ROTARY SWITCH
AUTOMATIC ELECTRIC COMPANY 25-POINT, LIGHT-DUTY TYPE
REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers AECo light-duty-type, 25-point rotary switches.

1.02 This section is reissued to revise the requirement and adjusting procedure covering lubrication to replace the KS-8559 lubricant with the KS-16832 L2 lubricant and to revise the List of Tools, Gauges, and Materials. Detailed reasons for reissue will be found at the end of the section.

1.03 Reference shall be made to Section 020-010-711 covering general requirements and definitions for additional information necessary for the proper application of the requirements listed herein.

1.04 ***Steady and Uniform Operation:*** A switch operates steadily and uniformly when it operates regularly for not less than ten revolutions. A slight hesitation or momentary change of speed at or about the time that the rotor brushes engage the feeder brushes is not objectionable if it recurs regularly. A distinctive click indicating the failure of the pawl to latch up over a tooth shall not be present. It shall be satisfactory to rotate the selector for approximately 1 minute and to judge its operation by ten consecutive revolutions thereafter.

1.05 Unless otherwise specified, all requirements must be met with the parts in the position which they assume after the switch is operated electrically.

1.06 All rotor brush requirements shall be met on both ends of the rotor brush assembly.

1.07 ***Operate*** means that the driving arm shall open the interrupter contacts and the driving pawl shall move the rotor assembly one bank terminal when the operate current is applied to the magnet and interrupter.

1.08 ***Nonoperate*** means that the driving arm shall not move sufficiently to open the interrupter contacts or allow the driving pawl to drop in on the next ratchet tooth when the nonoperate current is applied to the magnet.

1.09 ***One dip of KS-16832 L2 lubricant*** for the purpose of this section is the amount of lubricant retained on the KS-14164 brush after being dipped into the lubricant to a depth of approximately 3/8 inch and scraped once against the side of the container as the brush is removed.

1.10 When lubricating a switch, the best lubricating job is obtained if as much lubricant as possible is applied to the parts to be lubricated without having an excess flow to other parts of the switch.

1.11 ***Preparation of KS-16832 L2 Lubricant:*** This lubricant is provided in 2-ounce and 1-pint containers. A small wide-mouth container, such as the 2-ounce jar in which the lubricant is available, should be used as a receptacle from which to dispense the lubricant. If allowed to stand more than 1 day without agitation, the lubricant ingredients tend to separate; therefore, before each day's use, shake the container of lubricant for approximately 30 seconds to insure mixing of the ingredients. The proper method of shaking the lubricant consists of repeated, rapid turning of the container to an upside down position and back to the upright position. If the lubricant from a 1-pint container is to be used, the lubricant must be mixed as just described before it is poured into the smaller container. Under storage conditions, the cover should be tight on the container.

2. REQUIREMENTS

2.01 *Cleaning*

(a) Interrupter contacts shall be cleaned when necessary in accordance with the section covering cleaning of relay contacts and parts.

