PERFORATORS KS-13882 L1, L2, AND L3 AND PERFORATOR CABINET REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the KS-13882 L1, L2, and L3 perforators and perforator cabinet used in the AMA system.

1.02 This section is reissued for the following reasons.

- To change the title to include perforator cabinets
- To include a requirement and adjustment for the spiral tape guide
- To change the specified KS- oil and lubricant requirements
- To revise paragraph 2.07
- To revise the text to procedural format
- To make minor changes as necessary

Since this reissue is a general revision, all change arrows have been omitted.

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 ***Asterisk (*):*** Requirements are marked with an asterisk when to check for them would necessitate dismantling or dismounting of apparatus, or would 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.

1.05 ***One dip of KS-19589 L2 lubricant or KS-7470 L1 oil*** for the purpose of this section is the amount of lubricant or oil retained on the KS-14164 brush after being dipped into the lubricant or oil to a depth of 3/8 inch and scraped lightly against the side of the container as the brush is removed.

1.06 ***One drop of KS-7470 L1 oil*** for the purpose of this section is the amount of oil discharged from the nozzle of the 486A oilcan when the sides are depressed until a drop is released.

1.07 ***Preparation of ~~KS-19587~~ KS-19589 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.

1.08 ***The standard point of measurement*** is a point on the driving arm beneath the pawl spring to which the driving pawl is fastened, see Fig. 1.

1.09 ***The unoperated position of the splice contact*** is that position where the finger (see Fig. 13), is resting against the front edge of the opening in the tape chute or against the frame of the perforator, and the circuit through the contact is closed.

1.10 ***The operated position of the splice contact*** is that position where the end of the finger is resting on tape passing over the drum, and the circuit through the contact is open.

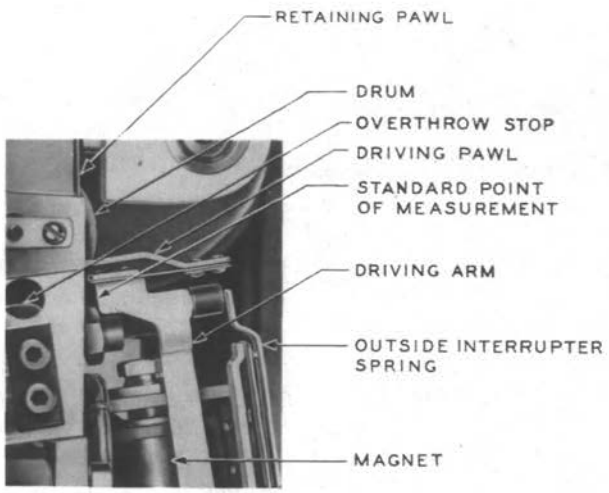

Fig. 1—Drum Advance Mechanism

1.11 ***Make-busy Information:*** Before making any check or adjustment specified herein, make busy the associated circuits and remove the tape in accordance with approved procedures.

1.12 Checking requirement and making adjustments on these perforators require the facilities of the perforator and reader test table per SD-40040-01 or SD-95497-01. To use these facilities proceed as covered in Section 034-306-501 or 034-306-502. In offices where the test table is not available, it will be necessary to ship the perforator to a maintenance center for adjustment in accordance with local instructions.

1.13 When checking or adjusting the drum advance mechanism, mount the perforator on the turntable of the test table with the tape chute downward.

1.14 ***To move the drum by hand,*** operate the drum advance magnet armature manually or electrically and ***hold it operated*** while turning the drum.

1.15 ***To step the drum advance mechanism manually,*** apply sufficient pressure to the bottom of the armature as shown in Fig. 2 to force it against the magnet core. Then release the armature. In some cases, it may be necessary to apply the force with a snap in order to obtain a slight whip of the driving arm so that the driving pawl will engage a tooth of the ratchet wheel. ***Never*** step the drum advance mechanism manually by means of the driving arm.

