# HPL-C INTERRUPTER SWITCH, ARC-CHUTE TYPE

**SINGLE POLE, SINGLE THROW**

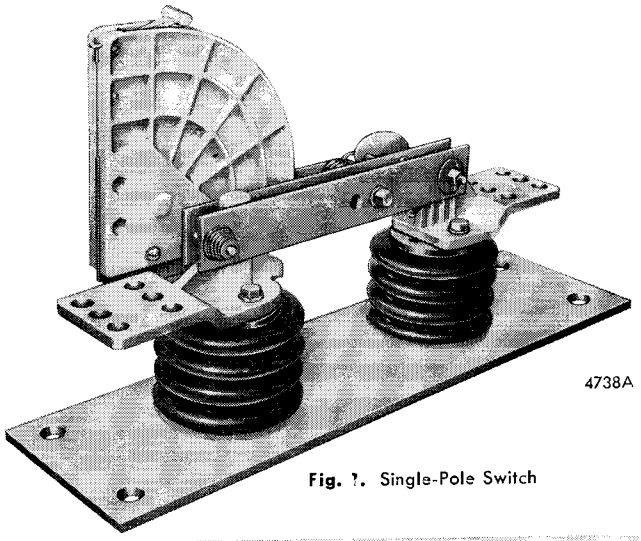
**4.8 THRU 14.4 KV**

**600 AND 1200 AMPERES**

**SAFE FAULT CLOSING**
**LONG INTERRUPTING LIFE**

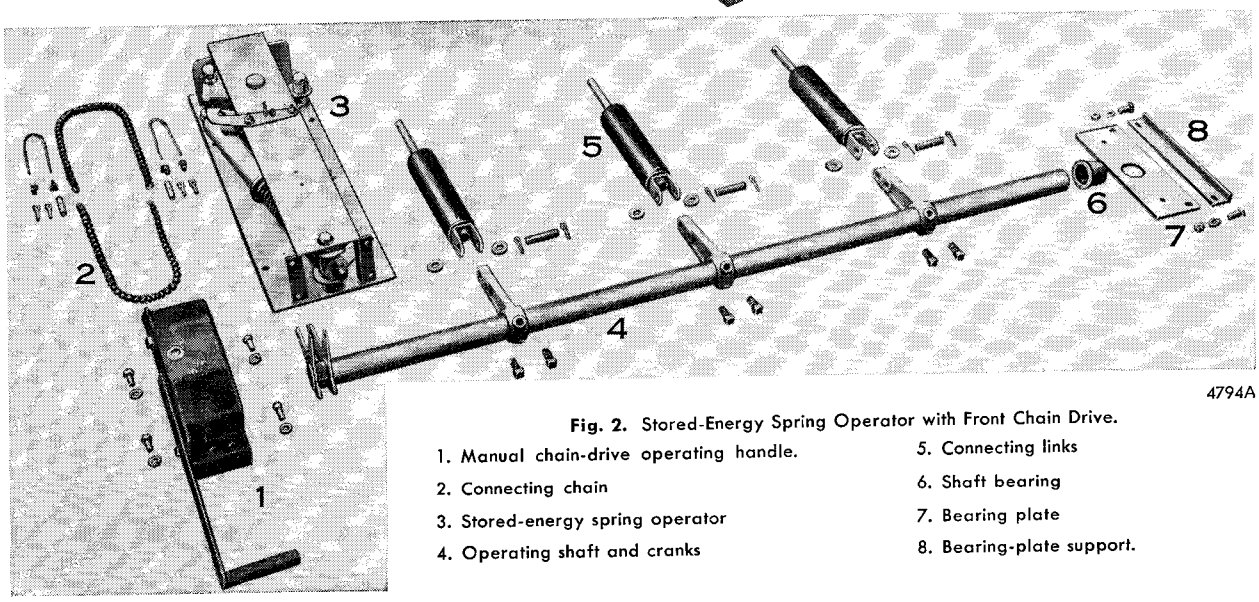
Single-pole switches and operating-mechanism parts for switchboard builders and assemblers, used in:—

- Transformer primary switchgear
- Unit substation primary sections
- Metal-enclosed fused-interrupter switchgear.



4738A

**Fig. 1.** Single-Pole Switch




4794A

**Fig. 2.** Stored-Energy Spring Operator with Front Chain Drive.

1. Manual chain-drive operating handle.
2. Connecting chain
3. Stored-energy spring operator
4. Operating shaft and cranks
5. Connecting links
6. Shaft bearing
7. Bearing plate
8. Bearing-plate support.

## RATINGS—3-POLE, HPL-C SWITCH AND OPERATING MECHANISMS

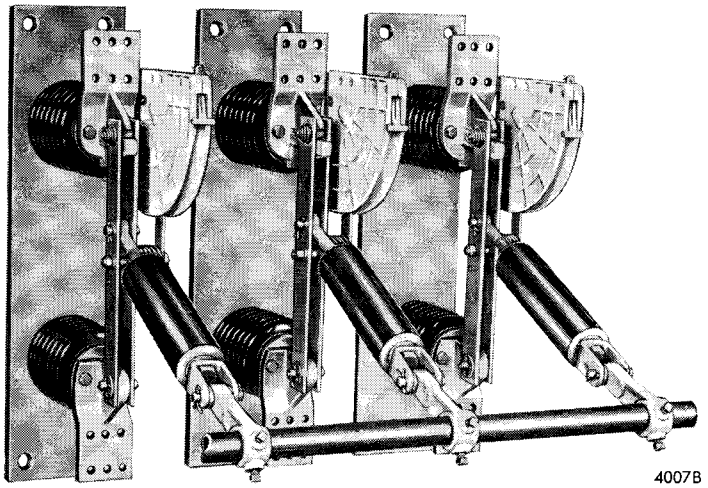
| Voltage Rating, KV | | | | Current Rating | | | | Interrupting Life on Close-Open Duty Cycle Number of Interruptions | | | | | Safe Fault Closing Rating, Amperes Rms Asymmetrical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nom. | Max. Design | Withstand | | Cont. Current Amp | At KV | 10-Cycle Momentary Ka Rms Asym. | 4-Second Short-Time Ka Rms Sym. | KV | Power Factor | Amperes | | | Direct Chain Drive | Stored-Energy Chain Drive |
| | | 60 Cycle | Impulse | | | | | | | 200 | 400 | 600 | | |
| 4.8 | 5.5 | 19 | 60 | 600 | 5.5 | 61 | 38 | 5.5 | 0.8 | 1000 | 1000 | 750 | 9000 | 40,000 or fuse interrupting rating |
| | | | | 1200 | | | | | | | | | | |
| 13.8 | 14.5 | 36 | 95 | 600 | 15 | | | 15 | | 800 | 400 | 300 | | |
| | | | | 1200 | | | | | | | | | | |
| 14.4 | 15.5 | 50 | 110 | 600 | 15.5 | 61 | 38 | 15.5 | | 500 | 300 | 200 | | |
| | | | | 1200 | | — | — | | | | | | | |

# HPL-C SWITCH AND OPERATING MECHANISMS

## SINGLE POLE, SINGLE THROW
## 4.8 THRU 14.4 KV
## 600 AND 1200 AMPERES

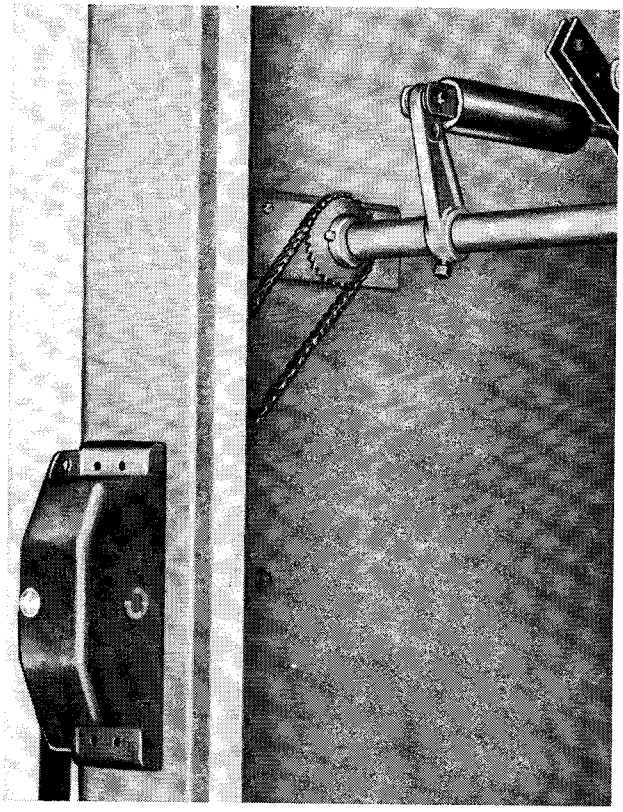
Three single-pole HPL-C switches are group operated as shown in Fig. 3. Switches are operated, open and closed, by means of cranks and porcelain links, driven from a common operating shaft.

Two types of manual switch operating mechanisms are available, Figs. 4 and 5.



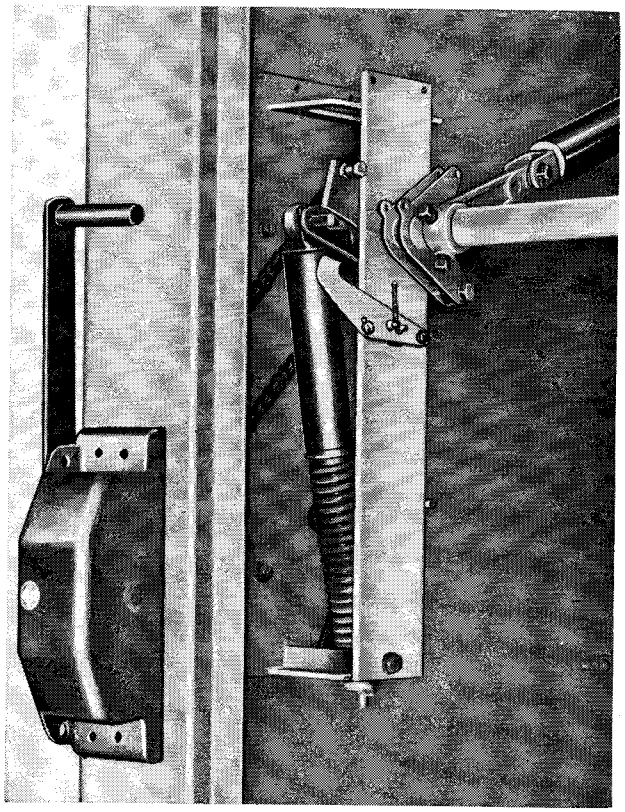
4007B

**Fig. 3.** Three Single-Pole Switches Arranged for Group Operation.



4781C

**Fig. 4.** Front Chain-Drive Connected Direct to Operating Shaft.



4781D

**Fig. 5.** Front Chain-Drive Connected to Shaft Through Stored-Energy Spring Operator for Maximum Fault Closing.

INTERLOCKING—Chain drive handles shown above have provision for mounting Kirk key interlocks—LO at top position, and LOC at bottom position.

# HPL-CL-13 DIMENSIONS

## HPL-C SWITCH WITH I-T-E CL-13 FUSE BELOW

## SINGLE-POLE

## UPRIGHT MOUNTING

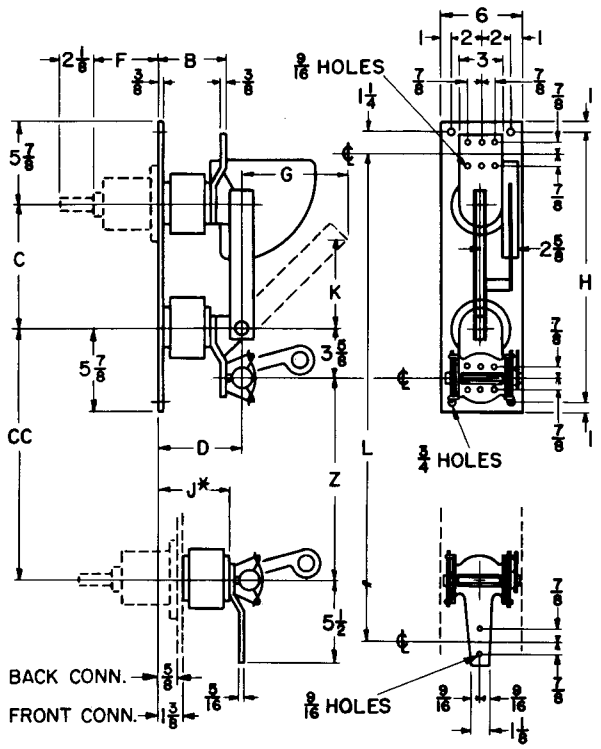



Fig. 1

Fig. 1—DIMENSIONS IN INCHES

| KV | BIL | FUSE RATING | B | C | CC | D | F | G | H | J* | K | L | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.8 | 60 | 10E-150E<br>200E-400E | 4⅞ | 9 | 18⅞<br>24⅞ | 6⅛ | 4⅞ | 8¼ | 18¾ | 4⅞ | 5⅞ | 35⅝<br>41⅝ | 15¼<br>21¼ |
| 13.8 | 95 | 10E- 50E<br>65E-200E | 7⅜ | 12 | 21⅞<br>24⅞ | 8⅝ | 7⅜ | 10¾ | 21¾ | 7⅜ | 7½ | 41⅝<br>44⅝ | 18¼<br>21¼ |
| 14.4 | 110 | 10E- 50E<br>65E-200E | 8⅞ | 14¼ | 21⅞<br>24⅞ | 10⅛ | 8⅞ | 11¾ | 24 | 8⅞ | 9⅞ | 43⅞<br>46⅞ | 18¼<br>21¼ |

* When using back-connected porcelain and stud, reduce J dimension ⅜".

| Fig. 3, RECOMMENDED SPACING, INCHES | | |
|---|---|---|
| A | M | P |
| 16½ | 7 | 3½ |
| 19½ | 10 | 5 |
| 22 | 12 | 6 |

### MINIMUM MOUNTING DIMENSIONS

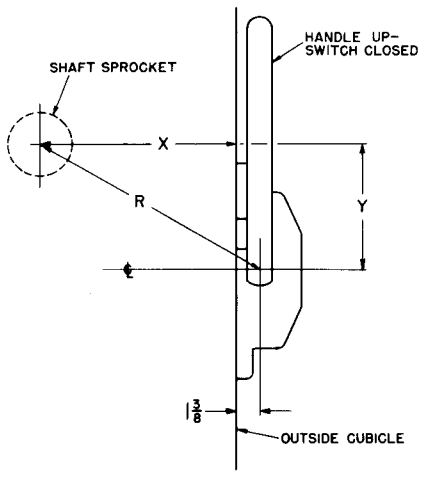



Fig. 2

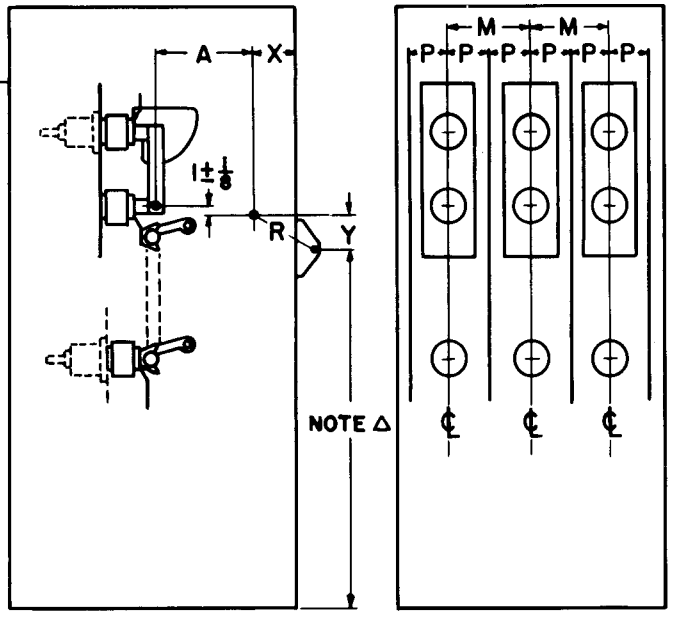



Fig. 3

△ Desired height of handle determines "Y" which must be coordinated with "X" and "R" from Fig. 1, Section 13.1.1.1, Page 13.



*Printed in U.S.A. – SG*

# HPL-CL-13 DIMENSIONS

## HPL-C SWITCH WITH I-T-E CL-13 FUSE ABOVE SINGLE-POLE INVERTED MOUNTING

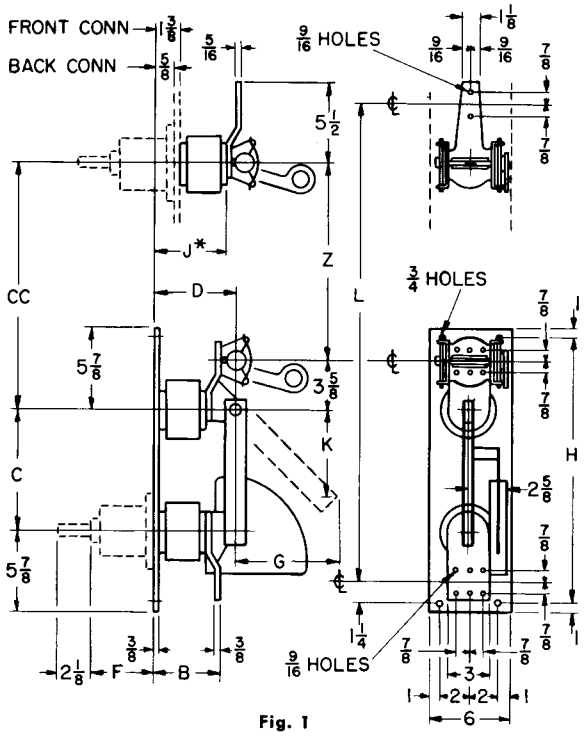



Fig. 1

Fig. 1—DIMENSIONS IN INCHES

| KV | BIL | FUSE RATING | B | C | CC | D | F | G | H | J* | K | L | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.8 | 60 | 10E-150E<br>200E-400E | 4⅞ | 9 | 18⅞<br>24⅞ | 6⅛ | 4⅞ | 8¼ | 18¾ | 4⅞ | 5⅞ | 35⅝<br>41⅝ | 15¼<br>21¼ |
| 13.8 | 95 | 10E- 50E<br>65E-200E | 7⅜ | 12 | 21⅞<br>24⅞ | 8⅝ | 7⅜ | 10¾ | 21¾ | 7⅜ | 7½ | 41⅝<br>44⅝ | 18¼<br>21¼ |
| 14.4 | 110 | 10E- 50E<br>65E-200E | 8⅞ | 14¼ | 21⅞<br>24⅞ | 10⅛ | 8⅞ | 11¾ | 24 | 8⅞ | 9⅞ | 43⅞<br>46⅞ | 18¼<br>21¼ |

* When using back-connected porcelain and stud, reduce J dimension ⅜".

