

THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

Assembly, Operating & Maintenance Instructions  
for  
Pringle Type QA Bolted Pressure Switches

Assembly

Our quality control and integral assembly eliminates any need for further adjustment on the switch. The assembler should, however, give consideration to the following:

1. The switch is shipped in the "closed" position, with the dead front operating handle and trim plate unmounted. The "closed" switch should be mounted vertical-upright in the switchboard. Before bolting bus bars to the line and load terminals, a check should be made to see that the bus is in line (flat, parallel, and properly located) with the switch terminals. Failure to follow these instructions could result in misalignment of the switch contacts.
2. After mounting the switch, and with the front cover of the switchboard in place, the trim plate may be mounted. Then the operating handle may be bolted to the operating shaft and is vertical or slightly left of vertical when the switch is in the "closed" position.

Operation

Grasp operating handle and rotate clockwise until the handle is parallel to the floor and "open" appears on the switch position indicator. To "close" the switch, rotate the handle counter-clockwise until "closed" appears on the switch position indicator.

Maintenance

As a result of the mechanical simplicity and the handcrafted assembly of precision components, the Pringle switch is practically maintenance-free. These fine tolerances will be retained indefinitely while the switch is in the "closed" position.

When the switch is in the "open" position, the contact surfaces will be exposed to possible accumulation of dirt, particularly during the construction period. This could cause possible "cutting" of the silver-plated contacts, resulting in improper mechanical and electrical operation of the switch. If dirt has accumulated on the exposed contacts, they should be cleaned with thinner and lubricated with a thin coating of G.E. Versilube G-300.

Instruction Sheet F

THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

INSTRUCTIONS FOR CHECKING AND ADJUSTING HINGE & JAW PRESSURE  
QA SWITCH

1. CAUTION: Be certain switch is completely de-energized and in OPEN position.
2. Tape aluminum bearing supports (A) at each end to maintain assembly. (Fig. 3)
3. Remove four (4) Allen screws (B) at each end of aluminum bearing supports. (Fig. 3)
4. Remove mechanism.

To Check Hinge Bolted Pressure

5. Place large (approx. 12") adjustable open end (crescent) wrench on insulating yoke (C). (Fig. 2)
6. Using wrench as a lever, move blades (D) slightly toward close position.
  - While holding wrench in this position with one hand, use other hand to trip linkage of all poles by depressing point (E).
  - Move yoke (C) until it meets blades. At this point "bolted Pressure" has been applied at hinges.
  - The correct pressure setting is a matter of judgment.
7. Place one hand at point (F) on blades and apply force until blades move. Check all poles in this manner to determine which pole (or poles) is tightest.
8. To remove "bolted pressure" pull down on wrench handle, linkages will snap over center.

To Adjust Bolted Pressure

9. To reduce pressure on tight poles: (Fig. 1)
  - (a) Mark pressure nut (G) and blade at set screw (H) location.

NOTE: The set-screw may be positioned by a vernier-type adjustment and the amount of pressure can be very finely set.

  - (b) Remove set-screw and rotate pressure nut slightly (approx. 8°) counter clockwise.
  - (c) Replace set-screw in pressure nut hole immediately clockwise from original location and tighten set-screw securely.

To Check Jaw Bolted Pressure

10. Starting with switch in fully OPEN position, using wrench as a lever, move switch to fully CLOSED position (yoke will meet blades). Now test try pulling or prying blades into motion. If blades cannot be moved with reasonable force, the pressure should be adjusted as described in Item 9.
11. Replace mechanism. Remove tape. Test operate.

THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

FIG.1

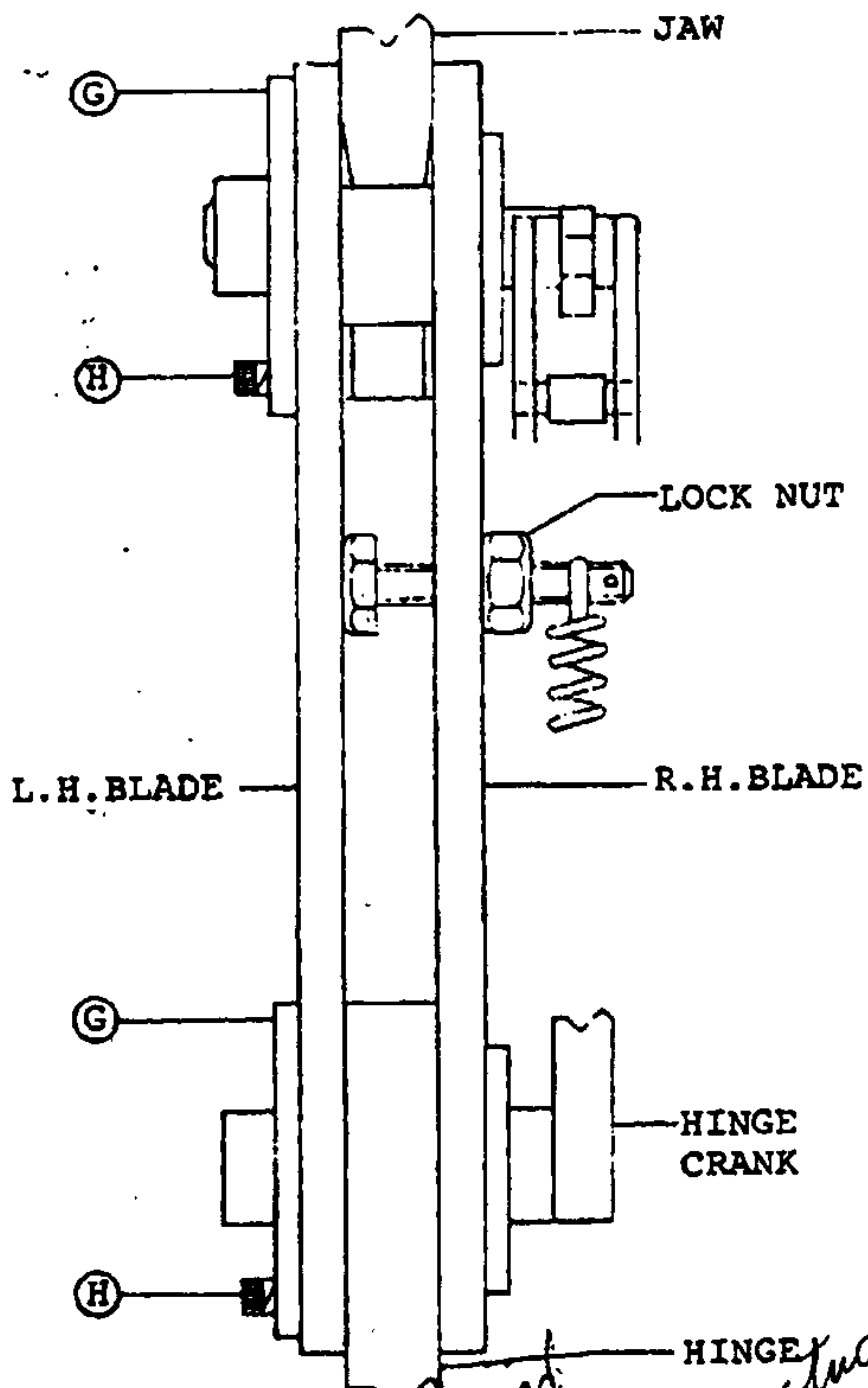


FIG.2

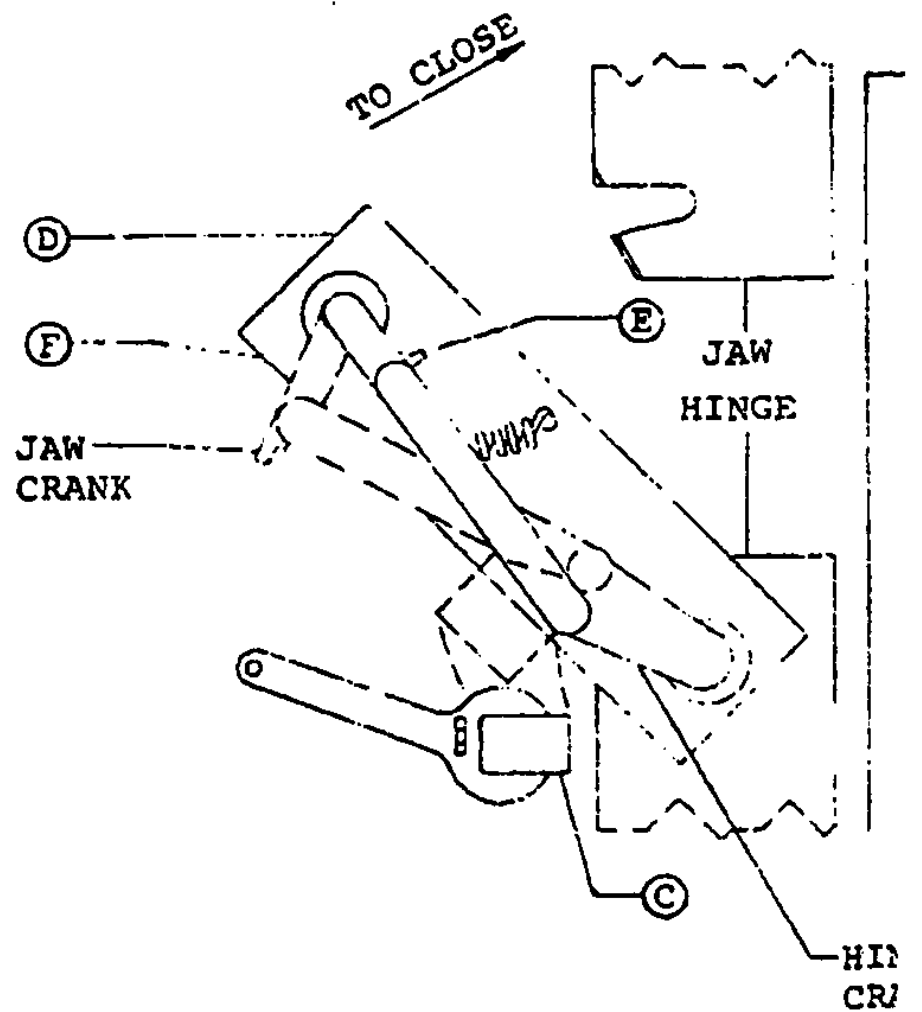
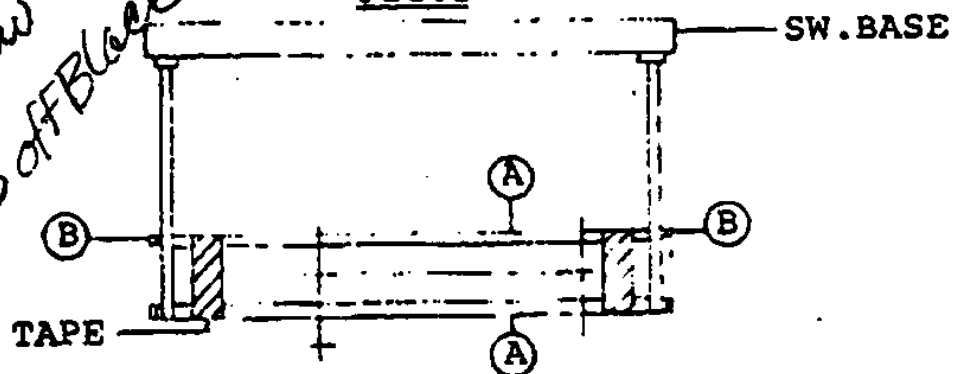


FIG.3



PLAN VIEW OF SWITCH

Instruction Sheet

THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

INSTRUCTIONS FOR CHECKING AND ADJUSTING HINGE & JAW PRESSURE  
QA SWITCH

1. CAUTION: Be certain switch is completely de-energized and in OPEN position.
2. Tape aluminum bearing supports (A) at each end to maintain assembly. (Fig. 3)
3. Remove four (4) Allen screws (B) at each end of aluminum bearing supports. (Fig. 3)
4. Remove mechanism.

To Check Hinge Bolted Pressure

5. Place large (approx. 12") adjustable open end (crescent) wrench on insulating yoke (C). (Fig. 2)
6. Using wrench as a lever, move blades (D) slightly toward close position.
  - While holding wrench in this position with one hand, use other hand to trip linkage of all poles by depressing point (E).
  - Move yoke (C) until it meets blades. At this point "bolted Pressure" has been applied at hinges.
  - The correct pressure setting is a matter of judgment.
7. Place one hand at point (F) on blades and apply force until blades move. Check all poles in this manner to determine which pole (or poles) is tightest.
8. To remove "bolted pressure" pull down on wrench handle, linkages will snap over center.

