ref. No.	Catalog Number	No. Req'd	Description
1	ø	-	Vertical rod
2	ø	-	Front crank
3	ø	-	Dashpot crank
4	ø	-	Link
5	ø	-	Front horizontal rod coupling
6	ø	-	Phase horizontal rod coupling
7	ø	-	Crank
8	ø	-	Beam
9	ø	-	Straddle link
10	ø	-	Lift rod coupling
11	6370569P98	6	Crank bushing
12	6370569P4	6	Straddle link bushing
13	6370567P7	6	Lift rod coupling bushing
14	6370567P13	6	Beam bushing
15	273A8997P2	3	Beam spacer
16	6370566P63	6	Beam lower bushing
17	6370569P9	6	Crank bushing
18	273A8997P1	3	Crank spacer
19	275A3400P1	4	Link bushings
20	6370569P15	2	Dashpot crank bushings
21	6370567P9	2	Dashpot crank bushings
22	275A3400P2	1	Dashpot roller bushings
23	6370569P3	2	Front crank front bushings
24	6370569P25	2	Front crank bushings
25	6370568P5	4	Front crank rear bushings

ø Order by description and give serial number of breaker.

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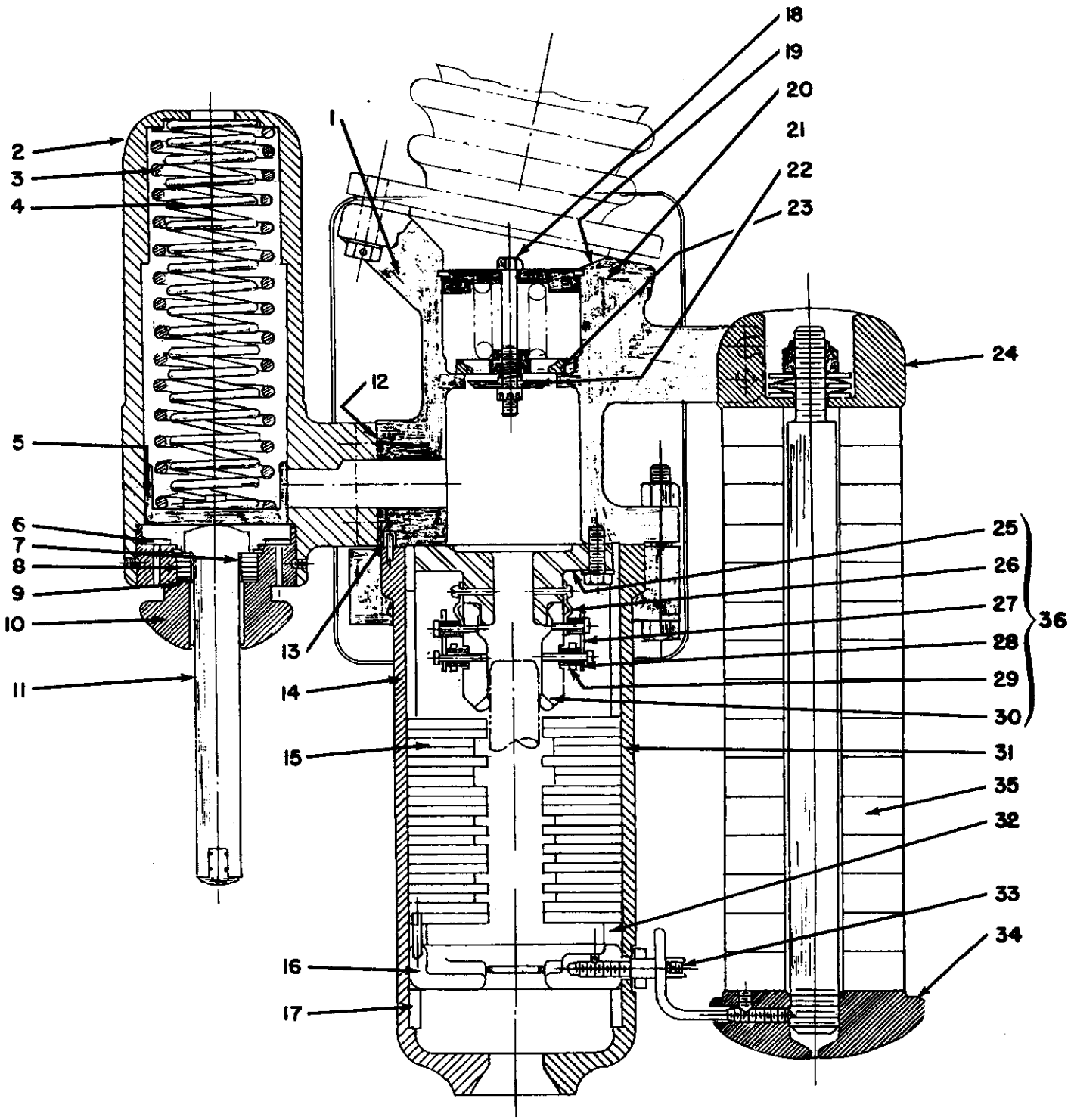

Fig. 4. Interrupter

INTERRUPTER (See Fig. 4)

Ref. No.	FK-121-20,000, 1200A INTERR. 172C4112G5	FK-121-40,000, 1600A INTERR. 172C4112G3	FK-121-63,000, 3000A INTERR. 172C4112G1	FK-145-20,000, 1200A INTERR. 172C4112G5	FK-145-40,000, 1600, 2000A INTERR. 172C4112G4	FK-145-40,000, 3000A FK-145-63,000, 2000A, 3000A, INTERR. 172C4112G2	Catalog Number	Description
	Quantity Required per Breaker							
1	-	6	-	-	6	-	138D4158P2	Adapter
1	-	-	6	-	-	6	184B6885G1	Adapter
2	-	6	6	-	-	-	172C4149P1	Pump housing
2	-	-	-	-	6	6	172C4149P2	Pump housing
3	-	6	6	-	6	6	275A5079	Outer pump spring
4	-	6	6	-	6	6	275A5078	Inner pump spring
5	-	6	6	-	6	6	275A5062P1	Piston
6	-	6	6	-	6	6	275A5050P1	Valve plate
7	-	6	6	-	6	6	215A5047P1	Retainer
8	-	24	24	-	24	24	275A5051P3	Buffer
9	-	6	6	-	6	6	275A5051P1	Spacer
10	-	6	6	-	6	6	184B6861P1	Bearing cap
11	-	6	6	-	6	6	275A5052G1	Pump rod
*Δ12	-	6	6	-	6	6	202A6426P233	"O" ring
13	6	6	6	6	6	6	103A2131P42	Locating pin
14	6	6	6	6	6	6	273A8962P1	Upper insulating spacer
Δ15	6	-	-	6	-	-	172C6600G2	Baffle assembly
Δ15	-	6	6	-	6	6	172C4111G1	Baffle assembly
16	6	6	6	6	6	6	172C4162P1	Resistor contact plate
17	6	6	6	6	6	6	275A5059P1	Lower insulation spacer
18	-	-	6	-	-	6	275A6250P1	Relief valve bolt
19	-	-	6	-	-	6	275A6247P1	Spring retainer
20	-	-	6	-	-	6	275A6248P1	Relief valve plate
21	-	-	6	-	-	6	275A6251P2	Relief valve spring
22	-	-	6	-	-	6	275A6249P1	Poppet valve
23	-	-	6	-	-	6	275A6251P3	Poppet valve spring
24	6	6	6	6	6	6	275A5087P1	Upper cap
25	6	6	6	6	6	6	184B6807P1	Contact block
26	60	60	60	60	60	60	153B5228P2	Flexible lead
27	6	6	6	6	6	6	273A8936P1	Retaining ring
28	60	60	60	60	60	60	6076150P1	Spring
29	6	6	6	6	6	6	273A8937P1	Spring retainer
30	60	60	60	60	60	60	184B6810G1	Contact finger
31	6	6	6	6	6	6	273A8972P1	Interrupter tube
32	6	6	6	6	6	6	275A5064G1	Middle insulating spacer
33	6	6	6	6	6	6	275A5069P1	Resistor stud
34	6	6	6	6	6	6	275A5086P1	Lower cap
Δ35	6	6	6	6	6	6	275A6411G1	Resistor assembly
*Δ36	6	6	6	6	6	6	172C6601G1	Stationary contact finger assembly (includes Ref. No's. 26, 27, 28, 29, and 30)

¶ Not shown.

