
Part 2 Chapter 2

Technical Manual

NAVY TYPE ACB

600 FRAME SIZE

AIR CIRCUIT BREAKER

Westinghouse Type DBN-40S

Alternating Current

WESTINGHOUSE ELECTRIC CORPORATION
EAST PITTSBURGH, PENNSYLVANIA, U.S.A.

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INDEX

Air Circuit Breaker

Navy Type ACB (Westinghouse Type DBN-40S)
600 Frame Size
10,000 Amp. A-C Interrupting Capacity
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AIR CIRCUIT BREAKER NAVY TYPE ACB—WESTINGHOUSE TYPE DBN-40S

SECTION A—INTRODUCTION

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A-2. CIRCUIT BREAKER DIMENSION PLAN

The drawing shown on Page 2 gives the outline dimensions for the Navy type ACB 600 frame size air circuit breaker, Westinghouse Corporation Type DBN-40S alternating current breakers.

SECTION B—GENERAL INFORMATION

B-1. MANUALLY OPERATED CIRCUIT BREAKER

The DBN-40S air circuit breaker is a sturdy compact piece of shipboard electrical equipment consisting of a rigid steel chassis to which are bolted the several sub-assemblies which make up the complete circuit breaker. For example, the mechanism, pole units, arc chutes, over-current trip devices and other attachments are each complete within themselves and are readily interchangeable between breakers. They may be removed intact and replaced if necessary with minimum outage time.

The DBN-40S is a type ACB air circuit breaker of 600 frame size. Its interrupting and continuous current ratings are as outlined in the following table:

INTERRUPTING RATING

10,000 Amperes R.M.S., 1000 Volts, 400 Cycles

CONTINUOUS CURRENT RATING

Circuit Breaker Copper Rating Amperes	Overcurrent Trip Coil Ratings Amperes	
	480	40
50		320
80		400
100		480
160		

The chassis of the breaker consists of a rigid steel panel (150) Fig. 2 on the front of which is bolted a supporting frame consisting of a bracket (151) which in turn supports shelf (152), brace (153), plate (154) and faceplate (155). A separate pole unit (100) is bolted to the steel

panel for each pole. The base of each pole unit is molded from insulating material. When supplied, the series overcurrent trip devices (400) are bolted to the lower part of the pole unit base. The moving contact assembly is pivoted at its lower end on the pole unit base and is connected to the lower stud either directly or through a series overcurrent trip device. The stationary contact assembly is connected directly to the upper stud. The moving contact assembly opens and closes the electric circuit by moving out and in from the stationary contact assembly. An arc chute is mounted above and surrounding each pair of contacts. Its purpose is to stretch and cool the arc drawn when the contacts separate so that it may be readily extinguished.

The operating mechanism (200) is located on the breaker shelf (152) and transmits the force for closing the breaker from the operating handle (166) to the cross bar (168) and thence to the moving contact assembly through insulating links. The mechanism then latches and holds the contacts in the closed position. The circuit breaker is closed manually by depressing handle latch and turning the operating handle (166) 90° clockwise and it may be tripped manually by turning the handle 45° in the opposite direction. Automatic tripping is accomplished by one of the automatic devices which lift the trip bar when suitably energized. These devices consist of the shunt trip (500) and the series overcurrent trip (400) either or both of which may be supplied with an individual circuit breaker.

The main power circuit through the circuit breaker consists of the lower stud, series over-current trip coil (if supplied), shunt, moving contact assembly, stationary contact, and upper stud, all connected in series in the order named.

SECTION C—OPERATION AND MAINTENANCE

C-1. CAUTION

Before working on a circuit breaker be sure load and control circuits feeding the circuit breaker are thereby de-energized.

Before putting the circuit breaker in regular operation it should be closed and tripped while withdrawn manually several times to see whether all parts are in proper alignment and move freely. Particular care should be taken to make sure the studs have not been forced out of alignment by the bus work. Lift the trip bar by hand with the circuit breaker open to make sure that it does not bind.

C-2. WIRING DIAGRAMS

Figure 3 shows the typical wiring diagrams. For complete details refer to applicable diagram in the Switchboard Instruction Book.

C-3. SHUNT TRIPPING

Shunt trip coils have nominal voltage of 120 volts 60 cycles.

C-4. MAINTENANCE

The frequency of inspection for maintenance will depend upon local conditions but, in general, a complete inspection for preventive maintenance should be made at least once a year. It is recommended that a special inspection be given any breaker that has opened a heavy short-circuit current.

If excessive heating not caused by over-current is observed, look for loose or corroded contacts or connections.

When inspecting the circuit breaker, examine the contact surfaces. Rough or high spots should be removed with a clean file or sandpaper. Do not use emery cloth since the dust from this material is a good conductor of electricity and is sure to cause trouble if allowed to settle on insulating surfaces.

More detailed instructions are given later on in the sections on the individual attachments.

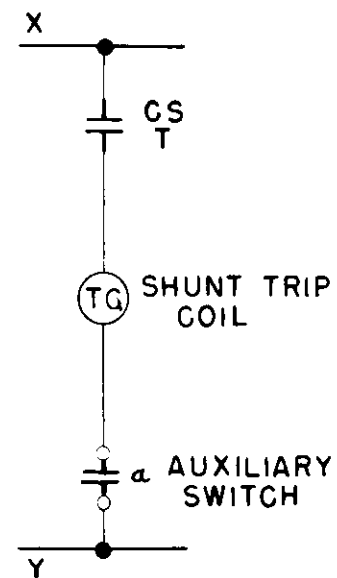


FIG. 3 — Wiring Diagram

AIR CIRCUIT BREAKER

SECTION D—COMPONENTS AND ATTACHMENTS

D-1. GENERAL ASSEMBLY (Manually Operated Breaker)

An air circuit breaker for three phase a-c service is normally provided with series over-current trip devices in the two outer poles only. Otherwise, all three poles are identical, each being provided with a stationary and moving contact assembly, and an arc chute.

D-2. ARC CHUTES

Reference Fig. 4

FUNCTION

The arc chute (135) mounted above and surrounding the contact assembly of each pole, has the function of stretching and cooling the arc drawn by the separating contacts so that it may be quickly extinguished and the circuit opened in the least possible time. The arc chutes are an extremely important part of the circuit breaker and the breaker should never be energized without their being mounted in place.

DESCRIPTION

Each arc chute consists of a number of metal plates (138) and (139) and asbestos plates (140) supported in a laminated case (135) and held in place by a clamping plate (136) and insulating tube spacers (146) and two screws (147) through the insulating spacers to the molded base (100). When the arc is drawn by the separating contacts, it moves up into the chute by magnetic and thermal action where it is quickly deionized and extinguished thus opening the circuit.

D-3. CONTACT ASSEMBLY

Reference Fig. 4

FUNCTION

The contact assembly closes and opens the electric circuit through the circuit breaker. The upper stud (120), the stationary contact (121), the series overcurrent trip device (400) (when supplied) and the lower stud (105) are stationary and are mounted rigidly on the molded base (100). The moving contact assembly is hinged on the molded base by pin (127) and is moved in and out by molded insulating link (116) which is pivoted on cross bar (168) Fig. 2.

