

SMALL CIRCUIT BREAKERS REQUIREMENTS AND TEST PROCEDURES

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NOTICE

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1. GENERAL

1.01 This section covers the following small manually operated circuit breakers:

KS-5648	KS-20684
KS-5786	KS-20685
KS-5926	KS-20903
KS-15659	KS-21122
KS-15713	KS-21123
KS-15739	KS-21124
KS-15769	KS-21186
KS-15794	KS-21225
KS-15795	KS-21226
KS-15799	KS-21596

KS-15813	KS-21597
KS-15815	KS-21895
KS-15943	KS-22009
KS-15944	KS-22010
KS-19735	KS-22011
KS-19943	KS-22012

The following codes are rated Mfr Disc. (No further reference to the Mfr Disc. Circuit Breakers will be made in this section.)

KS-15713
KS-15739, L1, L2, L3
KS-15794
KS-15795
KS-15799
KS-15815, L122, L128
KS-19735, L1
KS-20684, L211, L213
KS-21122, L1, L2, L3
KS-21123, L1
KS-21186, L10
KS-21226, L4

1.02 This section is reissued for the following reasons:

- (1) To change title from Requirements and Adjusting Procedures to Requirements and Test Procedures.
- (2) To rearrange text.
- (3) To add KS-22012, L60 through L73.

Revision arrows have been used to indicate the changes. This change affects the Equipment Test List.

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1.03 Typical small circuit breakers are illustrated in Fig. 1 through 6.

1.04 Refer to Section 020-010-711 which covers apparatus, general requirements, and definitions, and contains additional information necessary for the proper application of the requirements listed in this section.

1.05 **Asterisk (*):** Requirements marked with an asterisk necessitate dismantling or dismantling of apparatus, or affect the adjustment involved, or other adjustments. No check need be made for these requirements unless the apparatus or part is made accessible for other reasons, or its performance indicates that such a check is advisable.

1.06 Since it is not practical to do any maintenance work on any of the circuit breakers, they should be replaced when they become inoperable or fail to meet their requirements.

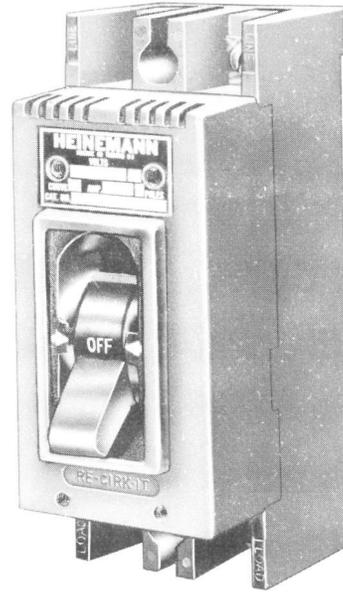


Fig. 2—Typical Small Circuit Breaker With Nameplate (Old Style)

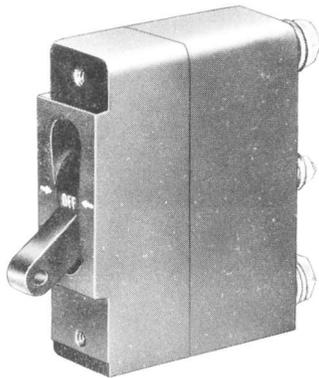


Fig. 1—Typical Small Circuit Breaker Without Nameplate (Old Style)

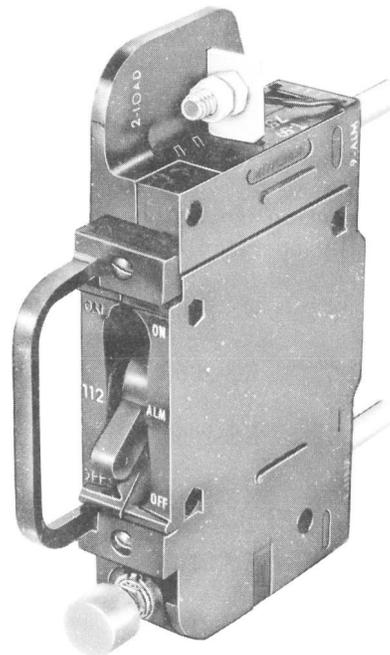


Fig. 3—Small Circuit Breaker—KS-21225, L112 (Without Guard Cup)

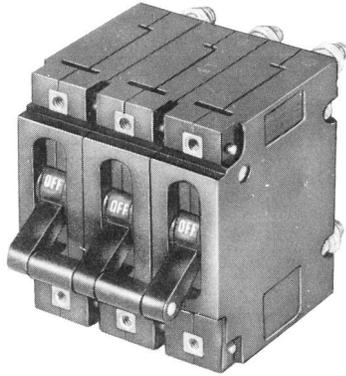


Fig. 4—Small Circuit Breaker—KS-21596, L3

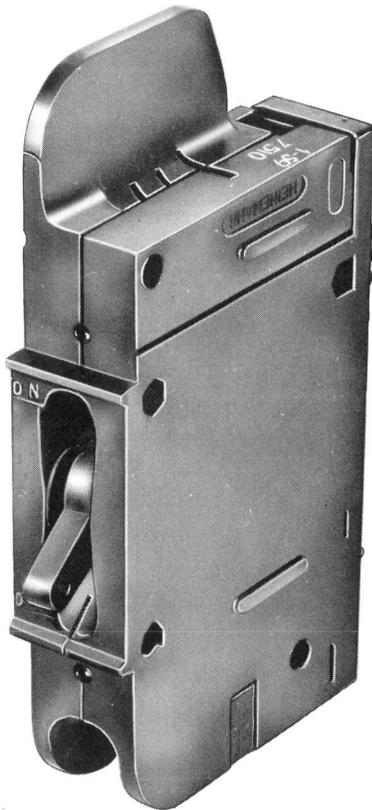


Fig. 5—Small Circuit Breaker—KS-21186, L6

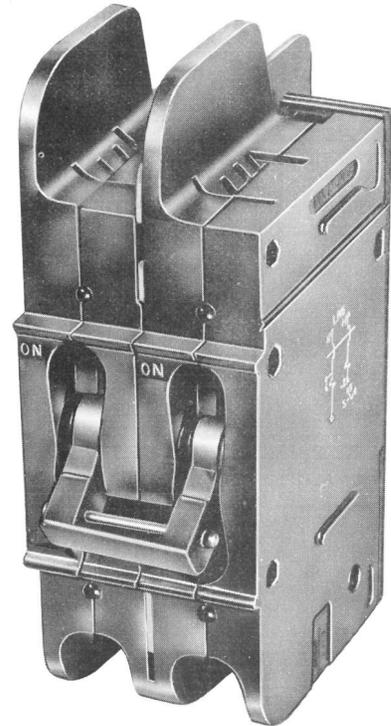


Fig. 6—Small Circuit Breaker—KS-21186, L203

2. REQUIREMENTS

2.01 *Switch Mounting:* The circuit breaker shall be fastened securely to its mounting. The component parts shall be held together securely.

2.02 *Mechanical Operation:* The circuit breaker shall operate satisfactorily without undue binding.

*2.03 *Electrical Operation*

(a) When a circuit breaker has a pole or poles of the time delay type, the poles shall carry rated current continuously and shall trip within 1 hour after continuous application of 125 percent of rated current. At larger values of current, the tripping time shall be less as shown on the performance curves which apply to the particular circuit breaker. See Fig. 7 through 17. A delay-type pole is distinguished by marking (for example, 4DC) which designates its time-delay performance curve.

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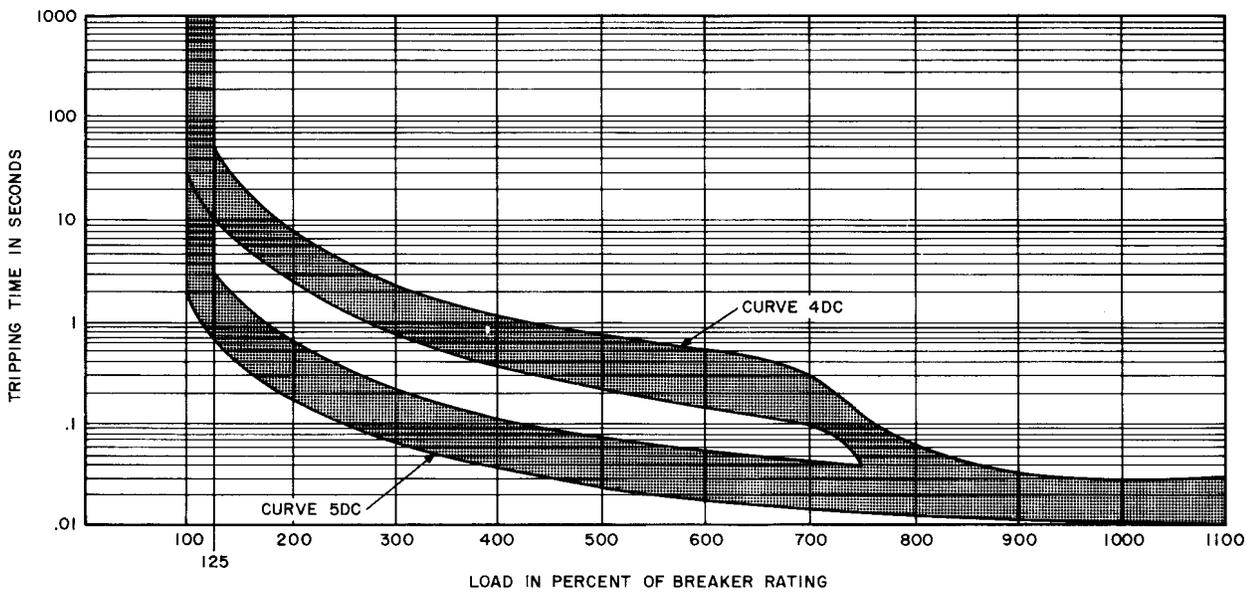
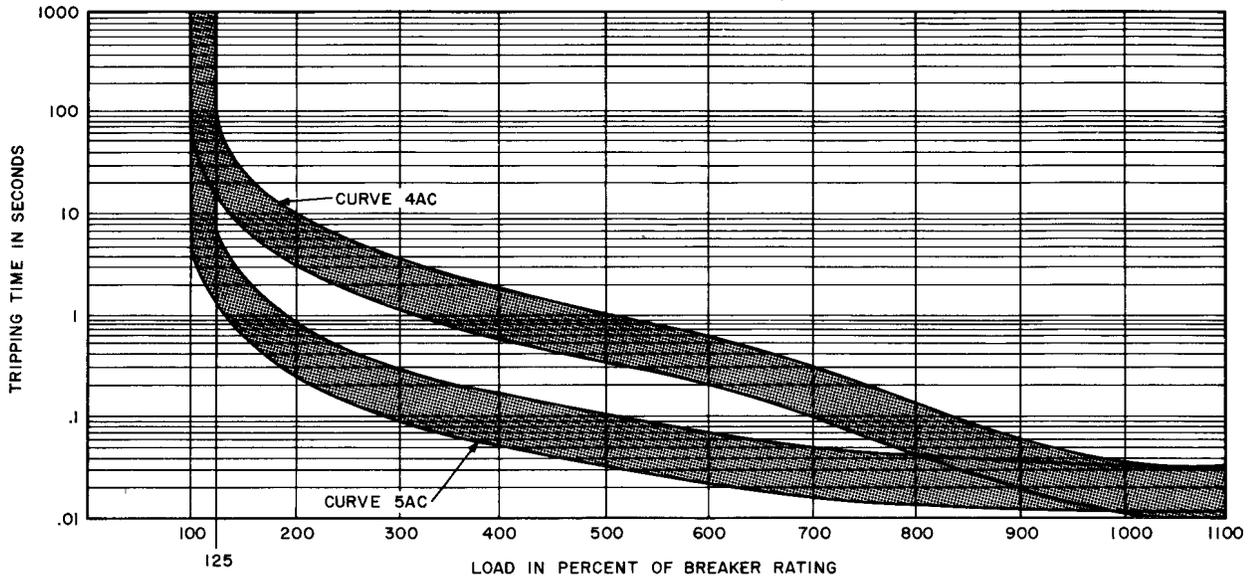