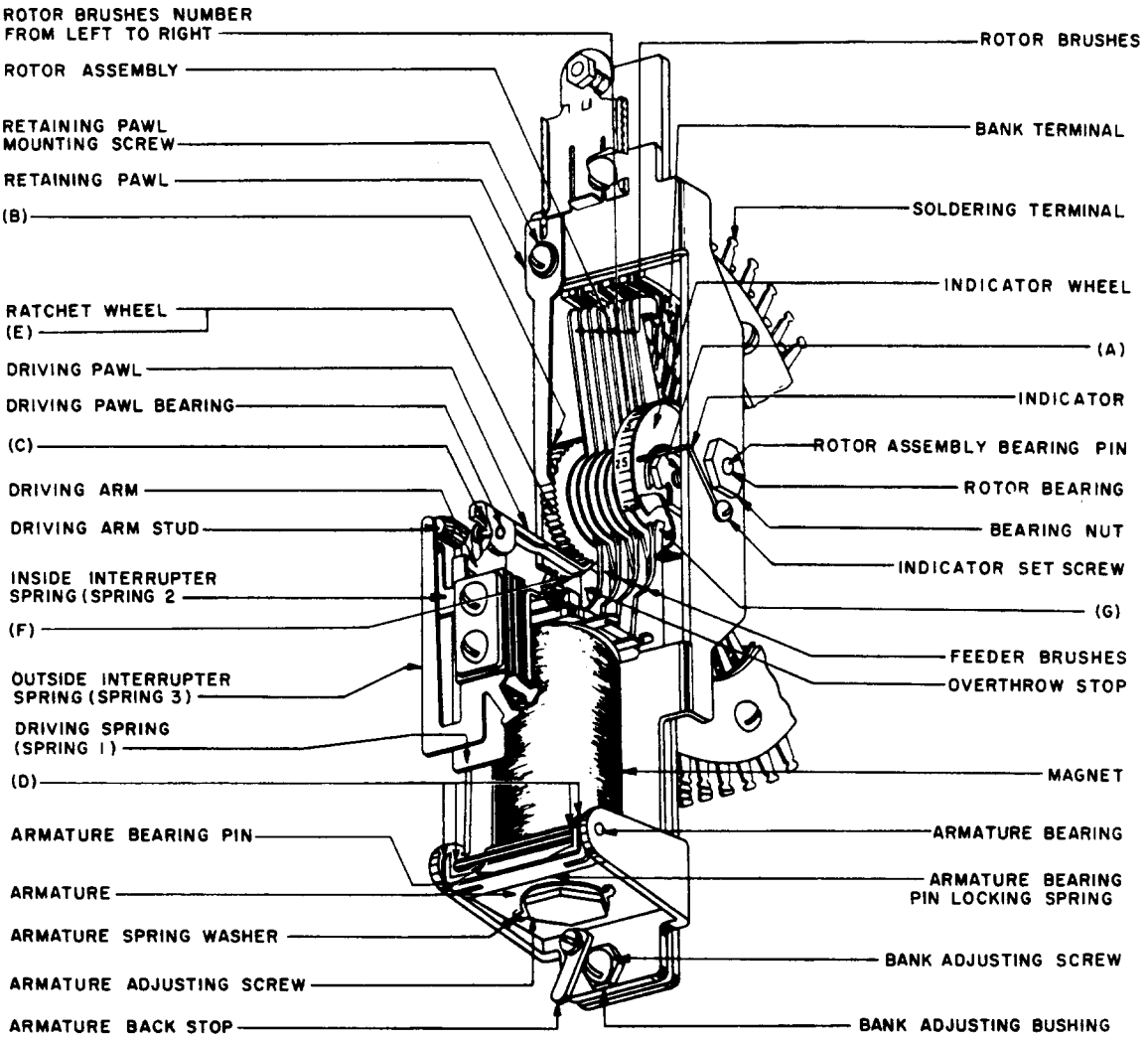

Fig. 1 – 25-Point, Light-Duty-Type Rotary Switch

(b) Other parts shall be cleaned when necessary in accordance with approved procedures.

(c) ***Treatment of Banks and Rotors:*** Treatment of bank terminals and rotors shall be done in accordance with Section 069-330-801.

2.02 *Lubrication*

(a) The following parts shall be adequately lubricated with KS-16832 L2 lubricant. When lubrication is necessary, the lubricant shall be applied as follows.

(1) ***Right Rotor Bearing:*** Fig. 1(A) — One dip applied to the bearing inside the frame.

(2) ***Left Rotor Bearing:*** Fig. 1(B) — One dip applied between the ratchet wheel and the frame above the bearing.

(3) ***Driving Pawl Bearing:*** Fig. 1(C) — One dip divided between the sides of the driving pawl.

(4) ***Armature Bearings:*** Fig. 1(D) — One dip at each bearing divided between both sides of the bearing.

(5) ***Ratchet Wheel:*** Fig. 1(E) — Four dips distributed evenly over the ratchet wheel teeth.

(6) ***Overthrow Stop:*** Fig. 1(F) — One-half dip applied between driving pawl and overthrow stop.

(b) ***Recommended Lubrication Intervals:*** After turnover, it is recommended that the parts listed above be lubricated at intervals of 2 years. This interval may be extended if periodic inspections have indicated that local conditions are such as to insure that the requirements will be met during the extended interval.

2.03 ***Record of Lubrication:*** During the period of installation a record shall be kept by date of the lubrication of the switch and this record shall be turned over to the telephone company with the equipment. If no lubrication has been done, it shall be so stated.

2.04 ***Tightness of Driving Arm Stud:*** Fig. 2(A) — The driving arm stud shall fit tightly on the driving arm.

Gauge by eye and by feel.

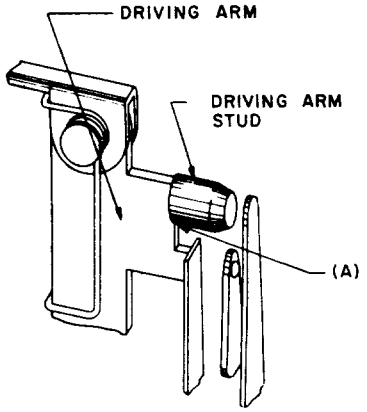

Fig. 2 – Driving Arm and Interrupter Springs

2.05 ***Tightness of Armature Adjusting Screw:*** Fig. 3(A) — The armature adjusting screw shall be held securely in position.

Gauge by feel.