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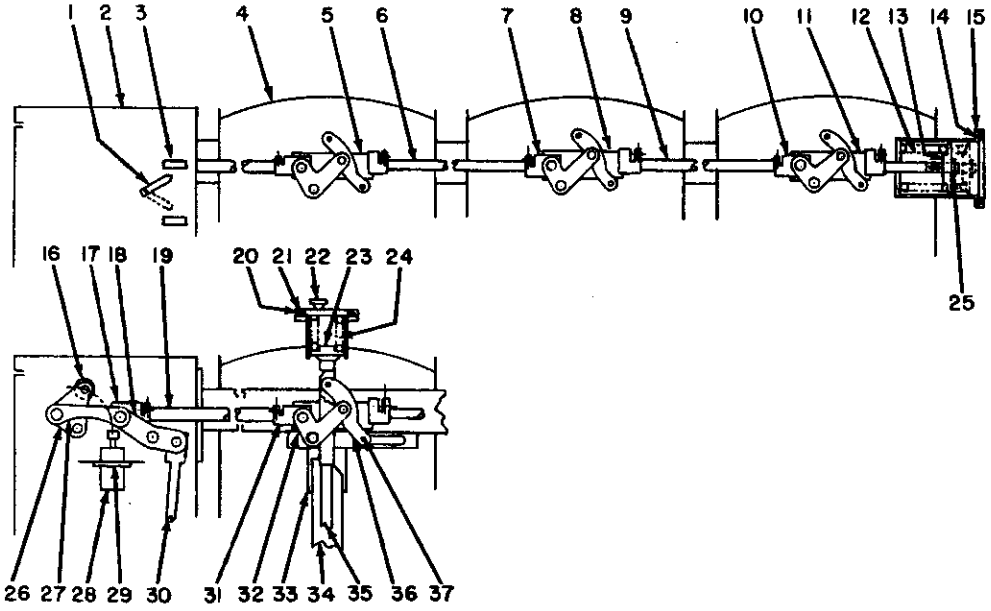

Fig. 5. Breaker mechanism in closed position (for all ratings of breakers)

Ref. No.	Catalog Number	No. Req'd	Description
1	ø	-	Breaker position indicator
2	ø	-	Control house roof
3	ø	-	Position indicator nameplate
4	ø	-	Breaker tank
5	ø	-	Phase 1 straddle link
6	ø	-	Phase 1 to 2 interphase rod
7	ø	-	Phase 2 coupling
8	ø	-	Phase 2 straddle link
9	ø	-	Phase 2 to 3 interphase rod
10	ø	-	Phase 3 coupling
11	ø	-	Phase 3 straddle link
12	275A5080P1	1	Follow-through spring (for all except 20,000 KA)
12	275A6273P1	1	Follow-through spring (for 20,000 KA only)
13	ø	-	Follow-through spring plate
*Δ14	275A5077P1	1	Cover gasket
15	ø	-	Follow-through spring cover
16	ø	-	Dashpot roller
17	ø	-	Mechanism coupling
18	ø	-	Crank
19	ø	-	Front horizontal rod
*Δ20	273A8953P1	3	Cover gasket
21	ø	-	Kickoff spring cover
22	182V804P1	3	Breather
23	ø	-	Kickoff spring retainer
24	275A5019P1	3	Kickoff spring
25	ø	-	Locknut
26	ø	-	Dashpot crank
27	ø	-	Dashpot link
28	138D4150G1	1	Opening dashpot
29	184B6815P1	1	Opening dashpot locking nut
30	ø	-	Vertical operating rod
31	ø	-	Phase 1 coupling
32	ø	-	Crank
33	ø	-	Lift rod guide bracket
34	ø	-	Lift rod guide bracket
35	ø	-	Lift rod
36	ø	-	Beam
37	ø	-	Roller

ø Order by description and give serial number of breaker. Quantity depends on individual application.

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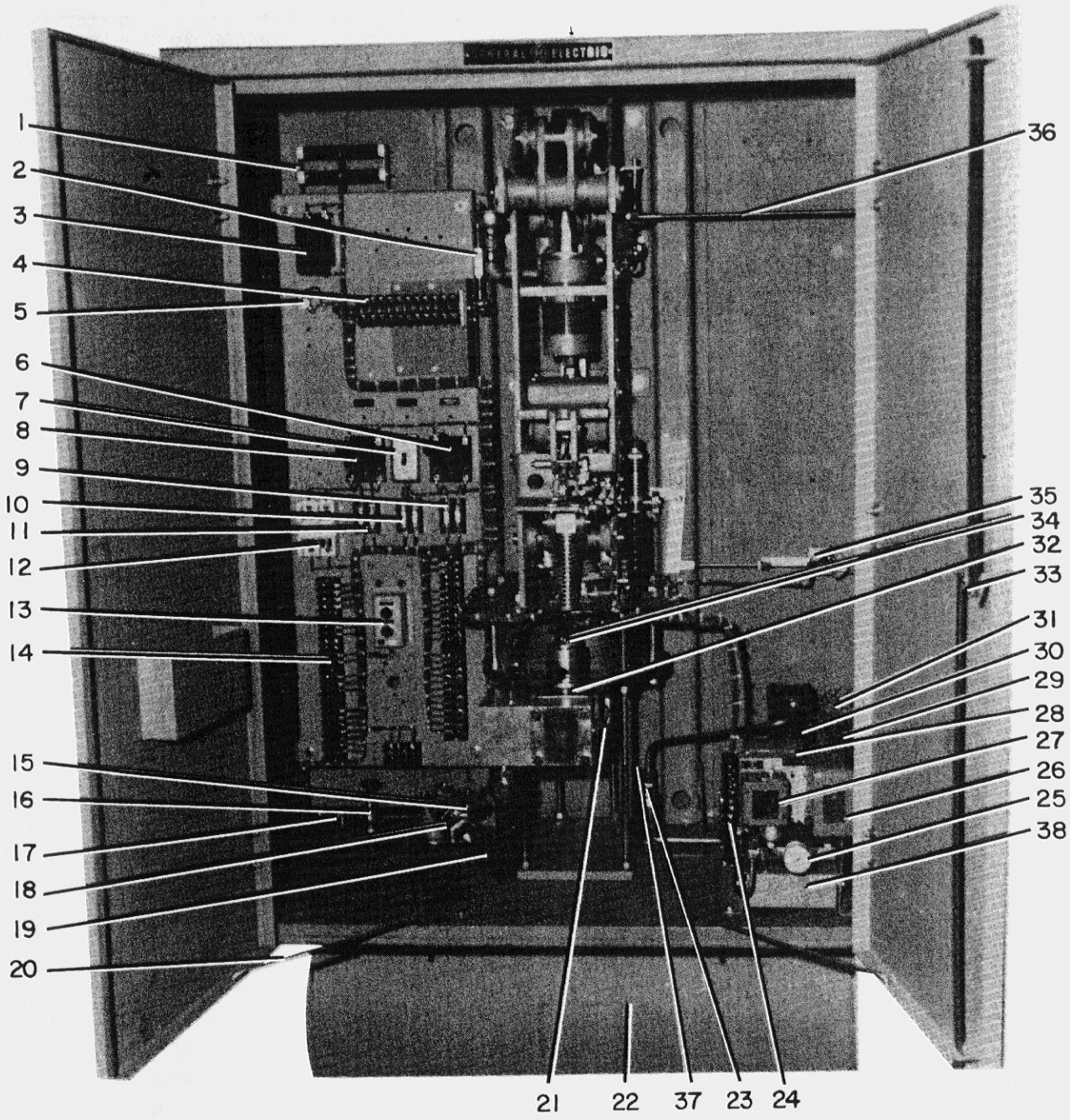