Fig. 7—AC and DC Time-Delay Performance Curves—KS-5648, L1, L2, L4-L8, L10-L15; KS-15659, L2-L15, L17A, L18A; KS-15713; KS-15794; KS-15795; KS-15799; KS-15813, L2-L41; KS-15815, L5-L39, L43-L48, L101, L103-L112, L115, L118-L122, L124-L128, L131-L133, L135-L143; KS-19735, L1; KS-20684, L10, L12-L18, L20, L22, L23, L205, L210, L212, L214, L217, L220, L222, L223

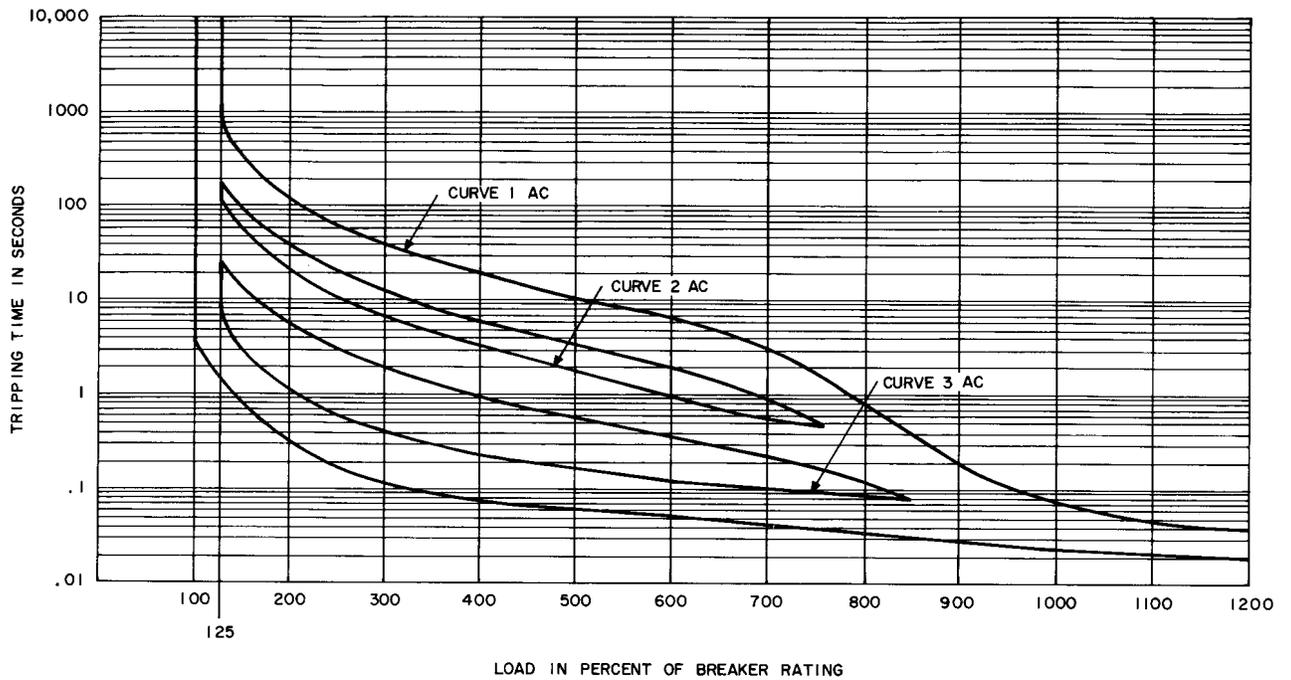


Fig. 8—AC Time-Delay Performance Curves—KS-5786, L1; KS-19943, L10; KS-15815, L40-L42

(b) When a circuit breaker has a pole or poles of the instantaneous type, the poles shall carry rated current continuously and shall trip

immediately upon the application of current exceeding 120 percent of its rating.

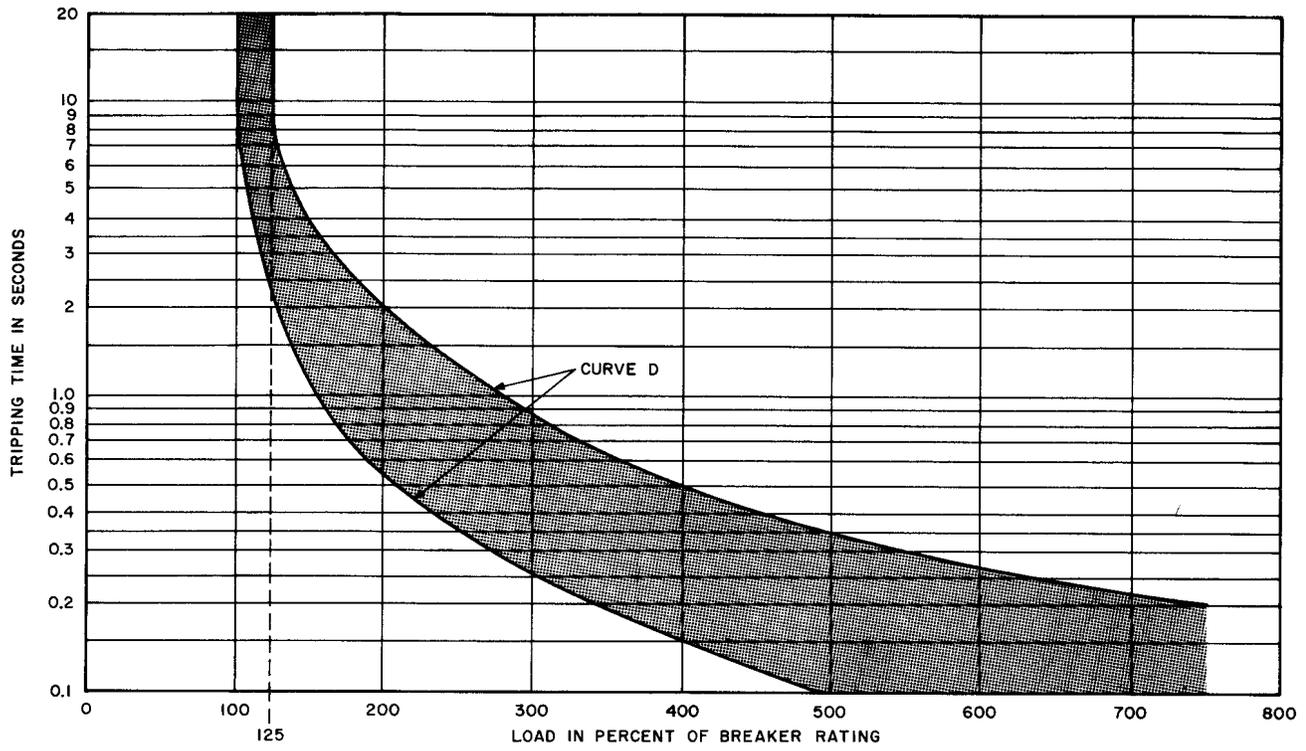


Fig. 9—D Time-Delay Performance Curve—KS-15739

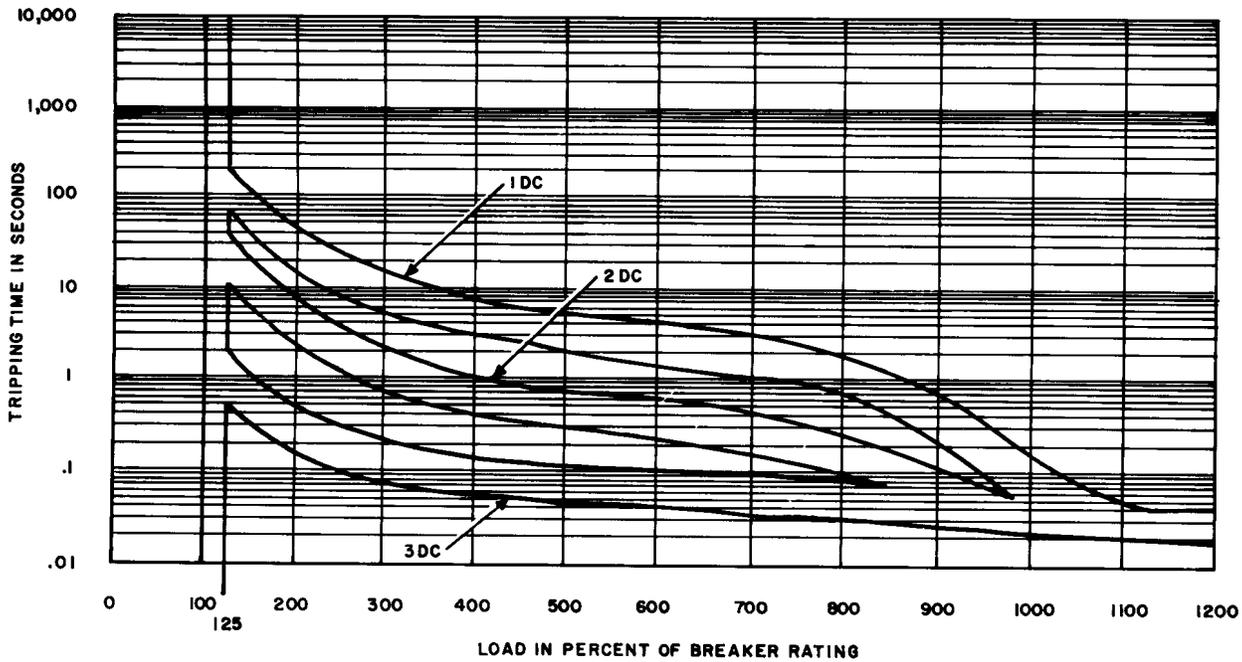


Fig. 10—DC Time-Delay Performance Curves—KS-15815, L117; KS-19943, L4, L5, L7, L8, L11, L13, L16-L31; KS-20655, L2, L3; KS-21122, L1-L16; KS-21123, L2, L202; KS-21186, L1-L6, L8-1110, L12-L35, L37, L203-L206, L208; KS-21225, L20, L30, L100, L112, KS-20684, L212-L214, L217, L220, L222, L223, L226; KS-21597, L3-L18; KS-22009, L1-L8; KS-22010, L1-L19; KS-22011, L1-L19; KS-22012, L1-L7, L11-L17, L21-L27, L31-L37, L51