Fig. 3, RECOMMENDED SPACING, INCHES

| A | M | P |
|---|---|---|
| 16½ | 7 | 3½ |
| 19½ | 10 | 5 |
| 22 | 12 | 6 |

### MINIMUM MOUNTING DIMENSIONS

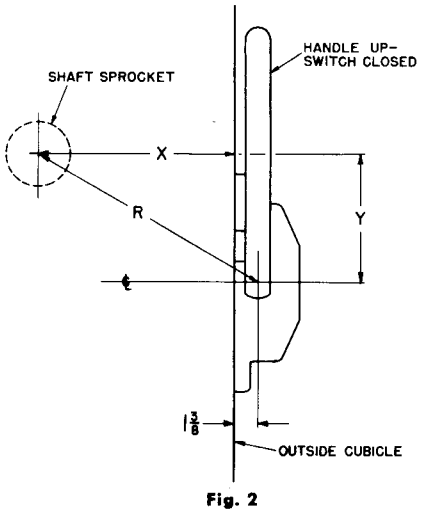



Fig. 2

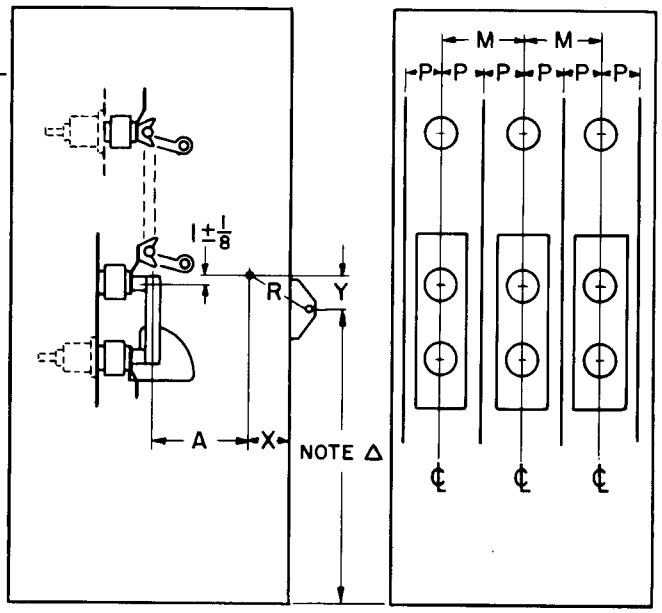
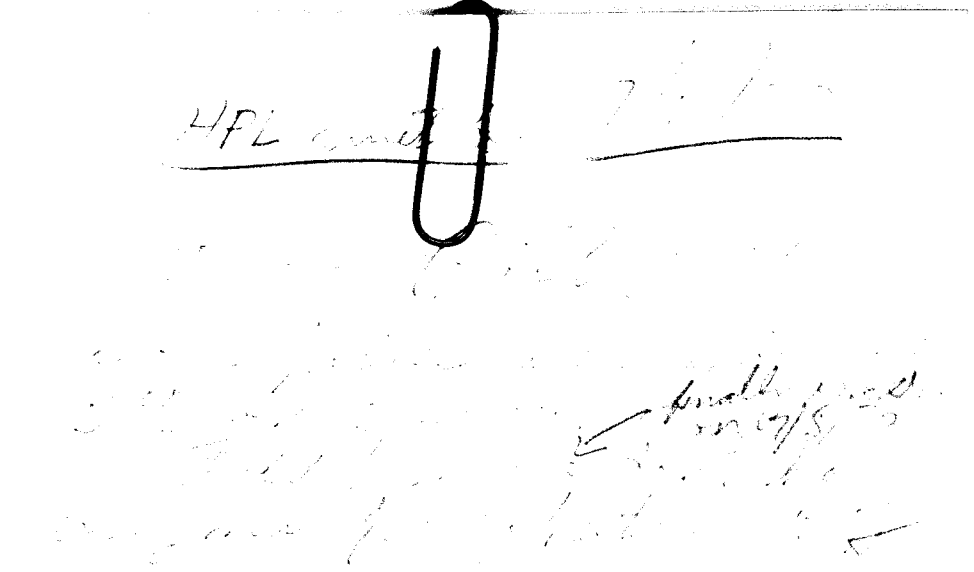
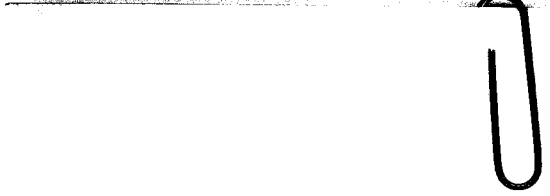



Fig. 3

△ Desired height of handle determines "Y" which must be coordinated with "X" and "R" from Fig. 1, Section 13.1.1.1, Page 13.





# NET PRICES

## HPL-C, UNFUSED—SINGLE POLE, SINGLE THROW

## 4.8 THRU 14.4 KV

## 600 AMPERES

| INS. ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Position | Direct Chain Drive 9,000 A, Fault Clos.* | | Stored Energy Ch. Dr. 40,000 A, Fault Cl. | | | |
| | Nom. | BIL | Catalog Number | Price | | Cat. No. | Price | Cat. No. | Price | Cat. No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 305-408-301<br>305-408-303<br>305-408-305<br>305-408-307 | $141.<br>171.<br>171.<br>202. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-501 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 305-409-301<br>305-409-303<br>305-409-305<br>305-409-307 | 154.<br>189.<br>189.<br>224. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-502 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 305-410-301<br>305-410-303<br>305-410-305<br>305-410-307 | 164.<br>198.<br>198.<br>234. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-502 | 22. |

*Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

2. Single-pole switch prices include a complete assembly of base, insulators, main blades and arc-chute interrupter. Back-connected studs are supplied with two contact nuts.

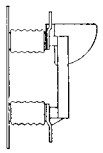
3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

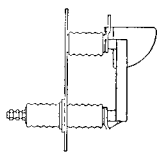
5. Interlocks—Order F2E key interlocks for chain drive handle.

Mounting charge—**$13.00**

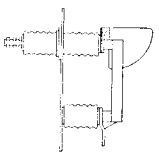
### INSULATOR ARRANGEMENTS



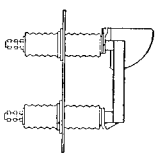
F.F.
Jaw and
Hinge Front
Connected



F.B.
Jaw Front
Connected
Hinge Back
Connected



B.F.
Jaw Back
Connected
Hinge Front
Connected



B.B.
Jaw and
Hinge Back
Connected

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

# NET PRICES

## HPL-C, UNFUSED—SINGLE POLE, SINGLE THROW

## 4.8 THRU 14.4 KV

## 1200 AMPERES

| INS. ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Position | Direct Chain Drive 9,000 A, Fault Clos.* | | Stored Energy Ch. Dr. 40,000 A, Fault Cl. | | | |
| | Nom. | BIL | Catalog Number | Price | | Cat. No. | Price | Cat. No. | Price | Cat. No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 305-408-302<br>305-408-304<br>305-408-306<br>305-408-308 | $191.<br>222.<br>222.<br>251. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-501 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 305-409-302<br>305-409-304<br>305-409-306<br>305-409-308 | 207.<br>241.<br>241.<br>277. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-502 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 305-410-302<br>305-410-304<br>305-410-306<br>305-410-308 | 217.<br>252.<br>252.<br>288. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-502 | 22. |

*Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

2. Single-pole switch prices include a complete assembly of base, insulators, main blades and arc-chute interrupter. Back-connected studs are supplied with two contact nuts.

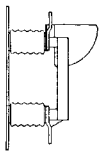
3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

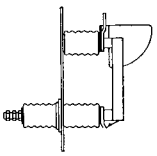
5. Interlocks—Order F2E key interlocks for chain drive handle.

Mounting charge—**$13.00**

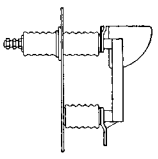
### INSULATOR ARRANGEMENTS



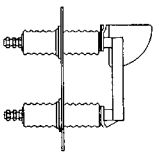
F.F.
Jaw and Hinge Front Connected



F.B.
Jaw Front Connected
Hinge Back Connected



B.F.
Jaw Back Connected
Hinge Front Connected



B.B.
Jaw and Hinge Back Connected

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

Effective May 25, 1970

# NET PRICES

## HPL-CL-13

## HPL-C SWITCH WITH PROVISION FOR MOUNTING I-T-E CL-13 CURRENT-LIMITING FUSES*

## 4.8 THRU 14.4 KV

## SWITCH RATING—600 AMPERES

| INSULATOR ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of Four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Position | Direct Chain Drive** 9,000 A, Fault Closing. | | Stored Energy Chain Drive Fault Closing 40,000 A, or Fuse Interr. Rating | | | |
| | Nom. | BIL | Catalog No. | Price | | Cat. No. | Price | Cat. No. | Price | Catalog No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 309-277-501<br>309-277-502<br>309-277-503<br>309-277-504 | $166.<br>195.<br>195.<br>226. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-508 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 309-277-505<br>309-277-506<br>309-277-507<br>309-277-508 | 178.<br>213.<br>213.<br>248. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-509 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 309-277-509<br>309-277-510<br>309-277-511<br>309-277-512 | 188.<br>223.<br>223.<br>258. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-509 | 22. |

**Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

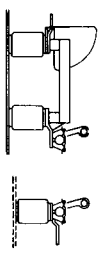
2. Single-pole switch prices include a complete assembly of switch base, insulators, main blades, arc-chute interrupter and fuse clips for I-T-E CL-13 clip-lok fuses. Prices also include an A-20 insulator front or back connected as indicated for fuse mounting. Back-connected studs are supplied with two contact nuts.

3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

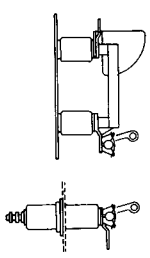
4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

5. Interlocks—Order F2E key interlocks for chain drive handle.
Mounting charge—$13.00

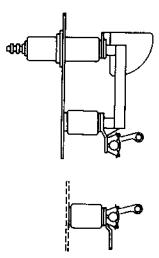
### INSULATOR ARRANGEMENTS



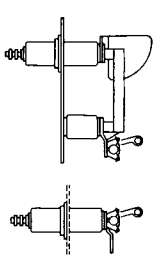
F.F.
Front
Connected



F.B.
Back
Connected



B.F.
Back
Connected



B.B.
Back
Connected

*Catalog number and actual fuse rating desired must be specified.

Above assemblies may be inverted without change.

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

# NET PRICES

## HPL-CB, WITH SEPARATE UNIVERSAL FUSE-MOUNTING SUPPORTS ON SEPARATE BASE

## 4.8 THRU 14.4 KV

## SWITCH RATING—600 AMPERES

| INSULATOR ARRANGEMENT | | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of eight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Direct Chain Drive 9,000 A, Fault Clos.* | | Stored Energy Ch. Dr. Fault Closing 40,000 A or Fuse Interr. Rating | | | |
| Fuse Hinge | Switch Jaw | Nom. | BIL | Catalog No. | Price | Position | Cat. No. | Price | Cat. No. | Price | Catalog No. | Price |
| F.C.<br>F.C.<br>B.C.<br>B.C. | F.C.<br>B.C.<br>F.C.<br>B.C. | 4.8 | 60 | 4CB1<br>4CB2<br>4CB3<br>4CB4 | $ 182.<br>211.<br>232.<br>248. | Right or Left | DR4<br>DL4 | $109. | SR4<br>SL4 | $213. | FB5 | $42. |
| F.C.<br>F.C.<br>B.C.<br>B.C. | F.C.<br>B.C.<br>F.C.<br>B.C. | 13.8 | 95 | 13CB1<br>13CB2<br>13CB3<br>13CB4 | 198.<br>232.<br>243.<br>271. | Right or Left | DR13<br>DL13 | 109. | SR13<br>SL13 | 213. | FB15 | 42. |
| F.C.<br>F.C.<br>B.C.<br>B.C. | F.C.<br>B.C.<br>F.C.<br>B.C. | 14.4 | 110 | 14CB1<br>14CB2<br>14CB3<br>14CB4 | 210.<br>244.<br>254.<br>293. | Right or Left | DR14<br>DL14 | 126. | SR14<br>SL14 | 230. | FB15 | 42. |

*Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

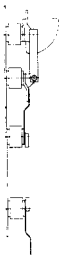
2. Single-pole switch prices include a complete assembly of switch base, insulators, main blades, arc-chute interrupters, together with separate universal fuse-mounting supports on separate base. Fuse clips, holders and refills not included. Back-connected studs are supplied with two contact nuts.

3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

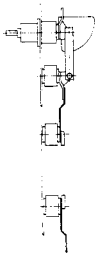
4. Operating mechanism prices include handle assembly with provision for Kirk key interlocks, shaft assembly, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets, and when required, a stored-energy spring-operating mechanism.

5. Interlocks—Order F2E key interlocks for chain drive handle.
Mounting charge—$12.00

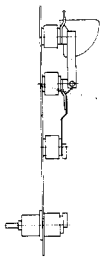
### INSULATOR ARRANGEMENTS



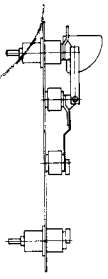
F.C.
F.C.
All
Front
Connected



F.C.
B.C.
Switch Jaw
Only
Back
Connected



B.C.
F.C.
Fuse Hinge
Only
Back
Connected



B.C.
B.C.
Switch Jaw
and
Fuse Hinge
Back
Connected

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

# LD PLUNGER-TYPE SWITCHES

**FRAME MOUNTED**
**THREE POLE, DOUBLE THROW**
**4.8, 7.2 AND 13.8 KV**
**600 AMPERES CONTINUOUS AND LOAD INTERRUPTING**

LD interrupter switches are of the plunger type, having interrupter chambers which quench the arc by an accelerated movement of a nylon follower into a bone-fibre-lined tube. The arc is drawn out between two electrodes into the narrow space between, causing the interruption in the current. An open gap is made between the electrodes and later visibly established by the rotary disconnect switch blade.

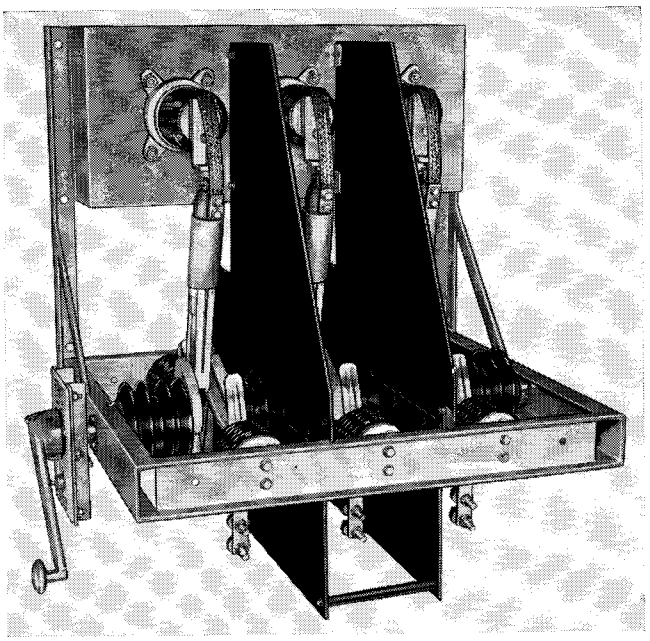


Fig. 1 3587

13.8-kV, 600-Ampere, Double-Throw, Back-Connected Switch

## APPLICATIONS

1 — For transfer or removal of load on energized distribution circuits.

2 — As a sectionalizing switch in feeder circuits.

3 — To isolate transformer banks.

4 — For interrupting exciting load currents of feeder regulators and capacitors.

5 — As an ordinary disconnect to provide safety in case of operating error.

6 — For changing transformer connections, star to delta or vice-versa, without opening primary feeder.

## OPERATING MECHANISM

A direct side-operating handle as shown in Fig. 1 is supplied.

## RATINGS

| Nom Rating | | Withstand KV | | Interrupting Rating at 80% Power Factor, Rms Amp |
|---|---|---|---|---|
| KV | Amp | 60 Cycle | BIL | |
| 4.8 | 600 | 19 | 60 | 600 |
| 7.2 | 600 | 26 | 75 | 600 |
| 13.8 | 600 | 36 | 95 | 600 |

# HPL-C INTERRUPTER SWITCH, ARC-CHUTE TYPE

**SINGLE POLE, SINGLE THROW**

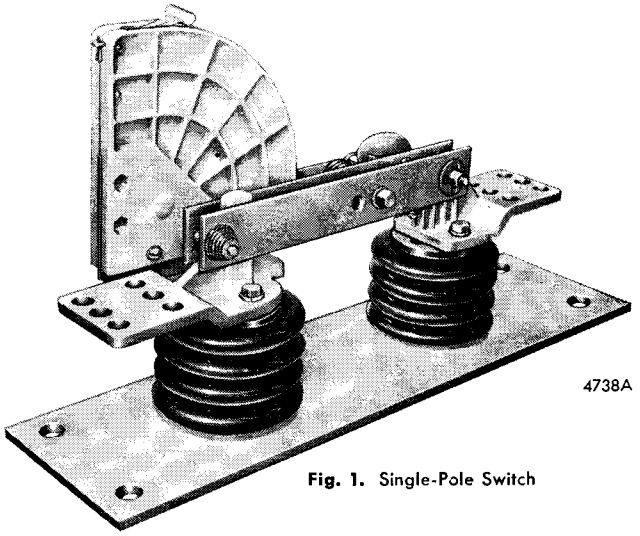
**4.8 THRU 14.4 KV**

**600 AND 1200 AMPERES**

**SAFE FAULT CLOSING**
**LONG INTERRUPTING LIFE**

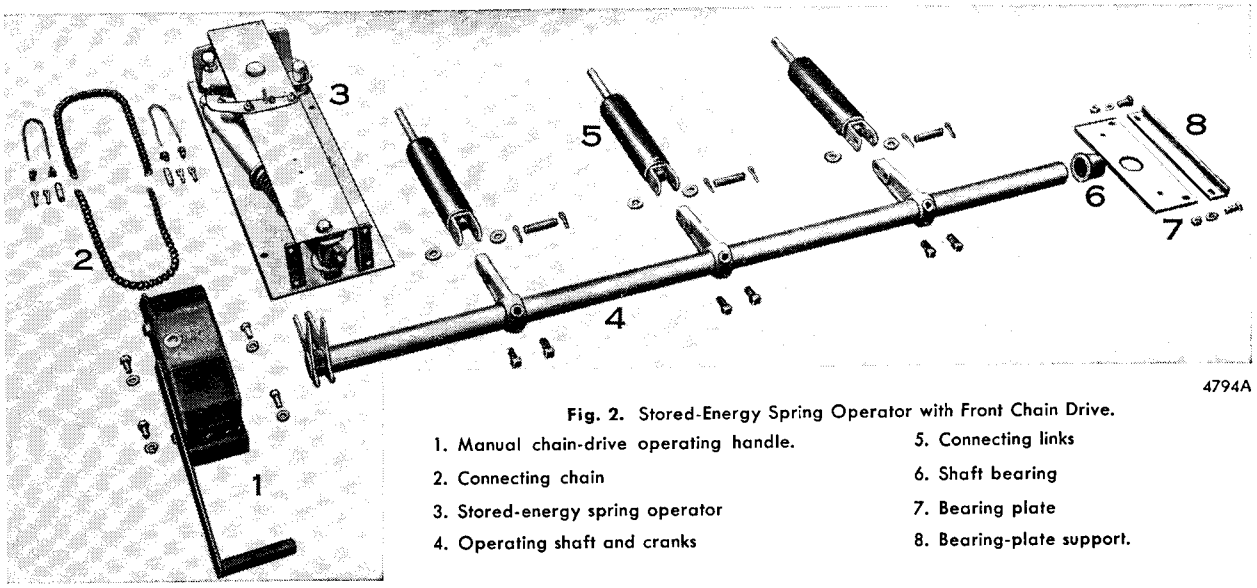
Single-pole switches and operating-mechanism parts for switchboard builders and assemblers, used in:—

- Transformer primary switchgear
- Unit substation primary sections
- Metal-enclosed fused-interrupter switchgear.



