



HK UNDERVOLTAGE TRIP DEVICE  
INSTRUCTIONS FOR INSTALLING ON  
5HK CIRCUIT BREAKERS



Instructions for the Installation of Undervoltage Trip Device  
(197909) on 5HK Circuit Breakers:

1. General operating instructions are given in IB-2807-51, and it is advised that the operator be familiar with these instructions insofar as the installation and removal procedure of the interphase barrier, arc chutes, and etc., are concerned.
2. Before attempting to do any work on the circuit breaker, it should first be determined that the breaker is in the OPEN position and that the closing springs are DISCHARGED.
3. Remove the following components and parts from the circuit breaker:
  - a. Interphase barrier assembly
  - b. Arc chutes
  - c. Base barrier insulation shelf (front half only)
  - d. Operating mechanism front plate
4. Place the breaker over on its back. It is advisable to place wood blocks under the back, bottom of the breaker. This will prevent the molded secondary control contact assembly and control relay from becoming damaged by preventing them from coming in contact with the floor.
5. Remove the pin (refer to Figure A) used to secure the right hand racking arm to the racking shaft.
6. Slide the racking shaft over to the extreme left, as far as possible.



7. Remove three (3) bolts (refer to Figure A) used to secure the racking mechanism to the breaker frame, and lay the racking mechanism as far to the right as possible. (Note: It is not necessary to disconnect the linkage between the racking and operating mechanism if care is taken not to distort this linkage.)
8. Remove the close and trip coils (refer to Figure B) and rest them on the front of the breaker frame. (Note: It is not necessary to disconnect the wires if care is taken to insure that the wires or terminals are not abused.)
9. Mount the undervoltage trip device (refer to Figure B) by bolting through the holes provided in the mechanism side plate. Mounting hardware is two (2)  $\frac{1}{4}$ -20 x  $\frac{1}{2}$ " long hex head screws and lock washer. Tighten to approximately 8 ft/lb. Caution must be taken here in order not to pinch any of the wires which must lay on top of the mounting inserts.
10. Replace the close and trip coils at this point.
11. Connect the undervoltage lead wires to the appropriate secondary control contacts. (Note: Caution should be taken at this point to insure that all control wires are clear off the moving parts of the operating mechanism.)



12. Adjust the undervoltage trip device as follows. (Refer to Figure B.)
  - a. Loosen lock nut
  - b. Turn the adjusting stud to provide for an approximate gap of  $1/8$ " between the stud and the trip arm, when the undervoltage trip device is energized. Do not move the spring adjusting rod as this will change the pickup and dropout values which have been preset at the factory.
  - c. Tighten lock nut after making the above adjustment.
13. Replace the racking mechanism (refer to Figure A) by reinstalling three (3) mounting bolts.
14. Slide the racking shaft back in position and reinstall the pin (refer to Figure A) used to secure the right hand racking arm to the racking shaft.
15. Return the breaker to its upright position at this point, and check the insulation level of the secondary control circuits to the breaker frame. Any defective wiring must be replaced.
16. Turn the racking screw clockwise approximately three turns until the interlock arm snaps into the first position corresponding to the DISCONNECT position.