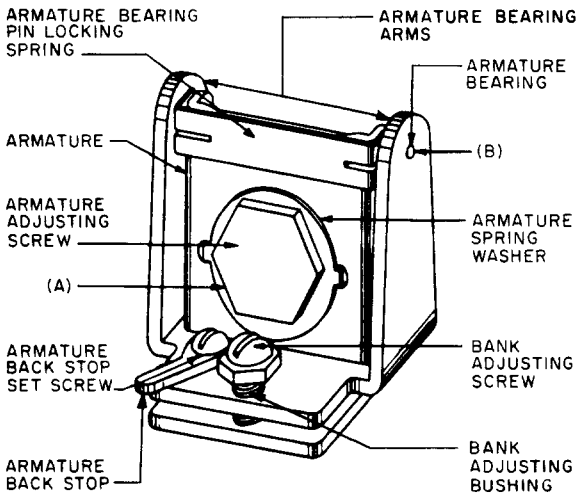

Fig. 3 – Armature and Associated Parts

2.06 ***Rotor Assembly Movement:*** The rotor assembly shall turn freely on its bearings.

Gauge by feel.

This requirement is met if there is side play of the rotor assembly in its bearings.

2.07 ***Feeder Brush Closure:*** Fig. 1(G) — The springs of each pair of feeder brushes shall rest against each other from their bases to a point approximately 1/4 inch from their ends, with the feeder brushes engaging the rotor brushes.

Gauge by eye.

2.08 ***Rotor Brush Alignment:*** The tips of the rotor brushes shall be aligned so that they will enter on to the base of the feeder brushes without excessive movement to one side or the other. Excessive movement shall be defined as a movement greater than the width of the feeder brush springs.

Gauge by eye.

To check the rotor brush alignment, set the switch to a position where one end of the rotor assembly is about to pass onto the feeder brushes and note visually that the junction between each pair of rotor brush springs lines up with the centerline of the associated feeder brush to the specified limits.

2.09 ***Rotor Brush Heel Shape:*** Fig. 4 (A) — The heels of all rotor brushes shall be slightly flared.

Gauge by eye.

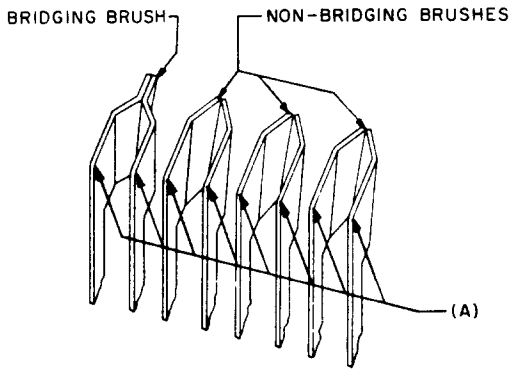

Fig. 4 – Bridging and Nonbridging Brushes

2.10 ***Bridging Brush Follow:*** Each spring of a pair of bridging brushes shall follow

Min 1/16 inch
Max 1/8 inch

measured at the brush tips when the pressure of the opposing spring is removed.

Gauge by eye.

2.11 ***Nonbridging Brush Follow:*** Each spring of a pair of nonbridging brushes shall follow

Min 1/16 inch
Max 3/32 inch

measured at the brush tips when the pressure of the opposing spring is removed.

Gauge by eye.

2.12 ***Rotor Brush Location***

(a) ***Nonbridging:*** Fig. 5(A) — With the brushes on bank terminals 1, 12, and 25, the tips of the brushes shall rest 1/4 to 1/2 the width of the bank terminals ahead of the leading edges of the bank terminals.

Gauge by eye.

(b) ***Bridging:*** Fig. 6(A) — With the brushes on bank terminals 1, 12, and 25, the tips of the brushes shall be approximately in alignment with the leading edges of the bank terminals.

Gauge by eye.

(c) ***Bridging:*** The brushes shall not bridge adjacent terminals within 1/64 inch, with all of the play taken up.

Gauge by eye.

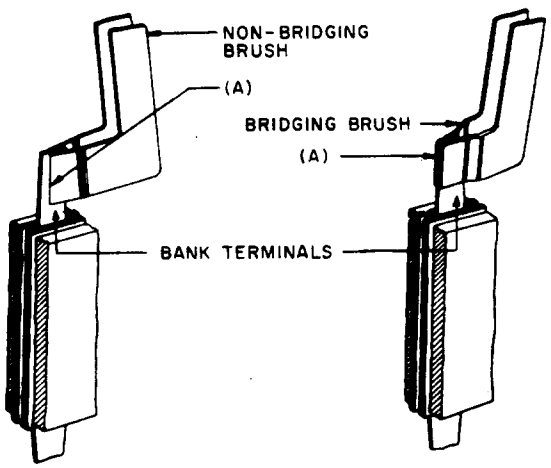

Fig. 5 **Fig. 6**

Fig. 5 and 6 – Bridging and Nonbridging Brushes

2.13 ***Armature Backstop and Overthrow Stop***

(a) The driving pawl, in its normal position, ***must not*** bind on the overthrow stop.

Gauge by feel.

(b) It ***must*** be possible to impart a perceptible rotary motion to the rotor brush assembly with the driving pawl in its normal position.

Gauge by eye and feel.

2.14 ***Clearance Between Driving Pawl and Rotor Brush 1 (brush nearest ratchet wheel):*** There shall be a clearance of minimum 1/64 inch between rotor brush 1 and the driving pawl and the overthrow stop, with the rotor brush assembly in the position it assumes after being operated electrically and with the side play of the armature taken up to the right as viewed from the front.