1.16 The KS-14131 carrying case shown in Fig. 3 should be used for housing the perforators during shipment. Before placing the perforator in the carrying case, lock all perforating pins in the operated position using the 649A pin locking tool shown in Fig. 4. To lock the pins in position, place the 649A pin locking tool so that the bar is parallel to the pin guide and the large pilot pin is in position to enter the large pilot hole in the upper perforator shelf. Lower the pin locking tool between the pins so that the studs on the rack rest on the top of the pin adjusting screws of the lower tier of perforating pins. Turn the clamps so that they clear the upper shelf and depress the pin locking tool taking care that the pilot pins enter the holes in the shelf. Turn the clamps so that they engage the edges of the shelf and tighten the clampscrews using the proper size Allen wrench. Fig. 5 shows a perforator with the 649A pin locking tool in place.

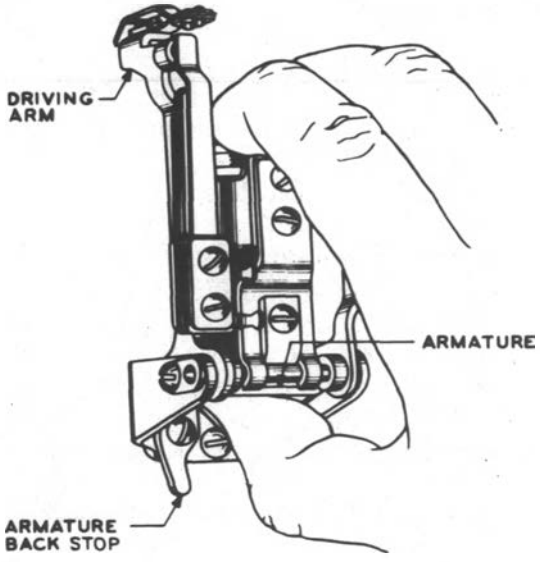

Fig. 2—Method of Operating Drum Advance Mechanism Manually

2. REQUIREMENTS

GENERAL

2.01 ***Cleaning***

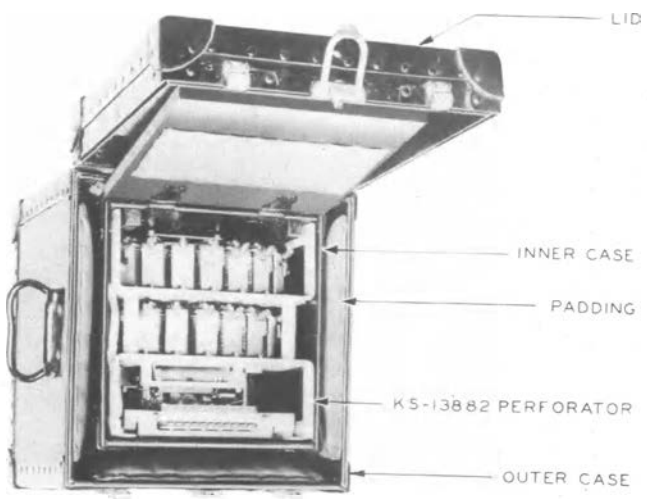

Fig. 3—KS-13882 Perforator in KS-14131 Carrying Case

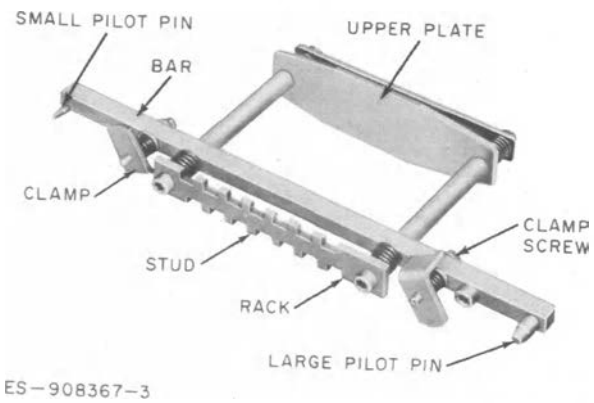

Fig. 4—649A Pin Locking Tool

(a) KS-13882 L2 perforator contacts of the drum advance checking mechanism shall be cleaned when necessary in accordance with the section covering cleaning of relay contacts.