The moving contact assembly is closed and held in the closed position against the force of the accelerating spring. (131) by the insulating link (116). When the force exerted by the insulating link is released by tripping the breaker, the accelerating spring quickly moves the moving contact assembly to the open position. When the breaker interrupts high short circuit currents, magnetic forces play a large part in the rapid opening of the contacts.

With the circuit breaker in the closed position, main contact surfaces (109) and (121) are held together and carry the load current. When the circuit breaker is tripped, arcing contact surfaces (119) and (123) snap together an instant before main contact surfaces (109) and (121) separate and then the moving contact assembly moves away, drawing the arc between the arcing contacts. This arrangement minimizes arc damage to main current carrying contacts. When the circuit breaker is closed the arcing contact surfaces touch first and then separate as the main contacts touch and the closing operation is completed.

DESCRIPTION

The stationary contact assembly consists of the main contact extruded integral with the upper stud (120) and the arcing contact (123) fastened to the extruded copper section by two screws (124). Contact surfaces (121) and (123) are special arc-resisting silver alloy inserts.

The moving contact assembly consists of a contact base (110) of copper to which is fastened arcing contact (118) by two bolts (112) which are locked with locking clips (113). Main and arcing contact surfaces (109) and (119) are silver alloy inserts welded to their respective bases. Contact base (110) is riveted and soldered to shunt (108) which is bolted at its lower end either to a connector (133) when a series overcurrent trip device is not supplied, or to an overcurrent tripping device. The shunt (108) is a flexible bundle of thin copper strips that carries current from the moving contact assembly to the lower stud. Contact base (110) is connected to contact link (106) with pin (115) and has a limited freedom of rotation about this pin. Contact link (106) is hinged by pin (127) to bracket (125) fastened to molded base (100) by two screws (128). Pin (130) mounted in bracket (125) has the function of restraining shunt (108) when the circuit breaker is tripped.

COMPONENTS AND ATTACHMENTS

100	MOLDED BASE
101	INSERT
102	INSERT
103	INSERT
104	INSERT
105	LOWER STUD
106	CONTACT LINK
107	ARMATURE
108	SHUNT
109	MAIN MOVING CONTACT TIP
110	CONTACT BASE
111	LINK
112	1/4-20 X 3/8 HEX. STL. BOLT
113	LOCKING CLIP
114	1/4-20 BR5 LOCKNUT
115	PIN
116	MOLDED LINK
117	INSERT
118	CONTACT, MOVING ARCING
119	MOVING ARCING CONTACT TIP
120	UPPER STUD
121	STATIONARY CONTACT TIP
122	STATIONARY ARCING CONTACT TIP
123	CONTACT, STATIONARY ARCING
124	.190-32 X 3/8 PAN STL. SEM5 MACH SCR
125	BRACKET
126	BRACKET
127	PIN
128	1/4-20 X 1/2 FIL STL MACH SCR
129	3/8-16 X 1 1/4 HEX SI BRZ BOLT
130	PIN
131	SPRING, ACCELERATING
132	BOLT
133	CONNECTOR
134	SOLDER
135	ARC CHUTE
136	CLAMPING PLATE
137	SHIELD
138	PLATE
139	PLATE
140	PLATE
141	PLATE
142	SPACER
143	GUIDE
144	PLATE
145	CLAMPING PLATE
146	TUBE SPACER
147	1/4-20 X 6 1/8 PAN STL. MACH. SCR.
400	OVERCURRENT TRIP

* REPAIR PARTS

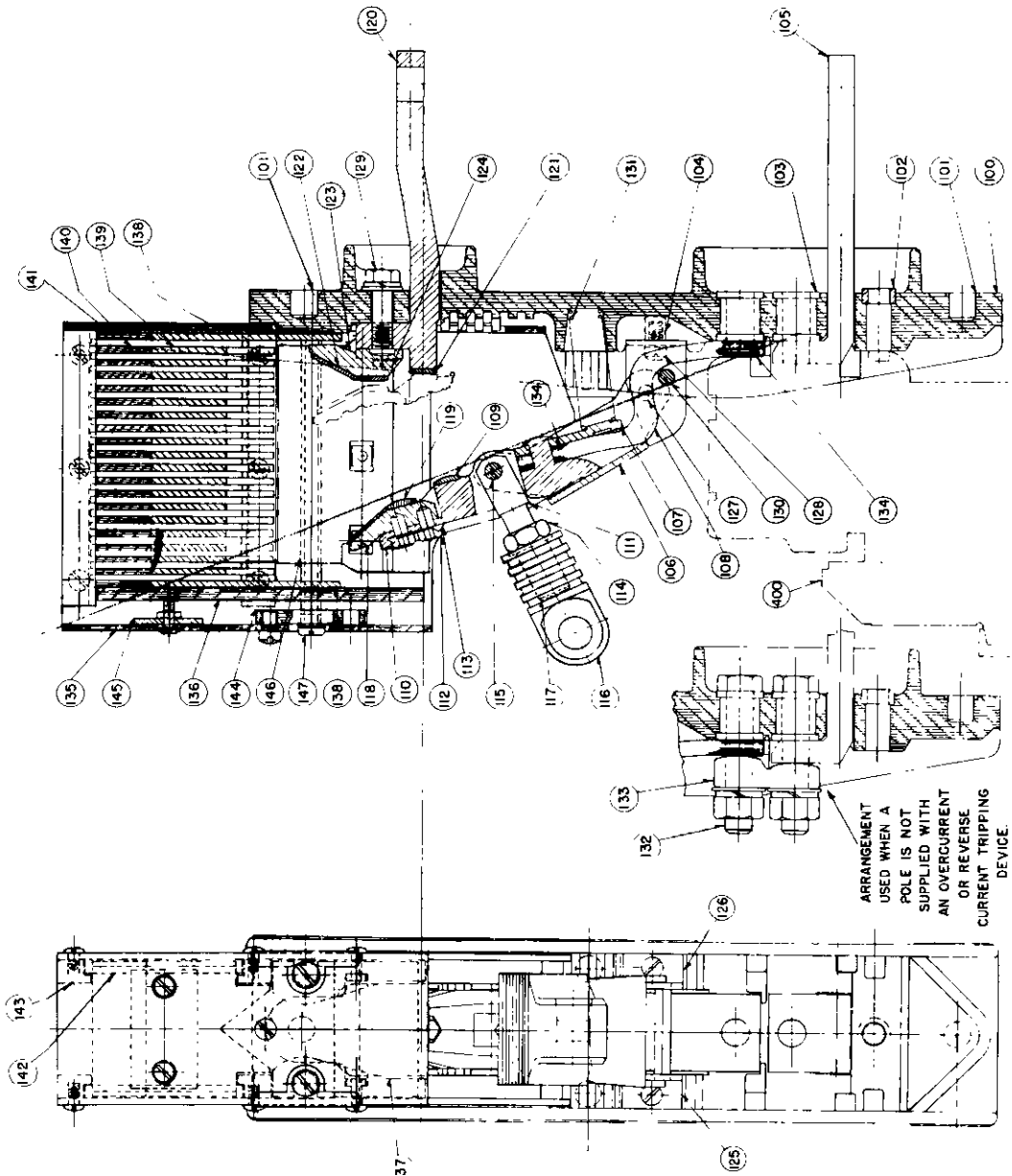


FIG. 4 — Arc Chute and Contact Assembly

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The moving contact assembly is attached to the mechanism cross bar (168) Fig. 2 by molded insulating link (116) which is screwed on metal link (111) and locked by nut (114). When the breaker is tripped all force is removed from the cross bar and accelerating spring (131) quickly snaps the moving contact assembly from the closed to the open position.