4738A

**Fig. 1.** Single-Pole Switch




4794A

**Fig. 2.** Stored-Energy Spring Operator with Front Chain Drive.

1. Manual chain-drive operating handle.
2. Connecting chain
3. Stored-energy spring operator
4. Operating shaft and cranks
5. Connecting links
6. Shaft bearing
7. Bearing plate
8. Bearing-plate support.

## RATINGS—3-POLE, HPL-C SWITCH AND OPERATING MECHANISMS

| Voltage Rating, KV | | | | Current Rating | | | | Interrupting Life on Close-Open Duty Cycle Number of Interruptions | | | | | Safe Fault Closing Rating, Amperes Rms Asymmetrical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nom. | Max. Design | Withstand | | Cont. Current Amp | At KV | 10-Cycle Momentary Ka Rms Asym. | 4-Second Short-Time Ka Rms Sym. | KV | Power Factor | Amperes | | | Direct Chain Drive | Stored-Energy Chain Drive |
| | | 60 Cycle | Impulse | | | | | | | 200 | 400 | 600 | | |
| 4.8 | 5.5 | 19 | 60 | 600 | 5.5 | 61 | 38 | 5.5 | 0.8 | 1000 | 1000 | 750 | 9000 | 40,000 or fuse interrupting rating |
| | | | | 1200 | | | | | | | | | | |
| 13.8 | 14.5 | 36 | 95 | 600 | 15 | | | 15 | | 800 | 400 | 300 | | |
| | | | | 1200 | | | | | | | | | | |
| 14.4 | 15.5 | 50 | 110 | 600 | 15.5 | 61 | 38 | 15.5 | | 500 | 300 | 200 | | |
| | | | | 1200 | | —— | —— | | | | | | | |



*Printed in U. S. A.*

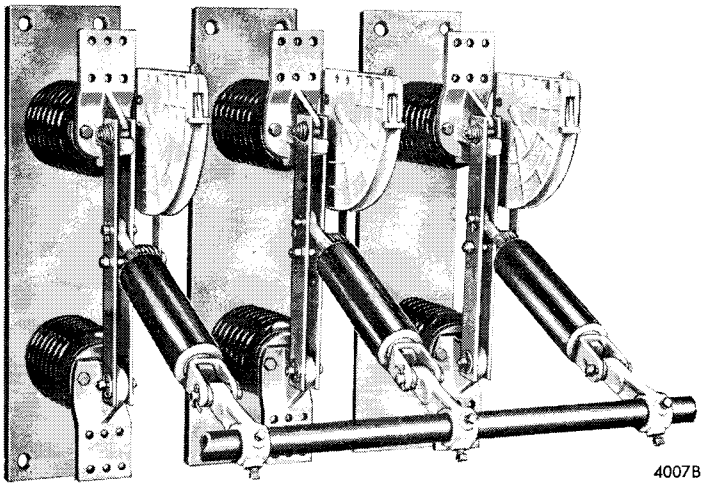
# HPL-C SWITCH AND OPERATING MECHANISMS

Three single-pole HPL-C switches are group operated as shown in Fig. 3. Switches are operated, open and closed, by means of cranks and porcelain links, driven from a common operating shaft.

Two types of manual switch operating mechanisms are available, Figs. 4 and 5.

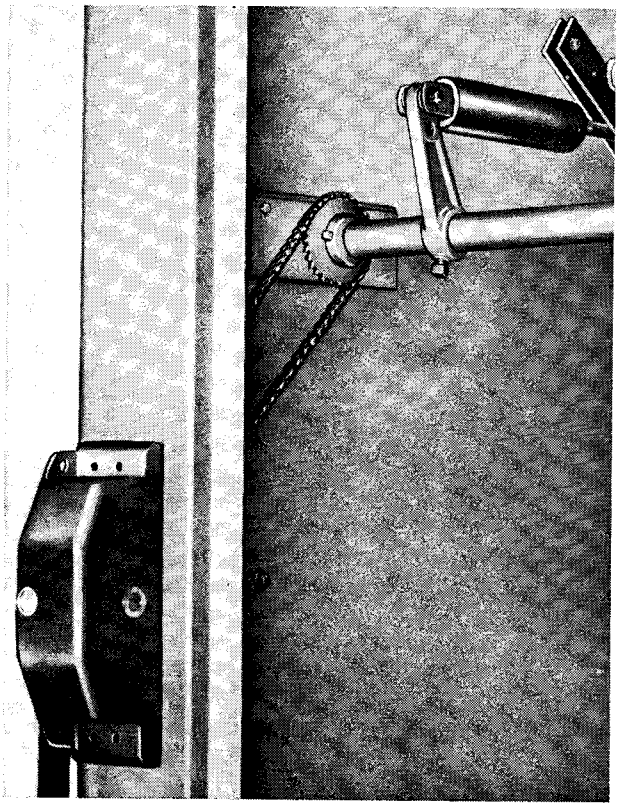
With the manual mechansims shown, the front operating handle is moved through 180 degrees for a switch operation ... up to close ... down to open.

As the handle is rotated, energy is stored in the spring device (Fig. 5). Only when the Tog-L spring is fully charged and moved over center, does the spring operator discharge causing a switch operation.



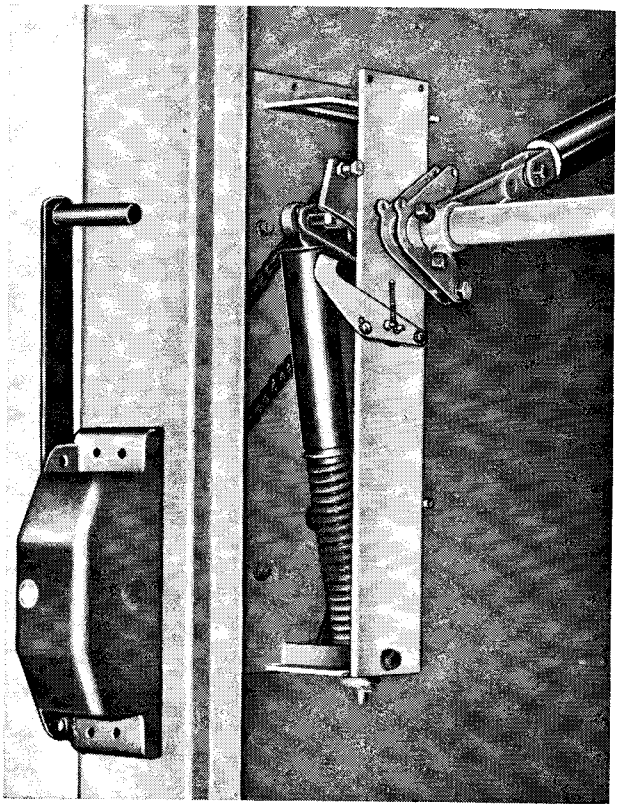
4007B

**Fig. 3.** Three Single-Pole Switches Arranged for Group Operation.



4781C

**Fig. 4.** Front Chain-Drive Connected Direct to Operating Shaft.



4781D

**Fig. 5.** Front Chain-Drive Connected to Shaft Through Stored-Energy Spring Operator for Maximum Fault Closing.

**INTERLOCKING**—Chain drive handles shown above have provision for mounting Kirk key interlocks—LO at top position, and LOC at bottom position.

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## OPERATING CRANK WITH SPROCKET AND TOG-L SPRING

The basic stored-energy spring operator consists of a one-piece crank and sprocket on a stub shaft assembled within a mounting support frame. One end of a Tog-L spring assembly is attached to the sprocket crank. The other end of the spring assembly is anchored to the mounting frame. The spring assembly itself consists of an operating rod and two compression springs, one inside the other. Upper half of main spring is covered by a cylinder whose purpose will be described later. The sprocket is chain-driven from a front operating handle.

In Fig. 1, the springs are compressed as the sprocket is driven in the counter-clockwise direction. When the springs are completely compressed and the sprocket crank is in line with the spring operating rod, the mechanism is in toggle. As the sprocket crank is further rotated, the springs discharge and drive the sprocket crank to a position approximately 180 degrees from its original starting point (Fig. 2). Belleville washers at lower end of spring absorb shock when spring discharges.

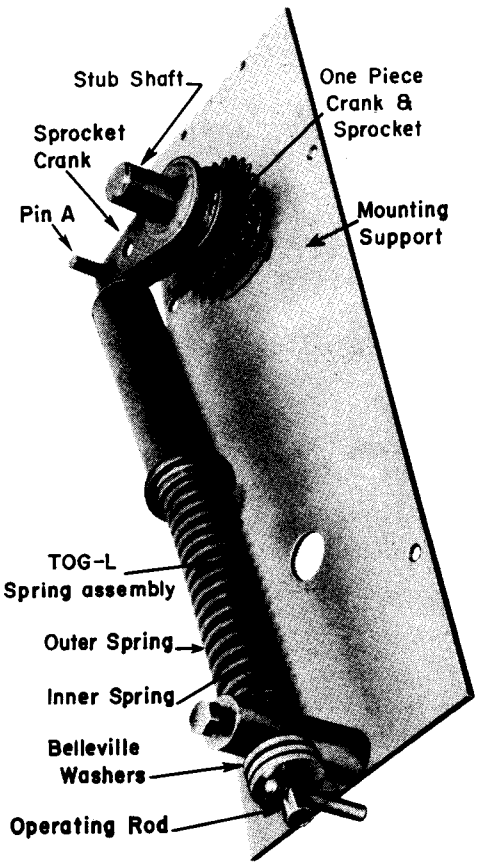



Fig. 1

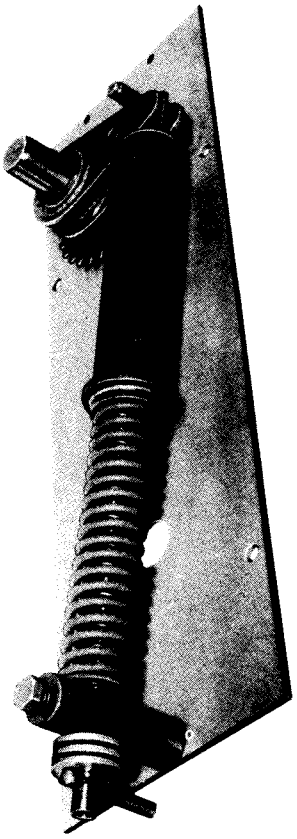
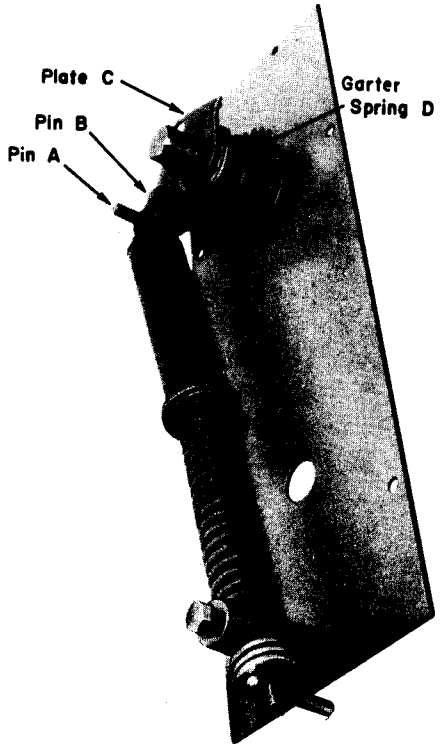


Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES




## OPERATING PLATE (FOR MOTOR) AND SHAFT OPERATING PLATE

All spring operators are assembled with pin (B), operating plate (C), and garter spring (D), (Fig. 3) used for motor operation which is described later. For straight manual operation, plate (C) is free on the stub shaft and serves only as a spacer between the sprocket crank and the switch shaft-operating plate (E) shown added to the assembly in Fig. 4.

In service, the HPL-C switch operating shaft is coupled to the switch shaft-operating plate of the spring operator as indicated in Fig. 5.

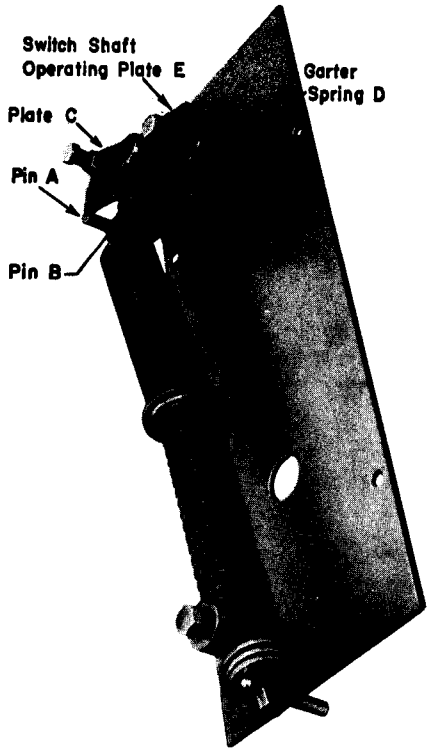



Fig. 4

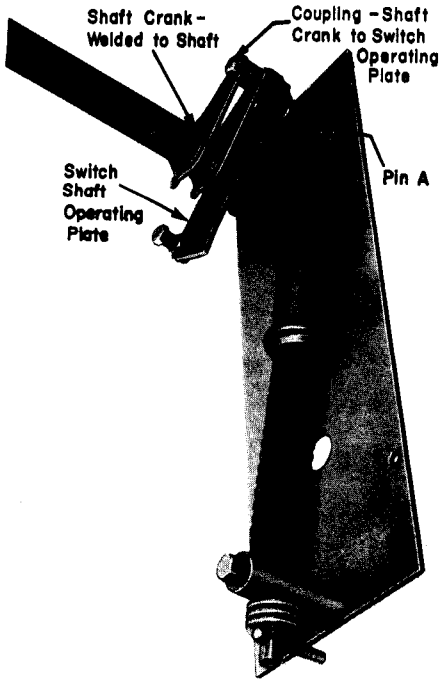



Fig. 5

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## SWITCH SHAFT OPERATING PLATE

The switch shaft-operating plate remains in position shown in Fig. 1 while spring is compressed, moves to toggle position, and starts to discharge. When spring discharges, pin A drives switch shaft-operating plate in counter-clockwise direction to position shown in Fig. 2, thus causing a corresponding rotation of the switch-operating shaft.

When the sprocket is rotated in the opposite direction and the spring is again charged and moved through toggle position, the switch shaft is rotated in the opposite direction as the spring discharges, driving switch shaft-operating plate to original position.

All spring operators are also equipped with a set of spring retainers as indicated in Fig. 2 whose purpose will be described later.

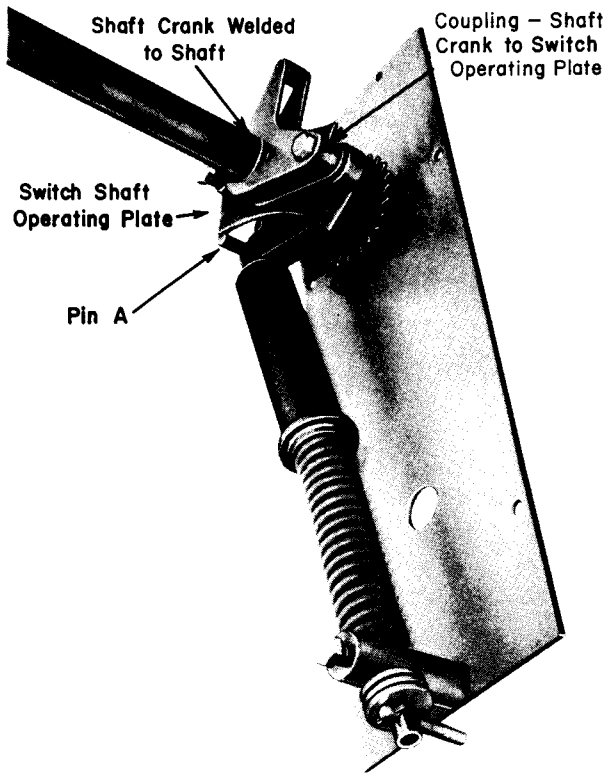



Fig. 1

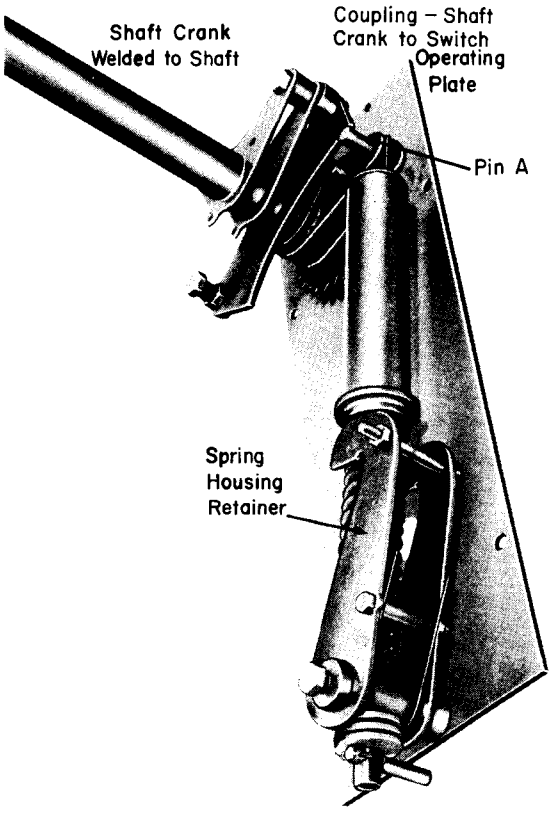



Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## SPRING HOUSING RETAINER

The spring retainers referred to on page 3 prevent the main spring from discharging completely on a switch opening operation as shown in Fig. 3, by retaining the main spring cylinder housing. They also allow the spring to discharge completely on a closing operation as shown in Fig. 4.

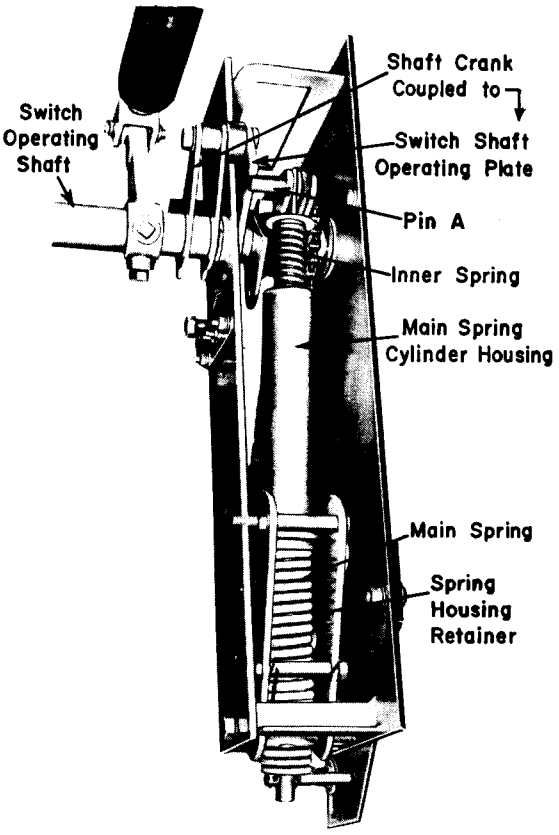



Fig. 3

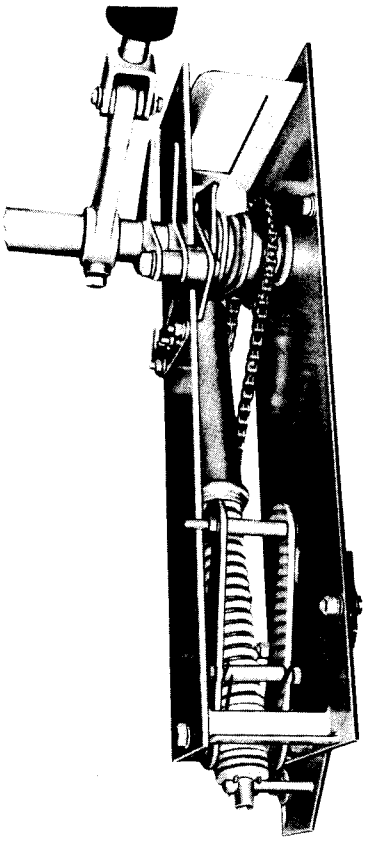


Fig. 4

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MECHANICAL INTERLOCK

It is evident from Fig. 1 that as the spring is charged for an opening operation, the switch no longer has the benefit of the spring to hold it closed. Actually it will hold in closed position on a current of full momentary rating because the switch crank and operating link are in line.