Fig. 6. Type MA13-8 operating mechanism, front view

OPERATING MECHANISM, FRONT VIEW (See Fig. 6)

Ref. No.	No. Req. for Type MA13-8	No. Req. for Type MA13-8-A	Catalog Number	Description
*Δ1	1	1	235L435G70	Resistor, 4 and 20 ohm, 125 Vdc, single trip
*Δ1	1	1	235L436G31	Resistor, 4 + 4 + 20 ohm, 125 Vdc, dual trip
*Δ1	1	1	235L435G71	Resistor, 14 and 62 ohm, 250 Vdc, single trip
*Δ1	1	1	235L436G32	Resistor, 14 + 14 + 62 ohm, 250 Vdc, dual trip
1	-	-	----------	(None required for 48 Vdc single or dual trip)
2	ø	ø	----------	Auxiliary switch linkage
Δ3	1	1	103A1438P51	Closing cutoff and anti-pump relay (12HGA35B2, 125 Vdc, 52 Y)
Δ3	1	1	103A1438P50	Closing cutoff and anti-pump relay (12HGA35B1, 250 Vdc, 52 Y)
Δ3	1	1	103A1438P52	Closing cutoff and anti-pump relay (12HGA35B3, 48 Vdc, 52 Y)
*Δ3A	1	1	366A732G17	Coil for 12HGA35B2
*Δ3A	1	1	366A732G16	Coil for 12HGA35B1
*Δ3A	1	1	366A732G15	Coil for 12HGA35B3
Δ4	1	1	132A1364P10	Thermostat, 40 F ± 5
Δ4	1	1	132A1364P12	Thermostat, 10 F ± 5 (cold weather application)
5	1	1	295B266G1	Auxiliary switch
6	ø	ø	----------	Compressor motor switch
7	ø	ø	----------	Heater switch
8	ø	ø	----------	Control power switch
9	ø	ø	----------	Compressor fuses
10	ø	ø	----------	Heater fuses
11	ø	ø	----------	Close circuit fuses
12	ø	ø	----------	Trip circuit fuses
13	ø	ø	----------	Test control switch (local control)
14	ø	ø	----------	Control power
*Δ15	1	1	132A1031P10	Interlock switch (29 device)
16	1	1	6300486P8	Air drain valve
*Δ17	1	1	132A1384P1	Condensation heater (230 V, 160 W)
*Δ17	1	1	132A1384P2	Condensation heater (115 V, 160 W)
*Δ17	2	2	132A1384P1	Condensation heater (208 V, 160 W)
18	1	1	132A1038P1	Air supply valve
19	ø	ø	----------	Control valve airline (1 1/2 inch)
20	ø	ø	----------	Door stop
21	ø	ø	----------	Emergency air pipe plug
22	ø	ø	----------	Air receiver
*Δ23	1	1	275A5255P1	Check valve
24	ø	ø	----------	Terminal board
25	1	1	132A1590P1	Pressure gage
Δ26	1	-	132A1590P1	Pressure governor switch (63G)
Δ26	-	1	275A6401P1	Pressure governor switch (69G)
Δ27	1	-	103A3679P9	Pressure cutout and alarm switch (63C-A)
Δ27	-	1	103A3679P8	Pressure cutout and alarm switch (63C-A)
Δ28	1	1	6009320P41	Compressor motor, 115/230 Vac, 60 Hz, 3/4 hp
Δ28	1	1	6009320P43	Compressor motor, 208 Vac, 60 Hz, 3/4 hp
Δ28	1	1	6009320P44	Compressor motor, 125 Vdc, 3/4 hp
Δ28	1	1	6009320P45	Compressor motor, 250 Vdc, 3/4 hp
Δ28	1	1	6009320P42	Compressor motor, 220 Vac, 50 Hz, 3/4 hp
*Δ29	1	1	269A2224P1	Compressor belt
Δ30	1	1	269A2223P1	Compressor
31	ø	ø	----------	Belt guard
32	1	1	See Fig. 11	Control valve
33	ø	ø	----------	Door latching linkage
34	1	1	See Fig. 11	Seal-in switch
Δ35	1	1	6412114P11	Lockout switch (69 device)
36	ø	ø	----------	Position indicator shaft
Δ37	1	1	377A466P3	Safety valve
38	ø	ø	----------	Compressor base
*Δ‡39	1	1	6557349P2	Compressor heater, 350 W, 230 Vac
*Δ‡39	1	1	6557349P1	Compressor heater, 350 W, 115 Vac
*Δ‡39	2	2	6557349P2	Compressor heater, 350 W, 208 Vac
‡40	1	1	103A3075P1	Counter
‡41	1	1	455A300P1	Spring for counter
*Δ‡42	1	1	6443133P1	Gasket between counter and right-side sheet

ø Order by description and give serial number of breaker. Quantity depends on individual application.
‡ Not shown.
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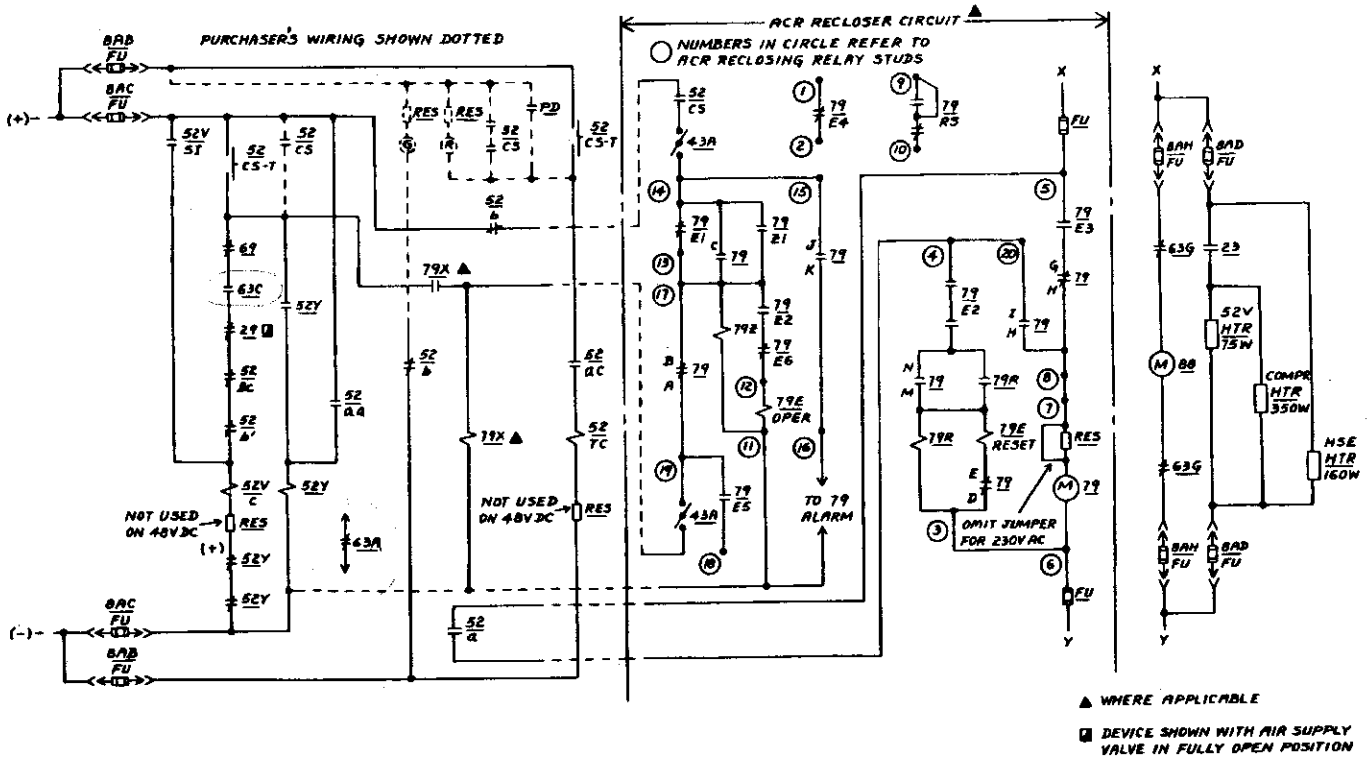