To Adjust Bolted Pressure

9. To reduce pressure on tight poles: (Fig. 1)
    - (a) Mark pressure nut (G) and blade at set screw (H) location.
- NOTE: The set-screw may be positioned by a vernier-type adjustment and the amount of pressure can be very finely set.
- (b) Remove set-screw and rotate pressure nut slightly (approx. 8°) counter clockwise.
  - (c) Replace set-screw in pressure nut hole immediately clockwise from original location and tighten set-screw securely.

To Check Jaw Bolted Pressure

10. Starting with switch in fully OPEN position, using wrench as a lever, move switch to fully CLOSED position (yoke will meet blades). Now test try pulling or prying blades into motion. If blades cannot be moved with reasonable force, the pressure should be adjusted as described in Item 9.
11. Replace mechanism. Remove tape. Test operate.

THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

FIG. 1

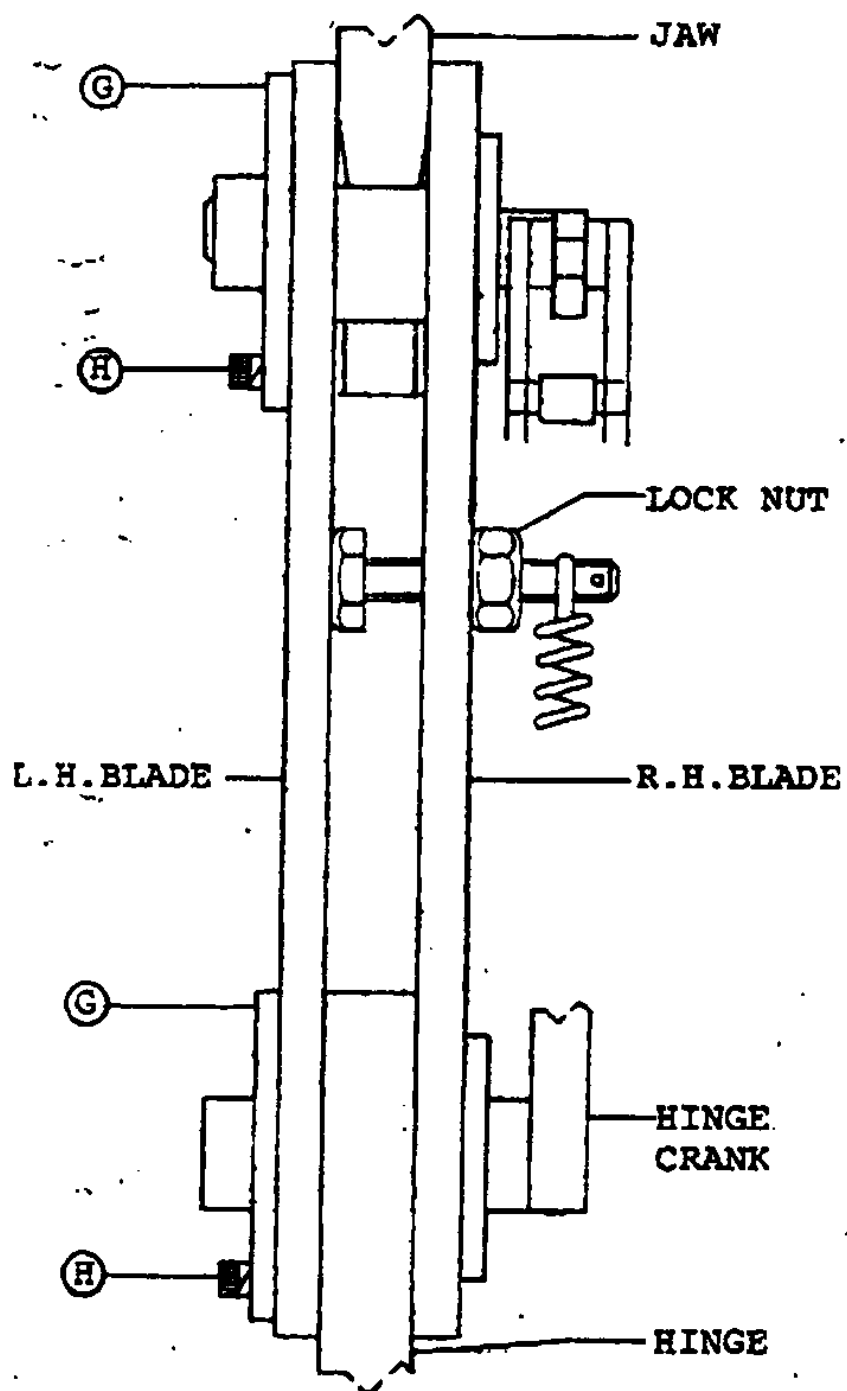


FIG. 2

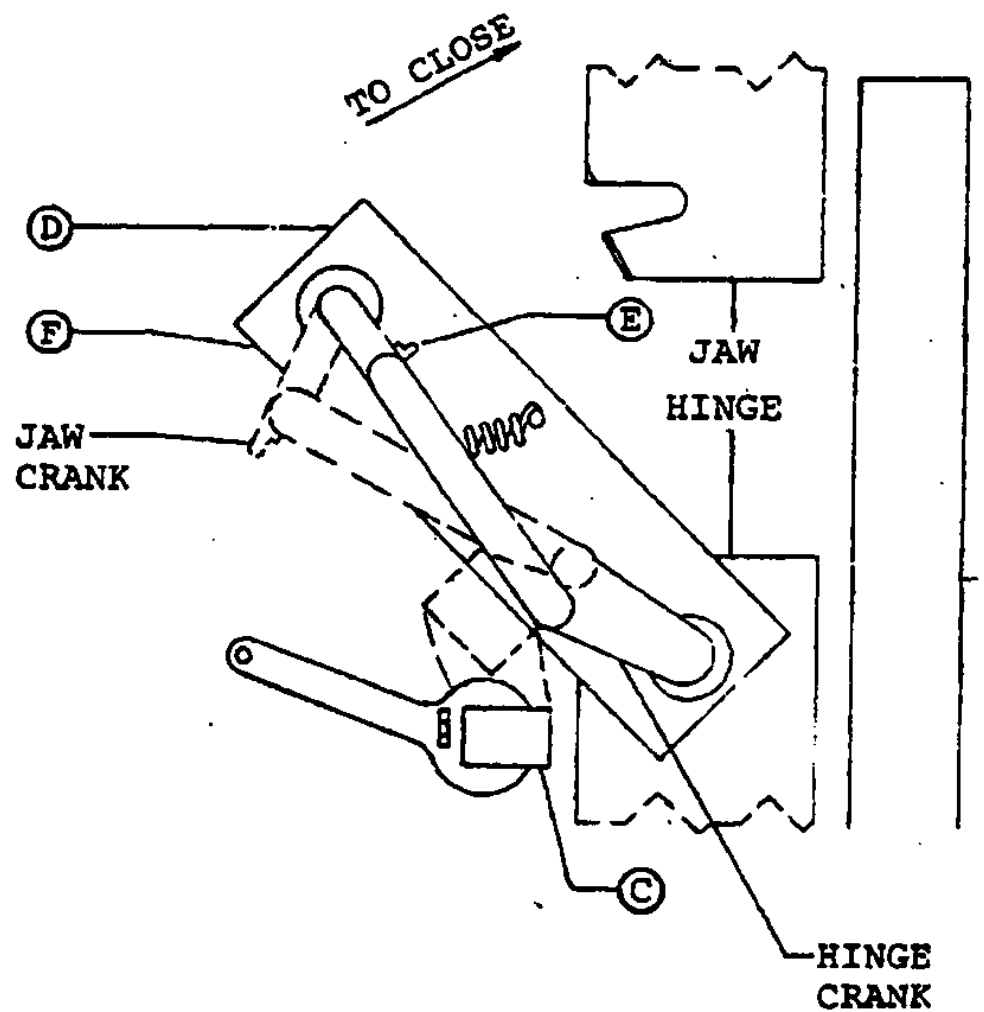
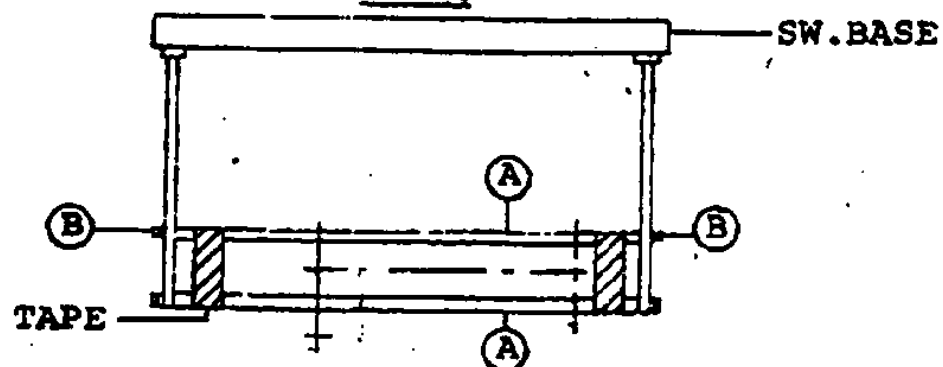
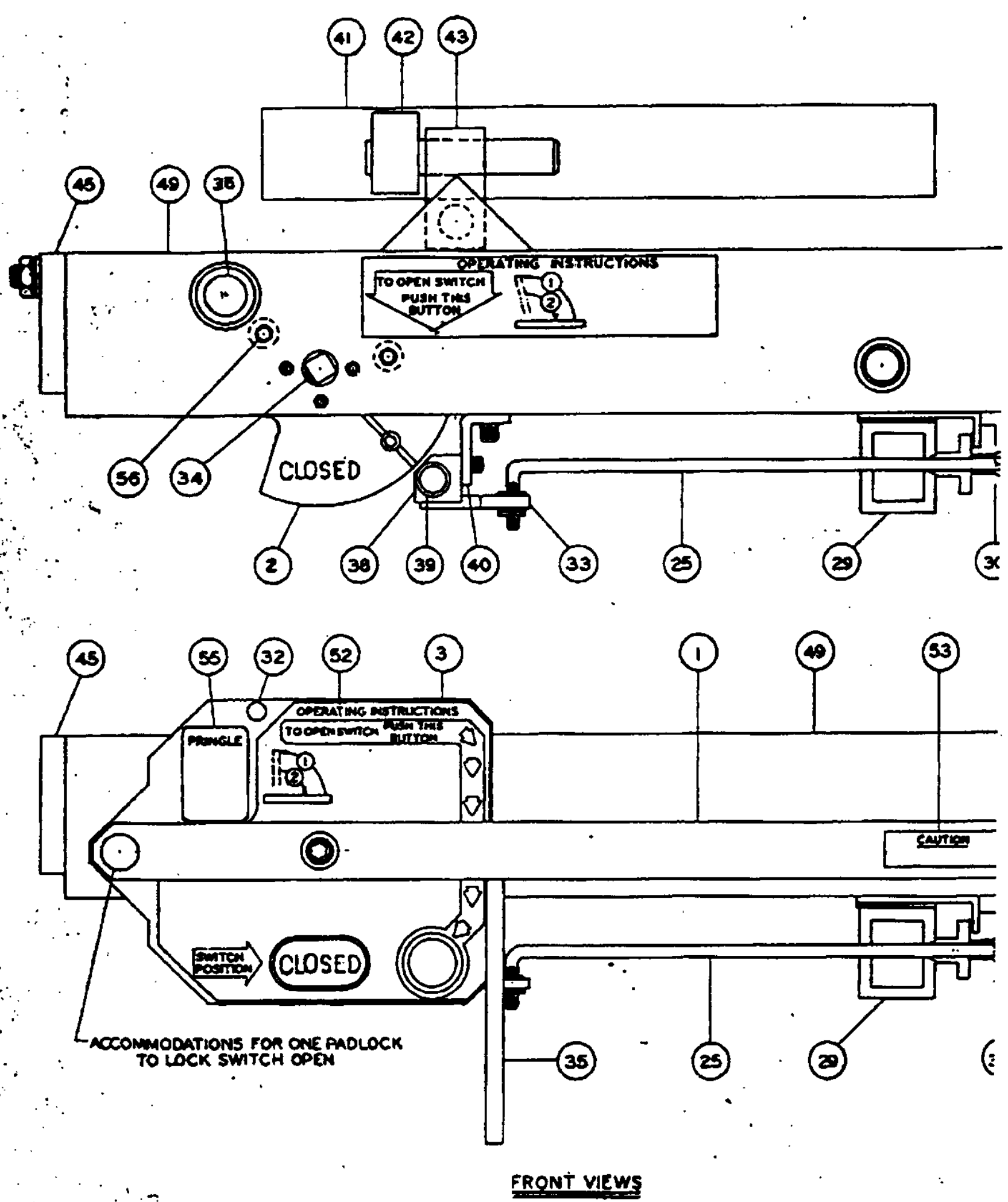