ADJUSTMENTS

The correct contact pressure of the DBN-40 is about 50 pounds. This pressure is obtained when the arcing contact surfaces are 3/32 inch apart when the breaker is closed. This gap may be adjusted after removing arc chute (135) by removing two screws (147) and cross bar (168). Loosen locknut (114) and turn insulating link counterclockwise if the gap is too small and clockwise if the gap is too large. The locknut should be retightened and the cross bar and arc chutes replaced.

REPLACEMENTS

To replace moving arcing contact (118):

- (a) Remove arc chute (135) by means of screws (147).
- (b) Bend down locking clips (113) and remove bolts (112). When replacing bolts be sure to relock them by bending up corners of clips.

To replace stationary arcing contact (123):

- (a) Remove arc chute (135) by removing screws (147).
- (b) Removing screws (124) frees the contact.

To replace contact arm accelerating spring (131):

- (a) Remove arc chute (135) by removing screws (147).
- (b) End of spring may be slipped off projection on contact arm and replaced.

D-4. MECHANISM

Reference Fig. 5

FUNCTION

The operating mechanism opens and closes the circuit breaker contacts by moving the cross bar (168) Fig. 2 to which the moving contact assemblies are attached by insulating links.

The DBN-40 is closed manually by depressing handle latch and turning the operating handle quickly and smoothly as far as it will go (90°) in a clockwise direction. The breaker may be tripped manually by depressing handle latch and turning the handle 45° in a counterclockwise direction. The breaker is tripped automatically by one of the automatic devices described later which rotate trip lever (220) about pin (224).

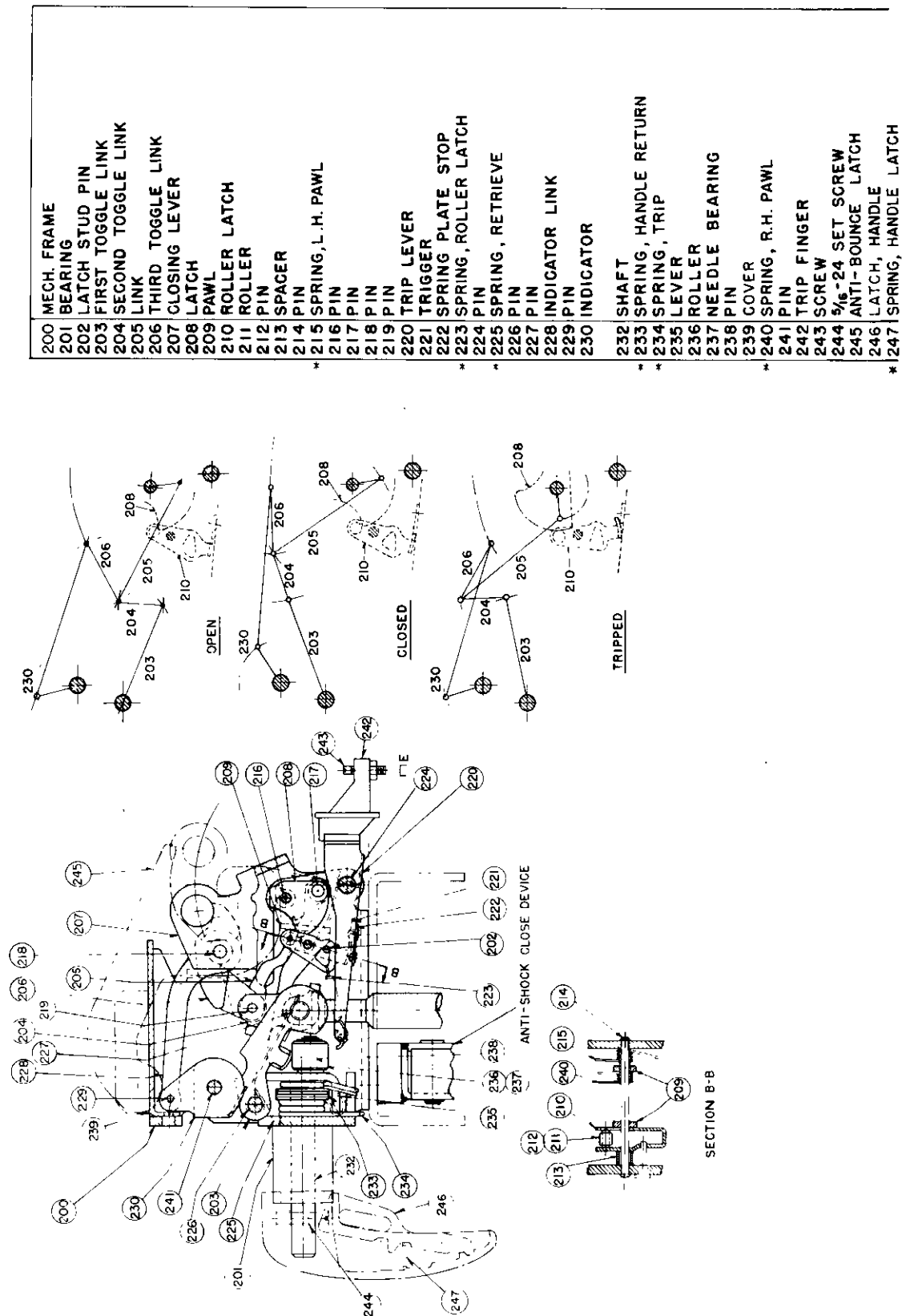
The mechanism is "trip free", that is, it is not possible to close the breaker if one of the automatic tripping devices moves the trip bar up during the closing stroke or if the trip bar is held in the raised position.

DESCRIPTION

The operating mechanism consists of a group of toggle links, and a latch attached to the operating mechanism frame on fixed pins (214), (226), (241), (216), and (224). The cross bar (168) is held by the closing lever (207). Rotating the operating handle clockwise moves the mechanism linkage from the open position shown to the closed position. This is accomplished when the roller (236) on the end of the operating handle shaft (232) forces the first toggle link (203) upward pushing second toggle link (204), third toggle link (206) and closing lever (207) ahead of it. The motion of the toggle linkages is directed by link (205) which is pivoted at its lower end on pin (217) in latch (208). Latch (208) in turn is restrained from moving by roller latch (210) which is pivoted on pin (214) and engaged trigger (221) on trip lever (220). The linkage is held in the closed position by pawl (209) which latches under pin (227). The handle shaft and lever are returned to the normal position after closing by handle return spring (233).

The mechanism is opened by rotating trip lever (220) counterclockwise. This is accomplished either by rotating handle counterclockwise, in which case the handle shaft lever strikes the extreme left end of trip lever (220) to move it downward; or by forcing push rod "E" of the tripping attachments to strike trip finger screw (243). In either case the counterclockwise rotation of the trip lever (220) moves trigger (221) out of engagement with the lower end of the roller latch (210), which in turn permits the roller latch to rotate counterclockwise out of engagement with latch (208). Latch (208) is then free to rotate in response to the pull of the latch link (205) so that the mechanism assumes the trip free position in which the contacts are open but part of the mechanism levers are in the closed position. In this position pawl (209)

COMPONENTS AND ATTACHMENTS



* REPAIR PARTS

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FIG. 5 — Mechanism

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is disengaged from pin (227) by a lug on link (204) which pushes it up permitting the linkage to collapse to the open position. Trip spring (234) returns operating handle to the normal vertical position after manual tripping.