(b) The tips of the backstop screws and the pole pieces under the screws shall be cleaned when necessary.

(c) The input tape and chute and spiral guides should be cleaned in accordance with Section 034-310-301 each time a tape bin is refilled.

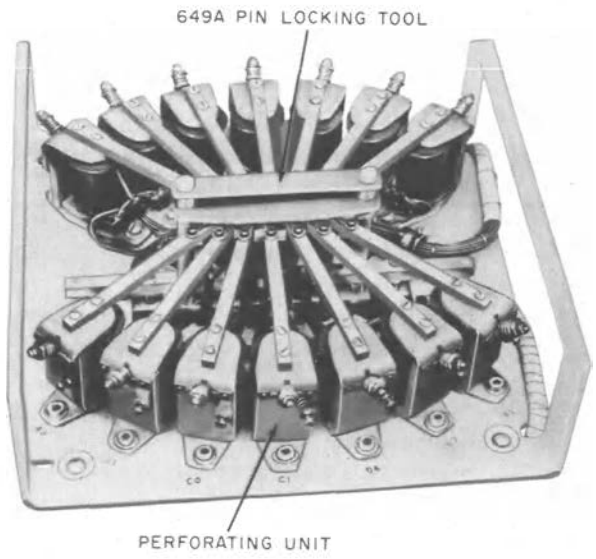

Fig. 5—649A Pin Locking Tool Mounted on KS-13882 Perforator

(d) Other parts shall be cleaned when necessary in accordance with Section 069-370-801. Ordinarily this cleaning can only be performed at an AMA equipment maintenance center.

2.02 *Lubrication*

(a) ***KS-19587 L2 Lubricant:*** The following parts shall be adequately lubricated with KS-19587 L2 lubricant. When lubrication is necessary, the lubricant shall be applied as follows:

(1) Fig. 6(A)—One dip distributed evenly over the ratchet wheel teeth.

(2) Fig. 6(B)—One dip divided between each side of the drum advance mechanism armature bearing.

(3) Fig. 7(A)—One dip to the surface of the overthrow stop adjacent to the driving pawl.

(4) Fig. 20—A visible film between the drum advance checking mechanism backstop screw and the finger, and between the bottom of the slot at the underside of the finger and the retractile spring.

(5) Fig. 7(B)—A light film on the tips of the backstop screws.

(b) ***KS-7470 L1 Oil:*** The following parts shall be adequately lubricated with KS-7470 L1 oil. When lubrication is necessary, the oil shall be applied as follows:

(1) One drop to each drumshaft bearing.

(2) Fig. 6(D)—One dip distributed over the polished surface of the cutter blade.

(3) Fig. 13(A)—One drop to each splice contact bearing.

(4) Fig. 6(F)—One drop applied to the loop at each end of the drum advance mechanism driving spring at the points where the loops are in contact with the lugs.

(5) Fig. 6(C)—One drop to each cutter assembly bearing.

(6) Fig. 15(A)—One drop between the stud of the solenoid arm and the retractile spring.

(c) ***Recommended Lubrication Intervals:*** Within 30 days prior to turnover to the telephone company, the perforator shall be completely lubricated as covered in (a) and (b). After turnover, the parts shall be lubricated at intervals of 6 months. The 6-month interval may be extended if periodic inspections have indicated that local conditions are such as to insure that (a) and (b) 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 perforator and this record shall be turned over to the telephone company with the equipment.