Occasionally, however, the HPL-C switch is used in an inverted arrangement as indicated in Fig. 2. Here it is evident that, as the spring is charged for a closing operation, the switch will tend to fall closed. To prevent this occurrence, during the time the spring is not in position to hold the switch open, all spring operators are equipped with a mechanical interlock shown in Fig. 3. This mechanical interlock is released as the spring operator discharges, but performs no function when the switch is mounted in the upright position, Fig. 1. In the latter case, the mechanical interlock may be removed.

SWITCH CLOSED-SPRING DISCHARGED

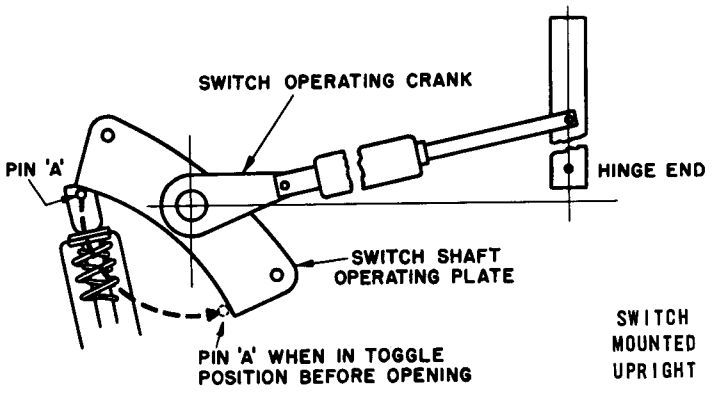



Fig. 1

SWITCH OPEN-SPRING DISCHARGED

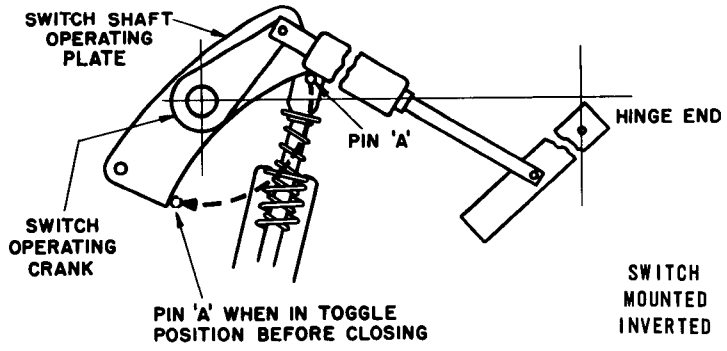



Fig. 2

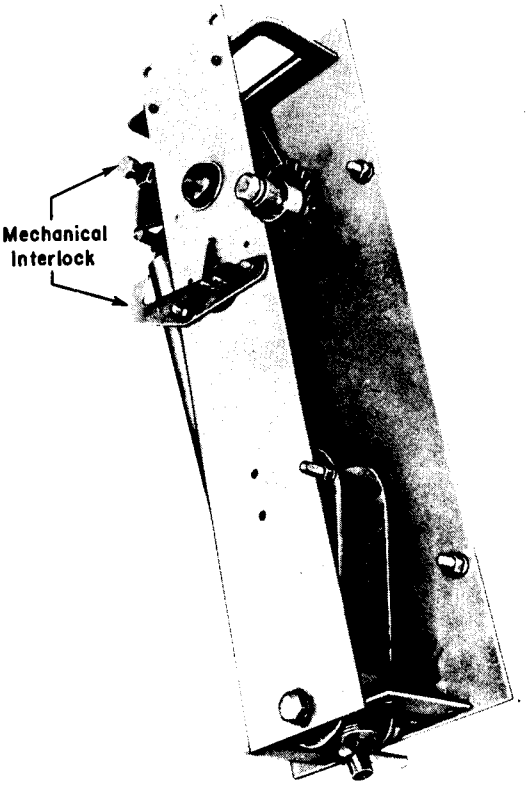



Fig. 3



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# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## LATCH WITH SOLENOID RELEASE

Figs. 1 and 2 show the relative position of latch and a stop with discharged Tog-L spring in each of its two positions. In either case, as the Tog-L spring is charged, it will be captured in its fully charged position as it moves over toggle position.

A solenoid may be added to the Tog-L spring latch as indicated in Fig. 3 when remote or automatic latch release is desired.

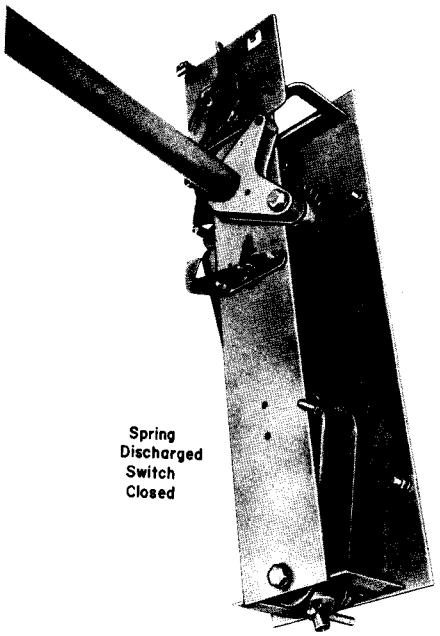
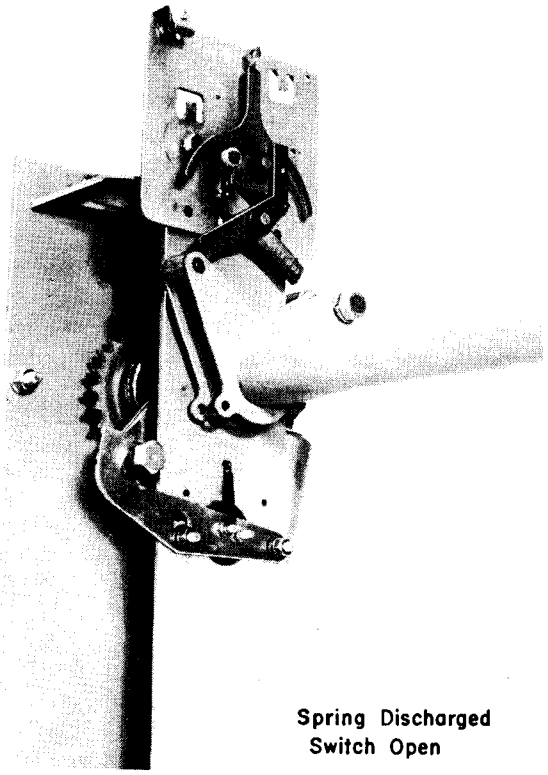



Fig. 1



Spring Discharged
Switch Open

Fig. 2

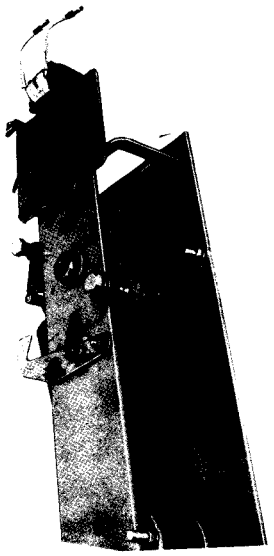


Fig. 3

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MOTOR ASSEMBLY

### ASSEMBLY

The motor charging attachment (1), Fig. 4, is added to the manual spring operator (2), to permit remote or automatic operation.

Referring to Fig. 5, the motor charging attachment is coupled to operating plate (C) of the stored energy operator. When the motor operates, the coupling link (9) drives plate (C) which in turn drives sprocket crank (E) via pin (B) counterclockwise, thus performing electrically the same function as the manually-operated mechanism described on page 2. Note that garter spring (D) has been encircled around the motor coupling. Its purpose is to spring bias the coupling link, thus allowing the motor to always run in the same direction, regardless of which direction the Tog-L spring is to be charged.

### MANUAL OPERATION

This mechanism may still be operated manually with the front handle (see page 2), except the chain drives the sprocket crank (E). In this case, however, the operating handle itself is spring biased to a free wheeling position and must be clutch engaged if manual operation is desired. The manual handle in this case always incorporates a safety switch which de-energizes the motor control circuit when the manual handle is engaged. Note that if the Tog-L spring in Fig. 5 is manually operated, there will be no movement of the motor mechanism, but the garter spring will automatically bias the coupling link and operating plate in the opposite direction.

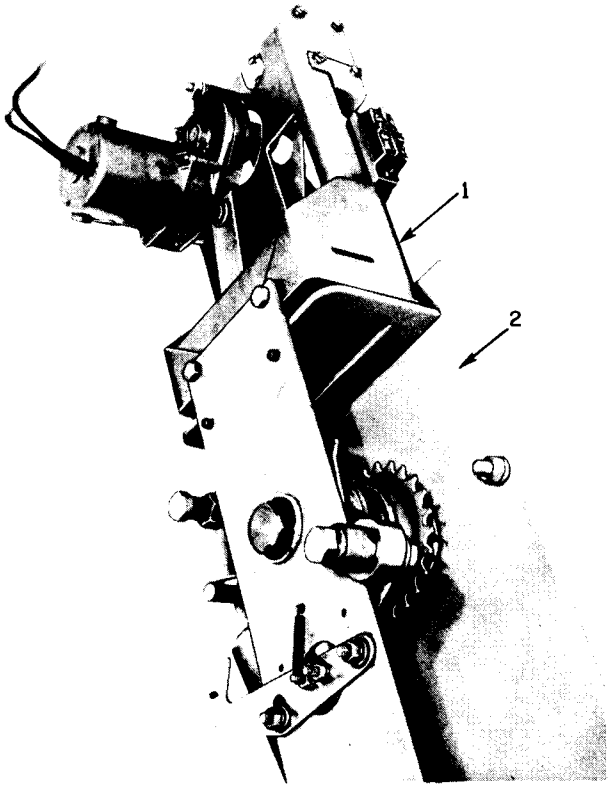



Fig. 4

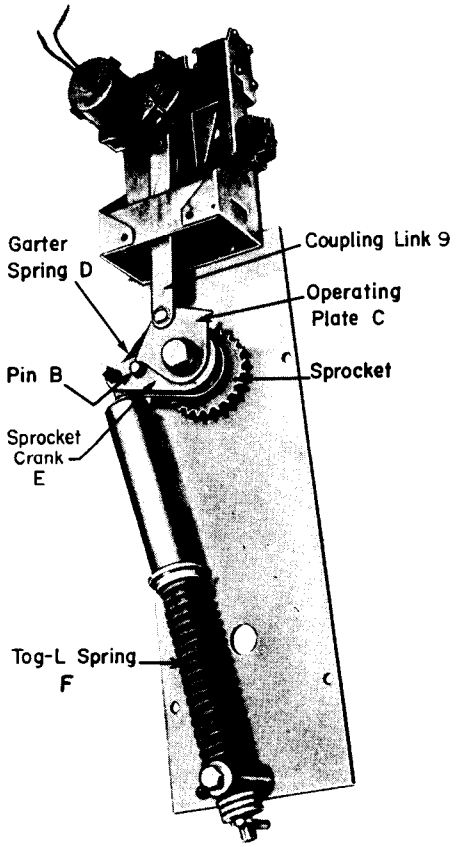



Fig. 5



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# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES

## MOTOR ASSEMBLY PARTS AND THEIR FUNCTIONS

Refer to Figs. 1 and 2 below, and Fig. 5,- page 9.

1. The circuit is energized through pushbuttons and the associated interlock auxiliary contacts which assure that the switch is in the proper position to perform the required operation, which has been signaled, open or close.

2. The motor starting contactor is energized, closing the starter seal-in contact and simultaneously energizing the starting solenoid (42X) and spring-charging motor (4). Solenoid (42X) will pull up link (14) and advance cam (11) and ratchet (7) by one ratchet tooth position. Cam (11) is mounted on square shaft (15) together with ratchet (7).

3. The motor rotates, driving yoke (5) in reciprocating motion. Drive pawl (6) attached to the yoke rotates the ratchet (7), one notch for each revolution. The ratchet is prevented from slipping backwards by spring loaded backup pawls (8), which are held stationary in the mechanism frame (17).

4. Clamp crank (16) mounted on a square shaft (15) is pin connected to link (9), driving operating plate (C), which in turn drives sprocket crank (E) via pin (B), thus compressing Tog-L spring (F) in the same manner as in manual operation.

5. Cam (11) actuates motor cut-off switch (33) through link (14) to open motor circuit and de-energize solenoid (42X) when link (9) is fully extended, at which time the Tog-L spring has been driven over center and now takes over to operate the switch (open or close). The motor coasts to a stop while continuing to drive ratchet (7) until drive pawl (6) finds the space of missing tooth (13) on the ratchet, at which moment the mechanism comes to rest and motor cut-off switch (33) resets.

6. The garter spring (D) encircling link (9) and sprocket crank (E) positions the link to "set" the motor mechanism for "opening" or "closing" stroke as required.

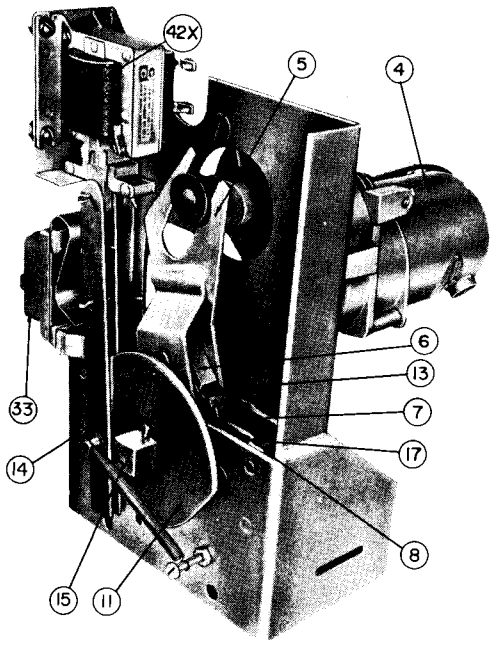



Fig. 1

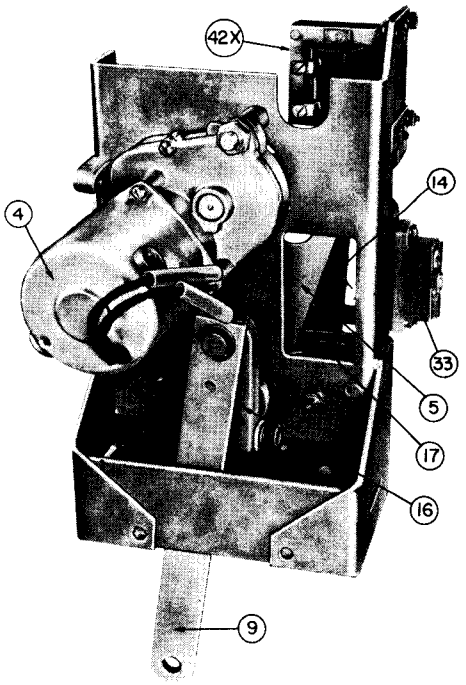



Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MOTOR ASSEMBLY, LATCH AND SOLENOID

Stored-energy spring operator equipped with motor-charging and Tog-L spring-latching accessories.

Such a combination offers complete automatic operation.