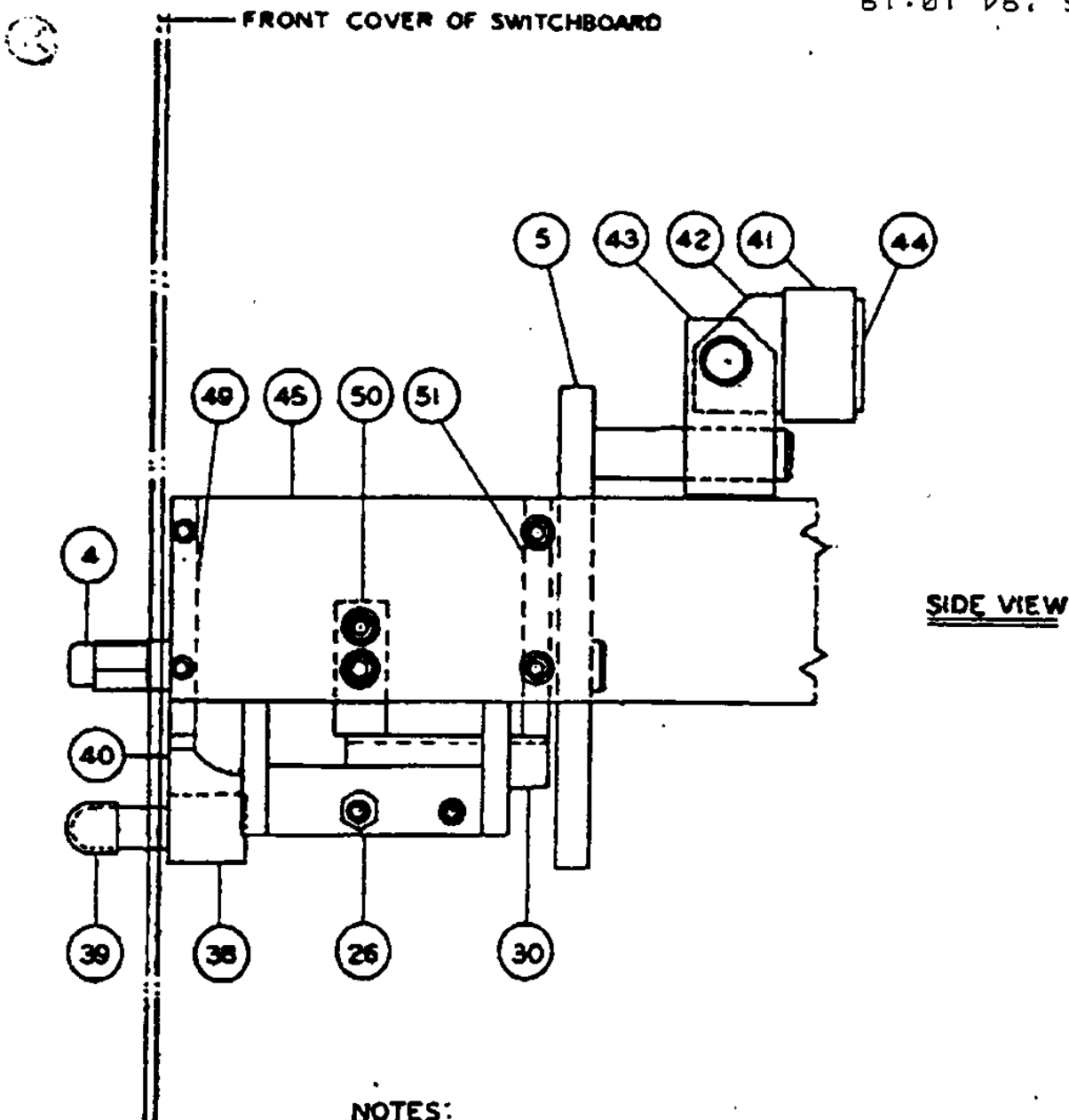
FIG. 3



PLAN VIEW OF SWITCH

PART OF THE OPERATING INSTRUCTIONS  
SEE DETAIL-C





NOTES:

LUBRICANT

PERIODICALLY ALL PIVOT POINTS SHOULD BE LUBRICATED WITH A MINIMUM AMOUNT OF LIGHT OIL

THIS DWG. MAY ALSO BE USED TO IDENTIFY 3000A. & 4000A. MECHANISMS

3000A. & 4000A. HAVE DOUBLE SPRING ASSEMBLY. THIS SECOND SPRING IS SMALLER & IS MOUNTED ON THE LEFT SIDE OF THE OPERATING SHAFT FACING THE SWITCH.