DRUM ADVANCE MECHANISM

2.04 ***Retaining Pawl Position:***

(a) With at least ten perforating units and the drum advance magnet electrically operated, the end of the retaining pawl shall not bind on the radial face of the tooth but the clearance between the end of the pawl and the radial face of the tooth shall be

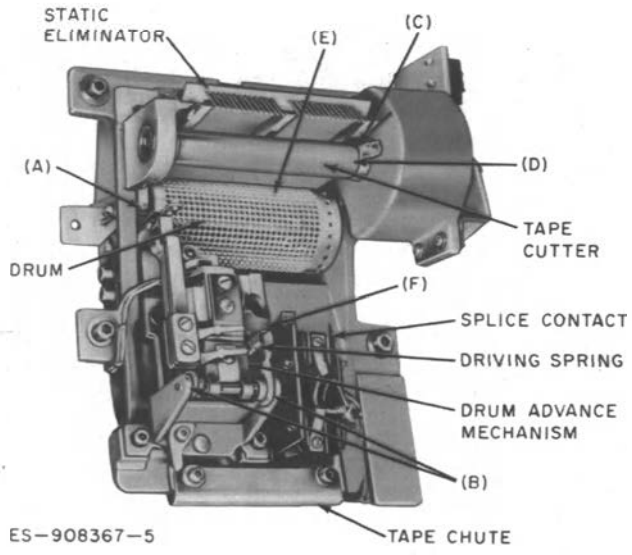

Fig. 6—Drum Advance Mechanism and Cutter Assembly

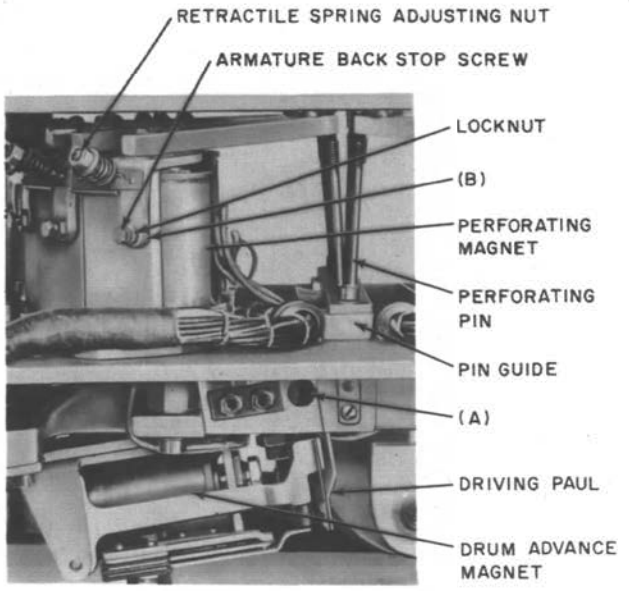

Fig. 7—Perforating Units and Drum Advance Mechanism

Test—Max 0.010 inch

Readjust—Max. 0.008 inch

This requirement shall be checked at four positions of the drum approximately 90 degrees apart.

Using the 92A and 92W gauges, proceed as follows.

(1) Lift the end of the pawl with the KS-6320 orange stick

(2) Observe that it returns to its original position when released

(3) Use the 92A gauge to check for minimum clearance

(b) The end of the retaining pawl shall lie wholly within the face of the ratchet wheel tooth.

Gauge by eye

(c) The end of the retaining pawl shall be parallel to the edge of the tooth of the ratchet wheel

Gauge by eye

2.05 ***Retaining Pawl Tension:*** Fig. 9(A)—The tension of the retaining pawl against the ratchet wheel tooth measured at the bend in the pawl shall be

Min 75 grams

Max 100 grams

Use the 79C gauge.

The application of the gauge may be facilitated by using a small loop of twine looped around the pawl and the end of the gauge.

2.06 ***Armature Backstop Position:***

(a) Fig. 9(B)—The armature backstop shall be positioned so that the driving pawl, in its nonoperated position, does not bind on the overthrow stop.

This requirement shall be checked at four positions of the ratchet wheel approximately 90 degrees apart.

Gauge by eye

Check this requirement as follows:

(1) Operate the drum advance mechanism electrically (step by step) to the required position.

(2) Grasp the upper end of the driving arm between the thumb and forefinger.

(3) Move the driving arm gently approximately 1/32 inch from side to side.

(4) Binding will be indicated if the driving pawl does not return to approximately its normal position

(b) The armature backstop shall be positioned so that the retaining pawl will clear each ratchet tooth when the drum advance armature is operated and released manually.