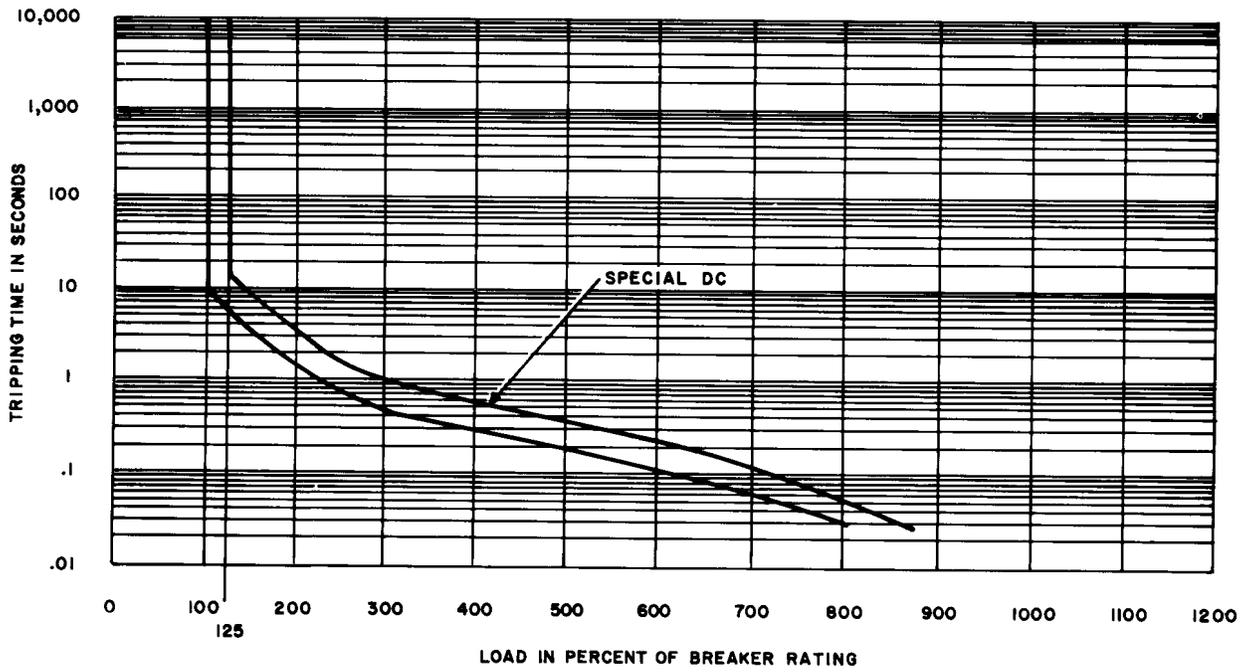


Fig. 11—Special Time-Delay Performance Curves—KS-19943, L14, L15

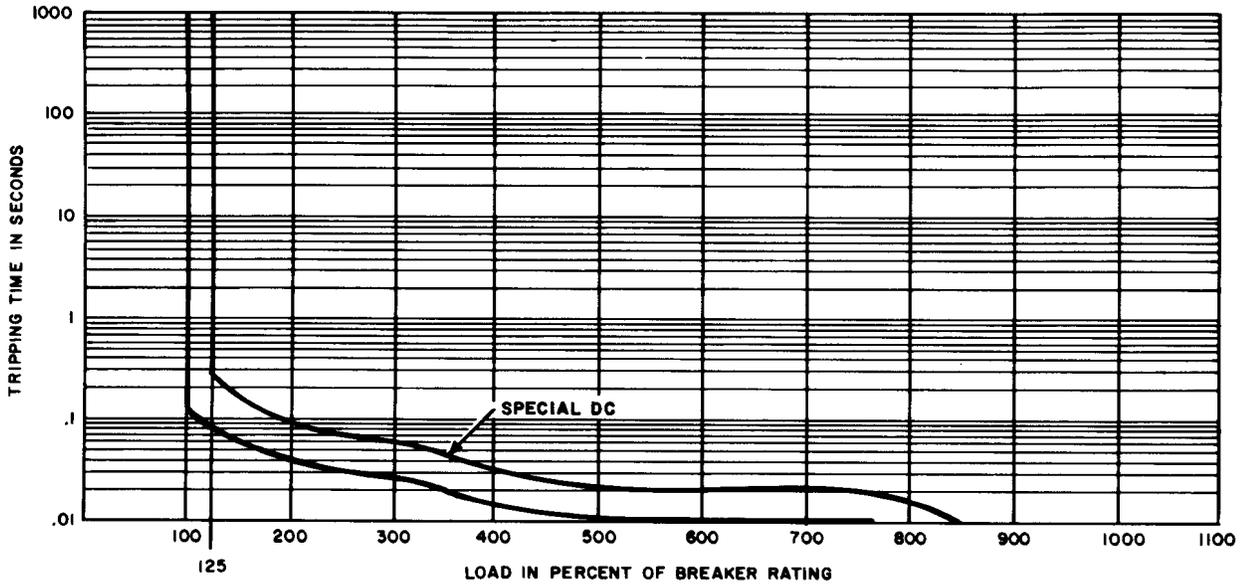


Fig. 12—Special Time-Delay Performance Curves—KS-20684, L21-24, L221-L224

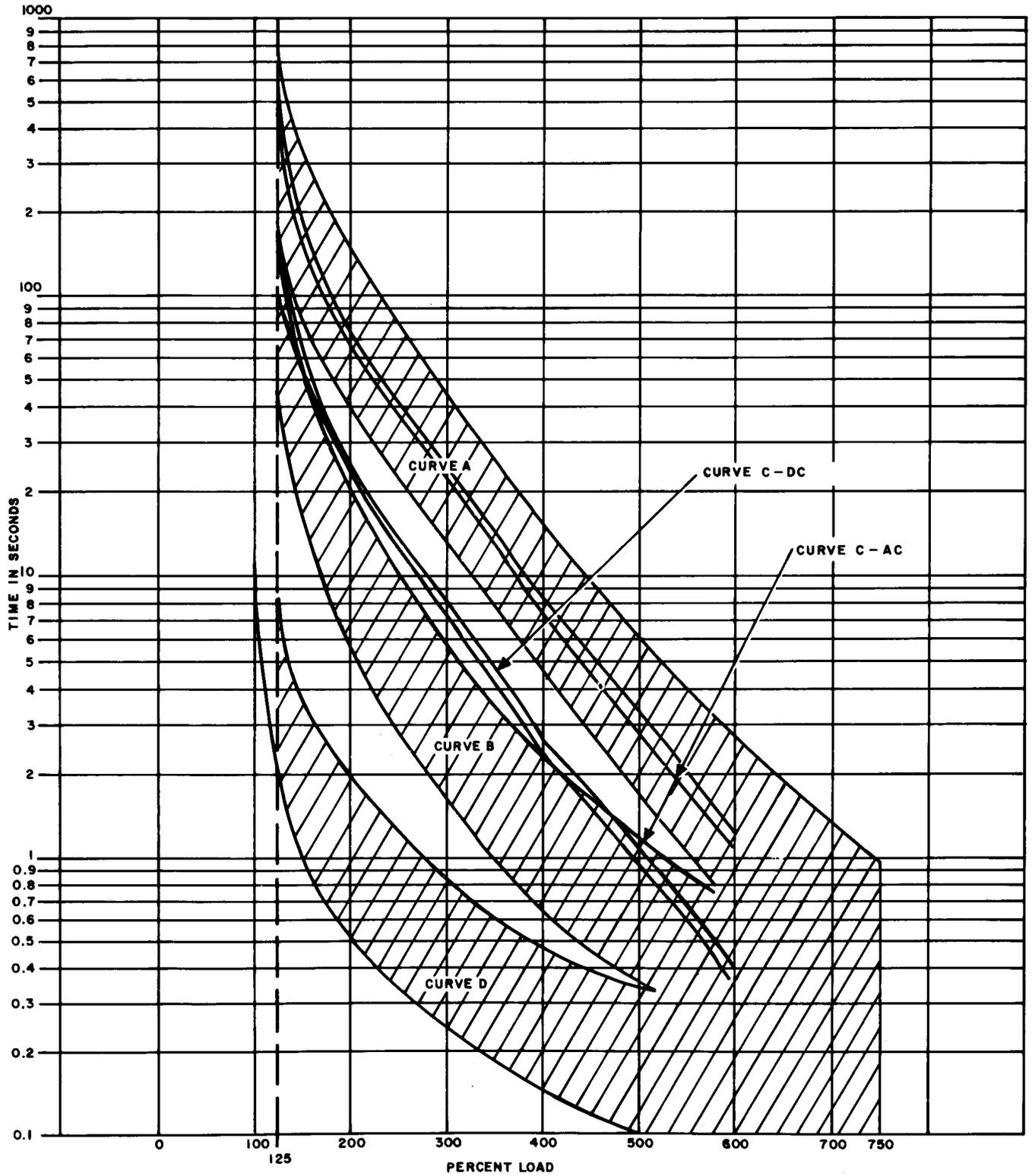


Fig. 13—A, B, C, and AC Time-Delay Performance Curves—KS-5926, L1-L10

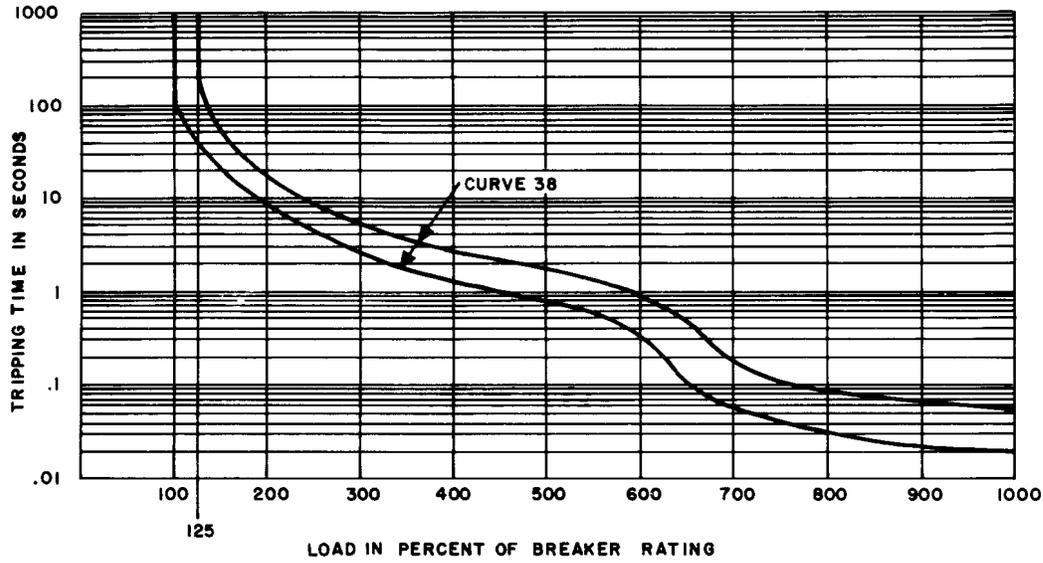


Fig. 14—38 Time-Delay Performance Curve—KS-15769, L1

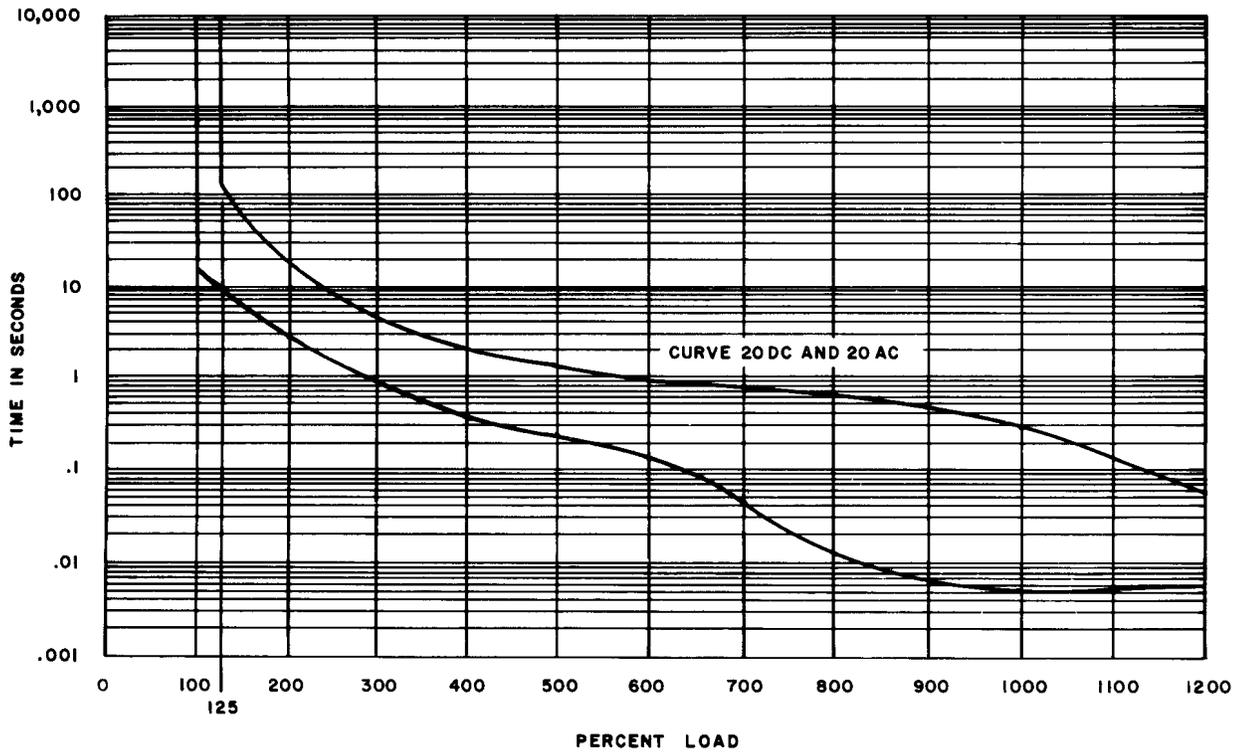


Fig. 15—20 AC and DC Time-Delay Performance Curves—KS-21123, L202, L203; KS-21596, L1-L5