ANTI-BOUNCE LATCH

The anti-bounce latch (245) prevents the closing lever (207) from bouncing off its stops and re-closing the circuit when the circuit breaker interrupts maximum short circuit currents. When the circuit breaker interrupts these high currents, the crossbar knocks the latch up, causing the latch to engage the crossbar should it tend to return to the closed position. The latch is pivoted on the side of the mechanism frame.

POSITION INDICATOR

Position indicator (230) is formed from sheet metal and is pivoted on pin (241). It is visible from the front of the circuit breaker through a window in the faceplate and mechanism frame. With the circuit breaker in the open position the yellow face of the indicator shows through the window. The word "OPEN" is stamped on this yellow face. When the breaker closes, pin (218) of the closing lever (207) pulls indicator link (228) to the right, thus rotating the other face of the indicator up into a position visible through the window. This face is painted blue and is stamped with the word "CLOSED".

REPLACEMENTS

To replace roller latch spring (223):

(a) Prepare to remove mechanism by removing anti-shock-open device (250), and auxiliary switch (550) all of Fig. 2. Avoid removing any more wires than necessary. It will usually be possible to push the devices aside without removing the wiring. Tag any wires which may have to be removed.

(b) Rotate handle (166) clockwise until pin (277) is visible through a hole in the right side of the mechanism frame. Using a small rod as a pusher, shove this pin part way through the hole until the rod of the anti-shock-close device, in the case of manually operated circuit breakers, or the operating rod of the closing magnet, in the case of electrically operated circuit breakers, drops off. Return the pin (227) to its proper location and allow linkages to fall open. This

frees mechanism from anti-shock-close device or the closing magnet as the case may be.

(c) Remove handle (166), faceplate (155) and cross bar (168) of Fig. 2.

(d) Remove the four bolts which hold mechanism to the shelf. This frees mechanism from shelf but frees also either anti-shock-close device (360) of manually operated breakers or closing magnet (340) of electrically operated breakers.

These devices should be temporarily replaced while repairs are being made to the mechanism.

(e) Removal of pin (224) enables trip lever (220) to be removed and spring (223) may then be replaced.

To replace pawl springs (215) and (240):

(a) Repeat (a) to (e) above.

(b) Remove pin (214) far enough to release pawl (209). Roller latch (210) and hold-in which are pivoted on the same pin will then remain in place. Replace springs (215) and (240), making sure that their ends are supported correctly.

To replace trip spring (234) or handle return spring (233):

(a) Repeat operations (a) through (e) under replacement of roller latch spring.

(b) Remove pin (214) and drop pawl (209) and roller latch (210) out of frame.

(c) Remove snap ring from handle shaft (232) and push the handle shaft back into frame. Spring (233) or (234) may then be replaced.

To replace retrieve spring (225):

(a) Repeat operations (a) through (e) under "Replacement of Roller Latch Spring".

(b) Remove cover (239).

(c) Remove pins (241) and (226). Retrieve spring (225) may then be replaced.

When replacing mechanism springs, particular attention should be given to the mechanism drawing to see that spring ends are properly placed and that torsion springs are properly oriented to exert torque in the proper direction.

COMPONENTS AND ATTACHMENTS

D-5. ANTI-SHOCK-CLOSE DEVICE

Reference Fig. 6

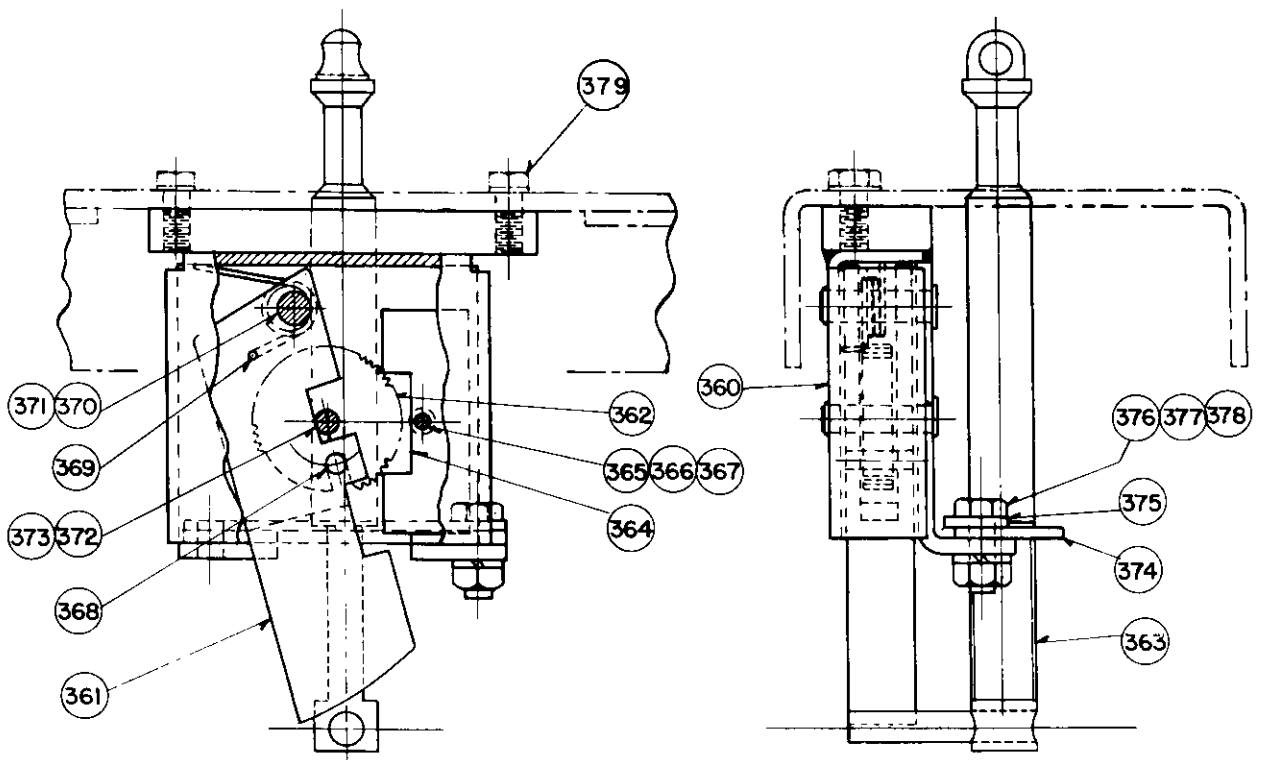
FUNCTION

This device serves to prevent the circuit breaker contacts from closing from shock when open. This is accomplished by an arrangement whereby a mechanical escapement device or "ticker" is operated by the closing of the breaker. Shock blows tending to close the breaker are of such short duration that the mechanical escapement device does not have time

to operate and the device effectively locks the open circuit breaker in the open position under shock conditions.