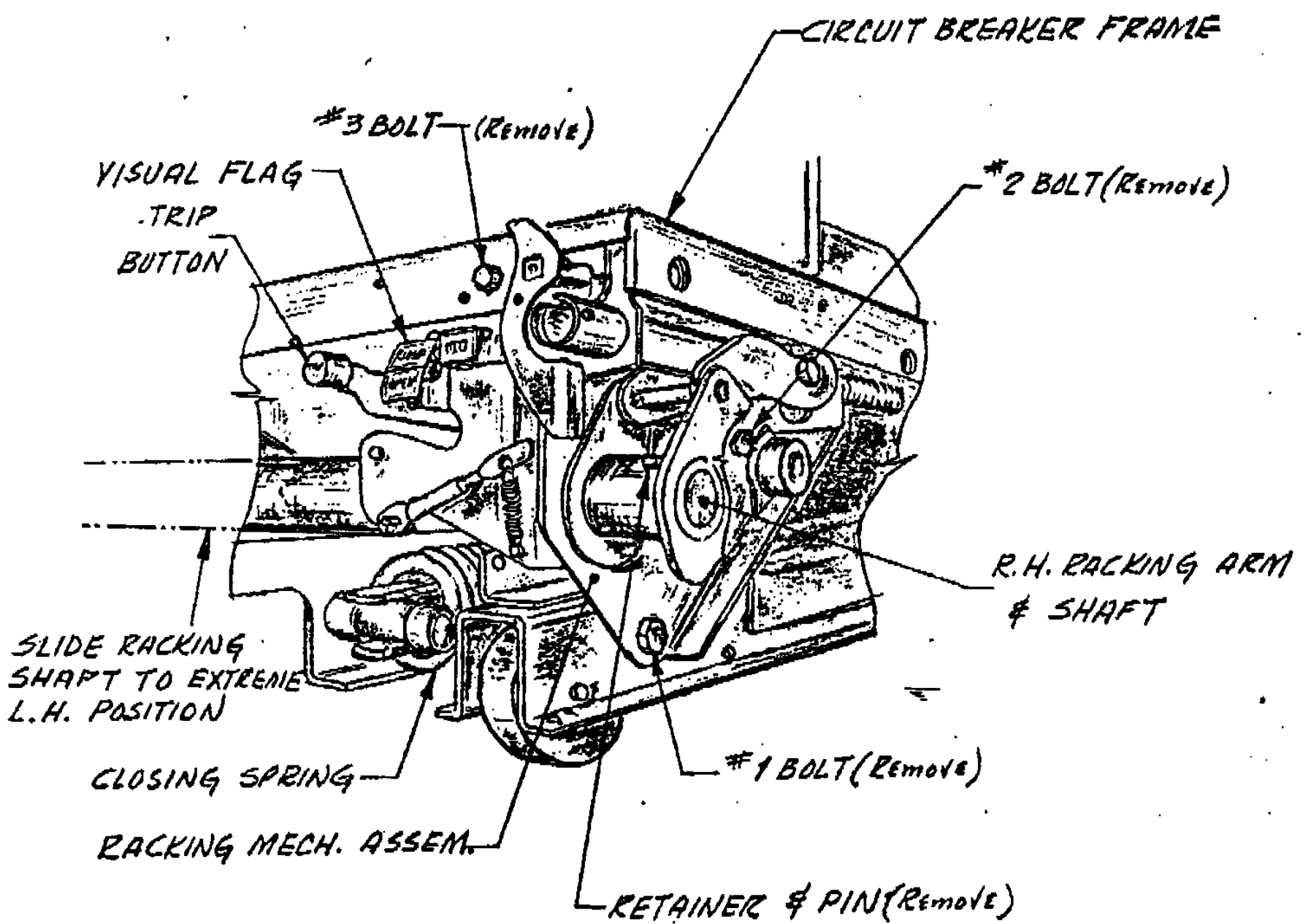


17. Manually charge the closing springs at this point to fully reset the breaker trip latch, and check that there is approximately  $1/16$ " gap between undervoltage adjusting stud and the trip arm when the undervoltage device is energized. (Note: Do not attempt to make any adjustments while the closing springs are charged.)
18. With the undervoltage device energized, manually close the circuit breaker. The breaker should close and remain closed.
19. With the breaker in the closed position, de-energize the undervoltage device to insure that it functions to trip the breaker.
20. Replace the following components and parts on the circuit breaker:
  - a. Operating mechanism front plate
  - b. Base barrier insulation shelf
  - c. Arc chutes
  - d. Interphase barrier assembly
21. Return the racking screw to its original position by turning counterclockwise approximately three turns until it stops.
22. The breaker is now ready to be returned to service.
23. Undervoltage trip device operating characteristics are given in Table I.