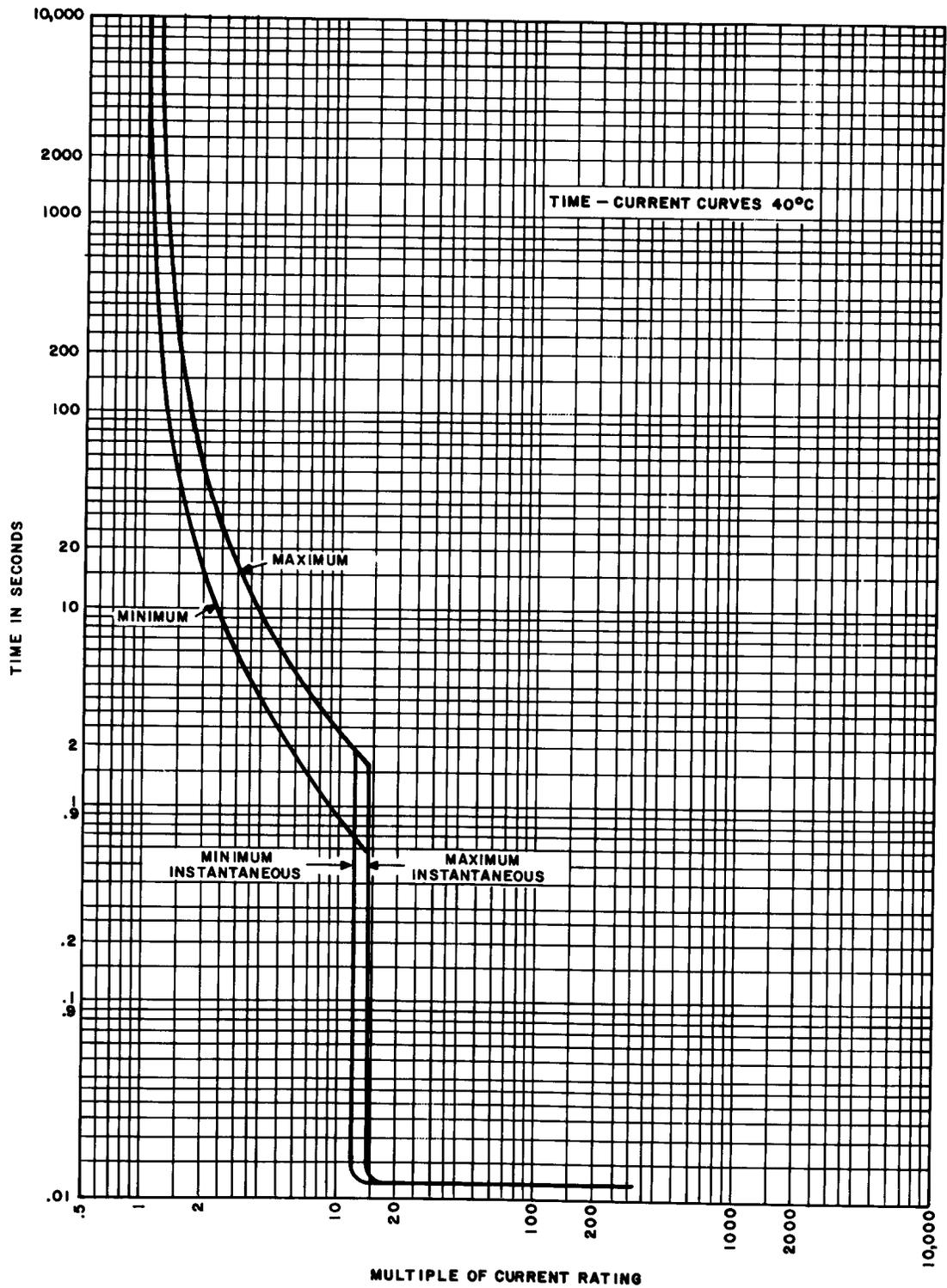


Fig. 16—Special Time-Delay Performance Curves—KS-20903, L20, L50

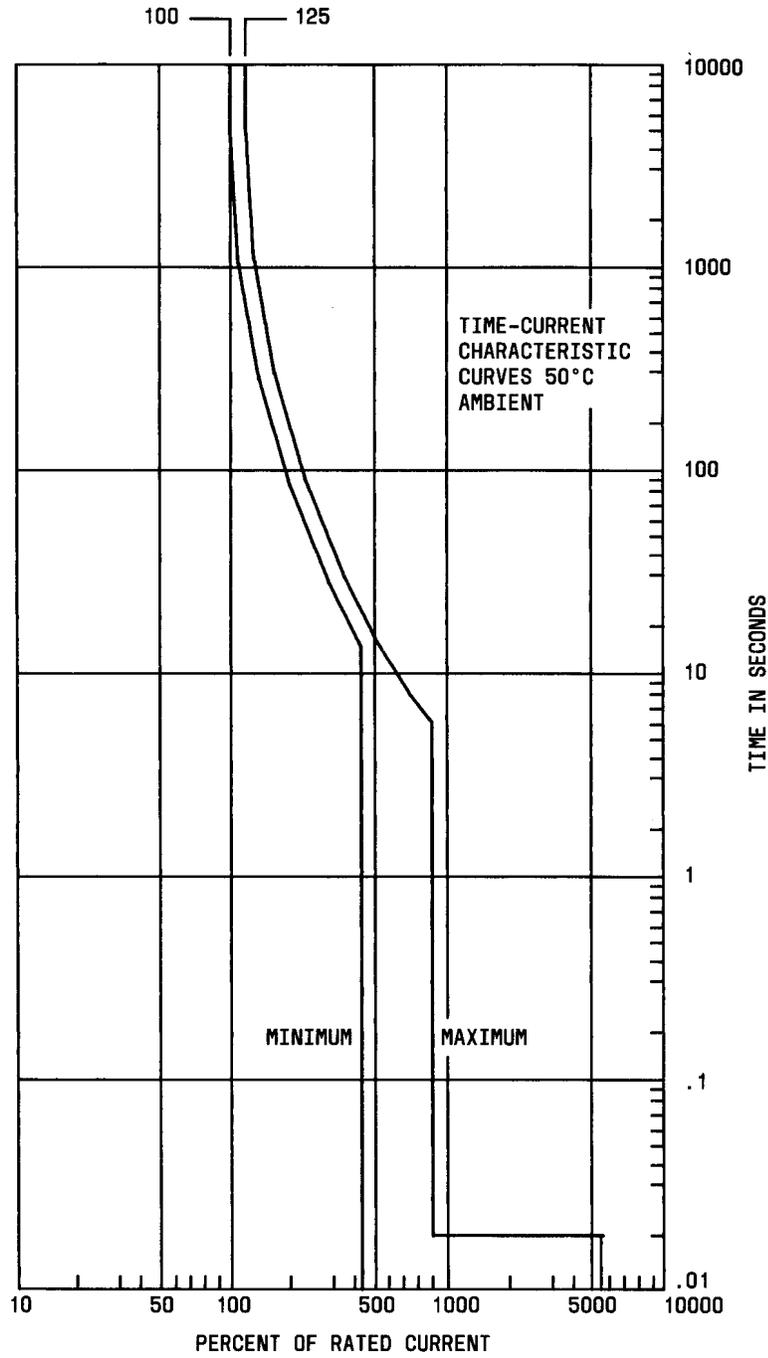


Fig. 17—Time-Delay Performance Curves—KS-21124, L1-L8

3. APPARATUS

3.01 *List of Tools, Gauges, and Test Apparatus:*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
KS-6854	Screwdriver
R-2512	Adjustable Wrench
AT-7825	3-Inch D Screwdriver
AT-7825	4-Inch E Screwdriver
GAUGES	
—	Pocket Watch or Clock
TEST APPARATUS	
352AL	Transformer
—	Ammeter, AC, Ranges as required
—	Ammeter, DC, Ranges as required
—	Autotransformer, continuously tapped (VARIAC*, 2.5 amperes, 230-volt input, type V-5HMT or equivalent, General Radio Company, Cambridge, Mass, suggested)
—	Battery, Storage
—	Rheostats (size to be determined by the circuit breaker being tested) (as required)
—	Switch, SPDT

*Registered trademark of the General Radio Company.

4. TEST PROCEDURES

4.01 ♦To check the electrical operation of a circuit breaker, proceed as follows:

- (1) Locate applicable circuit breaker listed in paragraph 4.02

- (2) Locate applicable checking circuit specified in listing

- (3) Locate applicable time delay performance curve specified on circuit breaker, Fig. 7 through 17.

- (4) Perform checks as specified in listing.

4.02 The listing below provides a reference to checking circuits and testing methods required for each type circuit breaker. Unique procedures are also provided when required. Options for checking individual poles are indicated by circled numbers in circuit diagrams referred to for the individual breakers.♦

(a) **KS-5648:** To check a KS-5648 circuit breaker, proceed in accordance with Methods 1, 2, or 3, as applicable. Refer to Fig. 18, 22, and 32.

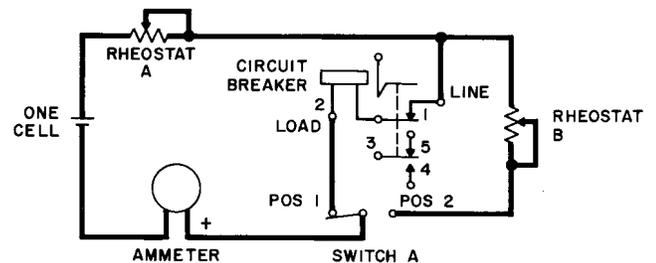


Fig. 18—Checking Circuits—DC Breakers—KS-5648, L1, L3, L5, L8, L10, L11, L16; KS-15799; KS-15815, L101-L108, L115, L116, L120-L123, L125, L126, L128-L131, L134, L135, L137, L139, L140, L143, KS-19943, L1-L4, L7-L9, L11, L13, L16-L23; KS-20684, L1-L4, L10, L12, L13, L21, L205, L210, L212, L213, L221, L226, KS-20685, L1-L4; KS-21122, L3, L7, L13-L16; KS-21186, L1, L4-L8, L12-L23, L37, L204, L208; KS-21597, L11-L20

(b) **KS-5786:** To check a KS-5786 circuit breaker, proceed in accordance with Method 3. Refer to Fig. 20. Check each pole separately as shown by options 1 and 2.

(c) **KS-5926:** To check a KS-5926 circuit breaker, proceed in accordance with Methods 1 or 3, as applicable. Refer to Fig. 22, 26, 32,

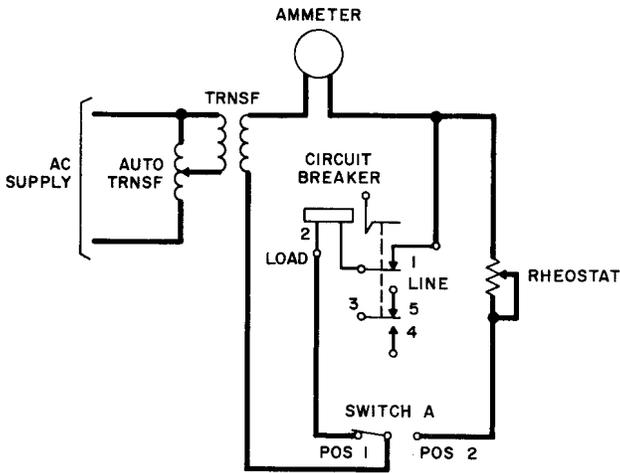


Fig. 19—Checking Circuits—AC Breakers—KS-15713; KS-15815, L5-L18, L46, L47; KS-15943, L1; KS-19735, L1; KS-20684, L5

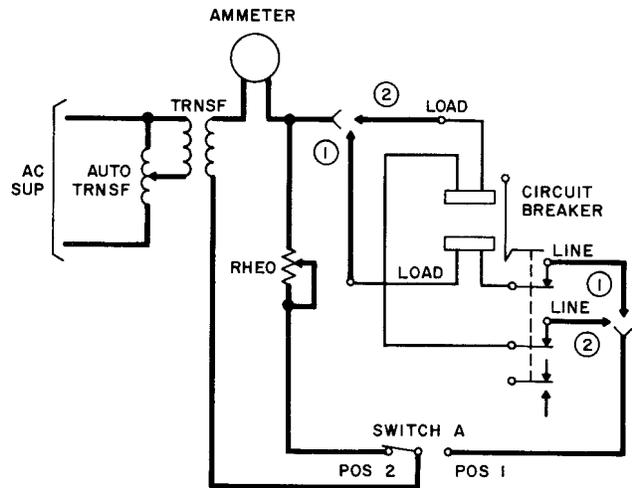


Fig. 21—Checking Circuits—AC Breakers—KS-15659, L2, L17B; KS-15813, L2, L4-L6, L8, KS-15815, L22-L24, L43, L45

and 35. Check each pole separately as shown by options 1, 2, and 3.