DESCRIPTION

The anti-shock-close device consists of a ticker case (360) which contains the ticker assembly, bolted to the platform by two bolts (379). A rod and cam pusher assembly (363) is connected at its upper end to pin (227) Fig. 5 of the mechanism. Whenever circuit breaker is closed, rod (363) is pulled up by pin (227) and cam (361) is caused to rotate in a clockwise



360	CASE
361	CAM
362	WHEEL
363	ROD AND CAM PUSHER
364	OSCILLATOR
365	PIN
366	.190 STD. BRS. WASHER
367	SNAP RING
368	PIN
* 369	SPRING, RESET

* REPAIR PARTS

370	PIN
371	SNAP RING
372	PIN
373	SNAP RING
374	GUIDE
375	GUIDE
376	$\frac{5}{16}$ -18 X $\frac{7}{8}$ HEX. STL. BOLT
377	$\frac{5}{16}$ -18 HEX. MACH. SCR. NUT
378	$\frac{5}{16}$ STL. LOCKWASHER
379	BOLT

Fig. 6 — Anti-Shock-Close Device

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direction around pin (370) against the torsion of return spring (369). As the cam rotates in this manner, oscillator wheel (362) is caused to rotate clockwise around pin (372) by pin (369) mounted in cam (361). The rotation of wheel (362) is regulated by mechanical oscillator (364) which is pivoted on pin (365). This oscillator oscillates due to the engagement of its teeth with the teeth of oscillator wheel (362). When the circuit breaker is tripped, rod (363) drops unimpeded and return spring (369) returns cam and consequently oscillator wheel to the "breaker open" position shown in the figure.

Shock blows tending to close the circuit breaker would have to act in such a way as to raise rod (363). These blows are of such short duration that the cam is restrained long enough by the oscillator to prevent closing of the circuit breaker.

REPLACEMENTS

To replace return spring (369):

- (a) Remove handle and faceplate.
- (b) Remove guide pieces (374) and (375) by removing bolt (376).

(c) Remove bolts (379) and remove case (360) from shelf.

(d) Removing snap rings (367), (371) and (373) will allow corresponding pins to be removed. The various parts are then free to be removed and the spring may be replaced.

(e) After reassembly, be sure that the cam operates freely and that it returns freely to its starting position when pushed over.

D-6. ANTI-SHOCK-OPEN DEVICE

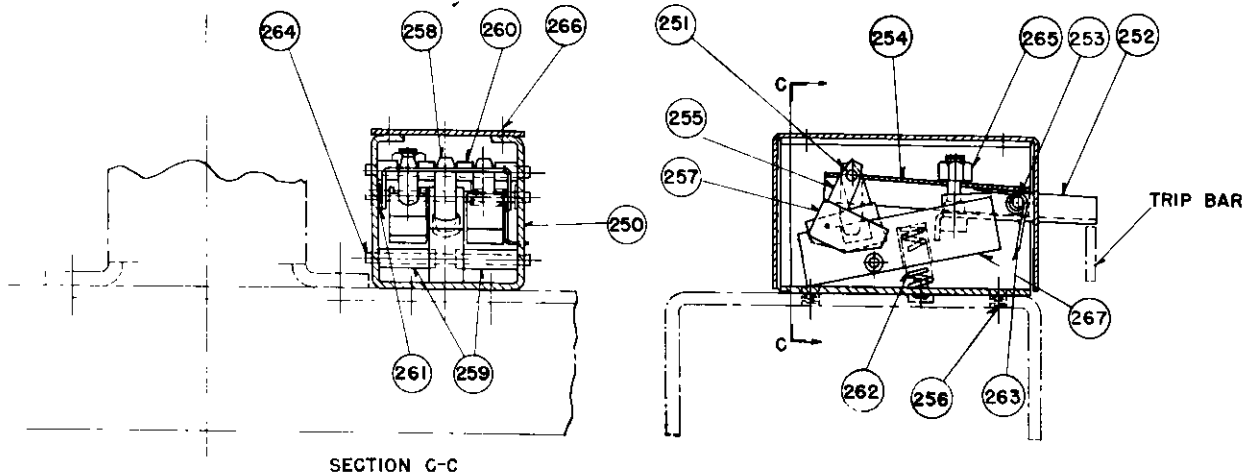
Reference Fig. 7

FUNCTION

This device prevents tripping of the circuit breaker due to rotation of the trip lever caused by shock but allows normal rotation of the trip lever by tripping devices.

DESCRIPTION

The bracket (250) is mounted on the supporting frame shelf to the immediate right of the operating mechanism frame (200) Figure 1



250	ANTI-SHOCK OPEN BRACKET
251	PIN
252	LEVER
253	PIN
254	PLATE
255	STUD
256	SCREW
257	WEIGHT
258	STUD

259	SPACER
260	SPACER
261	WASHER
* 262	SPRING WEIGHT
* 263	SPRING PLATE
264	PIN
265	1/4-20 ELASTIC STOP NUT
266	.164-32 X 1/4 FIL.HD.STL.MACH.SCR.
267	WEIGHT

FIG. 7 — Anti-Shock-Open Device

COMPONENTS AND ATTACHMENTS

quick reset is desirable. As diaphragm assembly (412) comes down, air is expelled thru port to bottom of long delay valve (416). Pressure moves disc (418) down providing a large opening for the expelled air. Spring (419) returns the disc to the sealed position after reset is completed.

REPLACEMENT

Although repair part springs are supplied, they should be used only in an emergency. The overcurrent trip device should be returned to the factory for calibration.

D-8. AUXILIARY SWITCH

Reference Fig. 9

FUNCTION

The auxiliary switch is used to close or open auxiliary or control circuits. The closed or open positions of its sets of contacts are coordinated with the closed or open position of the main circuit breaker contacts.

DESCRIPTION

The four pole type RC auxiliary switch is mounted on the top of the supporting frame shelf to the left of the operating mechanism. It is operated by shaft (555) and arm (557) which connects to the breaker lever of the operating mechanism. An eight pole auxiliary switch consists of two four pole switches, one mounted above the other.

The contacts are designed to carry 15 amperes continuously or 250 amperes for three seconds.

The interrupting capacities of the auxiliary switch contacts are as follows:

Volts	Non-Inductive Circuit	Inductive Circuit
125 DC	11 Amps.	6.25 Amps.
250 DC	2 Amps.	1.75 Amps.
115 AC	75 Amps.	15.0 Amps.
450 AC	25 Amps.	5.0 Amps.

For the purposes of this table, an "inductive" circuit is considered to be a bell alarm or shunt trip circuit and a "non-inductive" circuit is considered to be a resistance type indicating light or similar circuit.

The auxiliary switch is a shaft-operated, four pole, rotary type having "a" and "b" contacts. An "a" contact is one that is open when the circuit breaker is open, and a "b" contact is one that is closed when the circuit breaker is open.

A square shaft (555) extends through the rotor molds (560) which in turn insulate and support the rotor contacts (562). The rotor assembly is clamped together into a solid unit by screw (564). The rotor contacts are set 60° apart for 60° rotation of shaft (555).

Contact fingers (553) have one end hooked into stem (551) with spring (554) maintaining pressure between the finger contact and stem. The center of the contact finger bears against a stop surface in casing (550) to position the outer end of the contact finger.

ADJUSTMENT

The auxiliary switch is non-adjustable. However, it may be necessary to change from an "a" to a "b" contact or vice versa. This is accomplished as follows:

(a) Remove switch from the supporting frame shelf as described under "a" and "b" or "Replacements".