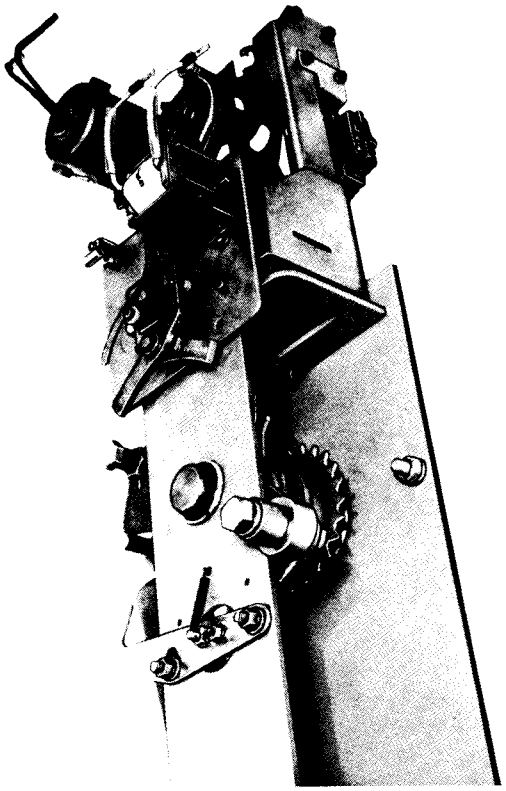


Fig. 3

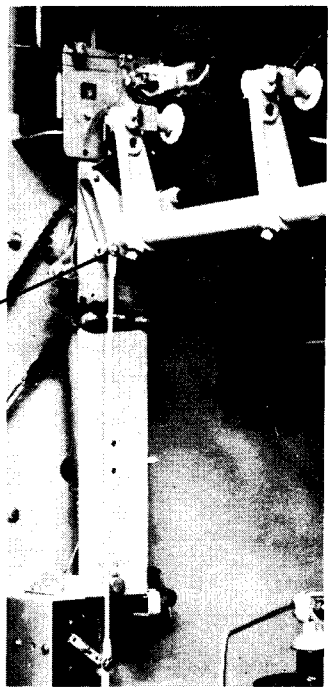



Fig. 4

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES

## S - STANDARD MECHANISM

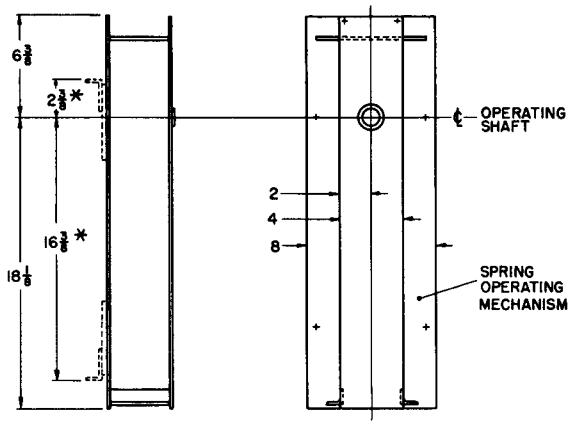



**Fig. 1** Dimensions

*Dimensions same as shown on P.5 Section 13.1.1.4, Installation Instructions

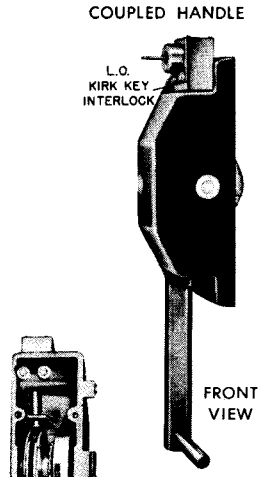



**Fig. 2**

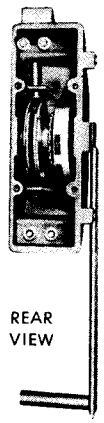



**Fig. 3**

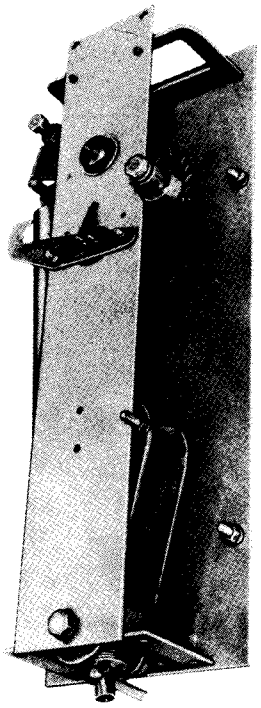


**Fig. 4** Complete Assembly (S)

# X, Y AND R COORDINATION CHART
## DIMENSIONS IN INCHES

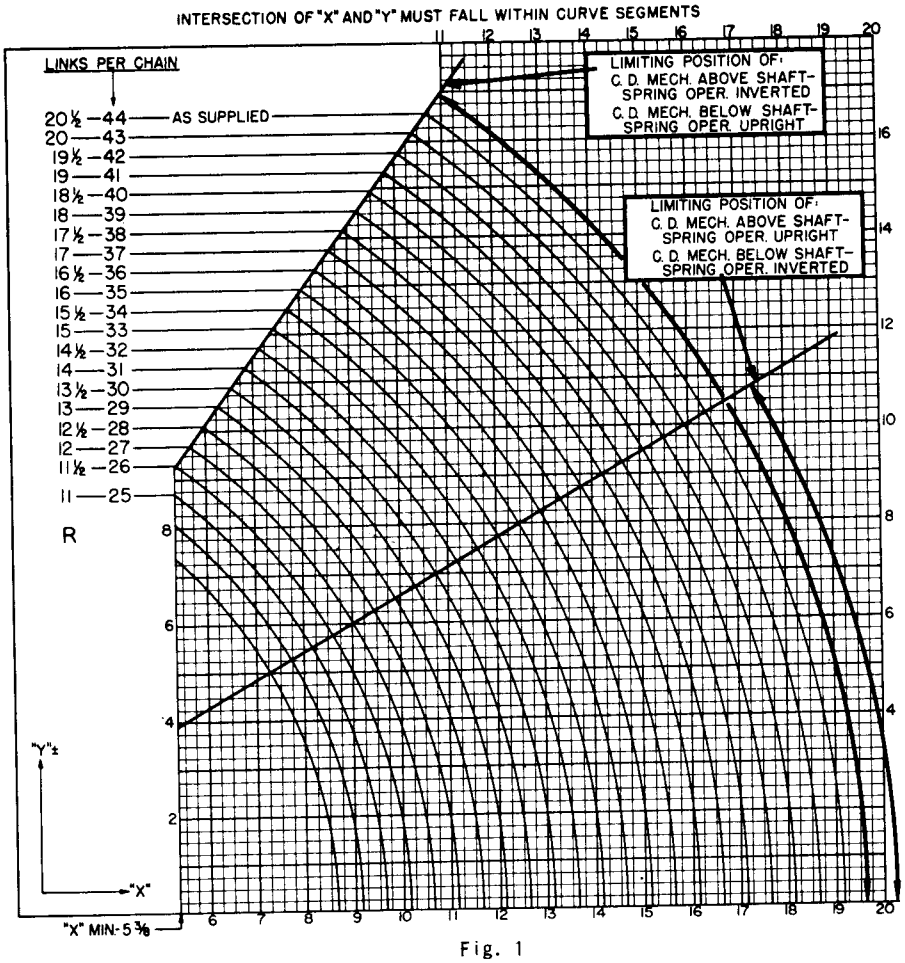


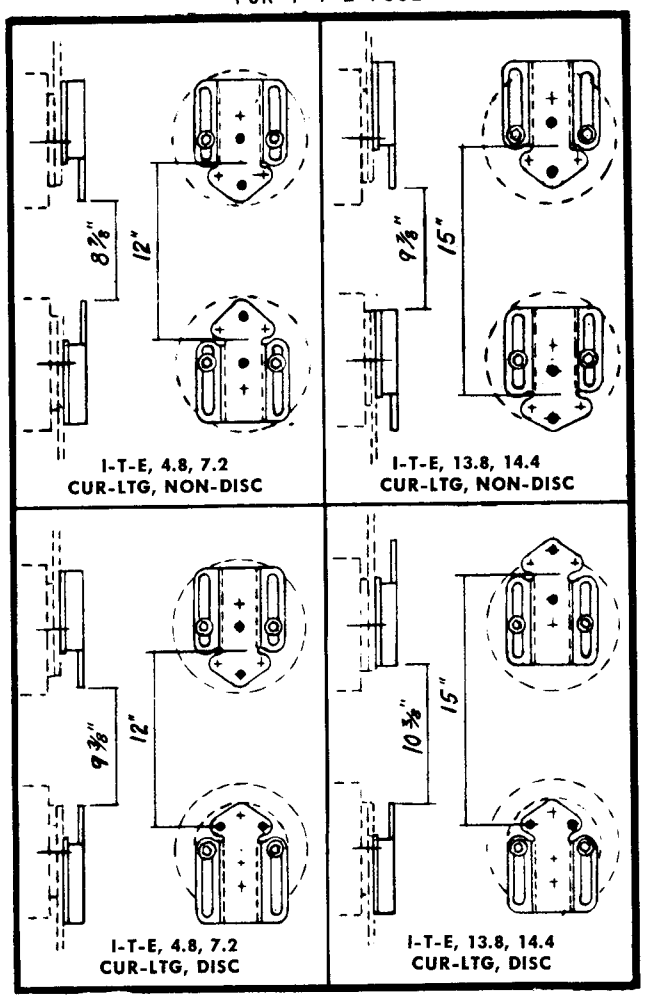

Fig. 1

Chart above covers coordination of chain-drive dimensions for use with stored-energy spring operator.

For direct chain drive (no spring operator) add six links, three to each chain, to the number of links indicated in the chart.

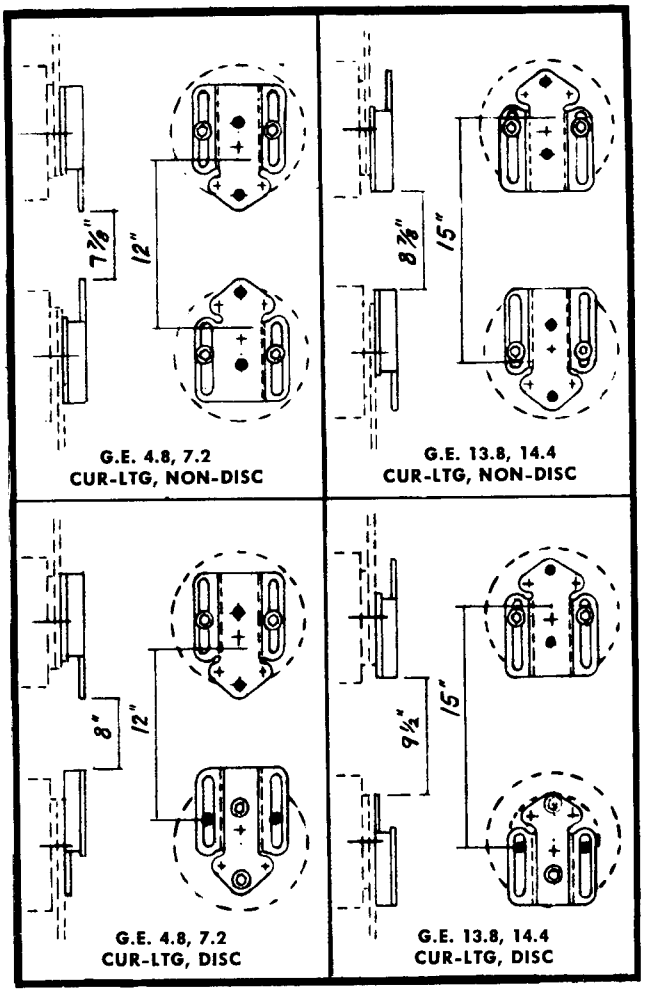
# UNIVERSAL FUSE ADAPTER ARRANGEMENTS
## USED ON HPL-CA AND HPL-CB SWITCHES

FOR I-T-E FUSES

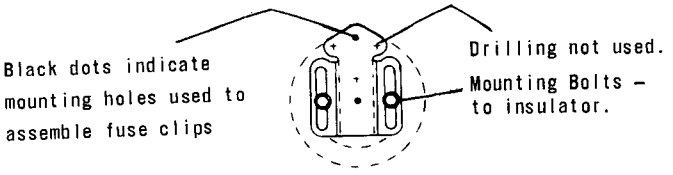



2-INCH BOLT CIRCLE FUSE CLIPS

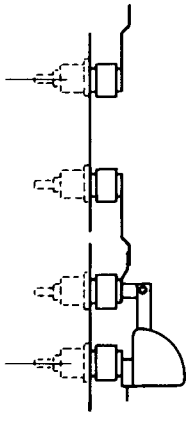
FOR GE FUSES



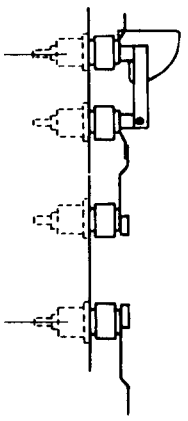

3-INCH BOLT CIRCLE FUSE CLIPS




Separate fuse-mounting bases used for HPL-CA and HPL-CB are equipped with two universal-mounting adapters. Adapters are to be adjusted as per arrangements shown on this page. For switch dimensions, see Section 13.1.1.2, Page 5.



HPL-CA

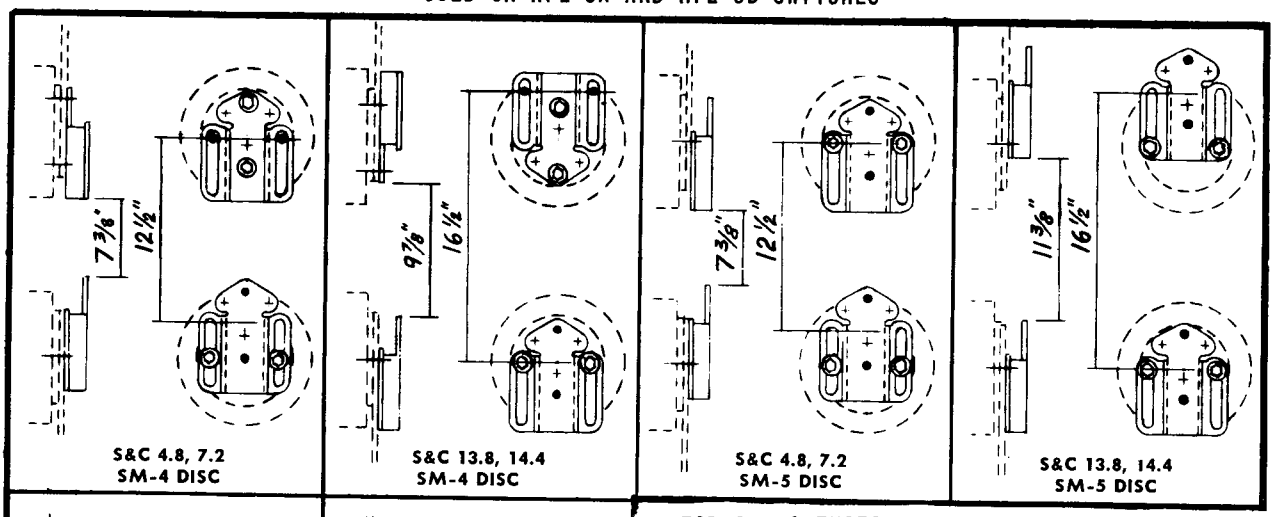


HPL-CB

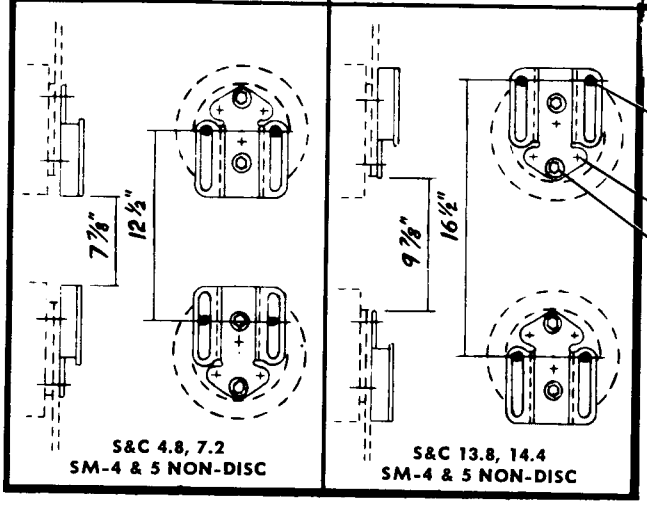


*Printed in U. S. A.*

# UNIVERSAL FUSE ADAPTER ARRANGEMENTS
## USED ON HPL-CA AND HPL-CB SWITCHES




FOR S & C FUSES



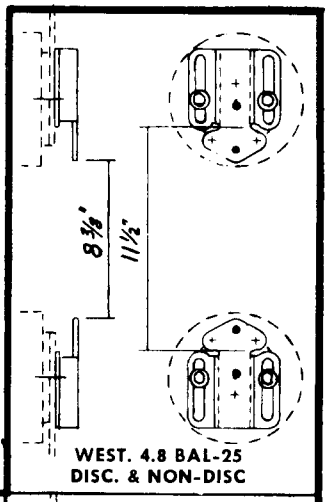

Black dots indicate mounting holes used to assemble fuse clips

Drilling not used.

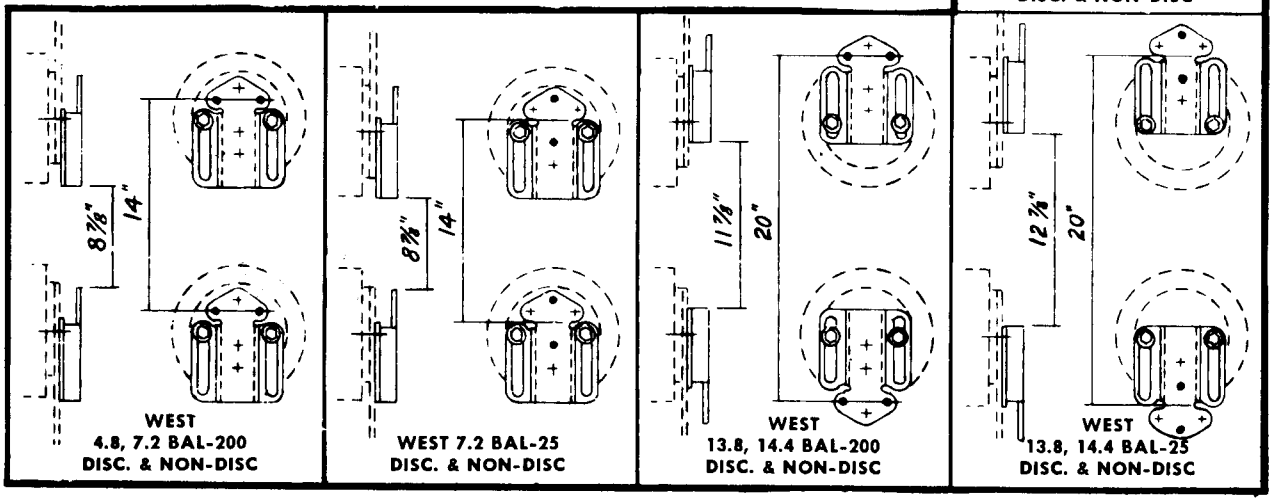
Mounting Bolts – to insulator.

Separate fuse-mounting bases used for HPL-CA and HPL-CB are equipped with two universal-mounting adapters. Adapters are to be adjusted as per arrangements shown on this page. For switch dimensions, see Section 13.1.1.2, Page 5.

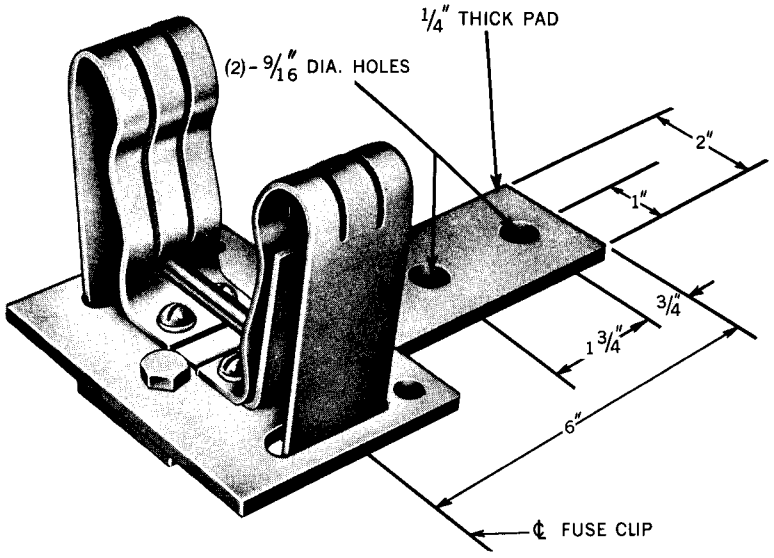
For HPL-CA and HPL-CB arrangements, see other side.




FOR WESTINGHOUSE FUSES

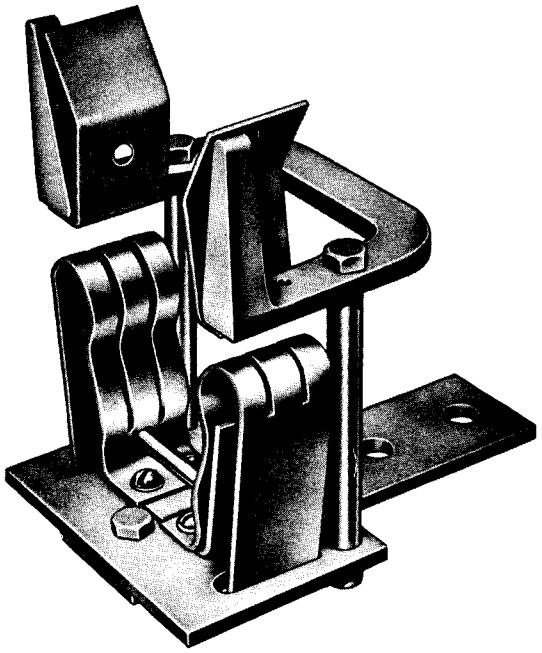


# FUSE CLIPS FOR I-T-E CURRENT-LIMITING FUSES
## NON-DISCONNECTING TYPE



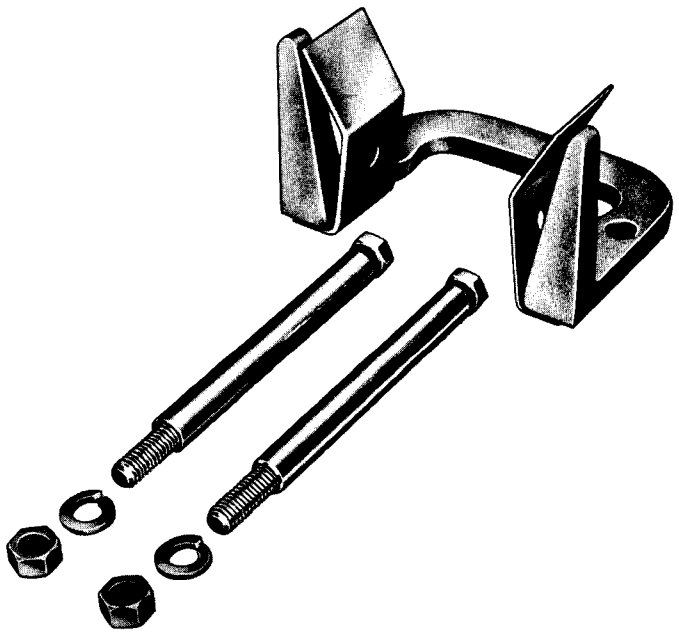

5042F

Fig. 1 Fuse Clip for Single-Barrel Fuse, Catalog No. 203-941-501 (Catalog No. Includes 2 Clips for One Fuse).