(d) **KS-15659:** To check a KS-15659 circuit breaker, proceed in accordance with Methods 1 or 3, as applicable. Refer to Fig. 20, 21, or 23. Check each pole separately as shown by options 1 and 2. L16 is a switch only.

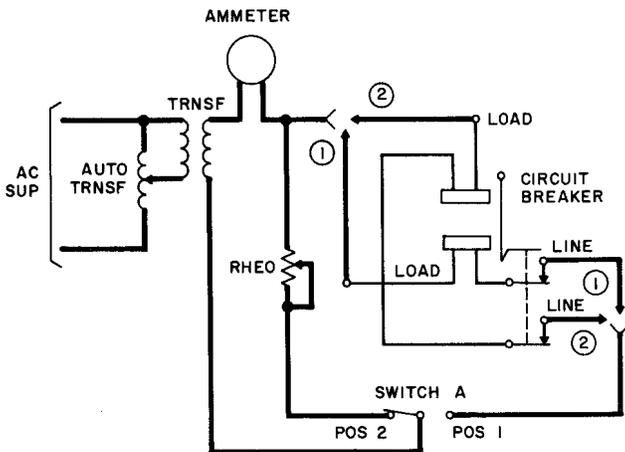


Fig. 20—Checking Circuits—AC Breakers—KS-5786, L1; KS-15659, L3-L12, L14; KS-15815, L25-L35, L40

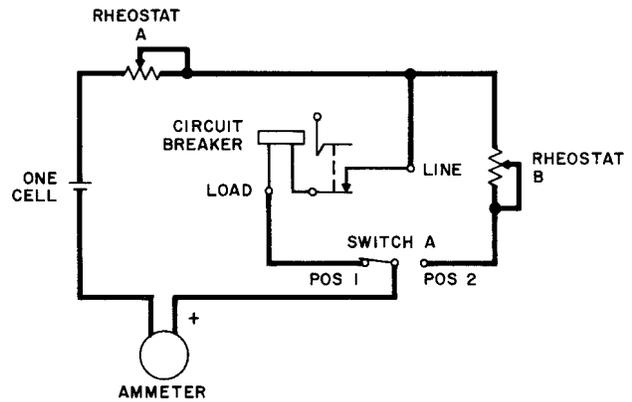


Fig. 22—Checking Circuits—DC Breakers—KS-5648, L14, L15, KS-5926, L5; KS-15739, L1; KS-15813, L24, L27; KS-15815, L109, L110, L113, L114, L117-L119, L124, L132, L133, L136, L138, L141, L142; KS-19943, L24-L31; KS-21122, L1, L2, L5, L6, L8-L12; KS-21186, L2, L9-L11, L24-L36; KS-21597, L1-L10

(e) **KS-15713:** To check a KS-15713 circuit breaker, proceed in accordance with Method 3. Refer to Fig. 19.

Note: One pole of this breaker is arranged as a switch and cannot be tested as a breaker.

(f) **KS-15739:** To check a KS-15739 circuit breaker, proceed in accordance with Methods 1 or 2, as applicable. In following Method 2, adjust the current to 200 percent instead of 125 percent of the breaker rating. Refer to Fig. 22, 23, or 24. Check each pole separately as shown by options 1 and 2.

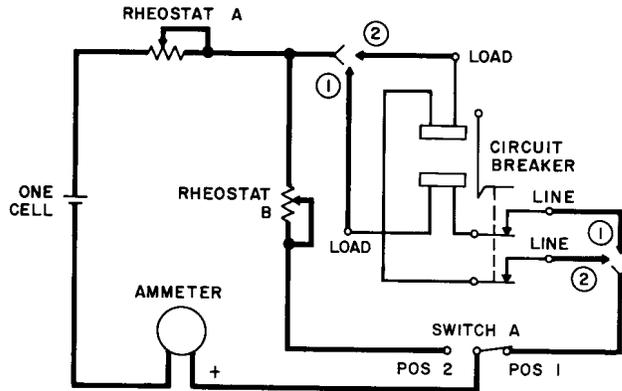


Fig. 23—Checking Circuits—DC Breakers—KS-15659, L13, L15, L17A, L18A, L18B, KS-15739, L2, L3; KS-15813, L15, L22, L26, L28, L29; KS-15815, L111-L112

(g) **KS-15769:** To check a KS-15769 circuit breaker, proceed in accordance with Method 3. Refer to Fig. 32.

(h) **KS-15794 (Mfr Disc.):** To check a KS-15794 circuit breaker, proceed in accordance with Methods 2 or 3, as applicable. Refer to Fig. 25. Check each pole separately as shown by options 1, 2, and 3.

(i) **KS-15795:** To check a KS-15795 circuit breaker, proceed in accordance with Method 3. Refer to Fig. 26. Check each pole separately as shown by options 1, 2, and 3.

(j) **KS-15799:** To check a KS-15799 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 18.

Note: One pole of this breaker is arranged as a switch and cannot be tested as a breaker.

(k) **KS-15813:** To check a KS-15813 circuit breaker, proceed in accordance with Methods 1, 2, or 3, as applicable. Refer to Fig. 21, 22,

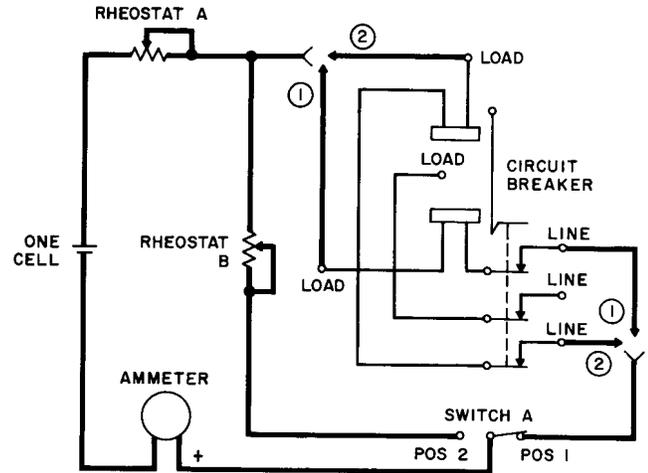


Fig. 24—Checking Circuits—DC Breakers—KS-15739, L1, KS-21186, L203

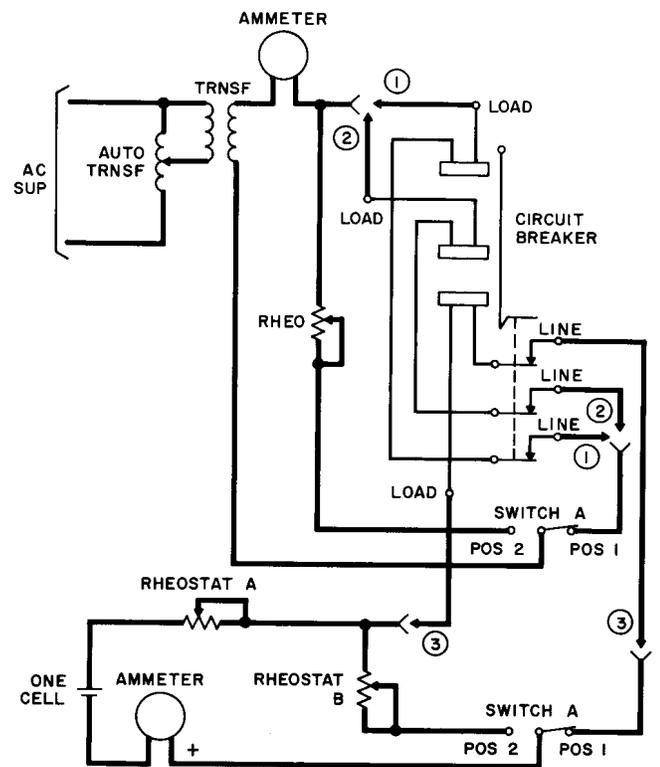


Fig. 25—Checking Circuits—AC and DC Breakers—KS-15794

23, 27, 28, 29, 30, 31, 34, 36, 37, 38, or 39. Check each pole separately as shown by options 1, 2, and 3.

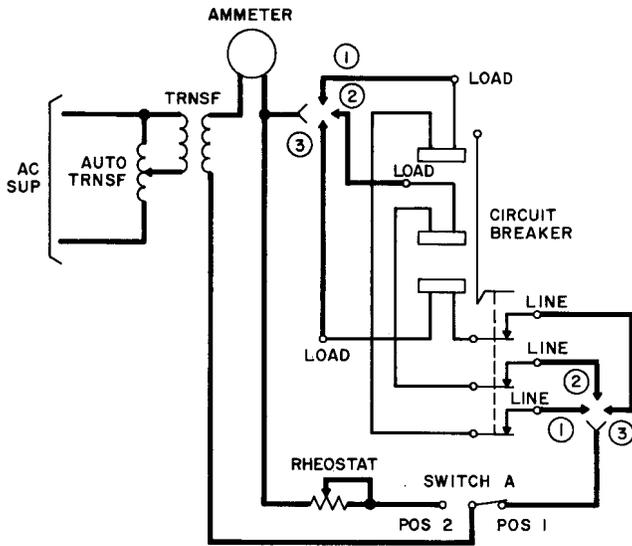


Fig. 26—Checking Circuits—AC Breakers—KS-15795, KS-5926, L6

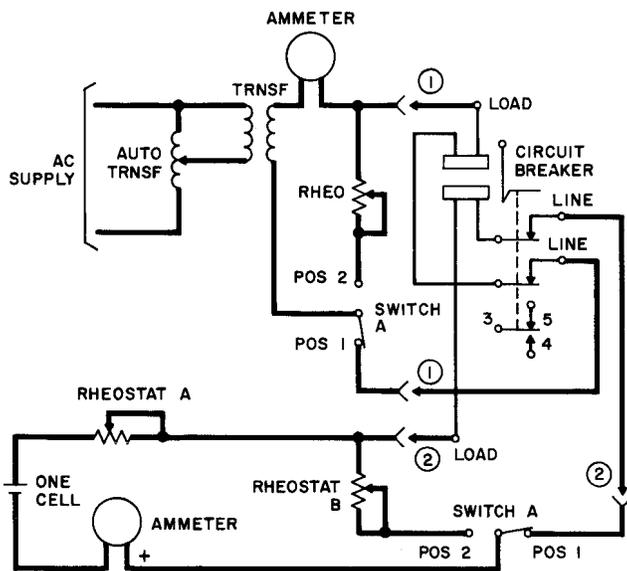


Fig. 27—Checking Circuits—AC and DC Breakers—KS-15813, L3, L14, L33-L37, L39; KS-21596, L2

Note: In some cases a pole of this breaker is arranged as a switch and cannot be tested as a breaker.