(b) Remove screw (564) and withdraw shaft (555) completely.

(c) Lift the rotor assembly out of the casing, pull apart slightly at the rotor contact to be changed to disengage the positioning lugs turn the rotor contact 60° to line up with the adjacent contact and push the rotor assembly together to lock in place.

(d) When replacing shaft (104) during reassembling, be sure that the crank portion is positioned exactly as removed relative to one of the unchanged contacts. This care is necessary as the shaft can also be reassembled when rotated either way 30°.

REPLACEMENT OF AUXILIARY SWITCH

(a) Remove and tag the terminal connections.

(b) Disconnect arm (557) from closing lever, remove the two mounting bolts and remove switch.

(c) Remove link from closing lever and add new switch.

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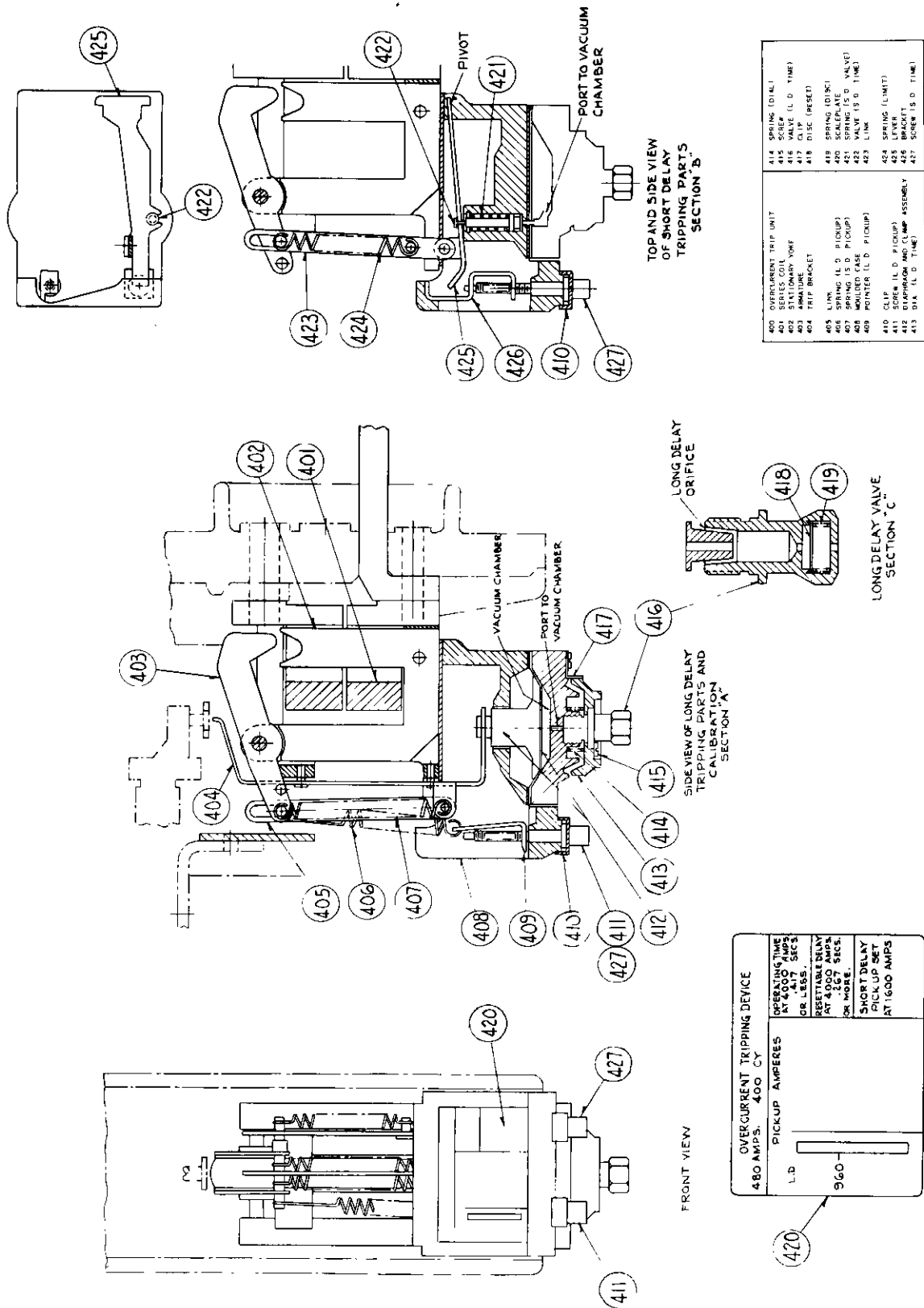


FIG. 8 — Series Overcurrent Trip Device

D-9. SHUNT TRIP DEVICE

Reference Fig. 10

FUNCTION

The shunt trip device serves as a means of tripping the circuit breaker from some remote point by the closing of a control switch or relay contacts at that remote point.

DESCRIPTION

The shunt trip device is mounted on the extreme right end of the supporting frame shelf. It consists of a frame, coil and moving core mounted horizontally. Energizing trip coil (513) causes a magnetic attraction between stationary core (503) and moving core (504) which causes moving core (504) to move to the left rotating trip lever (501) about pin (502). Lever (501) raises trip bar (157) Fig. 2 to trip the circuit breaker. The opening of the circuit breaker de-energizes the shunt trip coil through an "a" contact of the auxiliary switch. Spring (508) returns moving core (504) to its normal position. Non-magnetic washer (510) prevents residual magnetism from holding the cores together when the coil is de-energized.

REPLACEMENTS

To replace coil (513):

- (a) Disconnect the shunt trip leads from the auxiliary switch and cut-off switch.
- (b) Take out the two bolts (515) and remove the shunt trip assembly from the supporting frame.
- (c) Remove pin (502) and screws (509) holding plate (505) in place and drop out the moving core (504), stationary core (503) and sleeve (507). The coil is then free to be replaced.

To replace spring (508):

- (a) Repeat operations (a) and (b) above.
- (b) Remove pin (502) and replace spring (508).

D-10. REPAIR PARTS

Potential coils, springs, arcing contacts, and auxiliary switches are supplied as spare parts. Refer to Fig. 11 for identification.