8AB	Trip Control Power Fused Disconnect
8AC	Closing Control Power Fused Disconnect
8AD	Heater Fused Disconnect
8AH	Compressor Motor Fused Disconnect
23	Thermostat, Fixed
29	Shutoff Valve Interlock
43A	Recloser Cut-out Switch
52	Oil Circuit Breaker
a	Normally Open Auxiliary Switch open when 52 is open
aa	Cutoff Switch Operated by Piston
ac	Normally Open Auxiliary Switch capable of fine adjustment
b	Normally Closed Auxiliary Switch closed when 52 is open
CS	Control Switch
CS-T	Test Switch
lc	Latch Checking Switch
TC	Trip Coil
VC	Control Valve Closing Coil
V-SI	Control Valve Seal-in Switch
Y	Cutoff Anti-pump Relay
63A	Pressure Alarm Closes on Low Pressure
63C	Pressure Cutoff Opens for Low Pressure
63G	Pressure Governor Controls Compressor Motor
69	Manual Trip and Lockout Device Hand Reset to Close
79	ACR Recloser
E	Interlocking Relay for 79
R	Clutch Release Unit for 79
X	Auxiliary Reclosing Relay
Z	Anti-pump Unit for 79
88	Compressor Motor
FU	Fuse
GIL	Green Indicating Lamp
HTR	Heater
PD	Protective Device
RES	Resistor
RIL	Red Indicating Lamp
TB	Terminal Board

Fig. 7. Wiring diagram (breaker de-energized)

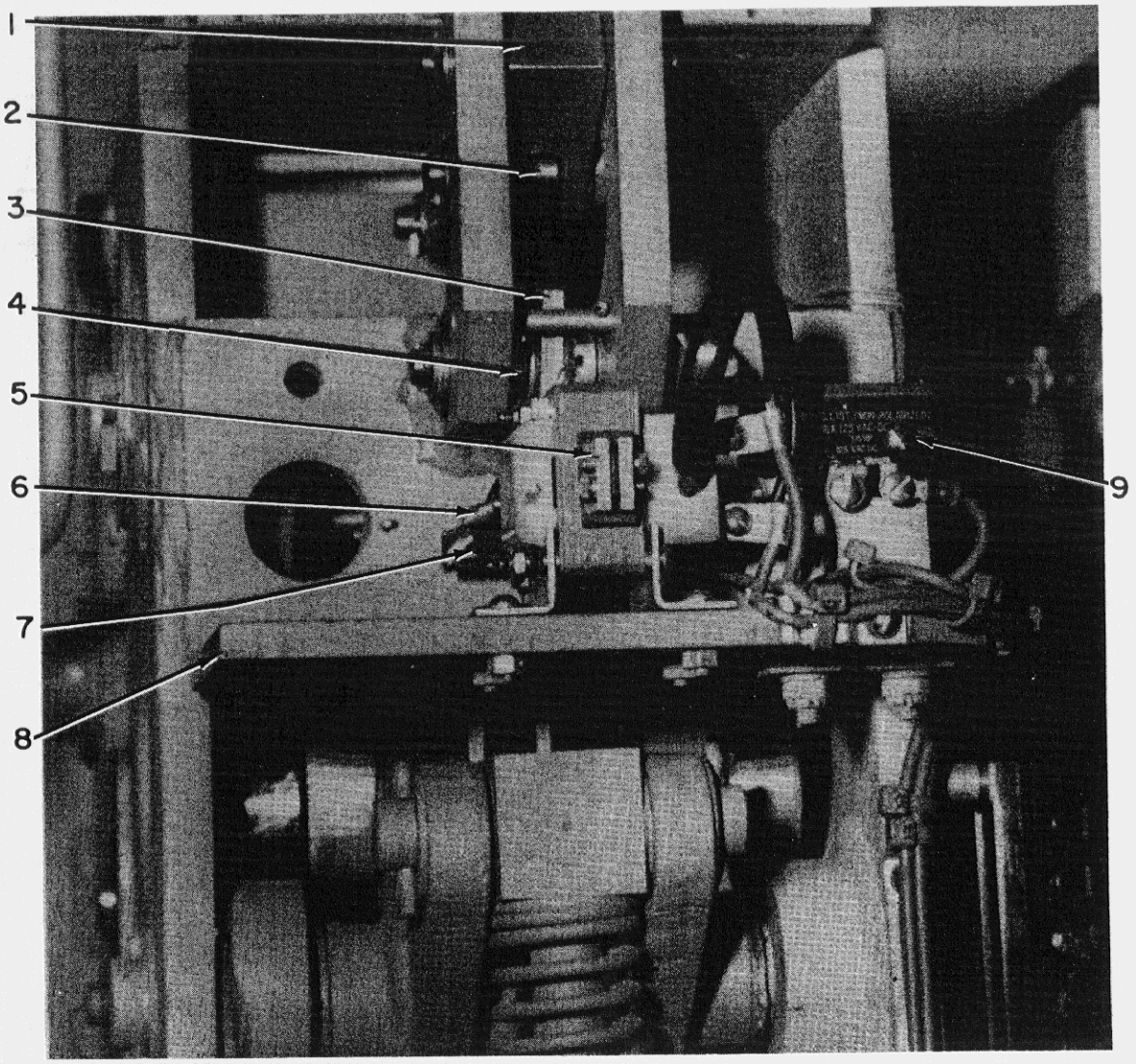

Fig. 8. Single trip latch assembly, left front view (for MA-13-8 and MA-13-8A)

Ref. No.	Catalog Number	No. Req'd	Description
1	ø	-	Front crank
2	See Fig. 13, Ref. 4	-	Trip latch roller bearing
3	See Fig. 10, Ref. 7	-	Trip latch
4	ø	-	Trip latch return spring
5	See Fig. 9, Ref. 11	-	Trip coil assembly
6	ø	-	Trip coil plunger return spring
7	ø	-	Safety bar
8	ø	-	Latch checking switch and trip coil assembly support plate
9	See Fig. 10, Ref. 61	-	Trip latch checking switch