(l) **KS-15815:** To check a KS-15815 circuit breaker, proceed in accordance with Methods

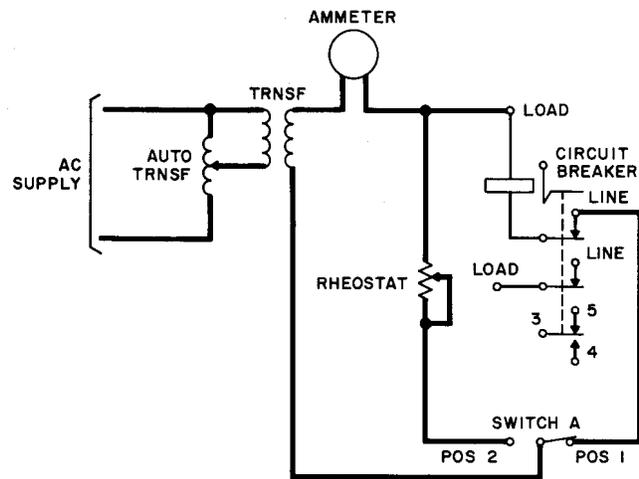


Fig. 28—Checking Circuits—AC Breaker—KS-15813, L7

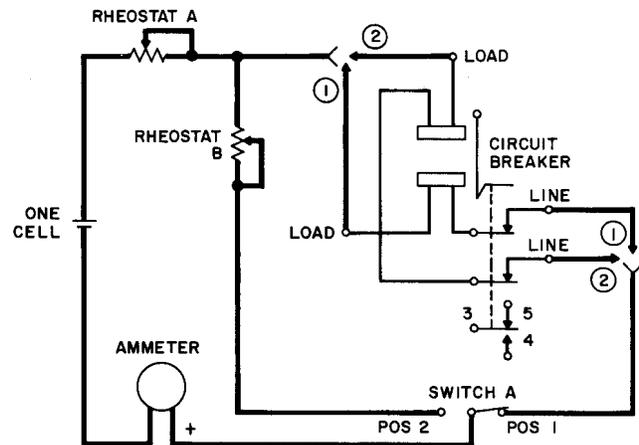


Fig. 29—Checking Circuits—DC Breakers—KS-15813, L9, L10, L13, L17, L21, L23, L25; KS-15815, L127; KS-19943, L5, L6; KS-20684, L6-L9, L11, L14-L20, L22-L24, L211, L214, L217, L219, L220, L222-L225; KS-21123, L2, L202, L203; KS-21186, L3

1, 2, or 3, as applicable. Refer to Fig. 18, 19, 20, 21, 22, 23, 29, 32, or 33. For the 2-pole breaker, check each pole separately as shown by options 1, 2, and 3.

(m) **KS-15943:** To check the KS-15943 circuit breaker, proceed in accordance with Method 2 except adjust current to 130 percent of the

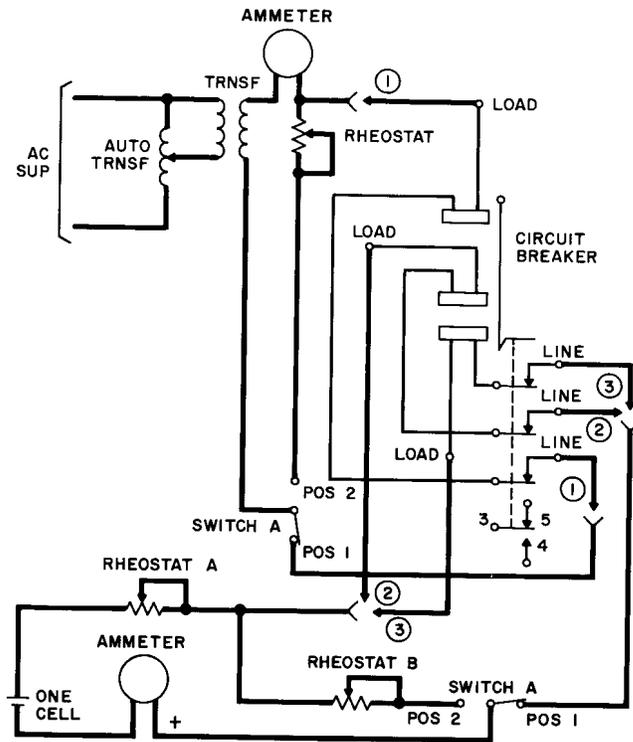


Fig. 30—Checking Circuits—AC and DC Breakers—KS-15813, L11, L20

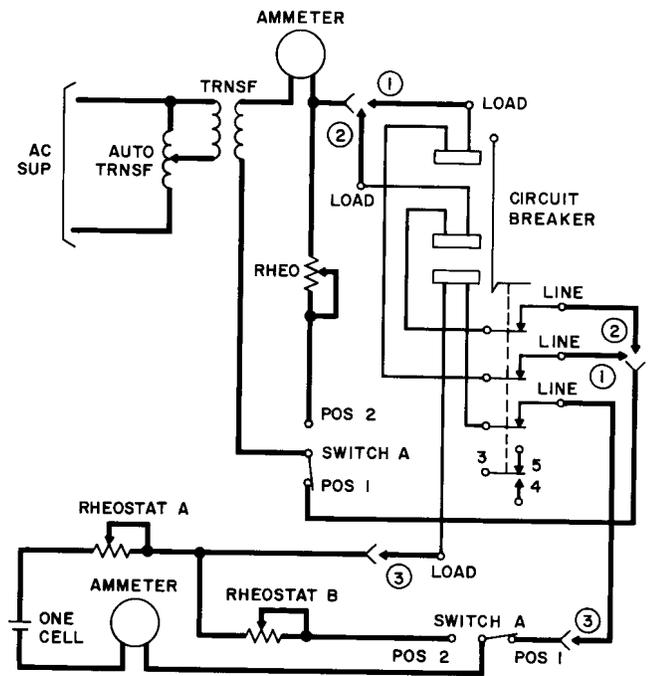


Fig. 31—Checking Circuits—AC and DC Breakers—KS-15813, L12, L40; KS-15944, L1

breaker rating instead of 120 percent. Refer to Fig. 19.

(n) **KS-15944:** To check a KS-15944 circuit breaker, proceed in accordance with Methods 2 or 3, as applicable. In following Method 2, adjust the current to 130 percent rated current instead of 120 percent. Refer to Fig. 31 or 40. Check each pole separately as shown by options 1, 2, and 3.

(o) **KS-19735:** To check a KS-19735 circuit breaker, proceed in accordance with Method 3. Refer to Fig. 19.

(p) **KS-19943:** To check a KS-19943 circuit breaker, proceed in accordance with Methods 1, 2, or 3, as applicable. Refer to Fig. 18, 22, 29 or 32. Check each pole separately as shown by options 1 and 2. To check an L12, apply 3.5 volts per Fig. 43. Relay will trip instantly.

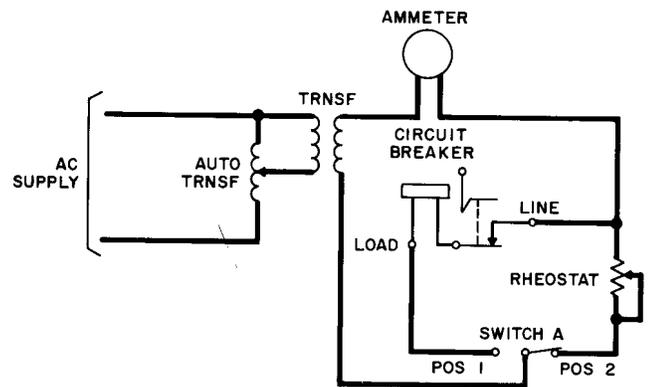


Fig. 32—Checking Circuits—AC Breakers—KS-5648, L2, L4, L13; KS-5926, L1-L3, L7-L10; KS-15796, L1; KS-15815, L19-L21, L36-L38, L44, L48; KS-19943, L10, L14, L15; KS-20903, L20, L50

(q) **KS-20684:** To check a KS-20684 circuit breaker, proceed in accordance with Methods 1, 2, or 3, as applicable. Refer to Fig. 19 or

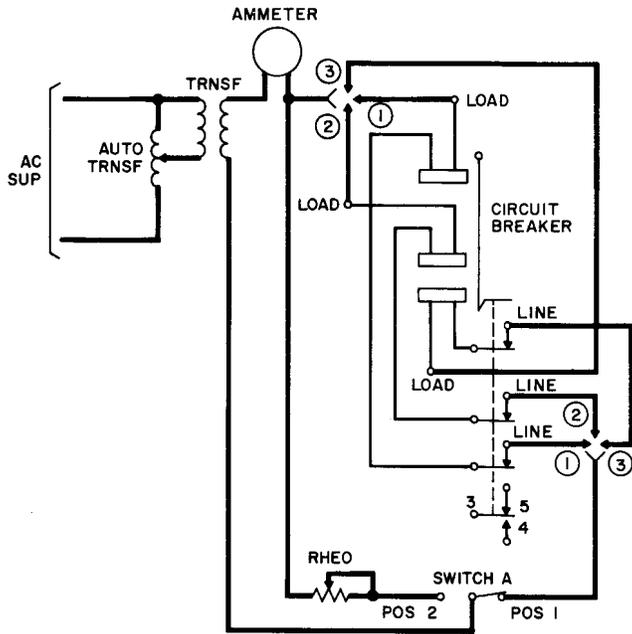


Fig. 33—Checking Circuits—AC Breakers—KS-15815, L39, L41, L42

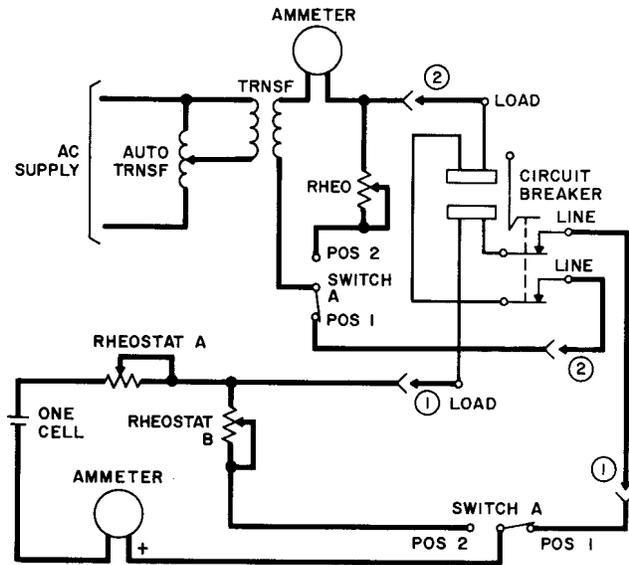


Fig. 35—Checking Circuits—AC and DC Breakers—KS-5926, L4, KS-21596, L1

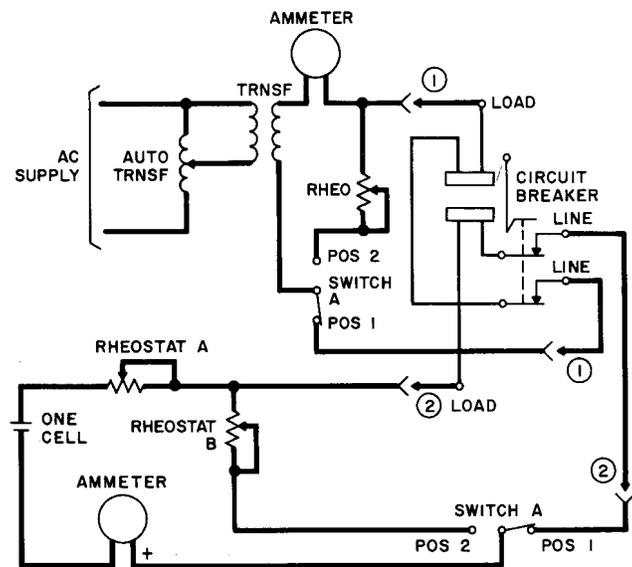


Fig. 34—Checking Circuits—AC and DC Breakers—KS-15813, L18, L38, L41; KS-21596, L4, L5

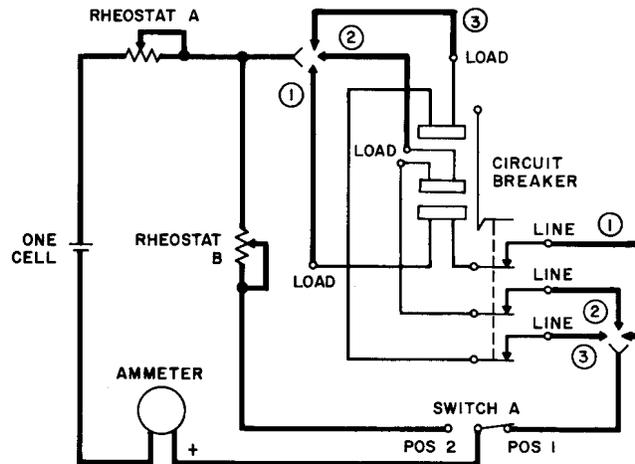


Fig. 36—Checking Circuits—DC Breaker—KS-15813, L19

29. Check each pole separately as shown by options 1 and 2.

(r) **KS-20685:** To check a KS-20685 circuit breaker, proceed in accordance with Methods 1 or 2, as applicable. Refer to Fig. 18.