Gauge by eye.

The thickness of a rotor brush is .010 inch.

To check this requirement, operate the switch electrically to the position in which the rotor brush nearest the ratchet wheel is nearest the driving arm or the overthrow stop. Grasp the driving arm and apply sufficient pressure to the right to take up the side play of the armature. Then make sure that there is at least the specified minimum clearance between rotor brush 1 and the driving arm.

2.15 ***Armature Movement:*** Fig. 3(B) — The armature shall not bind on its bearings or on the armature bearing pin locking spring. This requirement is met if the armature has a perceptible amount of side play.

Gauge by eye and feel.

2.16 ***Retaining Pawl Position:*** There shall be a perceptible clearance between the retaining pawl and the radial face of the ratchet tooth.

Gauge by eye.

2.17 ***Retaining Pawl Tension:*** Fig. 7(A) —The tension of the retaining pawl measured at the curve near the tip of the pawl shall be

Min 50 grams
Max 125 grams

Use the 79C gauge.

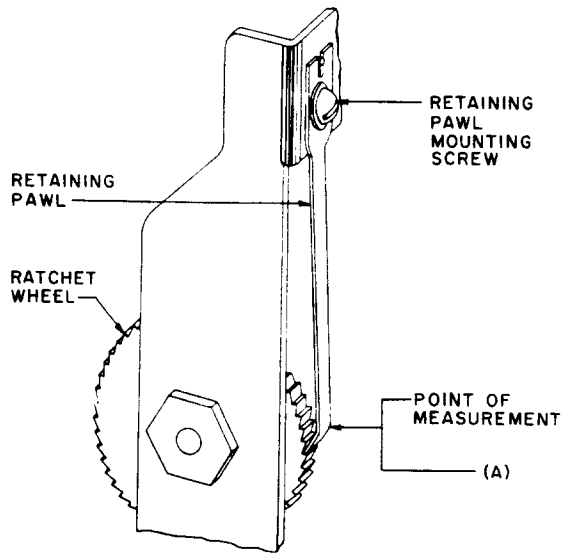

Fig. 7 – Position of Retaining Pawl

2.18 ***Driving Pawl Movement:*** The driving pawl shall not bind on its bearing or on the switch frame.

This requirement is met if, with the driving pawl spring unhooked from the driving arm and the armature operated by hand, the driving pawl falls by its own weight so that it rests against the overthrow stop.

Gauge by eye.

2.19 ***Driving Pawl Spring Tension and Position:*** Fig. 8(A)

(a) The driving pawl spring shall hold the driving pawl against the ratchet wheel when the armature is electrically operated.

Gauge by eye.

This requirement is met if the spring uncoils approximately 1/4 turn when it is unhooked from the driving arm.

(b) The edges of the driving pawl along its length shall be parallel to the sides of the ratchet wheel and the tip of the pawl shall be parallel to the outer edge of the ratchet wheel teeth.

Gauge by eye.

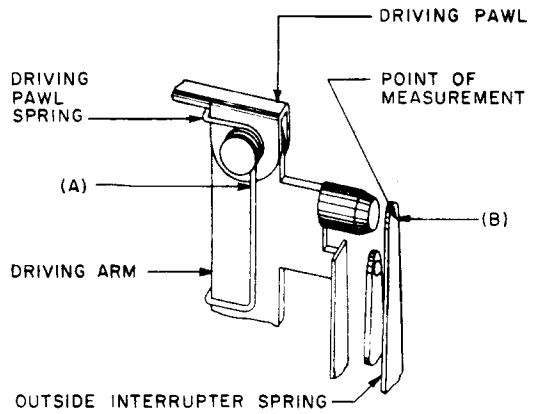

Fig. 8 – Driving Pawl Spring Tension

2.20 ***Armature Airgap***

(a) With a 0.002-inch gauge inserted between the armature adjusting screw and the core, the pawl shall drop onto the next ratchet

tooth when the magnet is electrically energized.

Use the KS-6909 gauge.

(b) With a 0.005-inch gauge inserted between the armature adjusting screw and the core, the pawl shall not drop in on the next ratchet tooth when the magnet is electrically energized.

Use the KS-6909 gauge.

2.21 ***Interrupter Spring Alignment:*** The interrupter contact springs shall be well aligned and approximately straight.

Gauge by eye.

2.22 ***Contact Alignment:*** Fig. 9(A) — The contacts shall not be out of alignment more than 1/3 of their base diameter.

Gauge by eye.

Fig. 9 – Illustrating Contact Alignment

2.23 ***Driving Spring Tension:*** The driving spring shall be tensioned so that the magnet will meet the electrical requirements specified on the relay adjustment sheet or circuit requirements table.

2.24 ***Outside Interrupter Spring Tension:*** Fig. 8(B) — The tension of the outside interrupter spring measured at the point where the driving arm stud strikes the outside interrupter spring shall be

Min 250 grams
Max 400 grams

Use the 79B gauge.

