

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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AT&T Co Standard

TESTING
KS-8274 ELECTROLYSIS SWITCH

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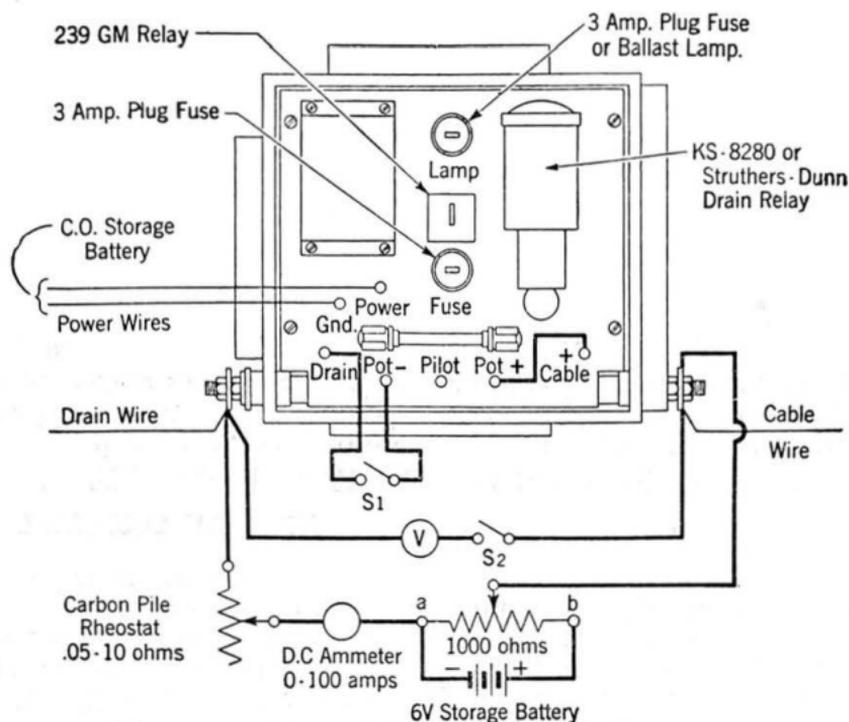
1. GENERAL

1.01 This section covers the testing and maintenance of the KS-8274 Electrolysis Switch.

1.02 KS-8274 electrolysis switches may be equipped with either a KS-8280 Drain Relay or a Struthers-Dunn Relay. The KS-8280 relay cannot be repaired in the field and should trouble develop in it, the relay should be replaced with a Struthers-Dunn 62HXX102 Relay. This relay is not adjustable but its movable parts and contacts can be cleaned or replaced if necessary.

2. TESTING SWITCH

2.01 The over-all performance of the switch equipped with either a KS-8280 drain relay or a Struthers-Dunn relay should be tested by connecting the switch to the test circuit shown below and proceeding as outlined in the following paragraphs.



- (a) With switches S_1 and S_2 closed, the arm of the potentiometer at end "a" and the carbon pile rheostat set at a high value, slowly increase the voltage across the cable and drain terminals by moving the arm of the potentiometer toward end "b." The drain relay should operate to close its contacts before the voltmeter indicates 0.09 volt. Operation of the drain relay closes a low resistance path around the 239GM Relay. Periodic operation of the electrolysis switch at a rate of several times a second, as indicated by the action of the voltmeter, should take place.
- (b) Open switch S_2 to protect the voltmeter, move the arm of the potentiometer to end "b." Periodic operation should continue. Slowly increase the current through the switch by means of the carbon pile rheostat. Periodic operation should cease before the current, as indicated on the ammeter, reaches 15 amperes.
- (c) Increase the current through the switch to 25 amperes and close switch S_2 . The voltage drop across the cable and drain terminals, as indicated by the voltmeter, should not exceed 0.1 volt, corresponding to a resistance between cable and drain terminals of 0.004 ohm. A greater voltage drop indicates that the resistance through the switch is undersirably high. All drain current carrying connections