The requirement shall be checked on each tooth of the ratchet wheel

Gauge by eye

2.07 ***Engagement of Driving Pawl With Ratchet Wheel Teeth:*** When the gauge specified below is fully inserted between the armature and magnet core, and the magnet is electrically energized with the overthrow or whip eliminated, the following requirements shall be met:

(a) With a 0.002-inch gauge inserted as described, the driving pawl shall engage the next tooth of the ratchet wheel. This requirement shall be checked in all positions of rotation.

(b) With a 0.006-inch gauge inserted as described, the driving pawl shall not engage the next tooth of the ratchet wheel. This requirement shall be checked at four positions of the drum approximately 90 degrees apart. Use the KS-6909 gauge and check these requirements as follows.

(1) Apply sufficient pressure against the outside interrupter spring above the offset to prevent the armature from operating when the magnet is electrically energized.

(2) Remove the finger pressure gradually, permitting the armature to operate slowly and thereby eliminating overthrow or whip of the armature.

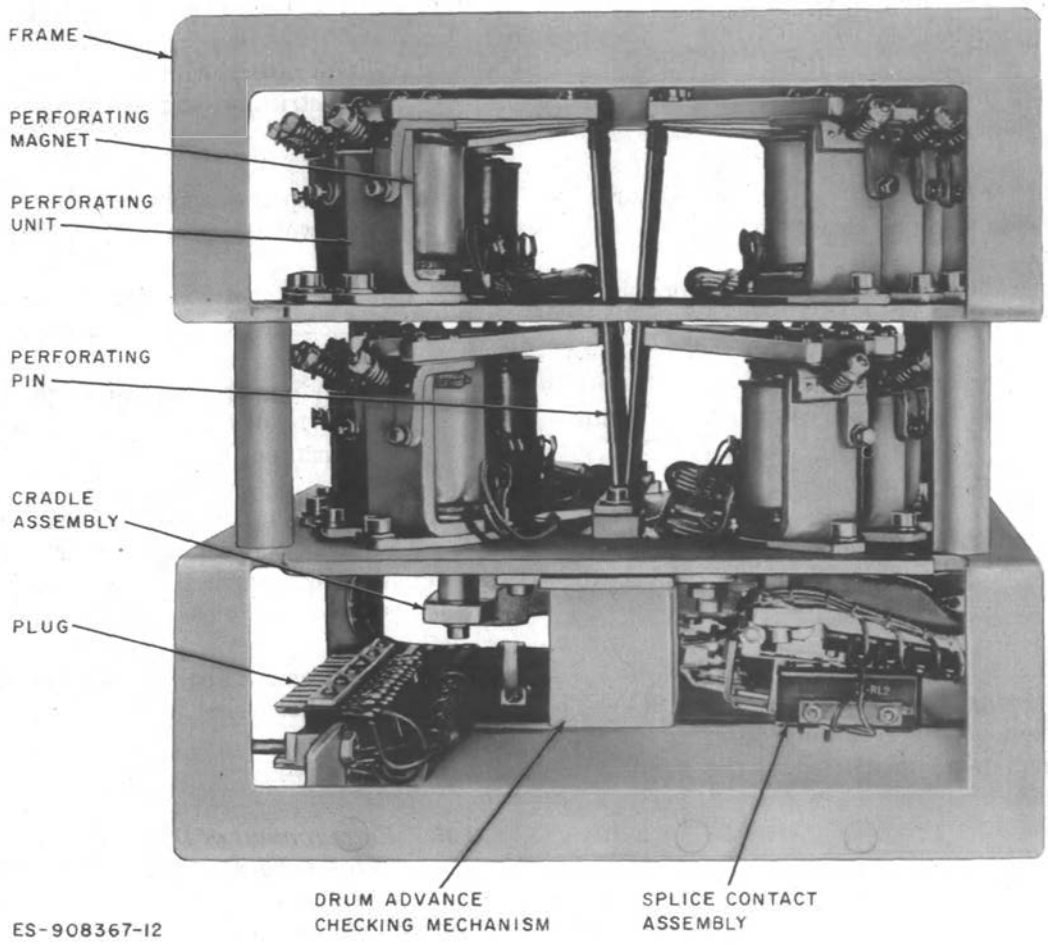

Fig. 8—KS-13882 L2 Perforator Side View

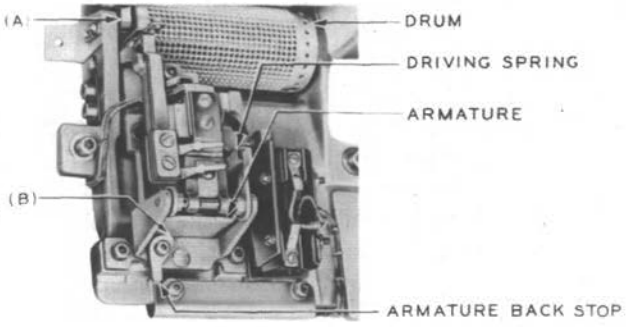

Fig. 9—Armature Backstop Position

(3) While the slow moving armature (whip elimiated) is operating, insert the specified gauge far enough to cover the core pole face and check the requirements.

2.08** ***Position of Magnet: (Applies only when the armature or magnet or both are replaced.) With the magnet electrically operated, the armature shall strike the core at the edge farthest from the armature bearing.

This requirement is considered met if, when the magnet is electrically operated, there is a gap for a depth of approximately 1/16 inch between the armature and the edge of the core nearest the armature bearing of