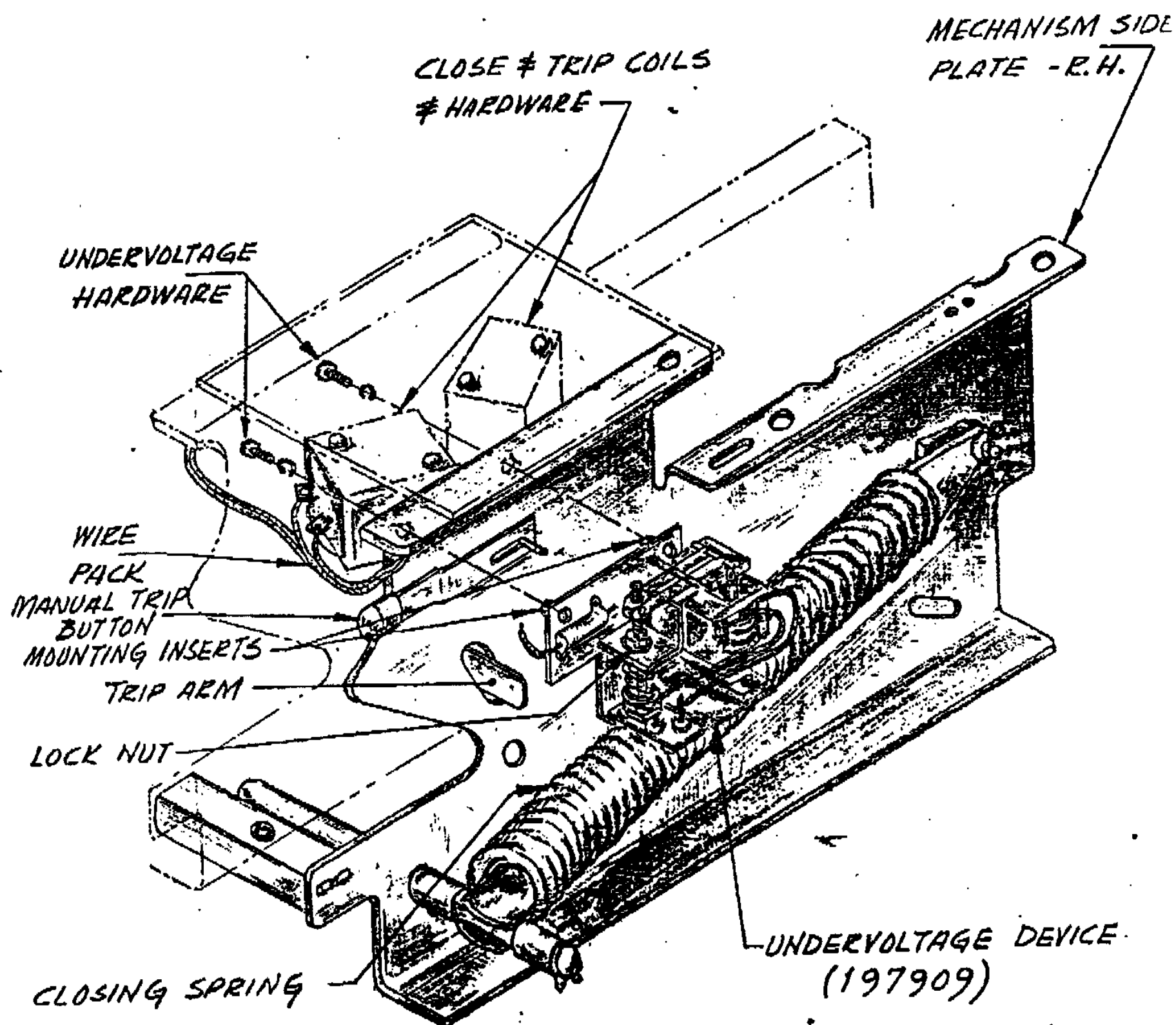


TABLE I  
HK UNDERVOLTAGE DEVICE

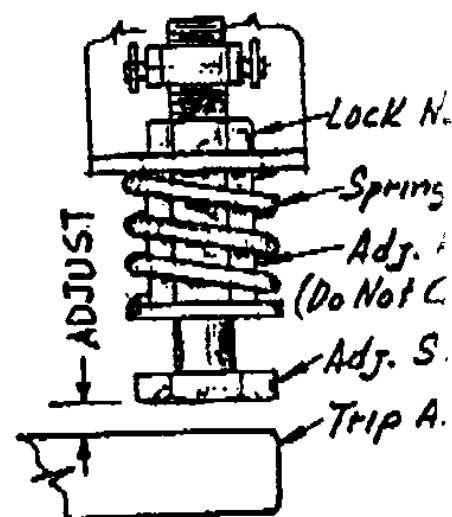
<u>Voltage Rating</u>	<u>Pickup Range</u>	<u>Dropout Range</u>	<u>Coil Resis.</u>	<u>Series Resistor</u>	<u>Rectifier Assembly</u>	<u>Avg. Sealed Current</u>
24V.DC	14- 19	7- 14	1.34	25	No	.91
48V.DC	29- 38	15- 29	5.70	100	No	.46
125V.DC	75-100	38- 75	38.0	500	No	.23
250V.DC	150-200	75-150	155	2500	No	.09
115V.AC	69- 92	35- 69	38.0	500	Yes	.22
230V.AC	140-180	69-140	155	2500	Yes	.09



**FIGURE A**  
**UNDervOLTAGE INSTALLATION**



**FIGURE B**  
**UNDervOLTAGE INSTALLATION**



**DEVICE ADJUSTMENT**