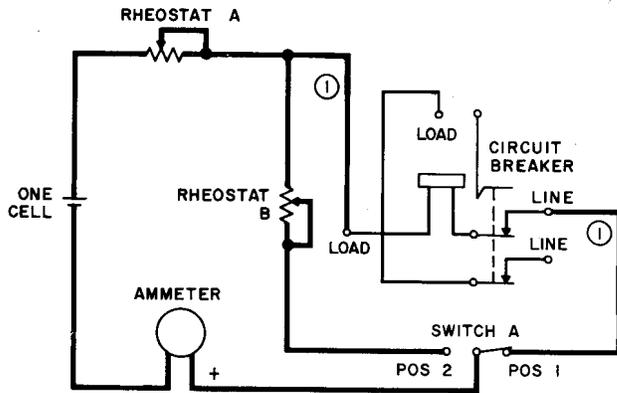


Fig. 37—Checking Circuits—DC Breakers—KS-15813, L30, KS-21596, L6

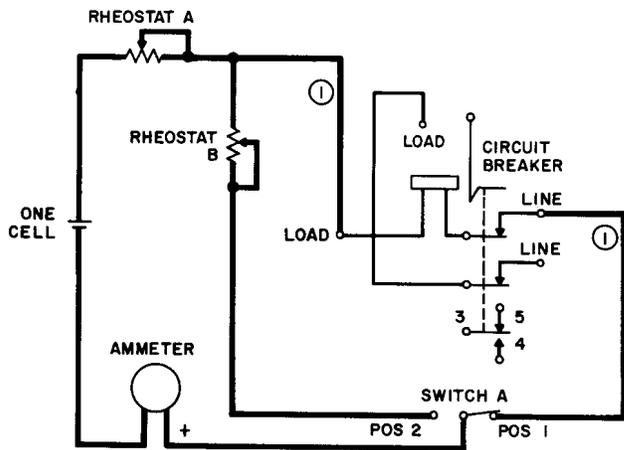


Fig. 38—Checking Circuits—DC Breakers—KS-15813, L31, KS-21226, L2-L4, KS-21596, L7, L10; KS-21895, L1

- (s) **KS-20903:** To check a KS-20903 circuit breaker, proceed in accordance with Methods 2 or 3. Refer to Fig. 32.
- (t) **KS-21122:** To check a KS-21122 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 18 or 22.
- (u) **KS-21123:** To check a KS-21123 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 29. Check each pole separately as shown by options 1 and 2.
- (v) **KS-21124:** To check a KS-21124 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 44 or 45. In addition to the

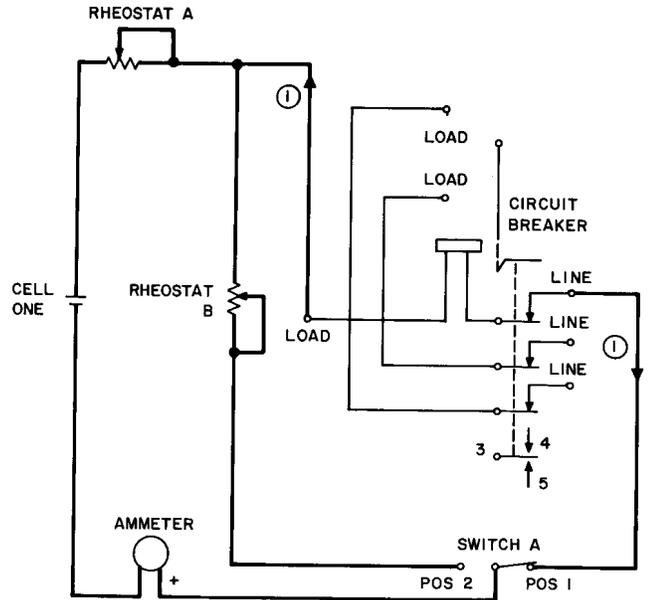


Fig. 39—Checking Circuits—DC Breaker—KS-15813, L32

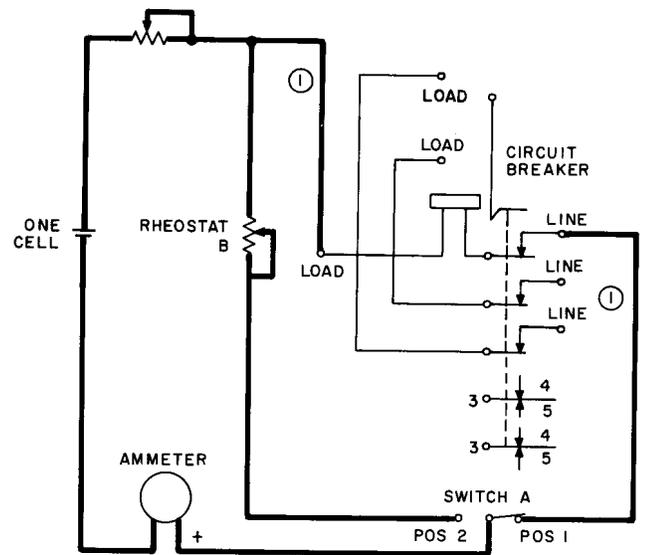


Fig. 40—Checking Circuits—DC Breaker—KS-15944, L2

time-delay performance check, perform the following.

- (1) Breakers equipped with auxiliary switch.

- (a) With the breaker in the ON position, contacts A and C are closed.
- (b) With the breaker in the TRIP or OFF position, contacts B and C are closed.

(2) Breakers equipped with alarm switch.

- (a) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.

(b) The breaker lever shall move to the ALM (center) position when the breaker is operated by an overload, and the alarm switch shall close, connecting the line terminal to the alarm terminal.

(c) The breaker lever shall not go from the ALM position to the ON position until it is operated manually to the OFF position. This opens the alarm contacts and resets the trip mechanism.

(w) **KS-21186:** To check a KS-21186 circuit breaker, proceed in accordance with Methods 1 or 2, as applicable. Refer to Fig. 18, 22, 24, or 29. Check each pole separately as shown by options 1 and 2.

(x) **KS-21225:** To check a KS-21225 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 42. In addition to the time-delay performance check, perform the following.

- (1) With the pushbutton switch in an off condition, pins 10 and 11 shall be a closed circuit.
- (2) With the pushbutton switch in an on condition, pins 10 and 11 shall be an open circuit and pins 10 and 2 (load) shall be a closed circuit.
- (3) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.

(4) The breaker level shall move to the ALM (center) position when the breaker is operated by an overload, and the tripped breaker indicating switch shall close, connecting the line terminal to the alarm terminal.

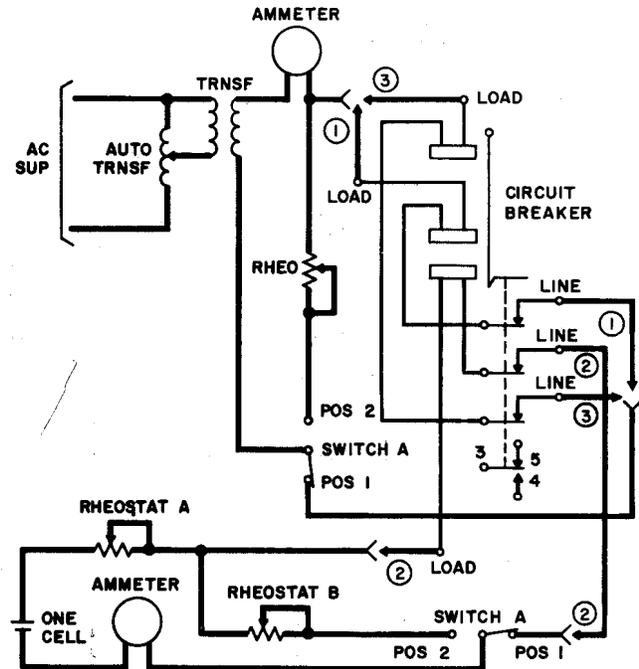


Fig. 41—Checking Circuits—AC and DC Breaker—KS-21596, L3

(5) The breaker level shall not go from the ALM position to the ON position until it is operated manually to the OFF position. This opens the alarm contacts and resets the trip mechanism.

(y) **KS-21226:** To check a KS-21226 circuit breaker, proceed in accordance with Method 2. Refer to Fig. 38.

(z) **KS-21596:** To check a KS-21596 circuit breaker, proceed in accordance with Methods 2 and 3. In following Method 2, adjust current to 125 percent of the breaker rating instead of 120 percent. Refer to Fig. 27, 34, 35, 37, 38, or 41. Check each pole separately as shown by options 1, 2, and 3.

(aa) **KS-21597:** To check a KS-21597 circuit breaker, proceed in accordance with Methods 1 or 2, as applicable, except adjust current to 125 percent of the breaker rating instead of 120 percent. Refer to Fig. 18 and 22. Check each pole separately as shown by options 1 and 2.

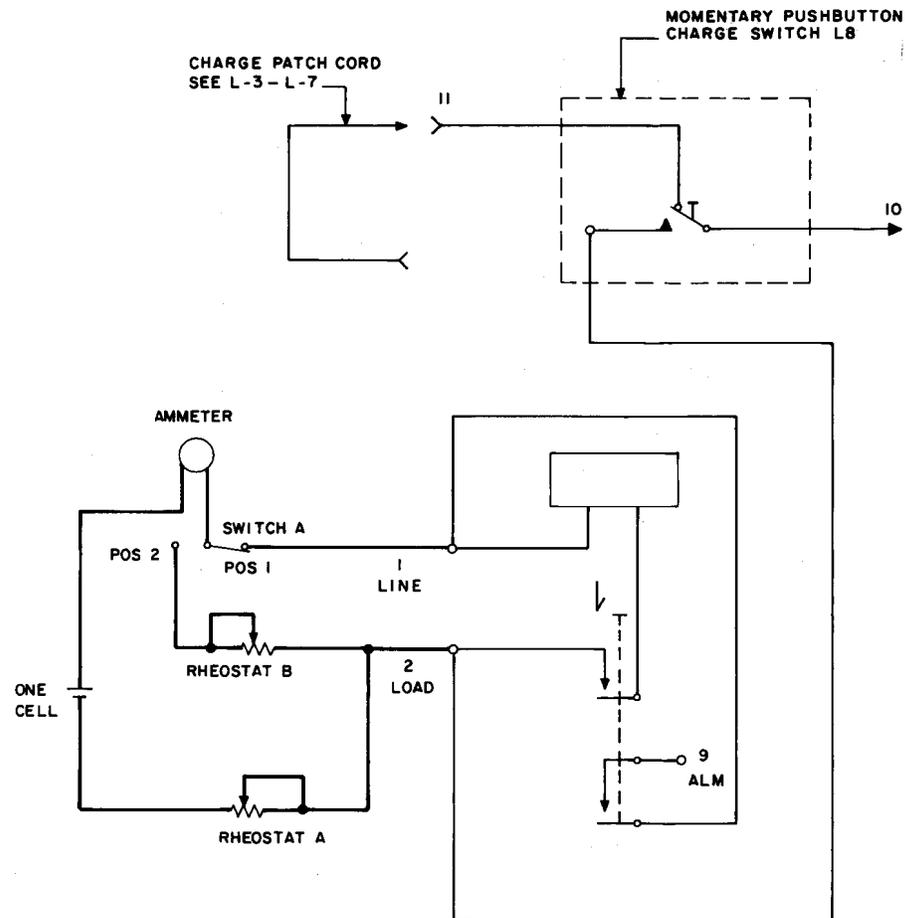


Fig. 42—Checking Circuits—DC Breakers—KS-21225, L20, L30, L100, L112

(ab) **KS-21895:** To check a KS-21895 circuit breaker, proceed in accordance with Method 2 except adjust current to 133 percent of the breaker rating instead of 120 percent. Breaker shall trip between 12 and 100 seconds. Refer to Fig. 38.