Min 0.002 inch

Max 0.005 inch

Use the 92S and 92T gauges and check as follows.

(1) Operate the magnet electrically.

(2) Insert the 92S gauge in the gap between the armature and the edge of the core nearest the armature bearing.

(3) The 92S gauge shall go in the gap at least 1/16 inch.

(4) Remove the 92S gauge and insert the 92T gauge.

(5) The 92T gauge shall enter 1/16 inch maximum.

2.09 ***Driving Spring Tension:***

(a) Fig. 10(B)—With the outside interrupter spring held away from the driving arm stud, the driving spring tension measured at the standard point of measurement, see 1.08 and Fig. 1, as the driving pawl falls over a ratchet wheel tooth shall be

Min 800 grams

This requirement shall be checked in four positions of the drum approximately 90 degrees apart. Use the 79B gauge check as follows.

(1) Set the perforator on the bench with the tape chute downward.

(2) Place a toothpick between the interrupter springs just below the contact point to force the outside interrupter spring away. This will avoid possible contact with the driving arm stud when the armature is fully operated

(3) Apply the 79B gauge to the standard point of measurement and hold the gauge horizontally.

(4) Read the tension at the instant the driving pawl drops over the next tooth of the ratchet wheel.

(5) It is advisable to check each measurement two or three times because of the likelihood of the gauge twisting at the point where it engages the driving arm.

(b) The drum advance mechanism shall be capable of taking a full step when the load on the driving spring is increased by

Test—Min 150 grams

Readjust—Min 300 grams

applied at the standard point of measurement, see 1.08 and Fig. 1, in the direction opposed to the pull of the driving spring.

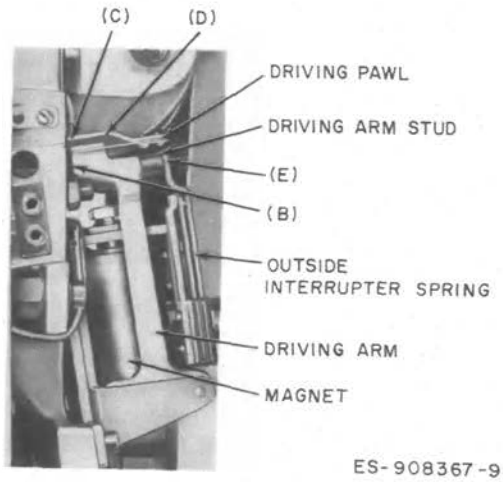

Fig. 10—Drum Advance Mechanism

Use the 79B gauge.