THIS MECHANISM MANUFACTURED FROM

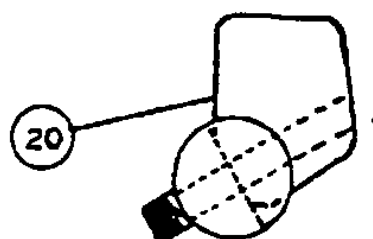
FOR SWITCHES SEE C-51900

JULY 1972 TO -  
REV. NR 1 5-15-75  
REV. NR 2 2-27-76  
REV. NR 3 3-14-77

TYPE QA-CBC  
DEAD FRONT MECHANISM  
FOR  
800A - 4000A

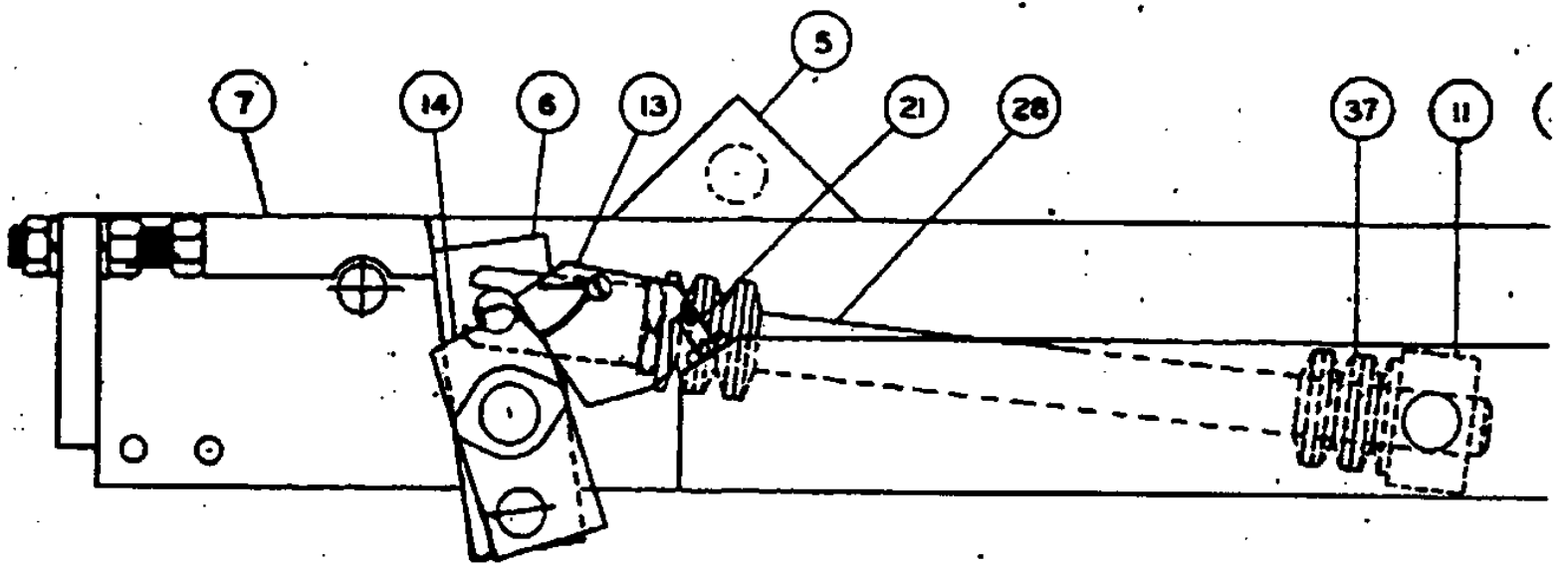
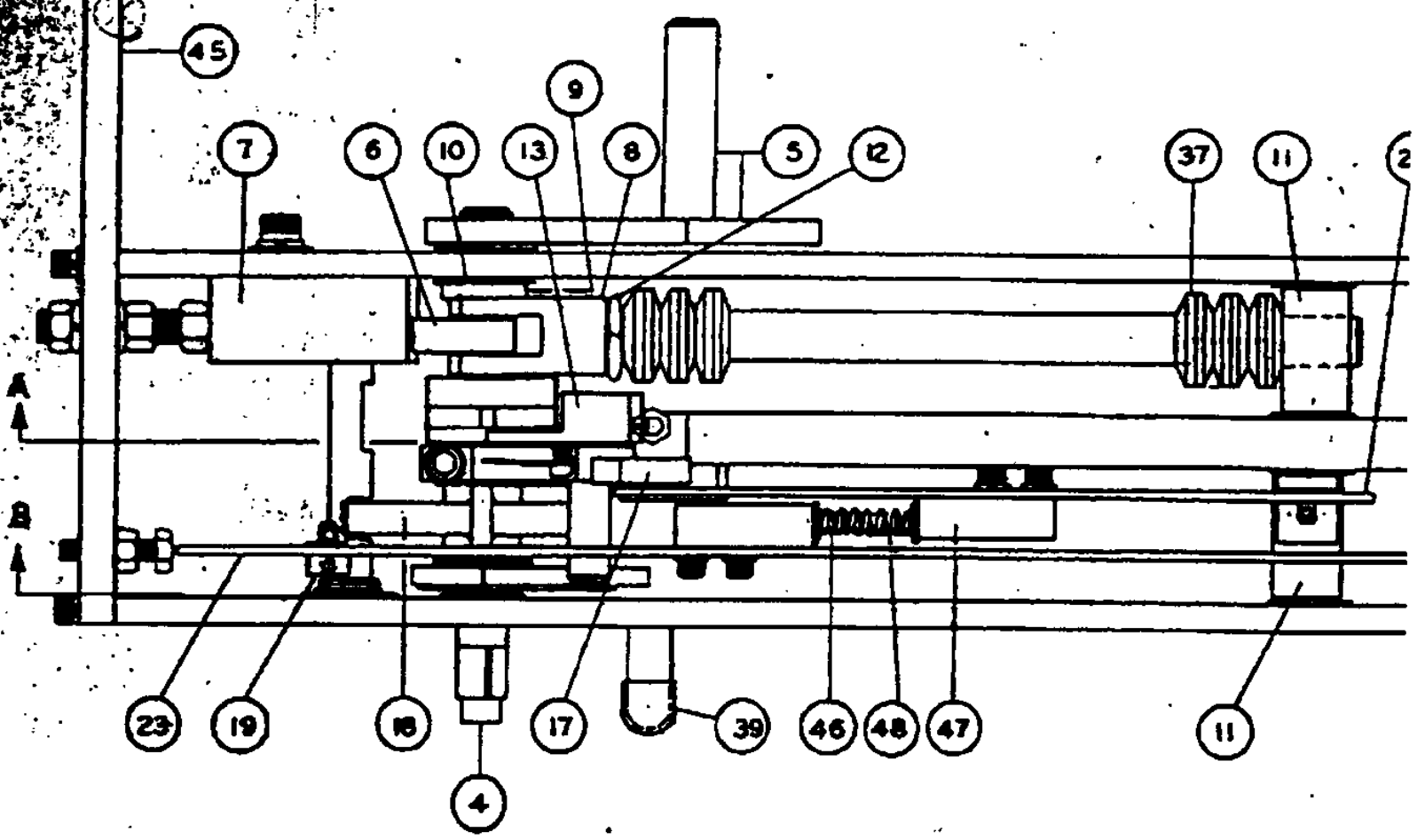
PRINGLE ELECTRICAL MFG. CO.