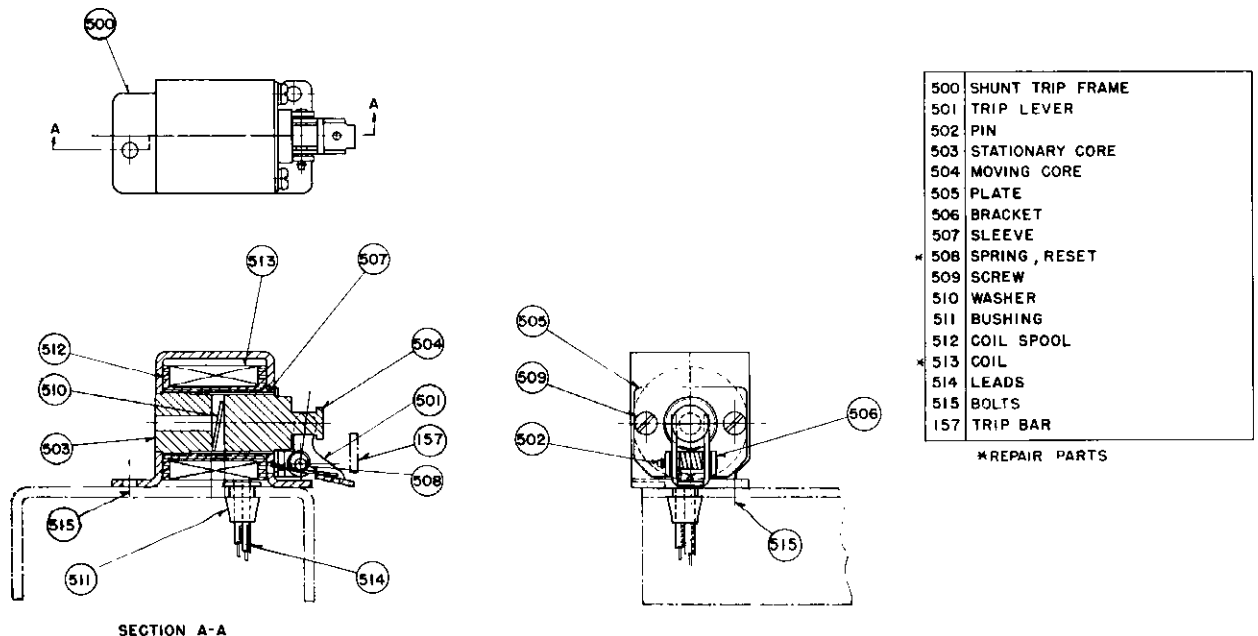


Fig. 10 — Shunt Trip Device

AIR CIRCUIT BREAKER

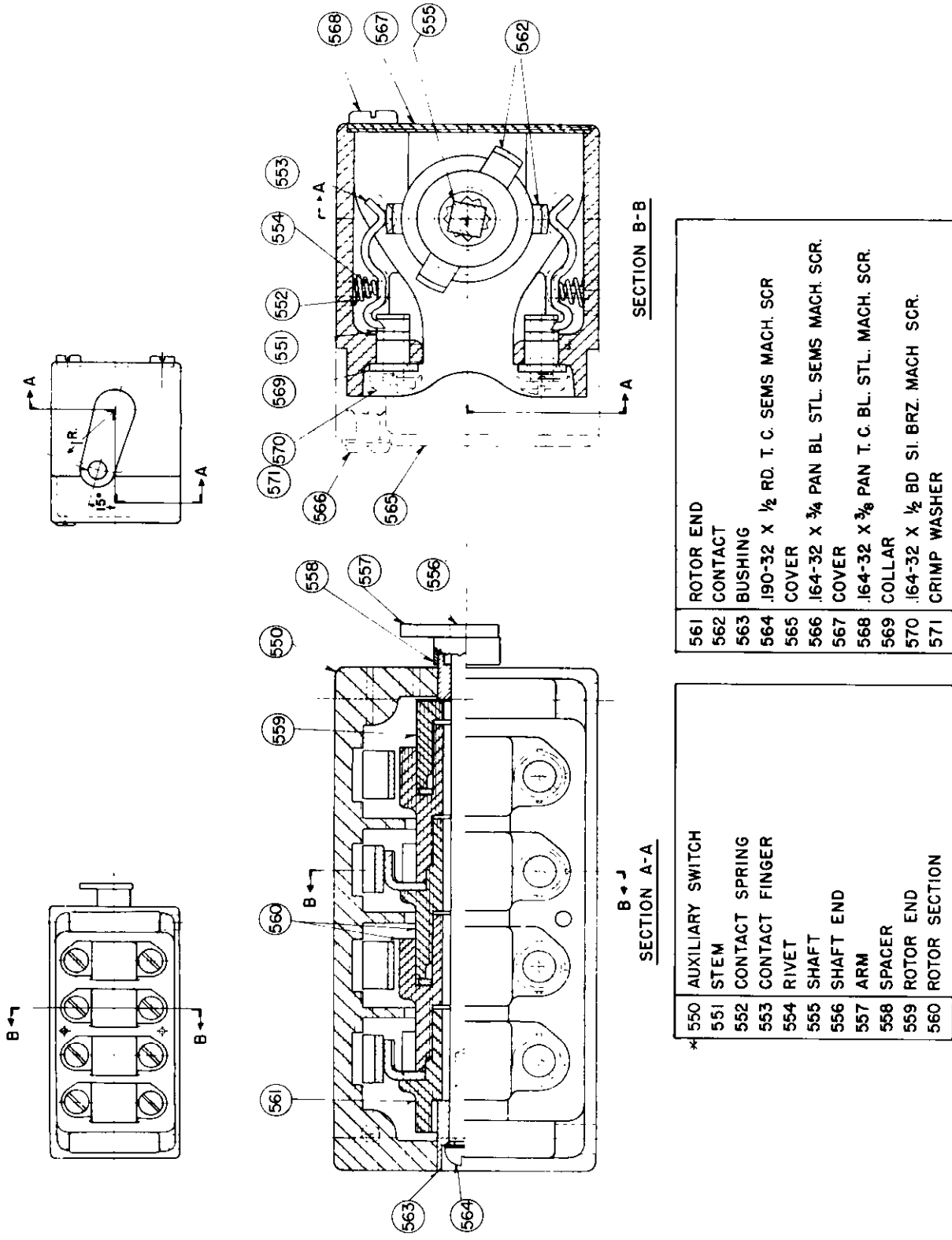


Fig. 9 — Auxiliary Switch

561	ROTOR END
562	CONTACT
563	BUSHING
564	.190-32 X 1/2 RD. T. C. SEMS MACH. SCR
565	COVER
566	.164-32 X 3/4 PAN BL STL SEMS MACH. SCR.
567	COVER
568	.164-32 X 3/8 PAN T. C. BL. STL. MACH. SCR.
569	COLLAR
570	.164-32 X 1/2 BD SI. BRZ. MACH. SCR.
571	CRIMP WASHER

* 550	AUXILIARY SWITCH
551	STEM
552	CONTACT SPRING
553	CONTACT FINGER
554	RIVET
555	SHAFT
556	SHAFT END
557	ARM
558	SPACER
559	ROTOR END
560	ROTOR SECTION

* REPAIR PARTS

CERTIFICATION DATA FOR CIRCUIT BREAKERS

A. MASTER DRAWING DD828-56202-902-366 REVISION 1

B. MFR'S DRAWING NO. 48J811 REVISION 3

C. MASTER DRAWING FIGURES APPLICABLE TO CONTRACT 1-3-4
WIRING DIAGRAM SHEET 3

D. APPLICABLE SPECIFICATION MIL-C-17587 OF 27 OCT. 1953
AND AMENDMENTS OF

E. NAVY CONTRACT OR SHIPBUILDER'S ORDER NO. SEE SHEET 1

F. MFR'S ORDER NO. SEE SHEET 1

G. CIRCUIT BREAKER TYPE AND FRAME SIZE-NAVY 640
MFR'S. DBN-40S

H. DESCRIPTION OF CIRCUIT BREAKER
VOLTAGE 1000V. 400 CYCLES MEANS OF CLOSING MANUAL
NO. OF POLES 3 NO. OF OVERCURRENT COILS 2
CONNECTIONS BACK MOUNTING STATIONARY
AUXILLIARY SWITCH CIRCUITS 4a-4b
OVERCURRENT TRIPPING CURVE MFR'S. NO. _____