(ac) **KS-22009:** To check a KS-22009 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 46. In addition to the time-delay performance check, perform the following.

- (1) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.
- (2) The breaker lever shall move to the ALM (center) position when the breaker is operated by an overload, and the alarm switch shall close, connecting the line terminal to the alarm terminal.

(3) The breaker lever shall not go from the ALM position to the ON position until it is operated manually to the OFF position. This opens the alarm contacts and resets the trip mechanism.

(ad) **KS-22010:** To check a KS-22010 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 46 or 47. In addition to the time-delay performance check, perform the following.

- (1) Breakers equipped with charge switch.

(a) With the pushbutton switch in an off condition, pins 10 and 11 shall be a closed circuit.

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(b) With the pushbutton switch in an on condition, pins 10 and 11 shall be an open circuit and pins 10 and 2 (load) shall be a closed circuit.

(2) Breakers equipped with alarm switch.

(a) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.

(b) The breaker lever shall move to the ALM (center) position when the breaker is operated by an overload, and the alarm switch shall close, connecting the line terminal to the alarm terminal.

(c) The breaker lever shall not go from the ALM position to the ON position until it is operated manually to the OFF position. This opens the alarm contacts and resets the trip mechanism.

(ae) **KS-22011:** To check a KS-22011 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 46 or 47. In addition to the time-delay performance check, perform the following.

(1) Breakers equipped with charge switch.

(a) With the pushbutton switch in an off condition, pins 10 and 11 shall be a closed circuit.

(b) With the pushbutton switch in an on condition, pins 10 and 11 shall be an open circuit and pins 10 and 2 (load) shall be a closed circuit.

(2) Breakers equipped with alarm switch.

(a) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.

(b) The breaker lever shall move to the ALM (center) position when the breaker is operated by an overload, and the alarm switch shall close, connecting the line terminal to the alarm terminal.

(c) The breaker lever shall not go from the ALM position to the ON position until it is operated manually to the OFF

position. This opens the alarm contacts and resets the trip mechanism.

(af) **KS-22012:** To check a KS-22012 circuit breaker, proceed in accordance with Method 1. Refer to Fig. 46 or 47. In addition to the time-delay performance check, perform the following.

(1) Breakers equipped with charge switch.

(a) With the pushbutton switch in an off condition, pins 10 and 11 shall be a closed circuit.

(b) With the pushbutton switch in an on condition, pins 10 and 11 shall be an open circuit and pins 10 and 2 (load) shall be a closed circuit.

(2) Breakers equipped with alarm switch.

(a) With the circuit breaker in either an OFF or ON position, the alarm switch shall be open.

(b) The breaker level shall move to the ALM (center) position when the breaker is operated by an overload, and the alarm switch shall close, connecting the line terminal to the alarm terminal.

(c) The breaker lever shall not go from the ALM position to the ON position until it is operated manually to the OFF position. This opens the alarm contacts and resets the trip mechanism.

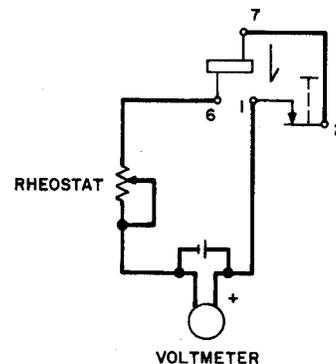


Fig. 43—Checking Circuits—DC Breaker—KS-19943, L12

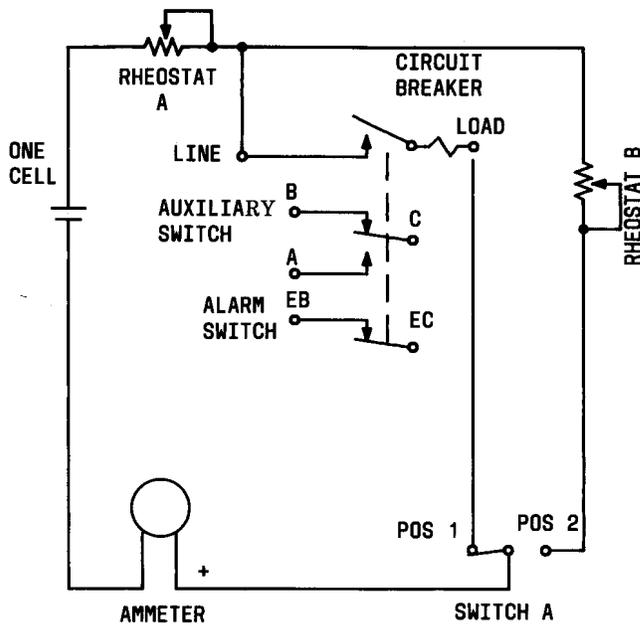


Fig. 44—Checking Circuits—DC Breakers—KS-21124, L1, L2, L3

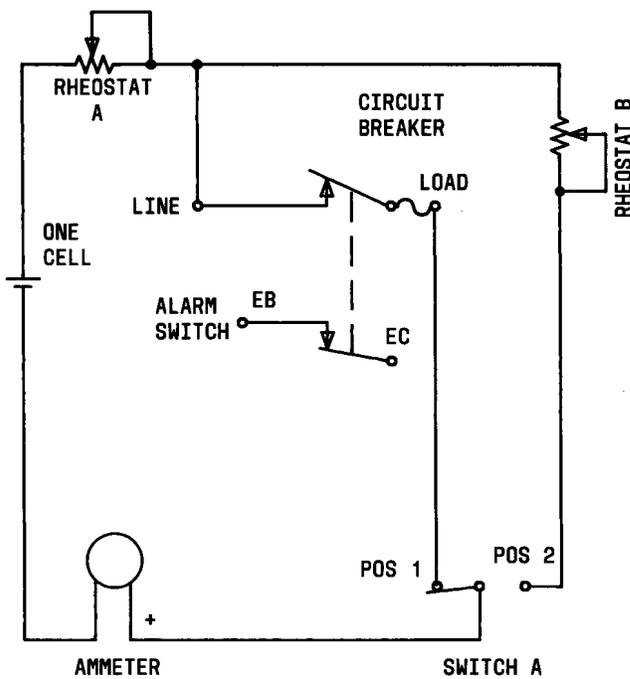


Fig. 45—Checking Circuits—DC Breakers—KS-21124, L4-L8

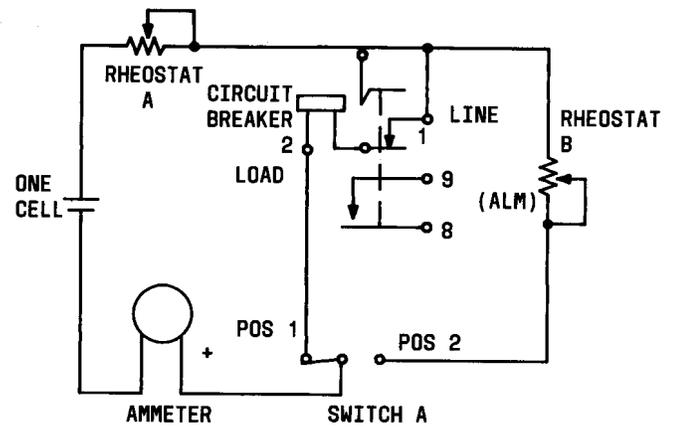


Fig. 46—Checking Circuits—DC Breakers—KS-22009, L1-L8; KS-22010, L11-L19; KS-22011, L11-L19; KS-22012, L11-L19, L31-L37, L51, L67-L73

4.03 Testing Methods: The three methods of checking circuit breakers are listed in (a) through (c).

(a) **Method 1:** To check a DC time-delay circuit breaker, proceed as follows.

- (1) Disconnect the circuit breaker from its circuit, and set up the proper test circuit as indicated by the illustration referenced in paragraph 4.02. Select the correct rheostats and ammeter depending on the current to be used. Use wire and switch capable of carrying the current without undue heating.
- (2) With the breaker closed and switch A in position 1, adjust rheostat A for current equal to rated current.
- (3) With switch A in position 2, adjust rheostat B until the same value of current is obtained.
- (4) Readjust rheostat A until the current is 125 percent of the rated current or higher (usually 200 percent of the rated current).
- (5) Throw switch A to position 1, and note that the pole trips within the required time.

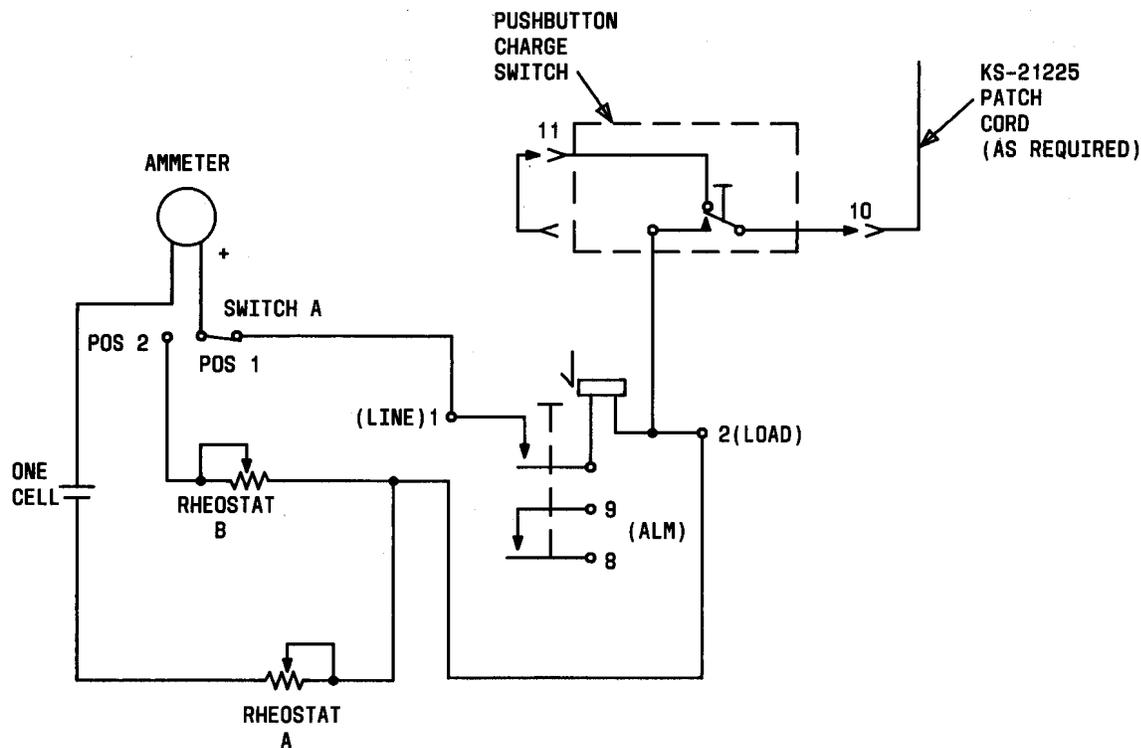


Fig. 47—Checking Circuits—DC Breakers—KS-22010, L1-L9; KS-22011, L1-L9; KS-22012, L1-L7, L21-L27, L60-L66

(b) **Method 2:** To check a DC instantaneous-type circuit breaker, proceed as in Method 1 except that the current should be adjusted to 120 percent of rated current, and the tripping time is instantaneous.

(c) **Method 3:** To check an AC time-delay circuit breaker, proceed as follows.

(1) Disconnect the circuit breaker from its circuit, and set up the proper test circuit as indicated by the illustration referenced in paragraph 4.02. Select the correct rheostat and ammeter depending on the current to be used. Use wire and a switch capable of carrying the current without undue heating.

(2) With the breaker closed and switch A in position 1, adjust the autotransformer for current equal to the rated current.

(3) With switch A in position 2, adjust the rheostat until the same value of current is obtained.

(4) Then readjust the autotransformer until the current is 125 percent of the rated current or higher (usually 200 percent of the rated current).

(5) Throw switch A to position 1, and note that the pole trips within the required time.