PART	DESCRIPTION	PART	DESCRIPTION
1	OPERATING HANDLE	41	YOKE
2	INDICATOR PLATE	42	YOKE BLOCK
3	TRIM PLATE	43	UNIVERSAL BLOCK
4	OPERATING SHAFT	44	YOKE PLATE
5	OPERATING LEVER	45	HORIZONTAL SUPPORTS
6	SPRING CAM (CLOSING)	46	SPRING (LINK)
7	CLOSING CAM STOP	47	SPRING BLOCK
8	SPRING CLEVIS	48	GUIDE PIN - LINK SPRING
9	SPACER	49	FRONT BEARING SUPPORT
10	WASHERS	50	MIDDLE BEARING SUPPORT
11	TRUNNION BLOCK	51	REAR BEARING SUPPORT
12	PRESSURE NUT	52	LABEL (TRIM PLATE)
13	PAWL	53	LABEL (CAUTION - HANDLE)
14	CLOSING CATCH	54	LABEL (IMPORTANT - HANDLE)
15	SPRING LOADER	55	RATING PLATE (TRIM PLATE)
16	HANDLE CATCH SUPPORT	56	HANDLE STOP (2)
17	HANDLE CATCH		
18	SPRING CAM (OPENING)		
19	OPENING SPRING CAM LATCH PIN		
20	OPENING SPRING CAM ARM (SEE DETAIL C)		
21	PAWL TRIP STOP		
22	HANDLE CATCH ACTUATOR		
23	OPENING TRIP LINK		
24	HANDLE CATCH LINK		
25	MANUAL TRIP LINK		
26	TRIP LEVER		
27	OPENING SPRING SHAFT		
28	CLOSING SPRING SHAFT		
29	SOLENOID		
30	SOLENOID SUPPORT		
31	TRIP LEVER PIVOT PIN		
32	HANDLE STOP PIN (USED AS VISUAL GUIDE)		
33	PUSH BUTTON ARM		
34	HANDLE REJECTION PIN		
35	FUSE DOOR INTERLOCK ROD & COVER		
36	OPENING CATCH PIN BEARING		
37	DISC SPRINGS		
38	PUSHBUTTON SUPPORT		
39	PUSHBUTTON & COVER		
40	PUSHBUTTON BEARING SUPPORT		

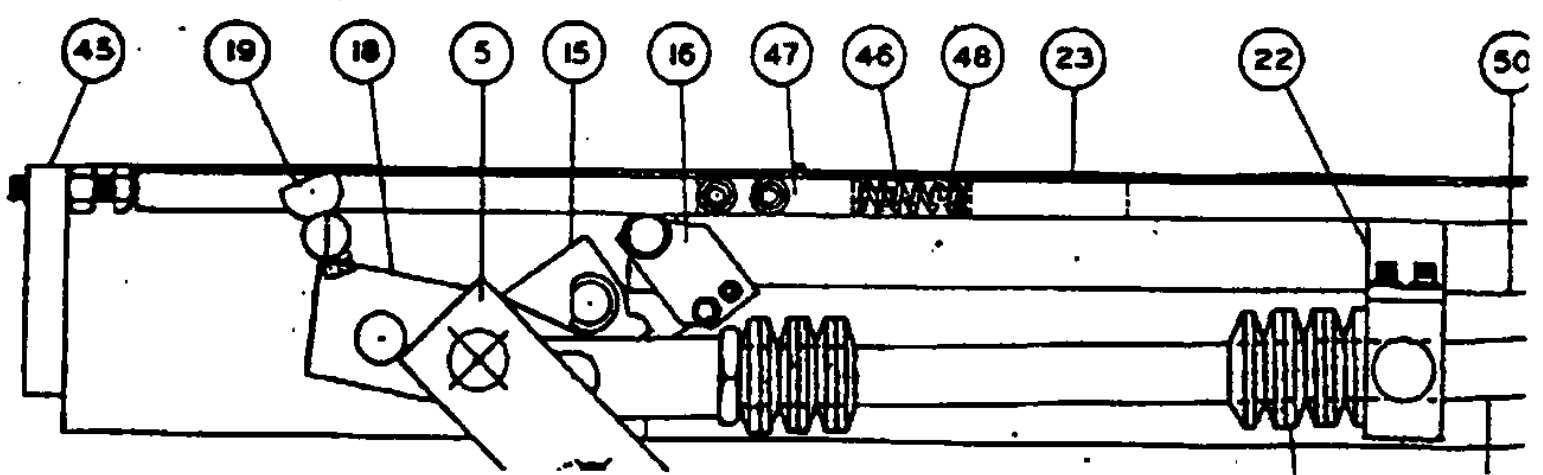


DETAIL-C  
LOCATED ON A SPRING LOADED  
SHAFT IN THE TIE BAR OF THE  
OPERATING LEVER





SECTION-AA





THE PRINGLE ELECTRICAL MANUFACTURING COMPANY  
Fort Washington Industrial Park  
Fort Washington, Pennsylvania 19034

Assembly, Operating & Maintenance Instructions  
for  
Pringle Type QA-CBC Bolted Pressure Switches

Assembly

Our quality control and integral assembly eliminates any need for further adjustment on the switch. The assembler should, however, give consideration to the following:

1. The switch is shipped in the "open" position, with the dead front operating handle and trim plate unmounted. The "open" switch should be mounted vertical-upright in the switchboard. The operating handle should be bolted to the operating shaft so that it is horizontal, extending to the right. The switch should be test operated and left in the "closed" (charged) position before making the bus connections. Also, before bolting the bus bars to the line and load terminals, a check should be made to see that the bus is in line (flat, parallel, and properly located) with the switch terminals. Failure to follow these instructions could result in misalignment of the switch contacts which could cause a mal-function in the operation of the switch.
2. After making the bus connections, the switch should be test operated again and left in the "open" position.
3. Remove the operating handle and after installing the front cover of the switchboard, the trim plate may be mounted and the handle rebolted to the shaft so that it is horizontal, extending to the right.

Operation

Grasp the operating handle and rotate counter-clockwise 90° from the horizontal position to the vertical position (this action charges the "opening" spring but does not "close" the switch). Then rotate handle clockwise 90° from the vertical to the horizontal (this action "closes" the switch). Open the switch by manual push button or electrical trip.

Maintenance

The Pringle switch parts are precision made and the switch is practically maintenance-free while the switch is in the "closed" position.

When the switch is in the "open" position, the contact surfaces will be exposed to possible accumulation of dirt, particularly during the jobsite construction period. This could cause "cutting" of the silver-plated contacts, resulting in improper mechanical and electrical operation of the switch. If dirt has accumulated on the exposed contacts, they should be cleaned with thinner and lubricated with a thin coating of G.E. Versilube G-300.