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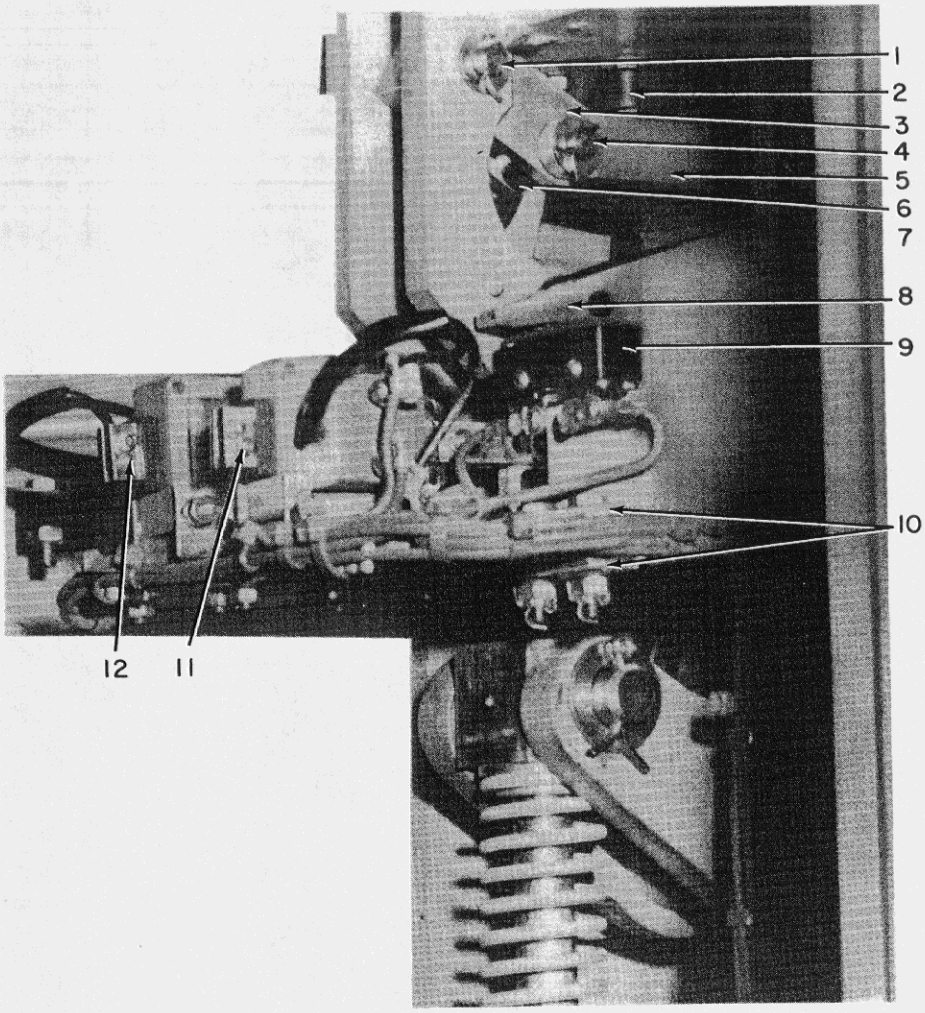

Fig. 9. Dual trip latch assembly, right front view (for MA-13-8 and MA-13-8A)

Ref. No.	Catalog Number	No. Req'd	Description
1	See Fig. 13, Ref. 48	-	Front crank pivot pin
2	ø	-	Front trip latch clearance adjustment bolt
3	ø	-	Front crank
4	See Fig. 13, Ref. 38	-	Trip latch roller pin
5	ø	-	Trip assembly link
6	ø	-	Front trip roller
7	See Fig. 10, Ref. 13	-	Front trip latch
8	ø	-	Latch checking switch ac activator ("1C")
9	See Fig. 10, Ref. 61	-	Latch checking switch ("1C")
10	ø	-	Latch checking switch adjustment shims
Δ11	138A7717G4	1	Trip coil assembly, single trip (48 Vdc)
Δ11	138A7717G1	1	Trip coil assembly, single trip (125 Vdc)
Δ11	138A7717G2	1	Trip coil assembly, single trip (250 Vdc)
*11A	132A1165P71	1	Coil only, single trip (48 Vdc)
*11A	132A1165P69	1	Coil only, single trip (125 Vdc)
*11A	132A1165P70	1	Coil only, single trip (250 Vdc)
Δ12	138A7717G4	2	Trip coil assembly, dual trip (48 Vdc)
Δ12	138A7717G1	2	Trip coil assembly, dual trip (125 Vdc)
Δ12	138A7717G2	2	Trip coil assembly, dual trip (250 Vdc)
*12A	132A1165P71	2	Coil only, dual trip (48 Vdc)
*12A	132A1165P69	2	Coil only, dual trip (125 Vdc)
*12A	132A1165P70	2	Coil only, dual trip (250 Vdc)

ø Order by description and give serial number of breaker. Quantity depends on individual application.

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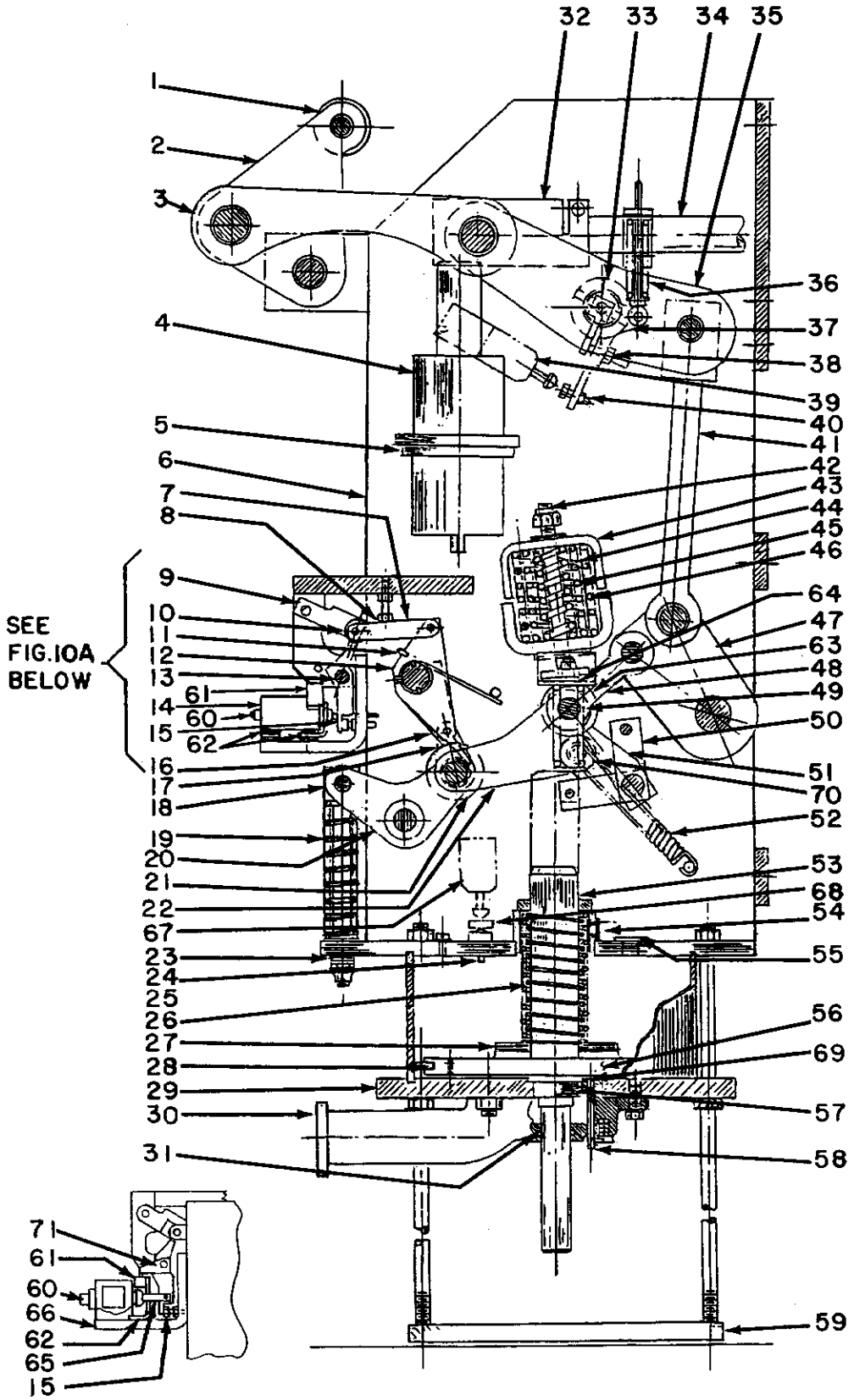