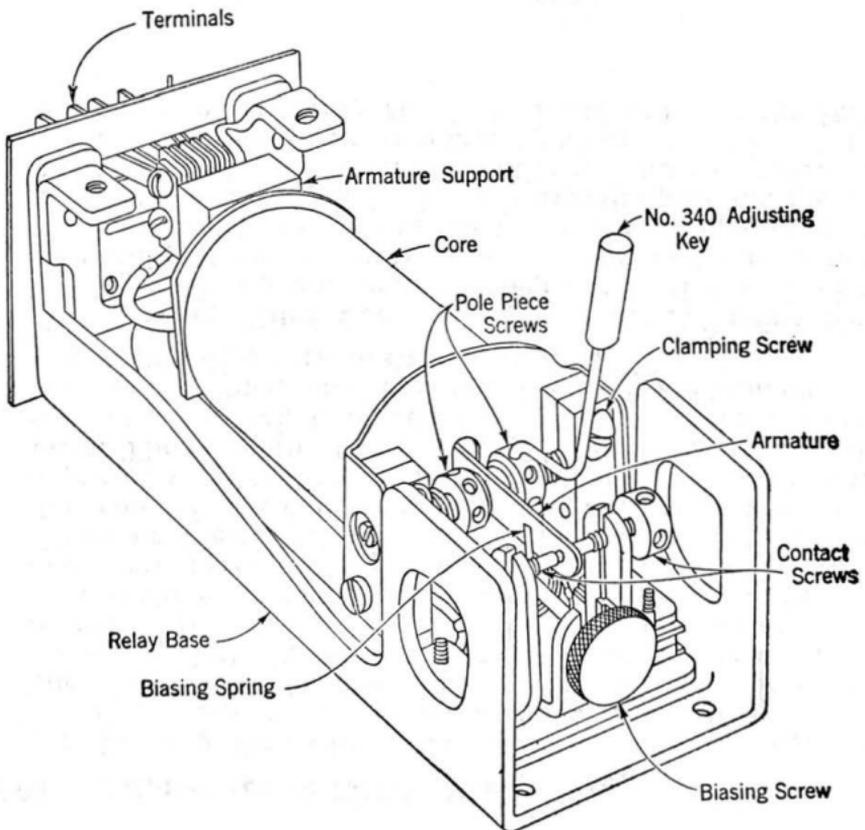
should be checked to make sure that they are clean and tight.

(d) With the current through the switch adjusted to 25 amperes and S_2 open, open and close S_1 several times. The electrolysis switch should open and close as S_1 is opened and closed, the operation being indicated on the ammeter.

2.02 In the event that it is impossible to obtain proper operation of the switch, the defective parts shall be replaced and adjustments made as outlined above. The KS-8280 drain relay cannot be repaired and should trouble develop it should be replaced with a Struthers-Dunn relay in accordance with instructions obtained from the Engineering Department. The Struthers-Dunn relay is not adjustable. The contacts, if pitted, should be dressed using a fine file or fine abrasive paper or if necessary, they should be replaced.

3. TESTING 239GM RELAY

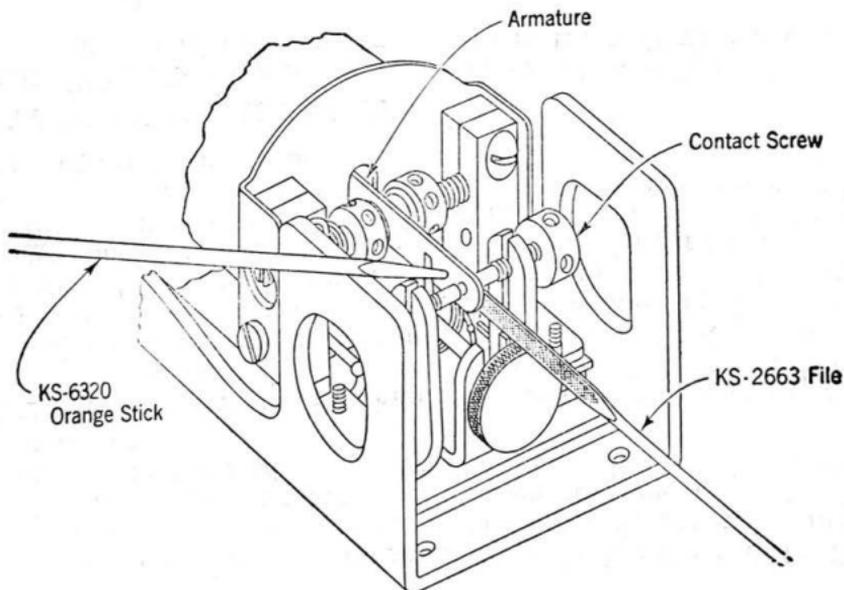
3.01 The 239 relay of the KS-8274 switch together with the names of the parts are shown in the following sketch.