FIELD INSTALLATION INSTRUCTIONS  
FOR CHANGING DEAD FRONT MECHANISMS

- I. Every dead front is shipped from the factory to match its mating switch in the OPEN position. All power including that for controls to both line and load of switch must be shut off for safety before attempting dead front replacement to the opened switch in question.
- II. For access to switch, sizes 800-6000A.
  1. Remove operating handle (one 3/8 socket head cap screw)
  2. Remove trim plate (three No. 10 flush head machine screws)
  3. Remove enclosure cover (all exposed front facing hardware)
  4. Remove barrier, red (four or more No. 10 RND.HD. scrs. as labeled)
- III. Although replacement is similar for different models, separate detail instructions are shown here for:
  - A. Type QA-Manual close and manual open, sizes 800 thru 4000A.
  - B. Type CBC-Manual close and trip open, electrically or manually.
  - C. Type QA & CBC - all models of 5 & 6000 amp. sizes

NOTE: Handles are peculiar to each type model and are keyed to NOT be interchanged.
- IV. QA replacement dead front, sizes 800-4000 amps:
  1. Securely wire or tape together front and rear bolting supports Item No. 1 & 2 enclosed drawing No. C-67340 in a manner similar to that seen on replacement dead front from factory.
  2. Tag any special wiring from auxiliary switches, etc. on the dead front at the most accessible terminal and disconnect.
  3. Remove four 1/4-20 socket head cap screws, Item 3 on drawing, on each (8 pcs. total) of the dead front, through the aluminum horizontal support members extending from the switch base. See dwg., Caution - removal of last screw will free dead front to drop!
  4. Pull or pry dead front directly forward while stabilizing bronze universal block, item 4 on drawing, so that stainless pin extending to rear from operating lever will slide freely from this universal as dead front is withdrawn. NOTE: If universal block falls from its swivel on the switch stainless yoke pin, it must be replaced exactly as shown with its beveled edge to the top/rear for proper pivot clearance.
  5. Insert the replacement dead front in exactly reverse motion of removal and to original position and then replace eight 1/4-20 socket head cap screws removed under section IV-3.

6. Remove binding straps (tape or wire) used to hold dead front together.
7. Reconnect any wiring to proper terminals. See section IV-2.
8. Temporarily attach operating handle for test operation and then remove and reverse access instructions, Section II-1, 2, 3 & 4 for final re-assembly of enclosure.
9. Retest switch operation for any possible assembly interference before final switch closure and return of power to unit.

V. CEC dead front replacement, sizes 800-4000 amps:

- A. On models prior to 1976, 800-2500A., only; omit on 3 & 4000A.
  1. Remove 2 bolts at location No. 6A on drawing C-67340
  2. Retract 5/16-18 H.H. back-up bolt to free closing cam stop.
  3. Remove closing cam stop and discard.
  4. Remove 5/16-18 H.H. back-up bolt and discard.
- B. On models after 1976, one bolt at location No. 6 into cam stop. Item No. 9
  1. Remove 1 bolt at location No. 6 on drawing C-67340
  2. Remove 1 nut at location No. 7
  3. Back off 1 nut (2 on 3 & 4000A.) at location No. 8
  - 3a. On 3 & 4000A. only, remove 4 bolts at location No. 11 to free Item No. 11A to be removed as an assembly with Item No. 12 rod.
  4. Pry Item No. 9 cam stop up (vertically) to clear top of cam resting against right end of stop as shown; then drive stop No. 9 to right as an assembly with rod until it clears horizontal support.
- C. On models both before & after 1976:
  5. Duplicate steps 1, 2 & 3 from Section IV noting in step 3 there are 4 pcs. of Item No. 3 & 4 pcs. of Item No. 3a, of different length.
  6. Remove 2 bolts, Item No. 5, from center bearing support Item No. 5a, thru the horizontal support on the right side
  - 6a. On 3 & 4000A only, remove 2 more of these same bolts on left.
  7. Duplicate step No. 4 from Section IV.
  8. Remove mounting hardware furnished with dead front and note its proper position for re-assembly. NOTE: The 1/2-13 threaded rod on replacement will NOT extend thru horizontal support as it originally did but 2 nuts jammed on rod rest against support as shown in detail A on drawing C-67340.
  9. Insert the replacement dead front in exactly reverse motion of removal and to original position and then install the mounting hardware furnished with unit from factory

9a. On 800-2500A., ONLY, check & adjust for approximately 1/32 clearance of Item No. 10 link stop to end of mating link.

10. Duplicate steps No. 6, 7, 8 & 9 from Section IV.

VI. QA & CBC dead front replacement, sizes 5 & 6000 amps:

1. Remove link disconnect pin, Item no. 13, after noting number & position of spacer washers used on pin, see drawing C-67340.
2. Duplicate step No. 2 from Section IV.
3. Remove 20 bolts on CBC or 14 bolts on QA as shown at location No. 14 on drawing C-67340 & note position for each different size & associated washers.
4. Drop dead front out & re-install new unit from factory.
5. If linkage disconnect pin, Item No. 13 does not re-align, loosen the jam nut on the 1/2-13 threaded link rod and screw clevis down or up in half turn increments until pin fits; then replace with washers & cotter pin as shown on drawing C-67340 and retighten jam nut.
6. Duplicate steps 7, 8 & 9 from Section IV except for access instructions.

VII. Replacement dead front with horizontal supports attached (only when switch is removed from cubicle)

A. For 800-4000 amp. QA & CBC

1. Duplicate Sections I, II, III & IV-2
2. Remove 4 bolts from rear of base (see drawing C-67340 detail B); Caution - removal of last bolt on either side will cause vertical support to fall, (NOTE its position in respect to base mounting hole) and free dead front to drop!
3. Remove dead front with horizontal supports attached while stabilizing bronze universal block, item 4 on drawing, so that stainless pin extending to rear from operating lever will slide freely from this universal as dead front is withdrawn. NOTE: If universal block falls from its swivel on the switch stainless yoke pin, it must be replaced exactly as shown with its beveled edge to the top/rear for proper pivot clearance.
4. Install replacement dead front in exact reverse motion of removal with the same 4 bolts as above while positioning vertical support with 5/8 hole matching nearest base mounting hole.
5. Duplicate sections IV-7, 8 & 9



B. For 5 & 6000 amp. QA & CBC

1. Duplicate Sections I, II, III & IV-2
2. Duplicate Section VI-1
3. Duplicate Section VII-A2
4. Remove dead front with horizontal supports attached.
5. Duplicate Section VII-A4
6. Duplicate Section VI-5
7. Duplicate Section IV-7, 8 & 9

NOTE: If any problems are encountered please notify the factory.  
Thank you

The Pringle Electrical Mfg. Company  
425 Commerce Drive  
Ft. Washington, PA 19034  
(215) 643-0100