Fig. 10A. Fig. 10. Type MA-13-8 and MA-13-8A operating mechanism, closed position

GEF-6000, OIL-BLAST CIRCUIT BREAKERS

(See Fig. 10)

Ref. No.	Catalog Number	No. Req'd	Description
1	ø	-	Dashpot roller
2	ø	-	Dashpot crank
3	ø	-	Link
4	5., Ref. 28	-	Opening dashpot
5	5., Ref. 29	-	Opening dashpot locknut
6	ø	-	Mechanism frame
7	ø	-	Trip link
8	ø	-	Trip link adjusting screw
9	ø	-	Front crank
10	ø	-	Trip roller
11	454A821P2	1	Trip linkage return spring
12	ø	-	Crank
Δ13	275A6260G1	1	Trip latch
14	ø	-	Trip coil
15	ø	-	Latch adjusting screw
16	ø	-	Intermediate prop
17	ø	-	Link
18	ø	-	Linkage reset spring guide
19	454A819P1	1	Linkage reset spring guide
20	ø	-	Linkage return crank
21	ø	-	Intermediate prop roller
22	ø	-	Lever arm
23	193A2785P2	2	Linkage reset buffer
23	193A2785P3	1	Linkage reset buffer
24	ø	-	Operator for piston cutoff switch ("A-A")
25	ø	-	Cylinder
26	6200480P1	1	Spring, outer
26	6200481P1	1	Spring, inner
27	ø	-	Piston shims
28	6177672P4	1	Piston ring
29	ø	-	Bottom plate
30	ø	-	Cylinder base
*Δ31	193A4434P216	1	"O" ring
32	ø	-	Horizontal coupling
33	ø	-	Actuating crank for the "AC" switch
34	ø	-	Horizontal rod
35	ø	-	Front crank
36	ø	-	Actuating lever return spring
37	ø	-	Actuating lever for the "AC" switch
38	ø	-	Adjusting screw for the "AC" switch
Δ39	6412114P25	1	A-C switch, single trip
Δ39	809B167G1	1	A-C switch, dual trip
40	ø	-	Adjusting screw for "AC" switch
41	ø	-	Vertical operating rod
42	ø	-	Buffer nut
43	ø	-	Buffer housing
44	202A7685P1	1	Spring, inner
45	202A7686P1	1	Spring, middle
46	202A7687P1	1	Spring, outer
47	ø	-	Output crank
48	ø	-	Link
49	193A2786P1	1	Manual trip lever return spring
50	ø	-	Manual trip crank
51	ø	-	Back prop
52	202A7683P1	2	Linkage return spring
53	ø	-	Operating piston rod
54	ø	-	Screened port on side of cylinder
55	ø	-	Screened port at top of cylinder
56	ø	-	Closing piston
57	ø	-	Piston locknut
58	ø	-	Orifice adjusting screw
59	ø	-	Manual operator plate
60	ø	-	Trip coil plunger
61	179V585P4	1	Latch checking switch
62	6076823P26	4	Adjusting shims for "1C"
63	ø	-	Back prop rollers
64	ø	-	Back prop shims
65	ø	-	Trip coil plunger link
66	ø	-	Trip coil support
67	104C8050G1	1	Piston cutoff ("AA") switch assembly
68	----------	-	Operating lever for "aa" switch (part of Ref. 67 and cannot be purchased separately)
69	ø	-	Closing speed orifice
70	ø	-	Piston rod roller
71	254A1681P1	-	Trip latch pin

ø Order by description and give serial number of breaker. Quantity depends on individual application.

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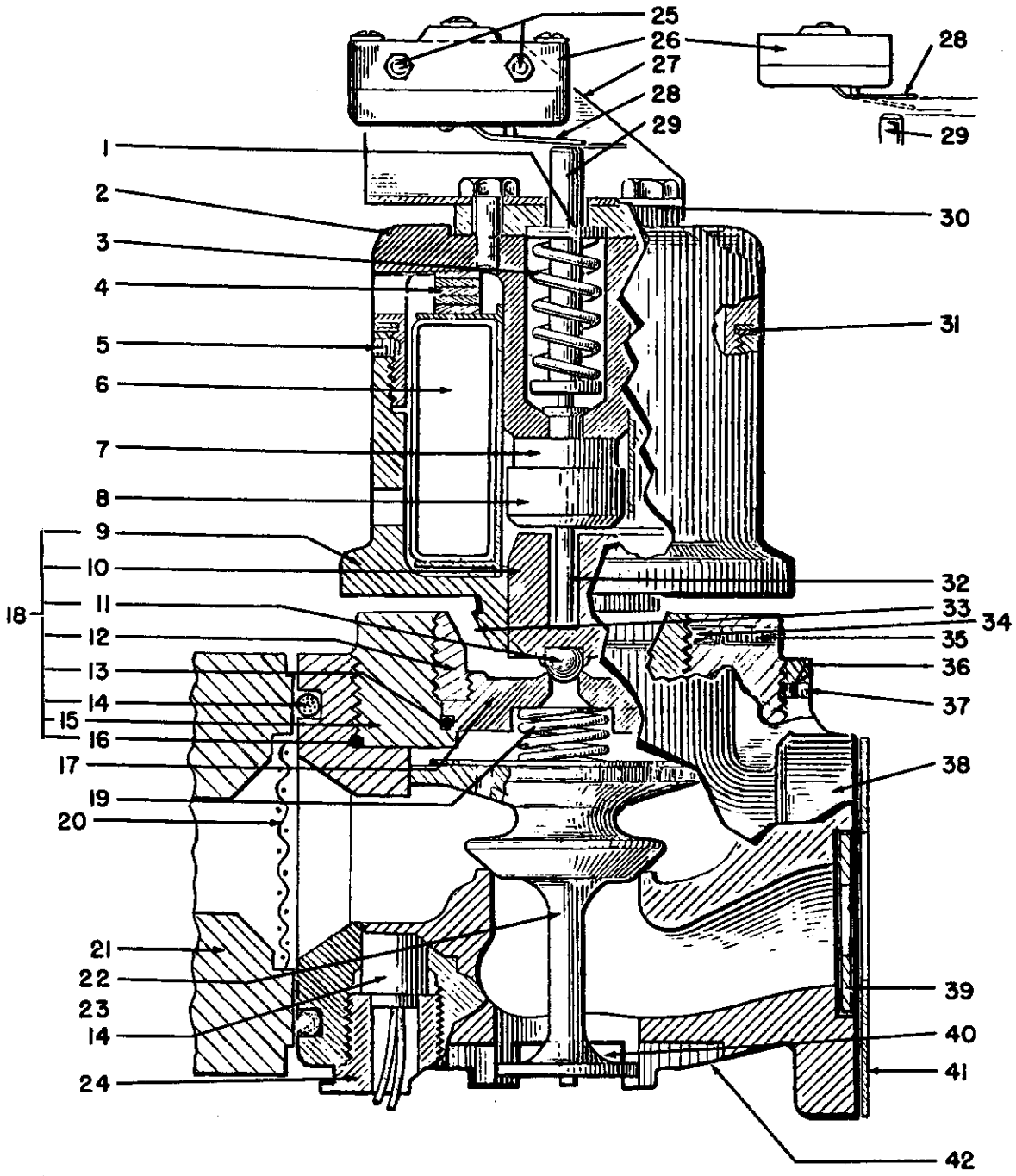