2.25 ***Spring Gauging***

(a) When the gauging value for make-or-break springs is 0.003 inch, the tolerances allowed shall cause the contacts to make or break with 0.002-inch gauge and not make or break with a 0.005-inch gauge inserted between the armature adjusting screw and the core when the magnet is electrically energized.

Use the KS-6909 gauge.

(b) When the gauging value for make or break springs is 0.004 inch or more, the tolerances allowed shall cause the contacts to make or break with a gauge 0.002 inch less than the gauging value specified and not make or break with a gauge 0.002 inch more than the gauging value specified, inserted between the armature adjusting screw and the core when the magnet is electrically energized.

Use the KS-6909 gauge.

2.26 ***Position of Indicator:*** Fig. 10(A) — The indicator shall point to the number or line on the indicator wheel corresponding to the bank contacts on which the rotor brushes are resting.

Gauge by eye.

2.27 ***Self-Interruptions:*** The switch when required to operate under self-interruptions shall step steadily and uniformly on the normal office voltage.

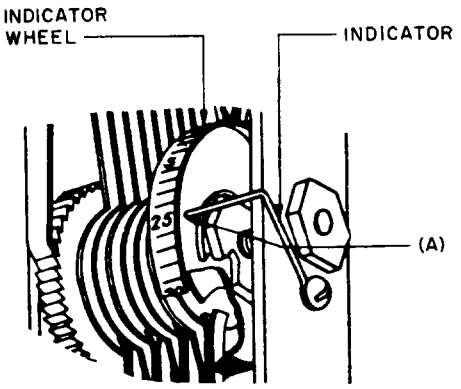

Fig. 10 – Position of Indicator

3. ADJUSTING PROCEDURES

3.001 *List of Tools, Gauges, and Materials*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
303	Spring Adjuster
359	Magnet Core and Armature Cleaning Tool
363	Spring Adjuster
417A	1/4- and 3/8-Inch Hex. Open Double-End Flat Wrench
418A	5/16- and 7/32-Inch Hex. Open Double-End Flat Wrench
KS-2631	4-1/2 Inch Screwdriver
KS-6015 (2 reqd)	Duckbill Pliers
KS-6367	7/16- and 5/8-Inch Open Double-End Flat Wrench
KS-14164	Brush
R-1760	Frame and Armature Adjuster
—	4-Ounce Riveting Hammer
—	P-Long-Nose Pliers
—	1/16-Inch Pin Punch
—	3-Inch C Screwdriver (or the replaced 3-inch cabinet screwdriver)
GAUGES	
79B	0-1000 Gram Push-Pull Tension Gauge
79C	0-200 Gram Push-Pull Tension Gauge
KS-6909	Thickness Gauge Nest
MATERIALS	
KS-7860	Petroleum Spirits
KS-14666	Cloth
KS-16832 L2	Lubricant
—	Hardwood Toothpicks, Flat at One End and Pointed at Other

3.01 *Cleaning* (Reqt 2.01)

(1) ***Contacts:*** Clean the contacts in accordance with the section covering cleaning of relay contacts and parts.

(2) ***Treatment of Banks and Rotors:*** If necessary, clean and treat the rotor and bank terminals in accordance with Section 069-330-801.

(3) ***Ratchet Wheel and Armature Bearings:*** If upon inspection there is found to be an accumulation of gummy oil or other foreign matter on the ratchet wheel or armature bearings, attempt to remove it with a clean toothpick. If the switch cannot be cleaned in this manner, dip the flat end of a toothpick in KS-7860 petroleum spirits and apply it very sparingly to the dirty part of the switch to soften this foreign material so that it may be removed with the other end of the toothpick. A dirty toothpick should never be dipped in the petroleum spirits. Remove as much petroleum spirits as possible and then lubricate as outlined in 3.02.

(4) ***Bank and Bank Terminals:*** Rotate the switch a number of times and carefully remove any loose dirt from the bank in a manner that does not affect the alignment of the terminals.

(5) ***Magnet Core Gap:*** Insert the 359 cleaning tool between the armature adjusting screw and the core and apply sufficient pressure to the bottom of the armature to force it upward against the cleaning tool. Then forcibly withdraw the cleaning tool. Repeat this operation several times, using first one flat surface of the tool and then the other, so as to remove dust and loose galvanizing scales that may have accumulated between the armature adjusting screw and the core.

Note: If a new 359 cleaning tool is to be used, check whether the tool is covered with a protective film of oil. If this condition exists, remove the film with KS-7860 petroleum spirits applied to a KS-14666 cloth.

3.02 *Lubrication* (Reqt 2.02)

(1) Make sure the container of KS-16832 L2 lubricant has been shaken as covered in 1.11.

(2) ***Rotor Bearings:*** Take up the play of the rotor assembly in a direction away from the bearing to be lubricated. Lubricate the bearing as specified. After lubricating the bearings, press the rotor from side to side a few times to work the lubricant into the bearings.