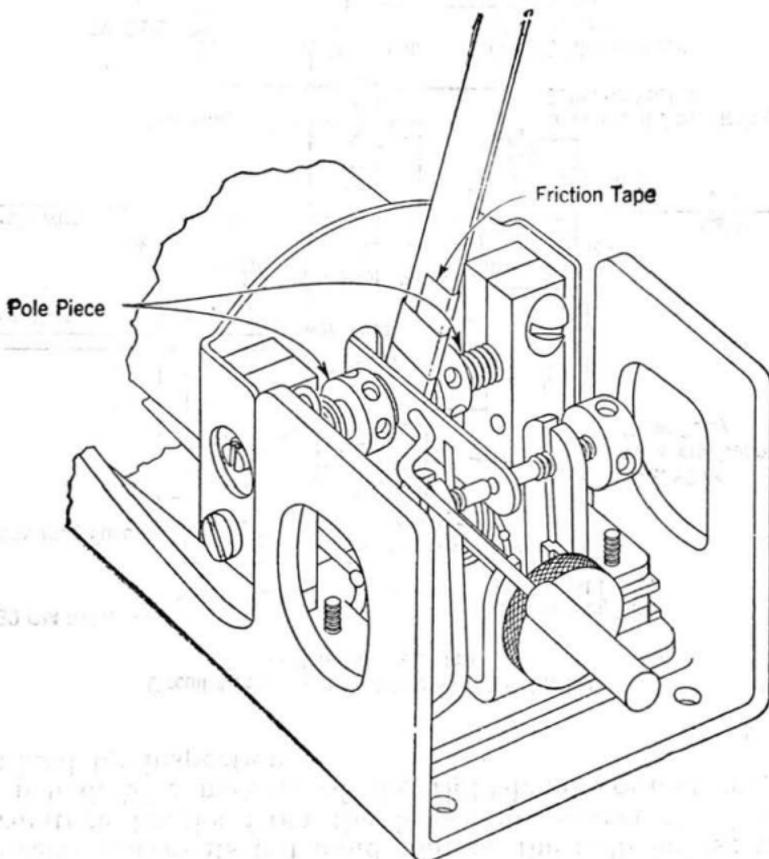
3.02 Maintenance of 239GM Relay:

(a) **Cleaning Non-Pitted Contacts:** Burnish the contacts with a No. 265B Contact Burnisher. The blade of the burnisher should be kept free of dirt by wiping it with a clean dry cloth. In burnishing the contacts place the blade of the 265B tool between the contacts, press the armature against the blade and at the same time move the blade back and forth across the contacts about three or four times. When unable to clean the contacts by burnishing, dip the flat end of a clean toothpick into mineral spirits to a depth of about 1/2 inch and deposit the liquid on the contacts. Then rub the flat end of the toothpick between the contacts. The liquid should soften any deposit on the contacts and rubbing should remove it. When the contacts are thoroughly dry, burnish them with the 265B tool.

(b) **Cleaning Pitted Contacts:** With a 340 Adjusting Key, back off the contact screws equally so that a KS-2663 File will just enter between the armature and the contact. Hold the armature against the file with a KS-6320 Orange Stick and with the file held in a horizontal position, file the contacts, as shown below. File until the contacts are free of pits and build-ups, as determined by visual inspection. After filing the contacts they should be burnished with the 265B tool.