5042G

Fig. 2 Fuse Clip for Double and Triple-Barrel Fuse, Catalog No. 203-941-502 (Catalog No. Includes 2 Clips for One Fuse).



5042H

Fig. 3 Conversion Kit for Adapting Single-Barrel Fuse Clip to Double-Barrel Fuse Clip, Catalog No. 159-925-501 (Catalog No. Includes Parts for One Fuse).

# HPL-C INTERRUPTER SWITCH, ARC-CHUTE TYPE

**SINGLE POLE, SINGLE THROW**
**4.8 THRU 14.4 KV**
**600 AND 1200 AMPERES**

**SAFE FAULT CLOSING**
**LONG INTERRUPTING LIFE**

Single-pole switches and operating-mechanism parts for switchboard builders and assemblers, used in—

- Transformer primary switchgear
- Unit substation primary sections
- Metal-enclosed fused-interrupter switchgear

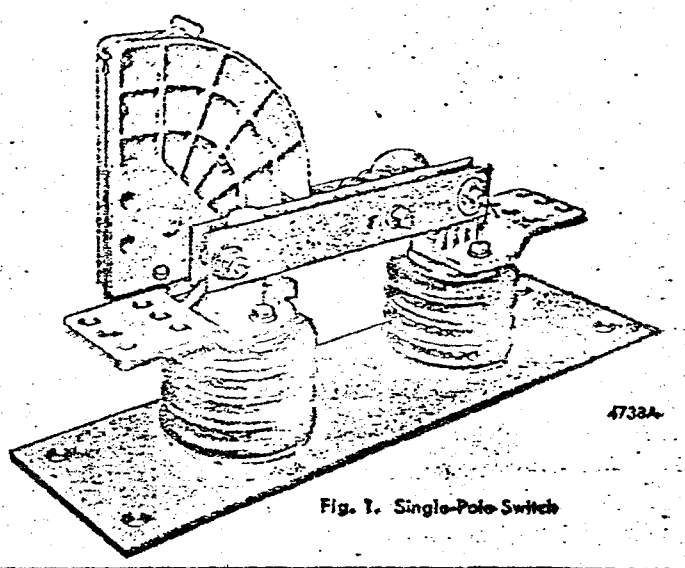



Fig. 1. Single-Pole Switch

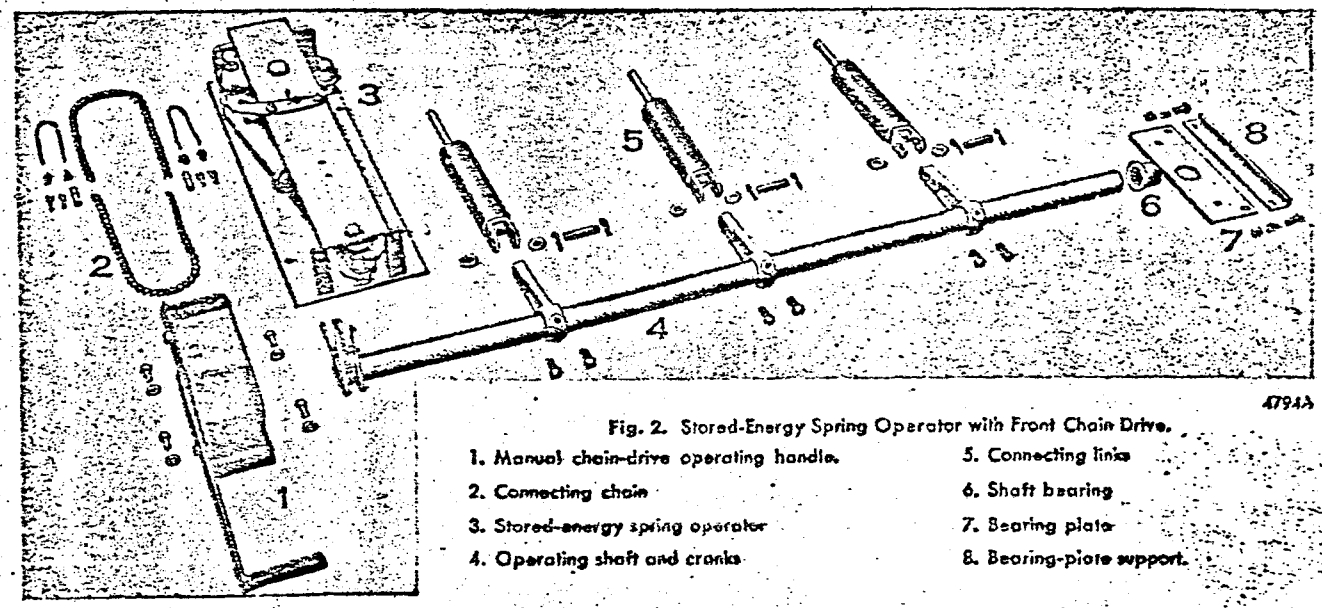



Fig. 2. Stored-Energy Spring Operator with Front Chain Drive.

1. Manual chain-drive operating handle.
2. Connecting chain
3. Stored-energy spring operator
4. Operating shaft and cranks
5. Connecting links
6. Shaft bearing
7. Bearing plate
8. Bearing-plate support.

## RATINGS—3-POLE, HPL-C SWITCH AND OPERATING MECHANISMS

| Voltage Rating, KV | | | | Current Rating | | | | Interrupting Life on Close-Open Duty Cycle Number of Interruptions | | | | | Safe Fault Closing Rating, Amperes Rms Asymmetrical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nom. | Max. Design | Withstand 60 Cycle | Withstand Impulse | Cont. Current Amp | At KV | 10-Cycle Momentary Ka Rms Asym. | 4-Second Short-Time Ka Rms Sym. | KV | Power Factor | Amperes 200 | Amperes 400 | Amperes 600 | Direct Chain Drive | Stored-Energy Chain Drive |
| 4.8 | 5.5 | 19 | 60 | 600 | 5.5 | 61 | 38 | 5.5 | 0.8 | 1000 | 1000 | 750 | 9000 | 40,000 or fuse interrupting rating |
| | | | | 1200 | | | | | | | | | | |
| 13.8 | 14.5 | 36 | 95 | 600 | 15 | | | 15 | | 800 | 400 | 300 | | |
| | | | | 1200 | | | | | | | | | | |
| 14.4 | 15.5 | 50 | 110 | 600 | 15.5 | 61 | 38 | 15.5 | | 500 | 300 | 200 | | |
| | | | | 1200 | | — | — | | | | | | | |

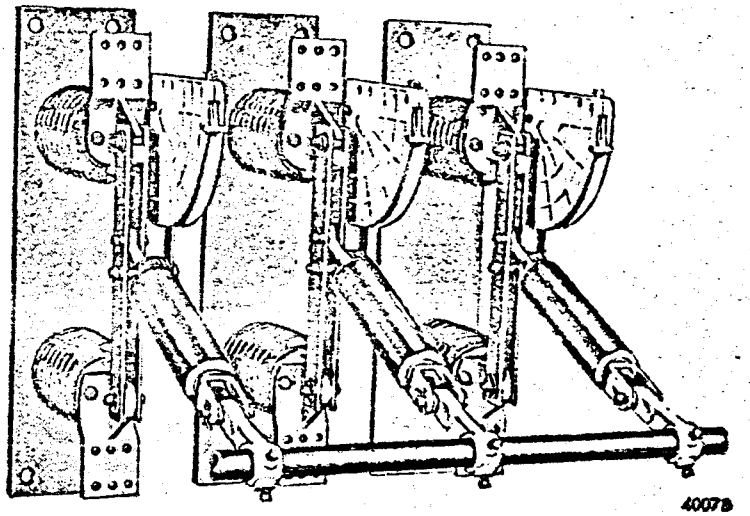
# HPL-C SWITCH AND OPERATING MECHANISMS

Three single-pole HPL-C switches are group operated as shown in Fig. 3. Switches are operated, open and closed, by means of cranks and porcelain links, driven from a common operating shaft.

Two types of manual switch operating mechanisms are available, Figs. 4 and 5.

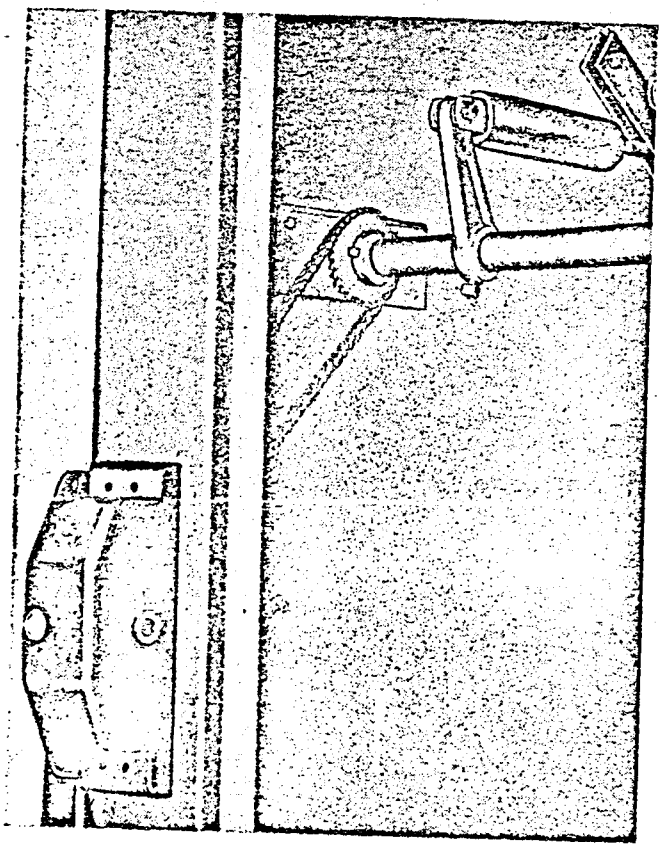
With the manual mechansims shown, the front operating handle is moved through 180 degrees for a switch operation ... up to close ... down to open.

As the handle is rotated, energy is stored in the spring device (Fig. 5). Only when the Tog-L spring is fully charged and moved over center, does the spring operator discharge causing a switch operation.



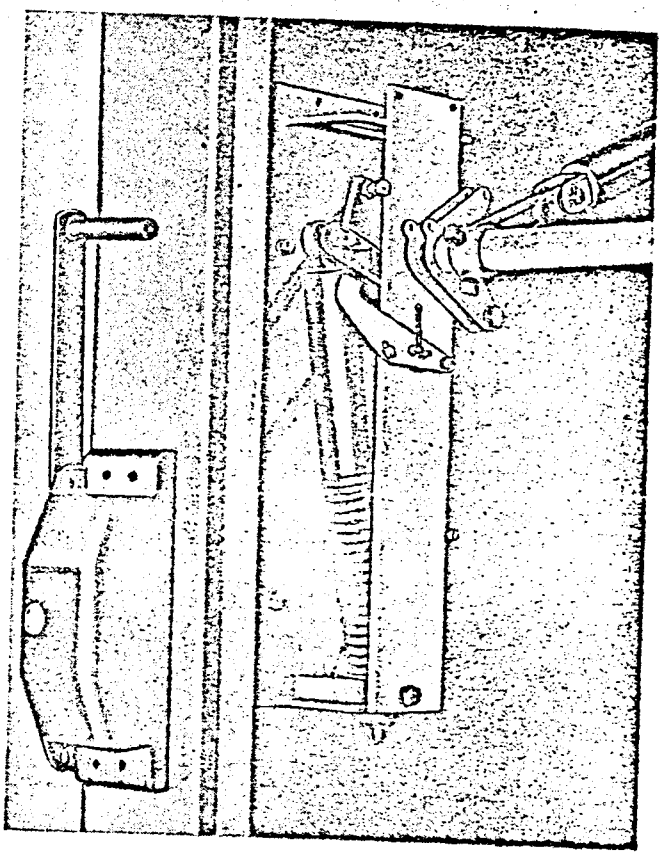
40078

Fig. 3. Three Single-Pole Switches Arranged for Group Operation.



47315

Fig. 4. Front Chain-Drive Connected Direct to Operating Shaft.



47313

Fig. 5. Front Chain-Drive Connected to Shaft Through Stored-Energy Spring Operator for Maximum Fault Closing.

INTERLOCKING—Chain drive handles shown above have provision for mounting Kirk key interlocks—LO at top position, and LOC at bottom position.

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## OPERATING CRANK WITH SPROCKET AND TOG-L SPRING

The basic stored-energy spring operator consists of a one-piece crank and sprocket on a stub shaft assembled within a mounting support frame. One end of a Tog-L spring assembly is attached to the sprocket crank. The other end of the spring assembly is anchored to the mounting frame. The spring assembly itself consists of an operating rod and two compression springs, one inside the other. Upper half of main spring is covered by a cylinder whose purpose will be described later. The sprocket is chain-driven from a front operating handle.

In Fig. 1, the springs are compressed as the sprocket is driven in the counter-clockwise direction. When the springs are completely compressed and the sprocket crank is in line with the spring operating rod, the mechanism is in toggle. As the sprocket crank is further rotated, the springs discharge and drive the sprocket crank to a position approximately 180 degrees from its original starting point (Fig. 2). Belleville washers at lower end of spring absorb shock when spring discharges.

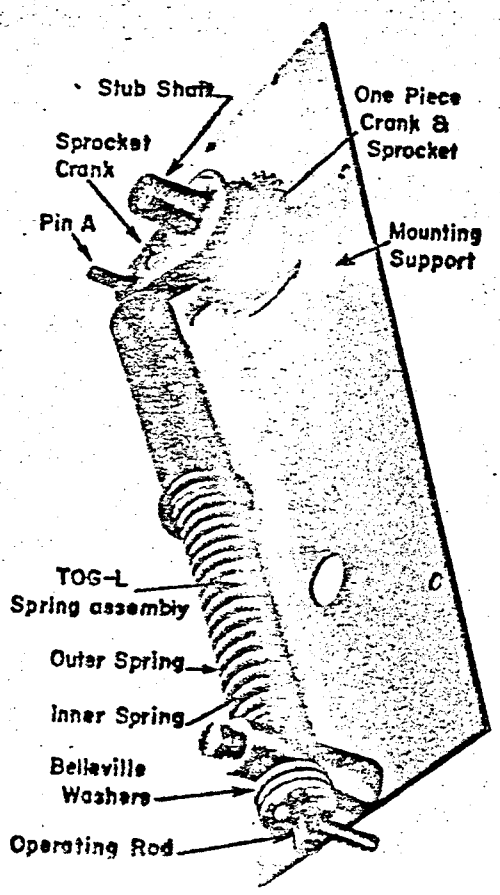



Fig. 1

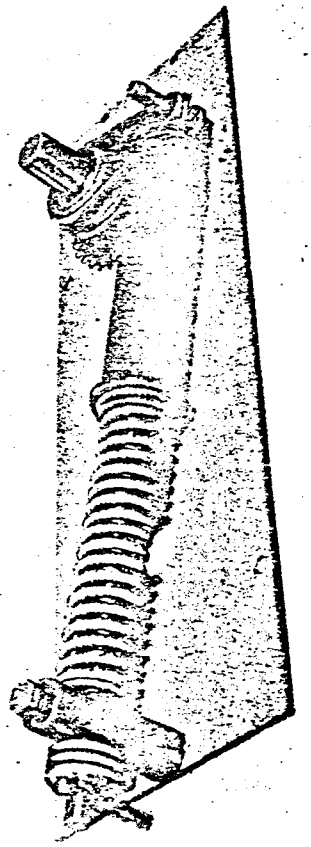
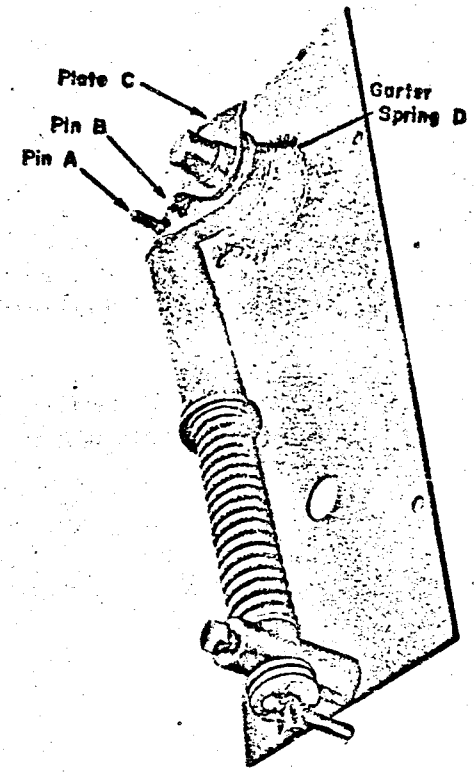


Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES




## OPERATING PLATE (FOR MOTOR) AND SHAFT OPERATING PLATE

All spring operators are assembled with pin (B), operating plate (C), and garter spring (D), (Fig. 3) used for motor operation which is described later. For straight manual operation, plate (C) is free on the stub shaft and serves only as a spacer between the sprocket crank and the switch shaft-operating plate (E) shown added to the assembly in Fig. 4.

In service, the HPL-C switch operating shaft is coupled to the switch shaft-operating plate of the spring operator as indicated in Fig. 5.

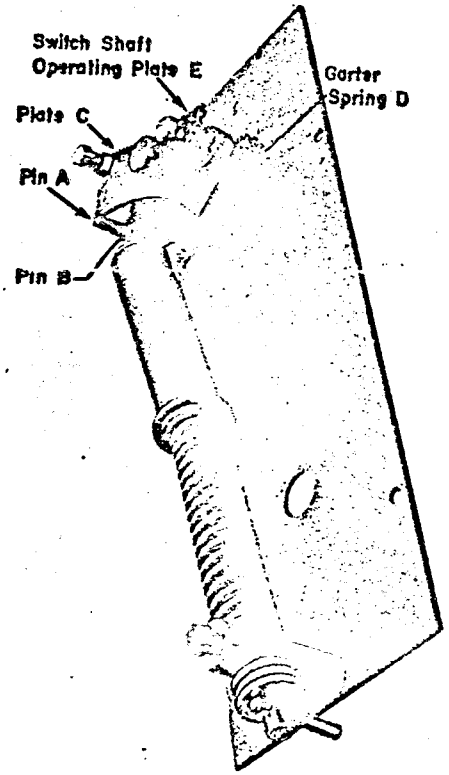



Fig. 4

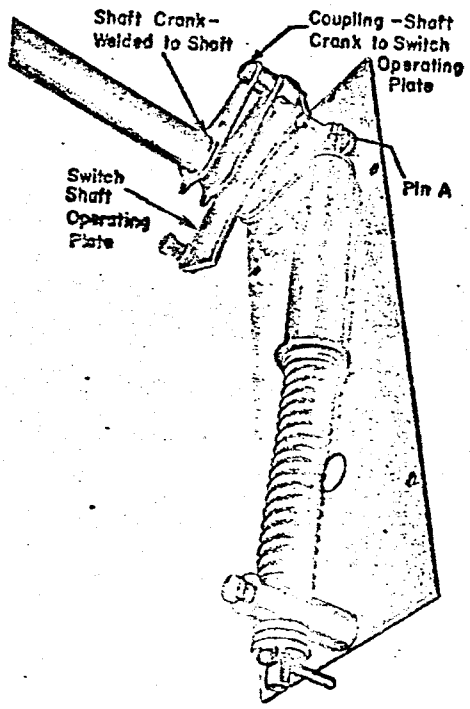



Fig. 5

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## SWITCH SHAFT OPERATING PLATE

The switch shaft-operating plate remains in position shown in Fig. 1 while spring is compressed, moves to toggle position, and starts to discharge. When spring discharges, pin A drives switch shaft-operating plate in counterclockwise direction to position shown in Fig. 2, thus causing a corresponding rotation of the switch-operating shaft.