(3) ***Overthrow Stop:*** With the switch operated manually or electrically, apply the specified quantity of lubricant to the surface of the overthrow stop adjacent to the driving pawl.

(4) ***Ratchet Wheel Teeth:*** Lubricate the ratchet wheel teeth as specified. In doing this, it may be necessary to manually operate the switch to spread the lubricant evenly.

(5) ***Driving Pawl Bearings:*** Take up the play in the driving pawl in a direction away from the bearing to be lubricated. Lubricate the bearing as specified.

(6) ***Armature Bearings:*** Lubricate the bearings as specified.

3.03 ***Record of Lubrication*** (Reqt 2.03)
(no procedure)

3.04 ***Tightness of Driving Arm Stud*** (Reqt 2.04)

(1) If the driving arm stud is loose on the armature, proceed as covered in the section covering the apparatus.

3.05 ***Tightness of Armature Adjusting Screw*** (Reqt 2.05)

(1) If the armature adjusting screw is not held securely in place, remove the bank adjusting bushing and bank adjusting screw with the 418A wrench and KS-2631 screwdriver. Then remove the armature adjusting screw and the armature spring washer with the KS-6367 wrench.

(2) Increase the bow in the armature spring washer by bending it with the long-nose pliers. Then reassemble it, noting that the washer bows outward toward the armature adjusting screw.

3.06 ***Rotor Assembly Movement*** (Reqt 2.06)

(1) If the rotor assembly binds in its bearings, it is probably due to a deposit of dirt and gummy oil in the bearings.

(2) Remove the rotor assembly bearing nuts with the 417A wrench and clean the bearings with KS-7860 petroleum spirits applied with the flat end of a clean toothpick. Remove as much petroleum spirits as possible and lubricate as covered in requirement 2.02. After being lubricated, replace the bearing nuts and tighten them securely.

3.07 ***Feeder Brush Closure*** (Reqt 2.07)

(1) If with the switch assembled and the bank in its normal position the springs of each pair of feeder brushes do not engage each other as specified, adjust them by applying the 363 spring adjuster as near as possible to the base as shown in Fig. 11 and slide it upward while giving it a slight twist.

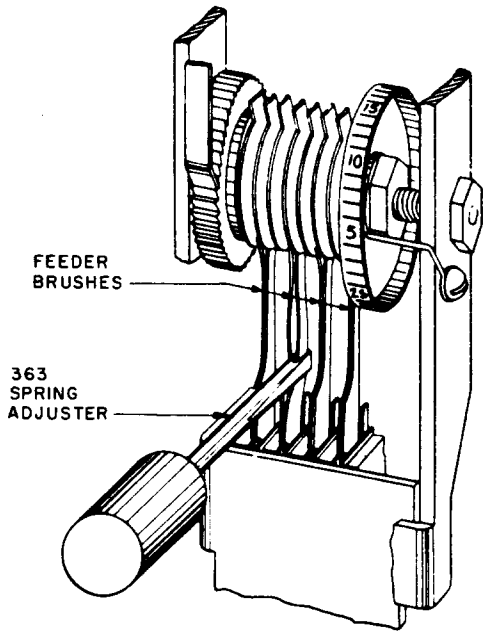

Fig. 11 – Method of Adjusting for Feeder Brush Closure

3.08 ***Rotor Brush Alignment*** (Reqt 2.08)

(1) To realign the rotor brushes, locate the rotor assembly so that the side play at each side of the rotor assembly is approxi-

mately equal. Block the assembly in this position and adjust one set of brushes with the 363 spring adjuster applied at the base of the brush, close to the shaft of the rotor brush assembly as shown in Fig. 12. Rotate the rotor assembly one-half a revolution and repeat as covered above.

3.09 ***Rotor Brush Heel Shape*** (Reqt 2.09)

(1) To adjust the rotor brush heels, set the rotor brushes on the fifth or sixth bank terminal so that the brushes not in contact with the bank terminals will be accessible for adjustment.

(2) Grasp one spring of the brush pair midway between the base and the end of the spring with the duckbill pliers. Twist the spring slightly to the right or left as required with the 363 spring adjuster while holding it stationary with the pliers. Apply the 363 spring adjuster near the heel of the brush as shown in Fig. 13. Then adjust the associated spring of the pair in a like manner. When making this adjustment, exercise care not to disturb any of the previous brush adjustments. Also check for brush follow in accordance with 3.10 and 3.11.

3.10 ***Bridging Brush Follow*** (Reqt 2.10)
3.11 ***Nonbridging Brush Follow*** (Reqt 2.11)

(1) To adjust for brush follow, use the 363 spring adjuster applied at the base of the brush close to the shaft of the rotor assembly as shown in Fig. 12.

3.12 ***Rotor Brush Location*** (Reqt 2.12)
3.13 ***Armature Backstop and Overthrow Stop*** (Reqt 2.13)

(1) If the tips of the bridging or nonbridging brushes do not rest properly on bank terminal 1, correct by turning the bank adjusting bushing in a clockwise or counterclockwise direction as required with the 418A wrench.