Fig. 11. Main control valve

CONTROL VALVE (See Fig. 11)

Ref. No.	No. Req. for Type MA13-8	MA13-8-A	Catalog Number	Description
Δ -	1	-	178L119G38	Control valve complete, 48 Vdc
Δ -	-	1	178L119G19	Control valve complete, 48 Vdc
Δ -	1	-	178L119G36	Control valve complete, 125 Vdc
Δ -	-	1	178L119G7	Control valve complete, 125 Vdc
Δ -	1	-	178L119G37	Control valve complete, 250 Vdc
Δ -	-	1	178L119G8	Control valve complete, 250 Vdc
-	1	-	203A4312G1	Control valve complete, less coil
-	-	1	175L508G11	Control valve complete, less coil
1	4	4	6477400P2	Shim washer
2	1	1	6509017G12	Upper coil frame
3	1	1	6275469P1	Pilot armature spring
4	3	3	6243872P3	Fibre spacers
4	4	4	6477400P2	Fibre spacers
4	5	5	6243872P1	Fibre spacers
5	ø	ø	----------	Set screw
*Δ 6	1	1	366A701G21	Closing coil, 48 Vdc
*Δ 6	1	1	366A701G10	Closing coil, 125 Vdc
*Δ 6	1	1	366A701G11	Closing coil, 250 Vdc
7	-	-	----------	Spacer (part of Ref. 2 and not furnished separately)
8	-	-	----------	Pole piece (part of Ref. 2 and not furnished separately)
9	-	-	----------	Lower coil frame (part of Ref. 18 and not furnished separately)
10	1	1	6558660G11	Pilot armature
11	-	-	----------	Ball seat (part of Ref. 10 and not furnished separately)
12	1	1	----------	Pilot valve seat support (part of Ref. 18 and not furnished separately)
*Δ13	1	1	193A4432P131	Pilot armature seat "O" ring
*Δ14	1	-	193A4432P338	Control valve block "O" ring
*Δ14	-	1	193A4432P330	Control valve block "O" ring
15	1	-	129C1026P2	Adapter
*Δ16	1	-	193A4432P232	"O" ring
17	1	1	----------	Pilot armature seat (part of Ref. 18 and not furnished separately)
18	1	-	193A9014G3	Lower coil frame
18	-	1	173A9014G1	Lower coil frame
19	1	-	202A7501P1	Piston and exhaust valve spring
19	-	1	6270392P1	Piston and exhaust valve spring
20	1	-	392A227G1	Air strainer
20	-	1	128C1028G1	Air strainer
21	1	-	129C1028P1	Control valve block
21	-	1	397A773P2	Control valve block
22	1	-	129C1026P1	Piston and exhaust valve
22	-	1	6557573P1	Piston and exhaust valve
*Δ23	1	1	6371077P1	Valve heater, 115 Vac, 75 W
*Δ23	1	1	6371077P2	Valve heater, 230 Vac, 75 W
*Δ23	2	2	6371077P2	Valve heater, 208 Vac, 75 W
24	1	1	6440046P1	Heater support bushing
25	1	1	103A1032G1	Micro switch mounting screws and brackets
*Δ26	1	1	132A1031P1	Micro switch
27	-	-	----------	Micro switch mounting bracket (part of Ref. 25 and not furnished separately)
28	-	-	----------	Micro switch operating lever (part of Ref. 25 and not furnished separately)
29	1	1	6247866P2	Plunger
30	1	1	6247867P1	Plunger spring retaining plate
31	6	6	6448258P1	Shims
32	1	1	6448493P1	Pilot armature pin
34	1	1	103A6334P4	Brass insert
35	ø	ø	----------	Set screw
36	1	-	103A6334P4	Brass insert
37	ø	-	----------	Set screw
38	-	-	----------	Mounting flange (part of Ref. 42 and not furnished separately)
39	1	-	428A865P8	Orifice
40	-	-	----------	Cylinder exhaust port (part of Ref. 42 and not furnished separately)
*Δ41	1	1	203A1720P1	Gasket
42	1	-	958D937P2	Control valve body
42	-	1	202A7521G1	Control valve body

ø Order by description and give serial number of breaker. Quantity depends on individual application.

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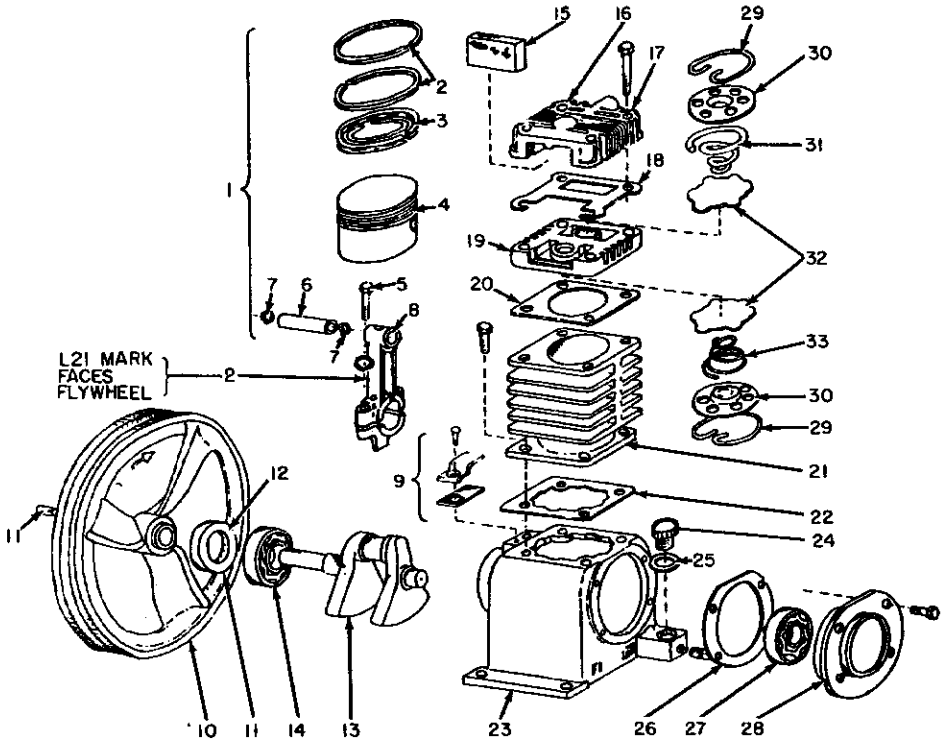