I. COIL RATINGS, PICKUP AND TIME SETTINGS: _____

1. OVERCURRENT COIL RATING-AMPERES SEE SHEET 5

2. LONG-TIME DELAY PICKUP SETTING-AMPERES SEE SHEET 5

3. SHORT TIME DELAY PICKUP SETTING-AMPERES SEE SHEET 5

4. SHORT TIME DELAY BAND SETTING SEE SHEET 5

5. INSTANTANEOUS PICKUP SETTING SEE SHEET 5

6. SHUNT TRIP COIL RATING-VOLTS * 120V - 60CY.

7. CLOSE COIL RATING — VOLTS NONE

8. CLOSING RELAY COIL RATING-VOLTS NONE

9. REVERSE CURRENT TRIP SETTING- AMPERES NONE

10. REVERSE CURRENT POTENTIAL COIL - VOLTS NONE

J. NUMBER OF SHIPS INVOLVED SEE SHEET 1

K. IDENTIFICATION NUMBERS OF SHIPS SEE SHEET 1

L. NUMBER OF CIRCUIT BREAKERS PER SHIP SEE SHEET 5

M. TOTAL NO. OF CIRCUIT BREAKERS INVOLVED SEE SHEET 5

N. REPAIR PARTS _____ SEE SHEET NO. 4

O. ADDITIONAL DATA, REMARKS, NOTES: - _____
* SHUNT TRIP ON 35Y9083 (TURBO GEN. BKR.) ONLY

	CERTIFICATION DATA	WESTINGHOUSE ELECTRIC CORPORATION	
	TYPE <u>DBN-40S</u> <u>640 FRAME</u> AIR CIRCUIT BREAKER	EAST PITTSBURGH PA USA	
	BUS TIE & TURBO GENERATOR BREAKERS	DWG <u>445D419</u>	SUB <u>5</u>
		BUSHIPS DWG NO	REV.
		<u>A</u>	
	SHEET 2 OF 5		

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AIR CIRCUIT BREAKER

REVISIONS							
REV.				MFR		USN	
	DATE	APPD	DATE	APPD	DATE	APPD	

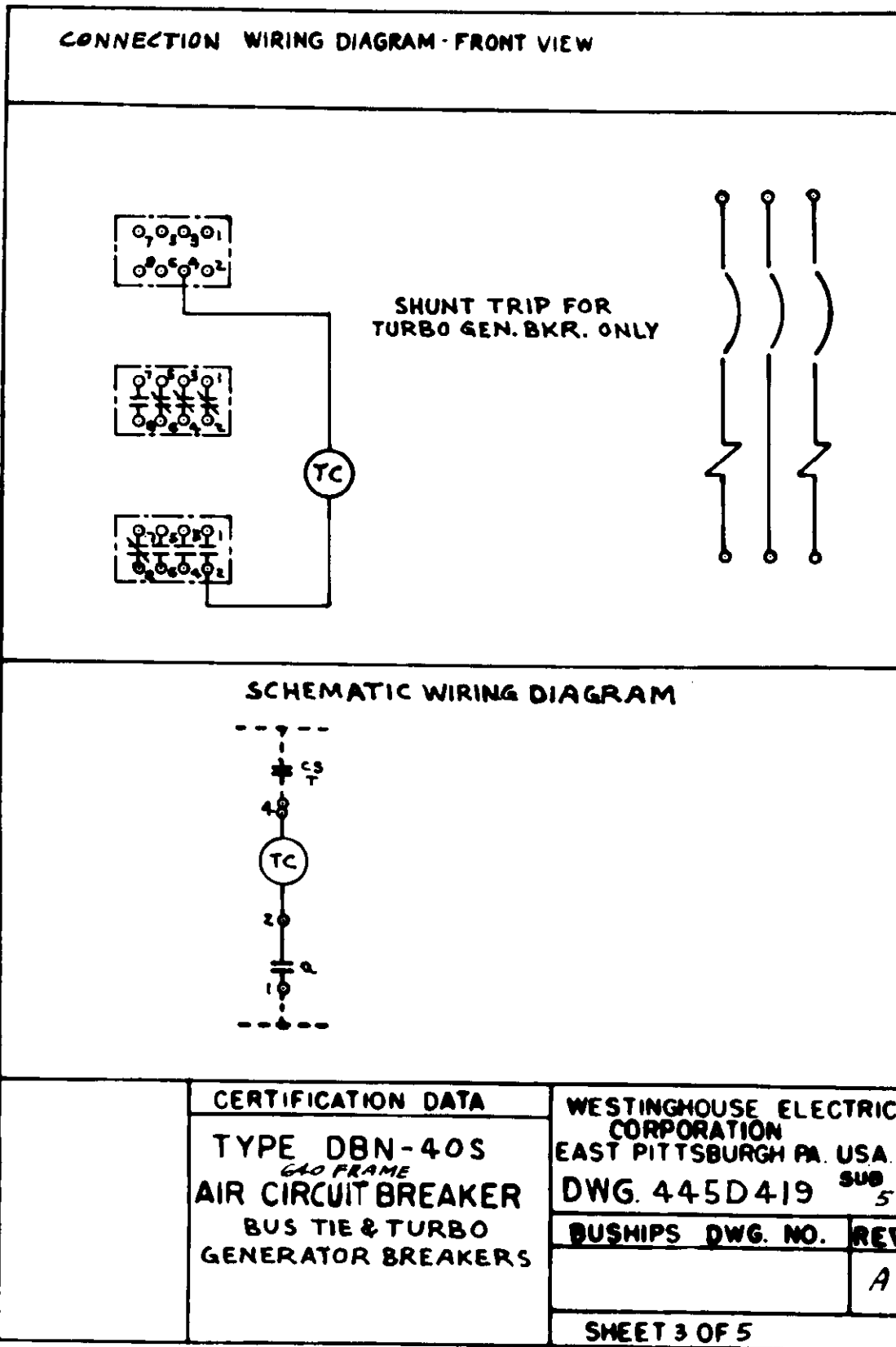
VESSEL SSN	SHIPBUILDER		NOBS	WESTINGHOUSE	
	NAME	ORDER		GEN. ORDER	SHOP ORDER
CVA(N)65	A	H546-405E-11	3959	NF24704Y	SEE SHEET 5

A- NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

DRYDOCKMAN ACKERMAN 7-10-58 ENGINEER HANCOCK 7-11-58 CERTIFIED	CERTIFICATION DATA TYPE DBN-40S 640 FRAME AIR CIRCUIT BREAKER BUS TIE & TURBO GENERATOR BREAKERS	WESTINGHOUSE ELECTRIC CORPORATION EAST PITTSBURGH PA. USA. DWG. 445D419 <i>SUB 5</i>				
APPROVAL LTR		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>BUSNIPS DWG. NO.</th> <th>REV.</th> </tr> <tr> <td> </td> <td style="text-align: center;">A</td> </tr> </table>	BUSNIPS DWG. NO.	REV.		A
BUSNIPS DWG. NO.	REV.					
	A					
SHEET 1 OF 5						

Fig. 11 — Certification Data

AIR CIRCUIT BREAKER



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