(2) If the tips of the bridging or nonbridging brushes do not rest properly on bank terminal 25, correct as follows. Loosen the overthrow stop setscrew with the 418A wrench. Then loosen the armature backstop setscrew with the 3-inch C screwdriver. Move the armature backstop as required until the brushes are properly positioned and then securely tighten

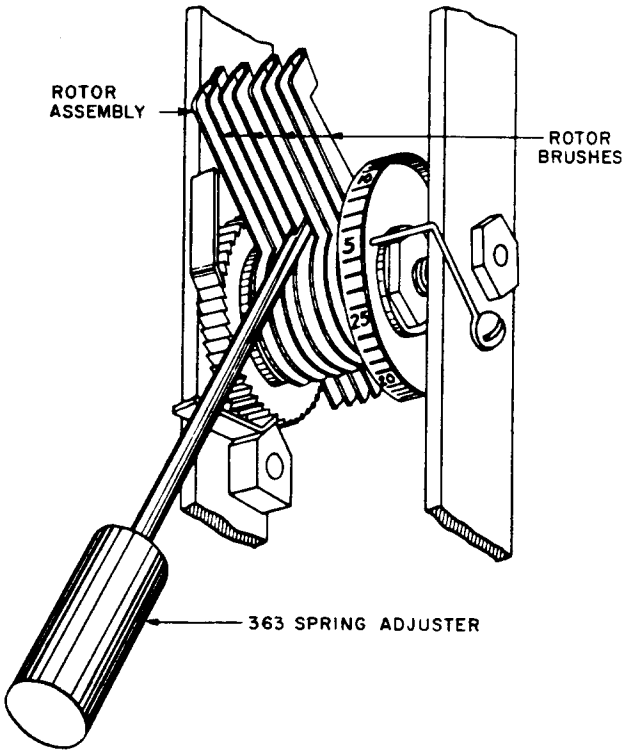

Fig. 12 – Method of Adjusting for Brush Alignment

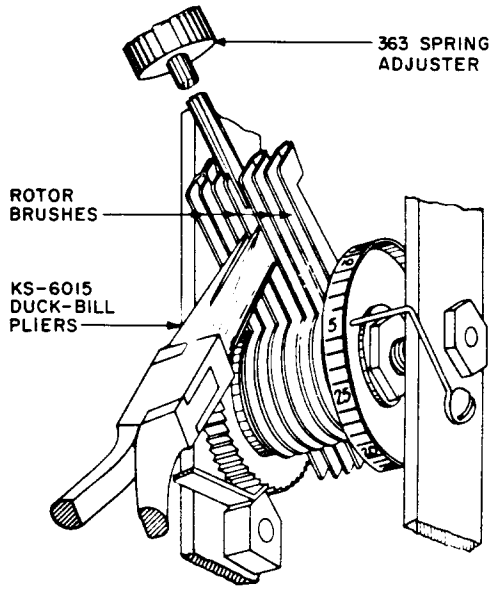

Fig. 13 – Method of Adjusting for Rotor Brush Heel Shape

the armature backstop setscrew. Check that the brushes rest properly on terminal 1.

(3) After the brushes are properly adjusted on bank terminals 1, 12, and 25, tighten the overthrow stop setscrew noting that there

is perceptible forward movement in the rotor assembly which indicates a perceptible gap between the driving spring and the overthrow stop.

(4) If there is not a perceptible forward movement in the rotor assembly, loosen the overthrow stop setscrew with the 418A wrench, move the stop downward, and tighten the stop securely. Note that the brushes still line up properly with the bank terminals.

3.14 ***Clearance Between Driving Pawl and Rotor Brush 1 (brush nearest ratchet wheel)*** (Reqt 2.14)

(1) If the rotor brush nearest the ratchet wheel meets requirement 2.08 (Rotor Brush Alignment), failure to meet the requirement covering the clearance between this brush and the driving pawl is probably due to a bent driving arm. Adjust the driving arm with the R-1760 adjuster applied to the driving arm directly beneath the pawl bearing. After adjusting the driving arm, ascertain that the end of the pawl will strike the overthrow stop squarely.

3.15 ***Armature Movement*** (Reqt 2.15)

(1) If the armature fails to operate satisfactorily, it may be due to bind between the armature and its bearings. This bind may be due to an accumulation of gummy oil or other foreign matter. Clean the bearings as covered in 3.01.

(2) If the armature still fails to operate satisfactorily, it may be due to bind of the armature arms against the armature bearing arms. Remove the armature bearing pin locking spring by inserting the 3-inch C screwdriver between the locking spring and the armature arms and twisting the spring so that it is forced outward.

(3) Place the end of the 3-inch C screwdriver between the armature arm and armature bearing arm and twist the screwdriver slightly so as to bend the bearing arm outward. This should remove any bind. Remount the armature bearing pin locking spring.

(4) If the bind still exists, it may be due to a bent bearing pin. Remove the armature bearing pin locking spring as covered in (2) and remove the bent bearing pin by driving it out with the 4-ounce hammer and a pin punch and replace with a bearing pin that is satisfactory.