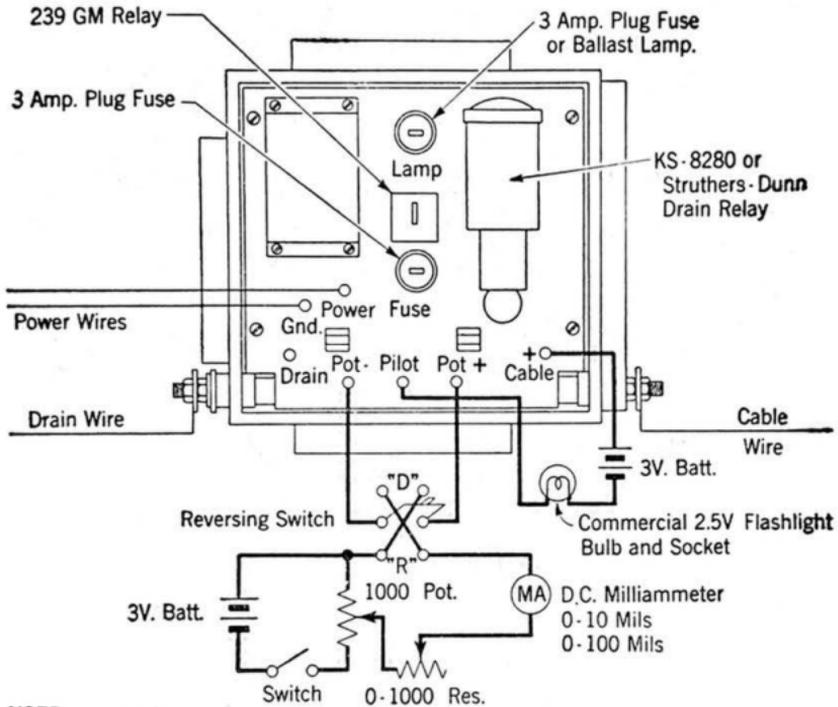


(c) **Cleaning Pole Pieces:** Using a 340 Adjusting Key, back off the pole pieces to permit the insertion of the cleaning tool described below. Also back off the contact screws so that the armature will not touch either contact when the cleaning tool is inserted between the armature and either pole piece. The cleaning tool should be made of a piece of thin, stiff, brass, aluminum or other metal and the end should be covered with a layer of friction tape. The tacky side of the tape should be placed toward the blade. **Press**, do not rub, the taped end against the pole piece, as shown in the sketch. The tape should be used for only one cleaning operation.



3.03 Adjustment of 239GM Relay: Before adjusting the 239GM relay, the electrolysis switch should be connected into the circuit shown below. The flashlight bulb provides an indication of the operation of the relay. When the armature of the relay makes its left-hand contact, the bulb lights; when the armature breaks from the left-hand contact the bulb is extinguished. The making of the right-hand contact may be determined by inspection.

Circuit Arrangement for Adjusting 239 GM Relay
As Wired in the Switch



NOTE:

Remove Knife Blade Fuse and Wires to Potential and Pilot Terminals.

3.04 To adjust the relay, proceed as outlined below:

- (1) Release the pressure on the biasing spring against the armature by turning the biasing screw in a counter-clockwise direction. Loosen the clamping screws and back off the pole piece screws using a 340 Adjusting Key. The armature should stand approximately midway between the contacts; if not, turn the contact screws so that the armature is centered.

(2) The contact travel should be a maximum of 0.004 inch and a minimum of 0.003 inch. These measurements should be made using the gauges of a 74D Thickness Gauge Nest.

(3) Immediately after applying a current of 70 milliamperes d-c in the direction which tends to hold the armature against the right-hand contact (reversing switch in the "R" position) the armature should break from the right-hand contact and make with the left-hand contact on a current of 8 milliamperes d-c in the opposite direction (reversing the switch to the "D" position).

(4) After applying a current of 70 milliamperes d-c in the direction which tends to hold the armature against the left-hand contact (reversing switch in the "D" position), the armature should continue to make the left-hand contact when the current in the same direction is reduced to 4 milliamperes d-c and should break from the left-hand contact and make with the right-hand contact when the current in the same direction is reduced to 1 milliampere.