Fig. 12. Air compressor

Ref. No.	Catalog Number	No. Req'd	Description
1	213X190P4	1	Piston pin and rings
2	213X190P15	2	Compression rings
3	213X190P16	1	Oil ring with expender
4	213X190P19	1	Piston
5	213X190P20	1	Rod bolt
6	213X190P21	1	Piston pin
7	213X190P22	2	Pin retainer
8	213X190P23	1	Connecting rod assembly, complete
9	213X190P1	1	Breather valve assembly
10	213X190P26	1	Flywheel, includes key
11	213X190P25	1	Flywheel key
12	213X190P27	1	Shaft oil seal
13	213X190P29	1	Crankshaft
14	213X190P28	1	Crankshaft bearing
*Δ15	213X190P47	1	Filter insert
16	213X190P46	1	Head
*Δ18	213X190P44	1	Head gasket
19	213X190P43	1	Valve plate
*Δ20	213X190P42	1	Valve plate gasket
21	213X190P37	1	Cylinder
*Δ22	213X190P36	1	Cylinder gasket
23	213X190P30	1	Crankcase
24	213X190P35	1	Fill cap including gasket Ref. 25
*Δ25	213X190P34	1	Fill cap gasket only
*Δ26	213X190P31	1	Bearing plate gasket (0.031 in. thick)
*Δ26	213X190P32	1	Bearing plate gasket (0.015 in. thick)
27	213X190P28	1	Crankshaft bearing
28	213X190P33	1	Bearing plate
*Δ29	213X190P38	2	Valve retainer
*Δ30	213X190P39	2	Valve bumper
*Δ31	213X190P45	1	Valve spring discharge
*Δ32	213X190P41	2	Valve disc
*Δ33	213X190P40	1	Valve spring intake

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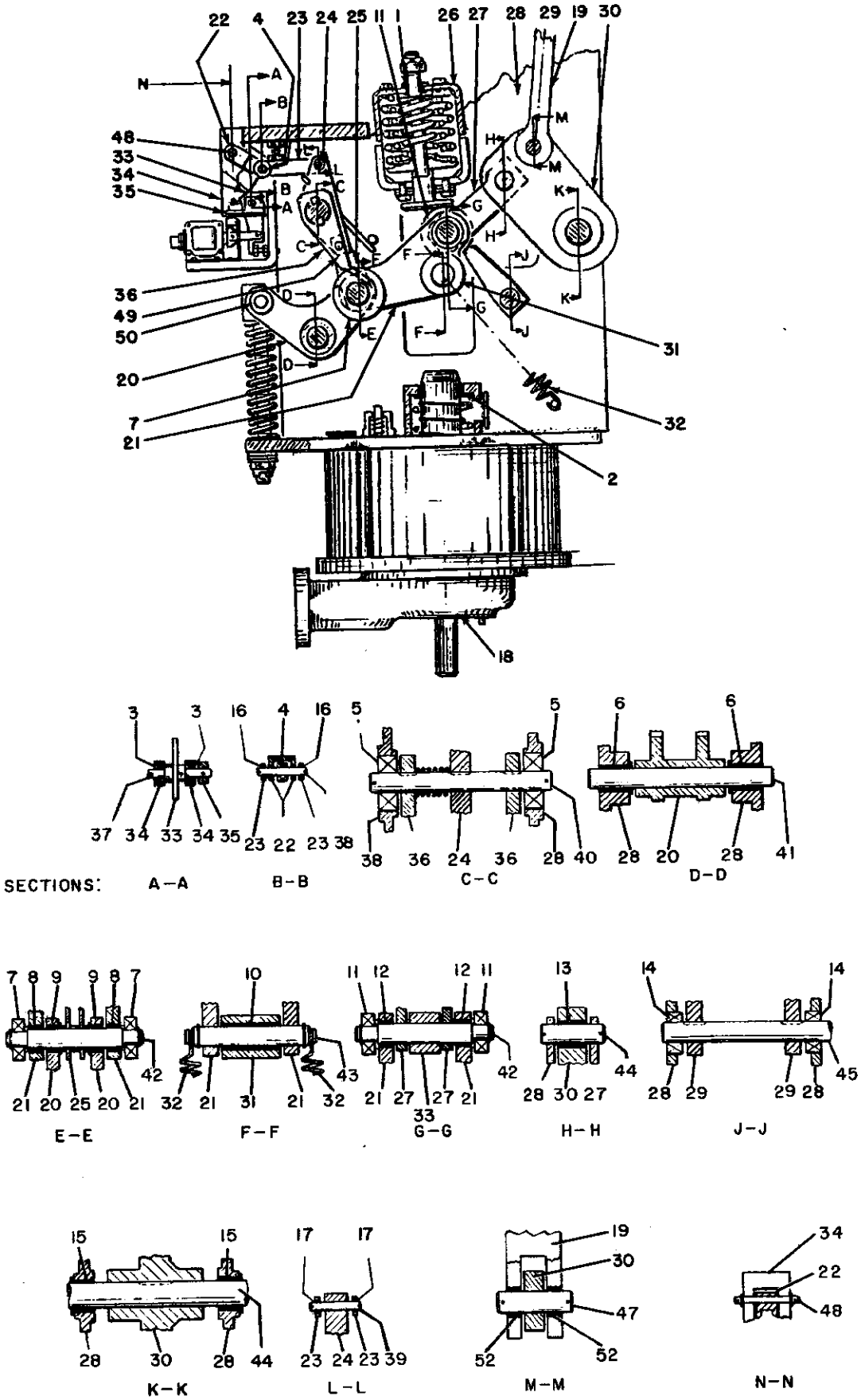

Fig. 13. Bushing and bearing locations of mechanism (for MA-13-8 and MA-13-8A)

BUSHING AND BEARING LOCATIONS OF MECHANISM FOR MA-13-8 AND MA-13-8A (SEE FIG. 13)

Ref. No.	Catalog Number	No. Req'd	Description
1	129C2520P4	1	Buffer piston bushing
2	6243433P1	1	Operating piston bushing
3	183V307P1	2	Trip latch shaft bearings
4	183V307P1	1	Trip latch roller bearings
5	103A2102P4	2	Intermediate prop shaft roller bearings
6	6146167P1	2	Crank shaft bushing
7	6009097G1	2	Intermediate prop bearings
8	6147224P1	2	Lever arm bushings (lower end)
9	6147537P1	2	Crank bushings
10	6146840P1	1	Operating piston rod closing roller bushing
11	6009097G1	2	Back prop bearings
12	6147224P1	2	Lever arm bushings (upper end)
13	6147236P1	1	Output crank bushings
14	414A112P37	2	Back prop shaft bearings
15	202A7625P2	2	Output crank shaft bushings
16	387A313P5	2	Trip assembly link bushings (upper end)
17	387A313P5	2	Trip assembly link bushings (lower end)
*Δ18	193A4434P216	1	Operating piston rod seal ("O" ring)
19	ø	-	Vertical operating rod
20	ø	-	Linkage return crank
21	ø	-	Lever arm
22	ø	-	Front crank
23	ø	-	Trip assembly link
24	ø	-	Crank
25	ø	-	Link
26	ø	-	Buffer housing
27	ø	-	Double link casting
28	ø	-	Mechanism frame
29	ø	-	Back props
30	ø	-	Output crank
31	6009097G1	2	Operating piston rod closing roller
32	See Fig.10 Ref. 49	1	Link return spring
33	ø	-	Spacer
34	ø	-	Trip latch support bracket
35	ø	-	Latch checking switch operator
36	ø	-	Intermediate prop
37	See Fig.10 Ref. 71	1	Trip latch pin
38	183V309P1	1	Trip latch roller pin
39	183V310P2	1	Trip assembly link pin
40	193A2796P1	1	Intermediate prop shaft
41	103A2130P31	1	Linkage return crank shaft
42	6200116G1	2	Linkage return crank to lever arm pin
43	153B7533P1	1	Closing roller pin
44	6076409P533	1	Output crank pin
45	193A2782P1	1	Back prop shaft
46	273A8999P3	1	Output crank shaft
47	6076411P536	1	Output crank to vertical rod coupling pin
48	103A4502P21	1	Front crank pivot pin
49	6200116G1	1	Intermediate prop to crank pin
50	6076407P533	1	Intermediate prop to crank pin
52	6370568P43	2	Vertical operating rod bushing

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