3.16 ***Retaining Pawl Position*** (Reqt 2.16)

(1) To position the retaining pawl, loosen the retaining pawl mounting screw with the 3-inch C screwdriver and move the pawl up or down as required. Tighten the screw securely.

3.17 ***Retaining Pawl Tension*** (Reqt 2.17)

(1) To adjust the retaining pawl, apply the 303 spring adjuster applied as near as possible to the retaining pawl mounting screw and adjust as required.

3.18 ***Driving Pawl Movement*** (Reqt 2.18)
3.19 ***Driving Pawl Spring Tension and Position*** (Reqt 2.19)

(1) If the driving pawl binds on its bearings, clean the bearings with KS-7860 petroleum spirits applied with a clean toothpick and relubricate in accordance with 3.02. After relubrication, check the requirement.

(2) If the tension of the spring is unsatisfactory, replace the spring.

(3) If the driving pawl is not positioned correctly with respect to the ratchet wheel, apply the R-1760 adjuster to the driving arm beneath the pawl bearing and adjust the arm so that the requirement is met.

3.20 ***Armature Airgap*** (Reqt 2.20)

(1) If the gap between the armature adjusting screw and the core is not satisfactory, turn the armature adjusting screw in a clockwise or counterclockwise direction as required with the KS-6367 wrench. After making this adjustment, recheck requirements 2.12 and 2.13.

3.21 ***Interrupter Spring Alignment*** (Reqt 2.21)
3.22 ***Contact Alignment*** (Reqt 2.22)

(1) To realign the contacts and springs, loosen the spring assembly mounting screws with the KS-2631 screwdriver. Shift the spring as required and tighten the assembly screws securely.

(2) If there are excessive bows or sharp bends in the springs, straighten them as required with the KS-6015 duckbill pliers.

3.23 ***Driving Spring Tension*** (Reqt 2.23)
3.24 ***Outside Interrupter Spring Tension*** (Reqt 2.24)
3.25 ***Spring Gauging*** (Reqt 2.25)

(1) If the tension of the driving or the outside interrupter springs is not as specified, adjust as follows. Grasp the horizontal portion of the spring with the KS-6015 duckbill pliers, holding the pliers in a position parallel to the spring, and twist them backward to increase the tension and forward to decrease the tension. If the proper tension cannot be obtained by this method, hold the pliers in the position specified above and grasp the vertical leg of the spring near the bottom with another pair of duckbill pliers as shown in Fig. 14. Hold the first pair stationary and twist the second pair as specified above.

(2) If the inside interrupter spring does not meet the spring gauging requirements specified on the relay adjustment sheet or circuit requirements table, it should be adjusted by grasping the horizontal portion of the spring with the duckbill pliers and twisting the pliers backward to increase the gap and forward to decrease the gap.

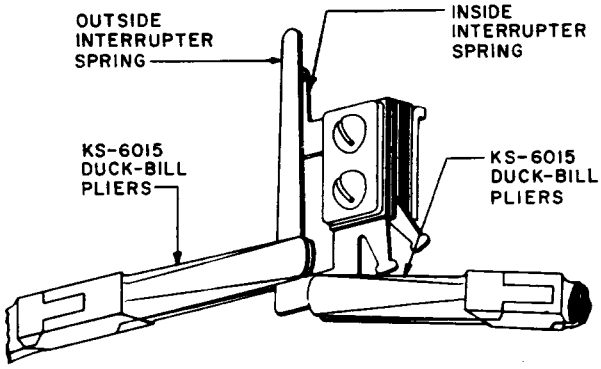

Fig. 14 – Method of Adjusting for Spring Tension

3.26 ***Position of Indicator*** (Reqt 2.26)

(1) If the indicator does not point to the proper number or line on the indicator wheel, loosen the indicator setscrew with the 3-inch cabinet screwdriver and move the indicator as required. Tighten the indicator setscrew securely when the indicator has been located in the proper position.

3.27 ***Self-Interruptions*** (Reqt 2.27)

(1) Check for self-interruptions by grounding the terminal of the inside interrupter spring and connecting battery to the winding of the magnet.

(2) If the switch does not operate steadily and uniformly under self-interruptions on the normal office voltage, recheck and adjust if necessary to meet requirements 2.06, 2.12, and 2.15 through 2.20. If the switch still does not operate satisfactorily, adjust the tension of the outside interrupter spring to near the minimum tension limit.

REASONS FOR REISSUE

1. To revise the general information covering one dip of lubricant to specify KS-16832 L2 lubricant instead of KS-8559 lubricant (1.09).
2. To add general information covering preparation of KS-16832 L2 lubricant (1.11).
3. To revise the requirement covering lubrication to replace KS-8559 lubricant with KS-16832 L2 lubricant (2.02).
4. To revise the List of Tools, Gauges, and Materials (3.001).
5. To revise the procedure covering lubrication (3.02).