When the sprocket is rotated in the opposite direction and the spring is again charged and moved through toggle position, the switch shaft is rotated in the opposite direction as the spring discharges, driving switch shaft-operating plate to original position.

All spring operators are also equipped with a set of spring retainers as indicated in Fig. 2 whose purpose will be described later.

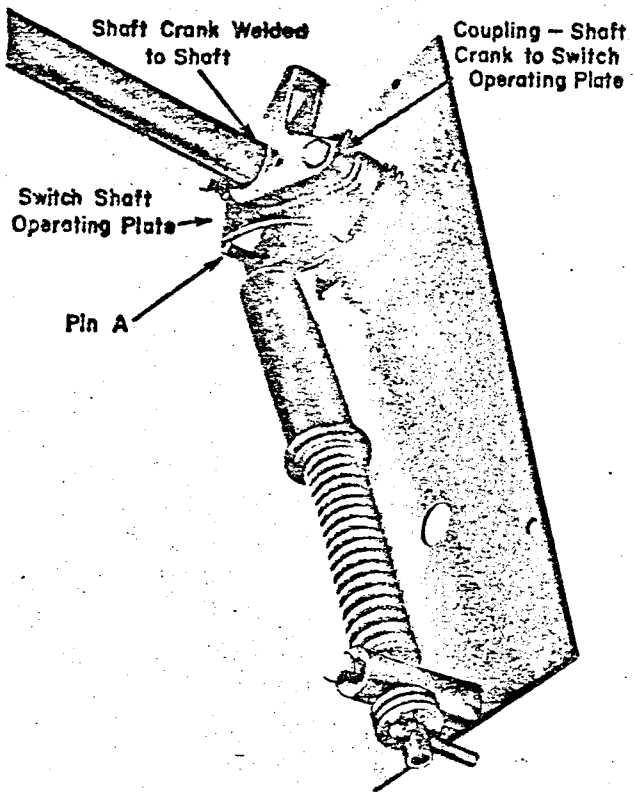



Fig. 1

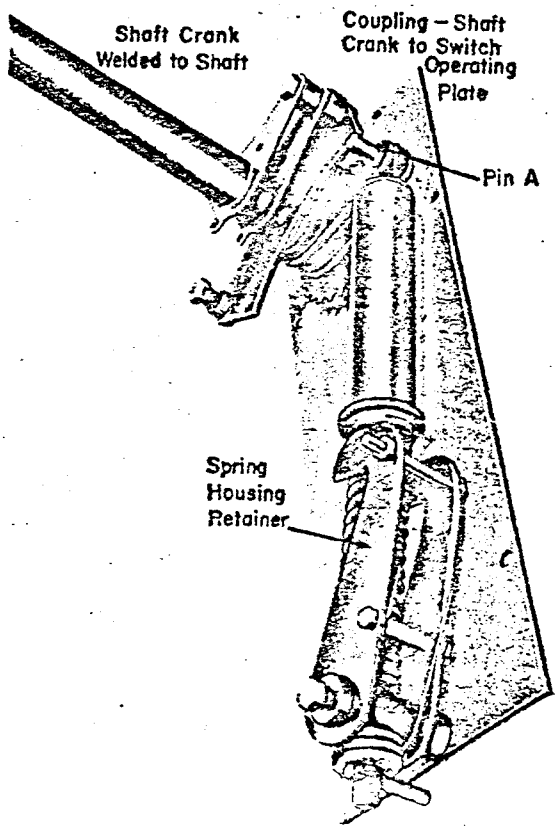



Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## SPRING HOUSING RETAINER

The spring retainers referred to on page 3 prevent the main spring from discharging completely on a switch opening operation as shown in Fig. 3, by retaining the main spring cylinder housing. They also allow the spring to discharge completely on a closing operation as shown in Fig. 4.

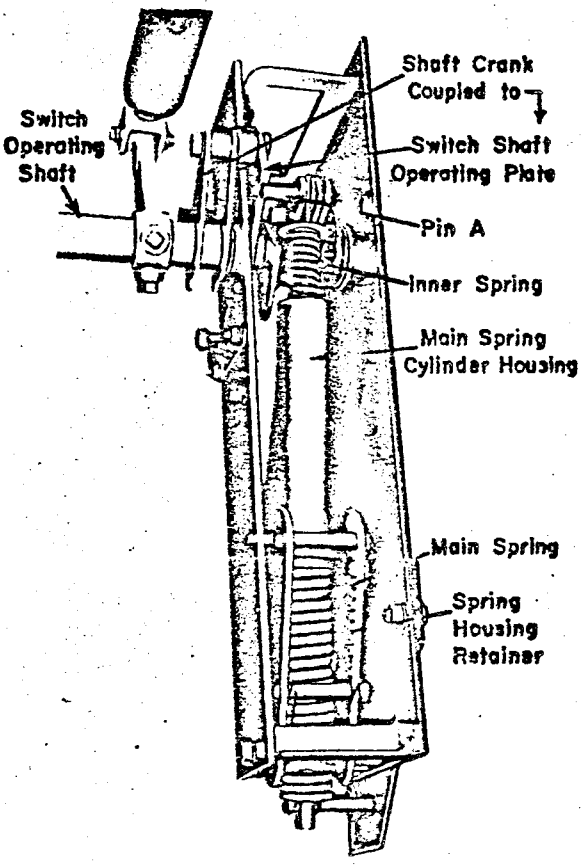



Fig. 3

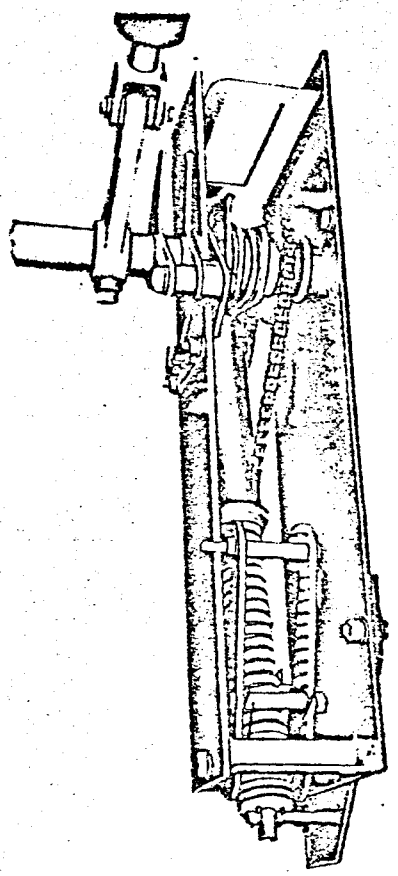


Fig. 4

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MECHANICAL INTERLOCK

It is evident from Fig. 1 that as the spring is charged for an opening operation, the switch no longer has the benefit of the spring to hold it closed. Actually it will hold in closed position on a current of full momentary rating because the switch crank and operating link are in line.

Occasionally, however, the HPL-C switch is used in an inverted arrangement as indicated in Fig. 2. Here it is evident that, as the spring is charged for a closing operation, the switch will tend to fall closed. To prevent this occurrence, during the time the spring is not in position to hold the switch open, all spring operators are equipped with a mechanical interlock shown in Fig. 3. This mechanical interlock is released as the spring operator discharges, but performs no function when the switch is mounted in the upright position, Fig. 1. In the latter case, the mechanical interlock may be removed.

SWITCH CLOSED-SPRING DISCHARGED

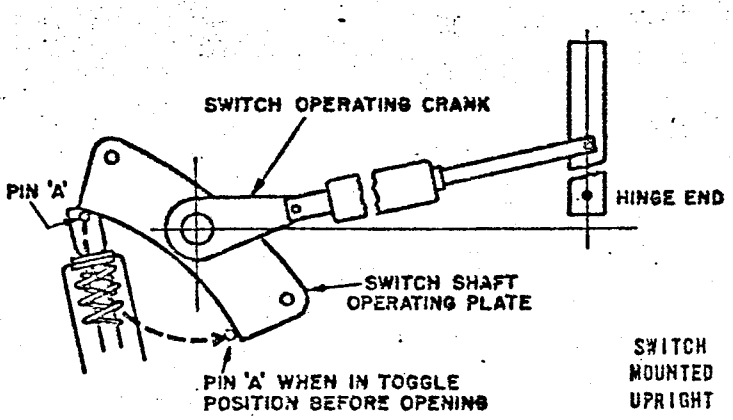



Fig. 1

SWITCH OPEN-SPRING DISCHARGED

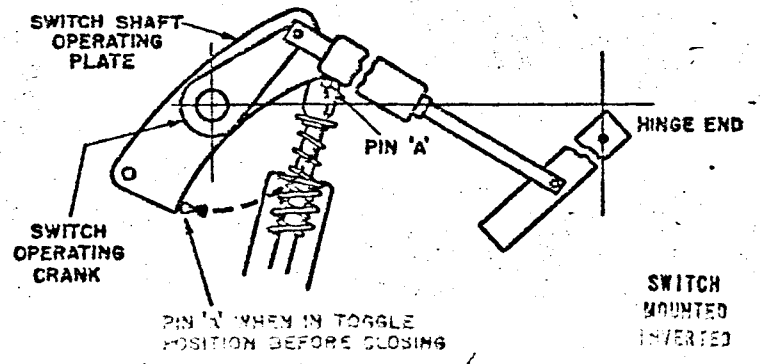



Fig. 2

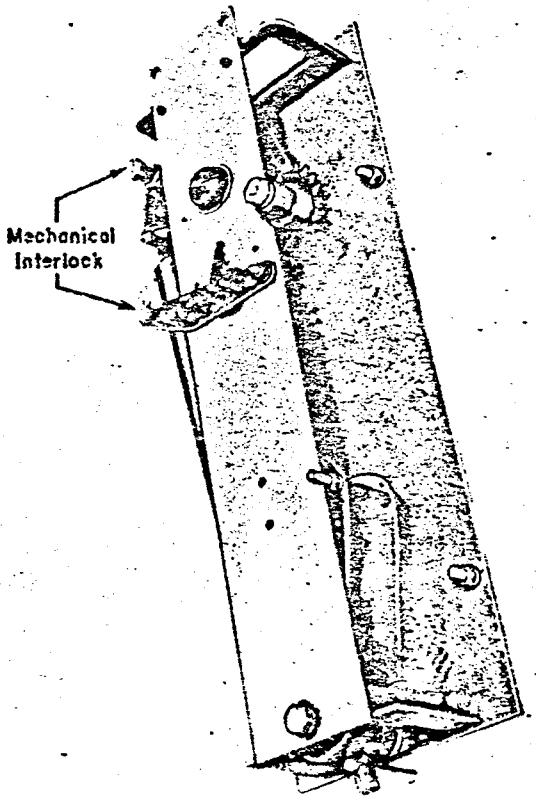



Fig. 3

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## LATCH WITH SOLENOID RELEASE

Figs. 1 and 2 show the relative position of latch and a stop with discharged Tog-L spring in each of its two positions. In either case, as the Tog-L spring is charged, it will be captured in its fully charged position as it moves over toggle position.

A solenoid may be added to the Tog-L spring latch as indicated in Fig. 3 when remote or automatic latch release is desired.

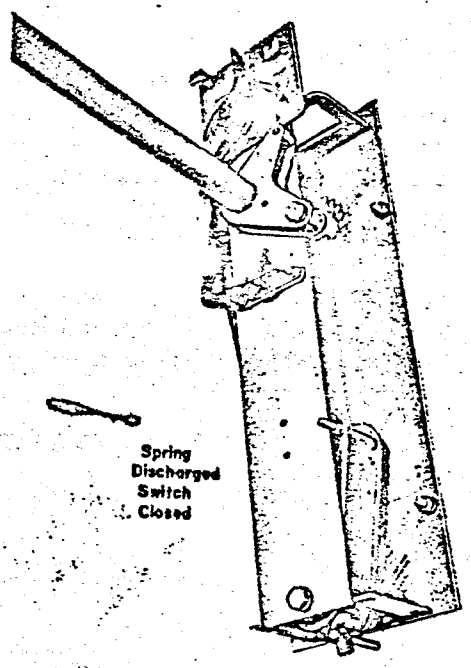



Fig. 1

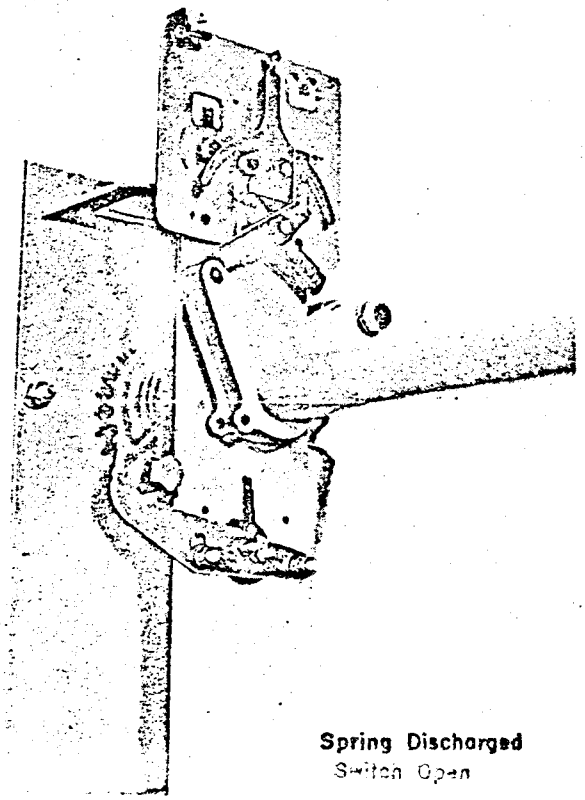



Fig. 2

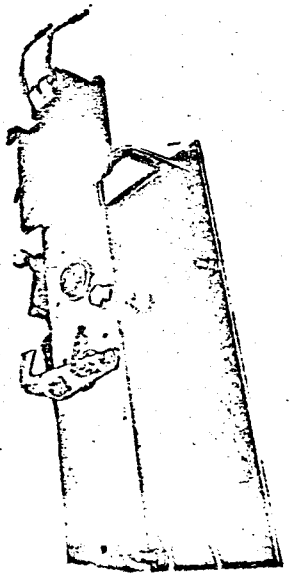


Fig. 3

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MOTOR ASSEMBLY

### ASSEMBLY

The motor charging attachment (1), Fig. 4, is added to the manual spring operator (2), to permit remote or automatic operation.

Referring to Fig. 5, the motor charging attachment is coupled to operating plate (C) of the stored energy operator. When the motor operates, the coupling link (9) drives plate (C) which in turn drives sprocket crank (E) via pin (B) counterclockwise, thus performing electrically the same function as the manually-operated mechanism described on page 2. Note that garter spring (D) has been encircled around the motor coupling. Its purpose is to spring bias the coupling link, thus allowing the motor to always run in the same direction, regardless of which direction the Tog-L spring is to be charged.

### MANUAL OPERATION

This mechanism may still be operated manually with the front handle (see page 2), except the chain drives the sprocket crank (E). In this case, however, the operating handle itself is spring biased to a free wheeling position and must be clutch engaged if manual operation is desired. The manual handle in this case always incorporates a safety switch which de-energizes the motor control circuit when the manual handle is engaged. Note that if the Tog-L spring in Fig. 5 is manually operated, there will be no movement of the motor mechanism, but the garter spring will automatically bias the coupling link and operating plate in the opposite direction.

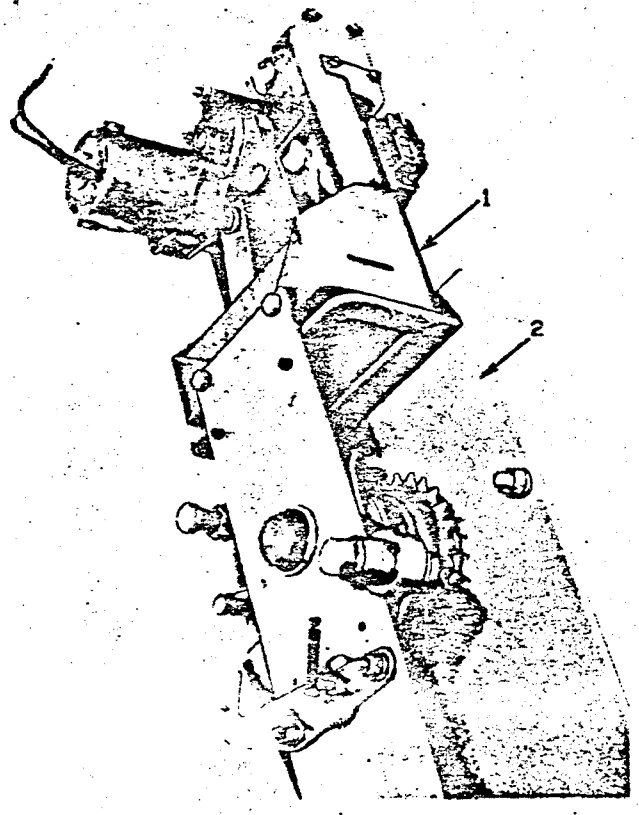



Fig. 4

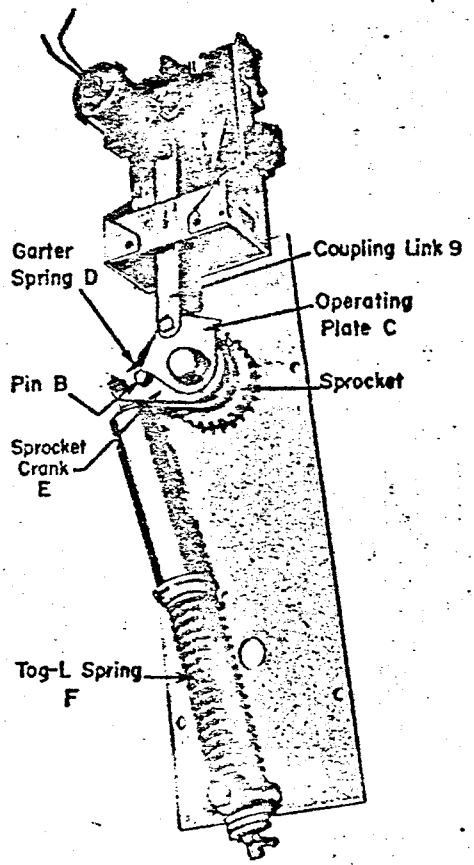



Fig. 5

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MOTOR ASSEMBLY PARTS AND THEIR FUNCTIONS

Refer to Figs. 1 and 2 below, and Fig. 5,- page 9.

1. The circuit is energized through pushbuttons and the associated interlock auxiliary contacts which assure that the switch is in the proper position to perform the required operation, which has been signaled, open or close.

2. The motor starting contactor is energized, closing the starter seal-in contact and simultaneously energizing the starting solenoid (42X) and spring-charging motor (4). Solenoid (42X) will pull up link (14) and advance cam (11) and ratchet (7) by one ratchet tooth position. Cam (11) is mounted on square shaft (15) together with ratchet (7).

3. The motor rotates, driving yoke (5) in reciprocating motion. Drive pawl (6) attached to the yoke rotates the ratchet (7), one notch for each revolution. The ratchet is prevented from slipping backwards by spring loaded backup pawls (8), which are held stationary in the mechanism frame (17).

4. Clamp crank (16) mounted on a square shaft (15) is pin connected to link (9), driving operating plate (C), which in turn drives sprocket crank (E) via pin (B), thus compressing Tog-L spring (F) in the same manner as in manual operation.

5. Cam (11) actuates motor cut-off switch (33) through link (14) to open motor circuit and de-energize solenoid (42X) when link (9) is fully extended, at which time the Tog-L spring has been driven over center and now takes over to operate the switch (open or close). The motor coasts to a stop while continuing to drive ratchet (7) until drive pawl (6) finds the space of missing tooth (13) on the ratchet, at which moment the mechanism comes to rest and motor cut-off switch (33) resets.

6. The garter spring (D) encircling link (9) and sprocket crank (E) positions the link to "set" the motor mechanism for "opening" or "closing" stroke as required.

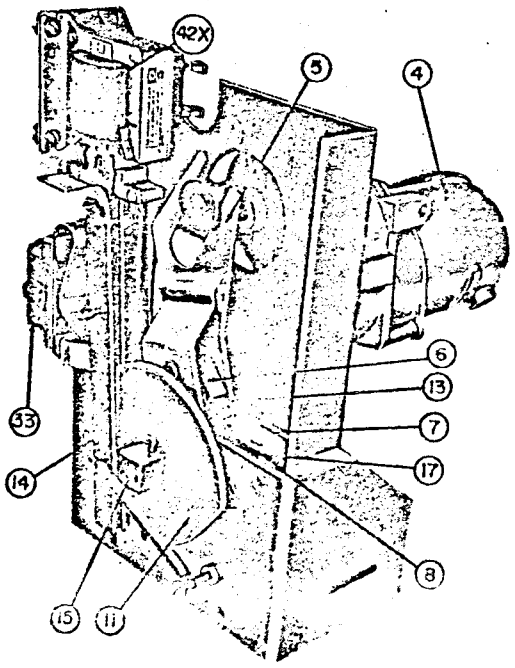



Fig. 1

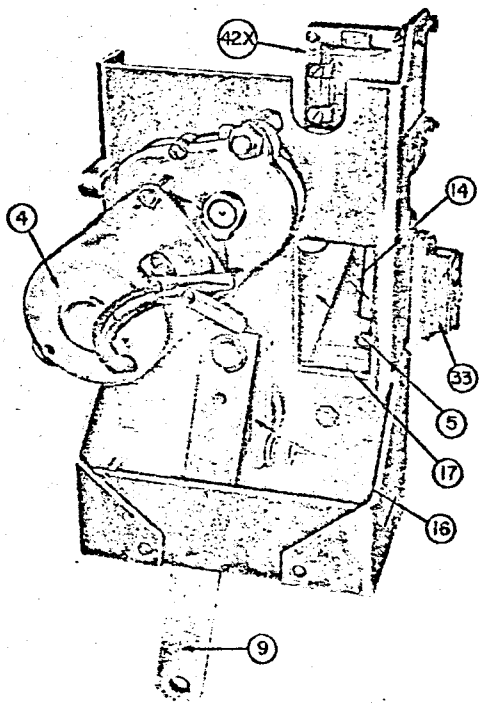



Fig. 2

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES
## MOTOR ASSEMBLY, LATCH AND SOLENOID

Stored-energy spring operator equipped with motor-charging and Tog-L spring-latching accessories.

Such a combination offers complete automatic operation.

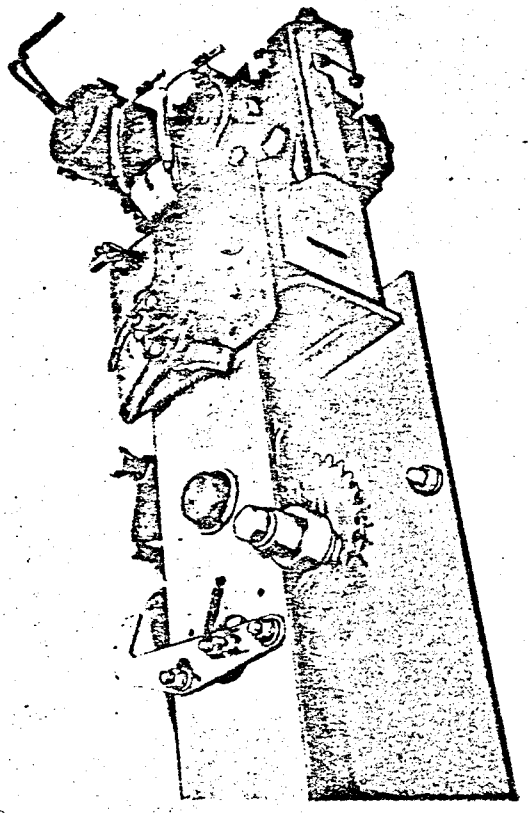


Fig. 3

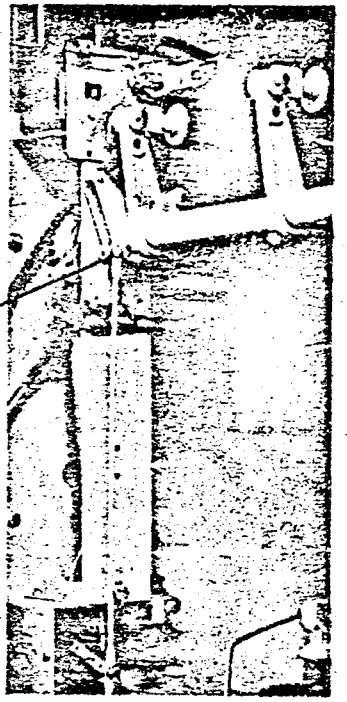



Fig. 4

# OPERATING MECHANISMS FOR HPL-C INTERRUPTER SWITCHES

## S - STANDARD MECHANISM

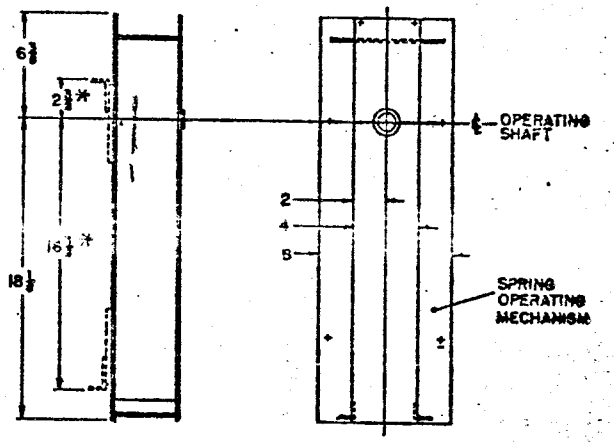



Fig. 1 Dimensions

*Dimensions same as shown on P.5 Section 13.1.1.4, Installation Instructions

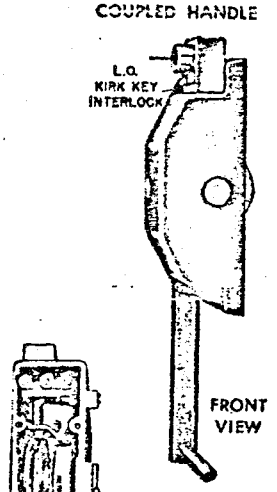



Fig. 2

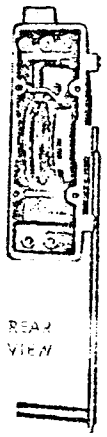



Fig. 3

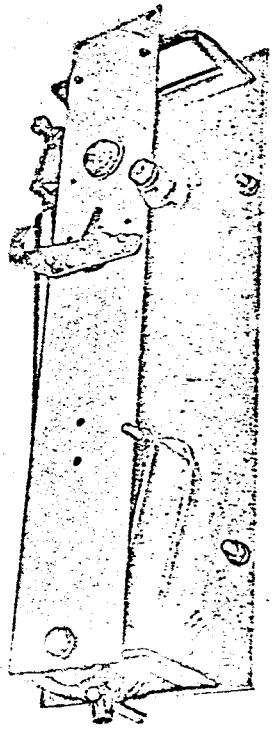


Fig. 4 Complete Assembly (S)

# X, Y AND R COORDINATION CHART
## DIMENSIONS IN INCHES

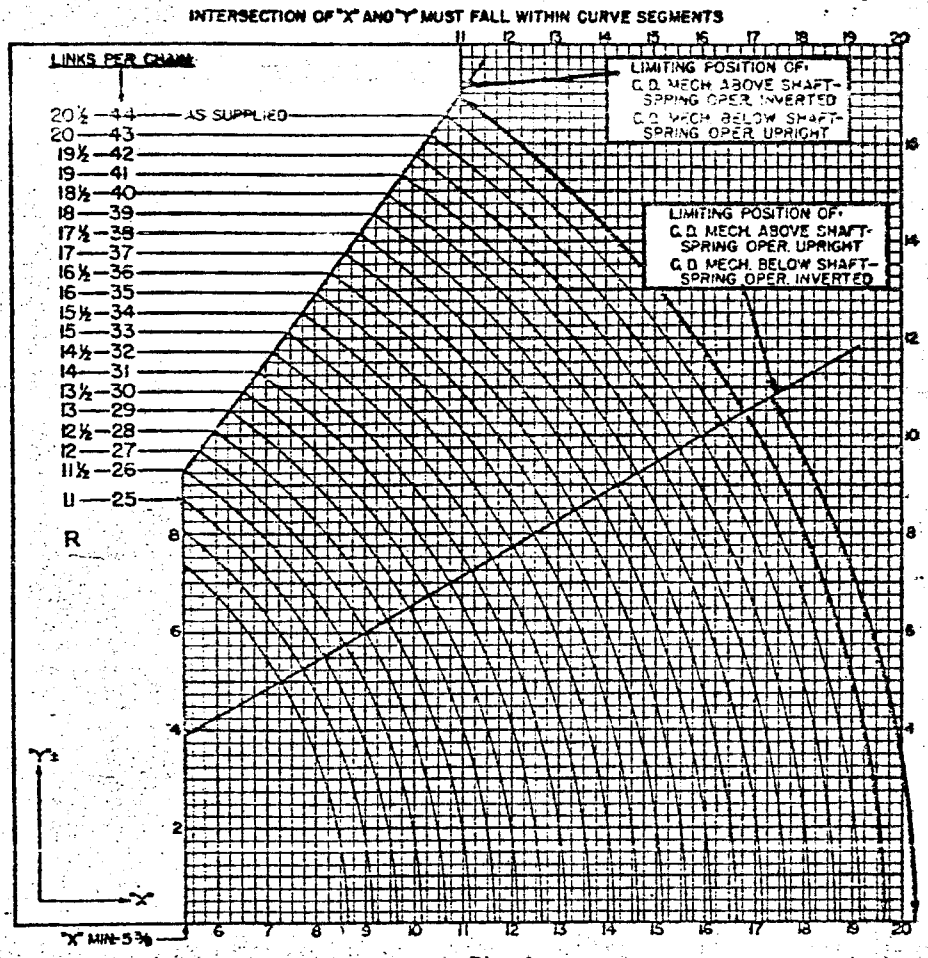



Fig. 1

Chart above covers coordination of chain-drive dimensions for use with stored-energy spring operator.

For direct chain drive (no spring operator) add six links, three to each chain, to the number of links indicated in the chart.

# NET PRICES

1 A

## HPL-C, UNFUSED—SINGLE POLE, SINGLE THROW

## 4.8 THRU 14.4 KV

## 600 AMPERES

| INS. ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Position | Direct Chain Drive 9,000 A, Fault Clos.* | | Stored Energy Ch. Dr. 40,000 A, Fault Cl. | | | |
| | Nom. | BIL | Catalog Number | Price | | Cat. No. | Price | Cat. No. | Price | Cat. No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 305-408-301<br>305-408-303<br>305-408-305<br>305-408-307 | ~~$141.~~<br>171.<br>171.<br>202. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-501 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 305-409-301<br>305-409-303<br>305-409-305<br>305-409-307 | 154.<br>189.<br>189.<br>224. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-502 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 305-410-301<br>305-410-303<br>305-410-305<br>305-410-307 | 164.<br>198.<br>198.<br>234. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-502 | 22. |

*Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

2. Single-pole switch prices include a complete assembly of base, insulators, main blades and arc-chute interrupter. Back-connected studs are supplied with two contact nuts.

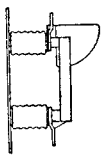
3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

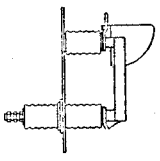
5. Interlocks—Order F2E key interlocks for chain drive handle.

Mounting charge—$13.00

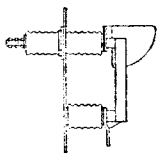
### INSULATOR ARRANGEMENTS



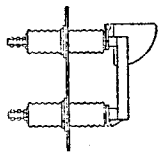
F.F.
Jaw and Hinge Front Connected



F.B.
Jaw Front Connected Hinge Back Connected



B.F.
Jaw Back Connected Hinge Front Connected



B.B.
Jaw and Hinge Back Connected

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

Effective May 25, 1970

# NET PRICES

## HPL-C, UNFUSED—SINGLE POLE, SINGLE THROW

## 4.8 THRU 14.4 KV

## 1200 AMPERES

| INS. ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Direct Chain Drive 9,000 A, Fault Clos.* | | Stored Energy Ch. Dr. 40,000 A, Fault Cl. | | | |
| | Nom. | BIL | Catalog Number | Price | Position | Cat. No. | Price | Cat. No. | Price | Cat. No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 305-408-302<br>305-408-304<br>305-408-306<br>305-408-308 | $191.<br>222.<br>222.<br>251. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-501 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 305-409-302<br>305-409-304<br>305-409-306<br>305-409-308 | 207.<br>241.<br>241.<br>277. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-502 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 305-410-302<br>305-410-304<br>305-410-306<br>305-410-308 | 217.<br>252.<br>252.<br>288. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-502 | 22. |

*Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

2. Single-pole switch prices include a complete assembly of base, insulators, main blades and arc-chute interrupter. Back-connected studs are supplied with two contact nuts.

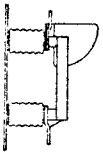
3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

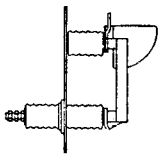
5. Interlocks—Order F2E key interlocks for chain drive handle.

Mounting charge—$13.00

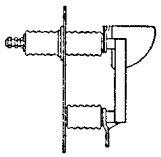
### INSULATOR ARRANGEMENTS



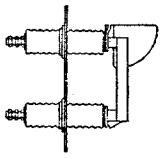
F.F.
Jaw and Hinge Front Connected



F.B.
Jaw Front Connected Hinge Back Connected



B.F.
Jaw Back Connected Hinge Front Connected



B.B.
Jaw and Hinge Back Connected

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.

# NET PRICES

## HPL-CL-13

## HPL-C SWITCH WITH PROVISION FOR MOUNTING I-T-E CL-13 CURRENT-LIMITING FUSES*

## 4.8 THRU 14.4 KV

## SWITCH RATING—600 AMPERES

| INSULATOR ARRANGEMENT | RATING, KV | | SINGLE-POLE SWITCH | | OPERATING MECHANISM | | | | | BARRIERS Set of Four | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Direct Chain Drive** 9,000 A, Fault Closing. | | Stored Energy Chain Drive Fault Closing 40,000 A, or Fuse Interr. Rating | | | |
| | Nom. | BIL | Catalog No. | Price | Position | Cat. No. | Price | Cat. No. | Price | Catalog No. | Price |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 4.8 | 60 | 309-277-501<br>309-277-502<br>309-277-503<br>309-277-504 | $166.<br>195.<br>195.<br>226. | Right or Left | DR4<br>DL4 | $114. | SR4<br>SL4 | $224. | 203-986-508 | $22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 13.8 | 95 | 309-277-505<br>309-277-506<br>309-277-507<br>309-277-508 | 178.<br>213.<br>213.<br>248. | Right or Left | DR13<br>DL13 | 114. | SR13<br>SL13 | 224. | 203-986-509 | 22. |
| F.F.<br>F.B.<br>B.F.<br>B.B. | 14.4 | 110 | 309-277-509<br>309-277-510<br>309-277-511<br>309-277-512 | 188.<br>223.<br>223.<br>258. | Right or Left | DR14<br>DL14 | 132. | SR14<br>SL14 | 241. | 203-986-509 | 22. |

**Based on rapid and complete movement of operating handle to fully closed position.

### GENERAL NOTES

1. COMBINATION OF LISTED SINGLE-POLE SWITCHES AND OPERATING MECHANISMS WILL PRODUCE AN ASSEMBLY CAPABLE OF FAULT CLOSING INDICATED.

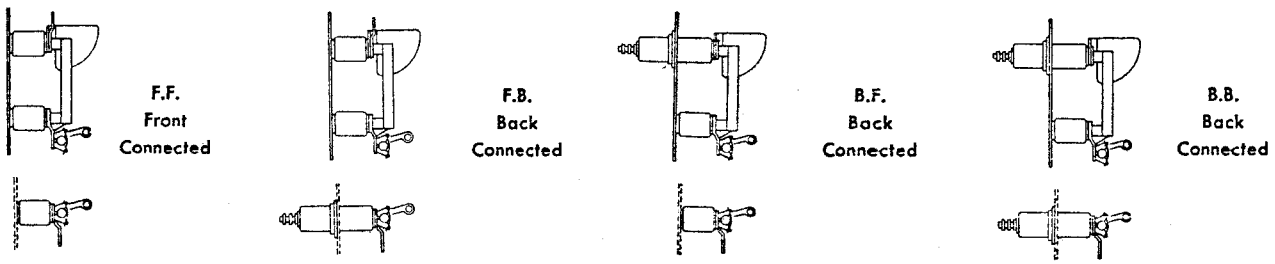
2. Single-pole switch prices include a complete assembly of switch base, insulators, main blades, arc-chute interrupter and fuse clips for I-T-E CL-13 clip-lok fuses. Prices also include an A-20 insulator front or back connected as indicated for fuse mounting. Back-connected studs are supplied with two contact nuts.

3. Terminal lugs for cable up to 500 MCM will be included only if specified on order.

4. Operating-mechanism prices include handle assembly with provision for Kirk key interlocks, shaft, bearings, cranks with piercing set screws, porcelain connecting links, necessary chain and sprockets and, when required, a stored-energy spring-operating mechanism.

5. Interlocks—Order F2E key interlocks for chain drive handle.
Mounting charge—$13.00

### INSULATOR ARRANGEMENTS




*Catalog number and actual fuse rating desired must be specified.

Above assemblies may be inverted without change.

Prices subject to change without notice.
Terms—Net 30 days, f.o.b. Greensburg, Pa., freight allowed.