2.10 ***Driving Pawl Tension:*** Fig. 10(C)—With the armature of the drum advance mechanism electrically operated, the tension of the driving pawl against the ratchet wheel tooth shall be

Test—Min 125 grams, Max 200 grams

Readjust—Min 150 grams, Max 200 grams

Use the 79B gauge check as follows

(1) Apply the gauge to the straight portion of the pawl at the bend near the ratchet wheel end

(2) Read the gauge just as the pawl leaves the bottom of the ratchet wheel tooth.

2.11 ***Driving Pawl Position***

(a) The edges of the driving pawl along its length shall be parallel with the sides of the ratchet wheel

Gauge by eye

*(b) The end of the driving pawl shall lie wholly within the face of any tooth of the ratchet wheel. Check in four positions of the ratchet wheel 90 degrees apart.

Gauge by eye

(c) The driving pawl shall engage the tooth without a twisting motion as the rotary play in the drum is taken up in both directions.

Gauge by eye and check as follows

(1) Rotate the drum back and forth.

(2) Observe the movement of the driving pawl at the point shown in Fig. 10(D)

2.12 ***Clearance Between Driving Arm Stud And Outside Interrupter Spring:*** The clearance between the driving arm stud and the outside interrupter spring shall be

Min 0.040 inch

Max 0.050 inch

Use the 112A gauge

2.13 ***Outside Interrupter Spring Tension:*** Fig. 10(E)—The outside interrupter spring tension measured at the tip of the spring just as the contact breaks shall be

Min 60 grams

Max 175 grams

Use the 79C gauge check as follows.

(1) Apply the gauge so that the pull finger rests on the top of the outside interrupter spring and the offset portion enters between the driving arm stud and the spring.

2.14 ***Electrical Requirement:*** The drum advance magnet shall operate the armature so that the driving pawl falls into the next tooth when the magnet is energized with a current of 615 milliamperes.

Use the 35-type test set in conjunction with the perforator and reader test circuit SD-40040-01 or SD-95497-01 and as covered in Section 034-306-501 or 034-306-502.

TAPE GUIDES AND SPRINGS

2.15 ***Tape Positioning Spring Tension:*** Fig. 11(A)—The rollers of the tape positioning springs shall bear against the edge of the KS-13887 perforator tape with a pressure of

Min 15 grams

Max 25 grams

This requirement is met if the rollers are moved at least 1/32 inch by the insertion of KS-13887 perforator tape in the tape chute.

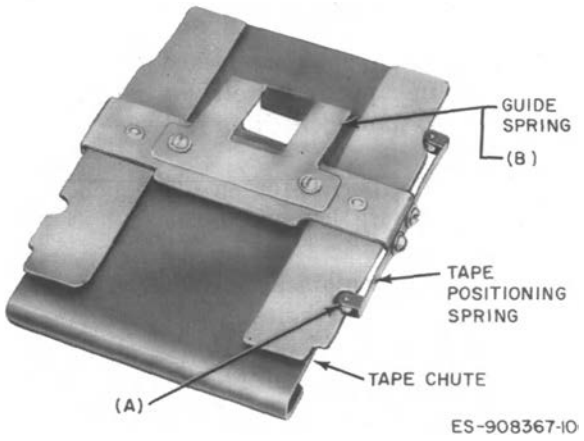

Fig. 11—Input Tape Chute

Gauge by eye.

2.16 ***Clearance Between Guide Springs and Tape Chute:*** Fig. 11(B)—The clearance between the guide springs and the input tape chute shall be sufficient to permit a double thickness of KS-13887 perforator tape to pass between the springs and the chute without bind.

Gauge by feel by moving a double thickness of KS-13887 perforator tape back and forth in the chute.

Note: This requirement may be considered to be met if any standard 3 × 5 file card inserted into the input tape chute can be easily moved back and forth between the guide spring and tape chute without sticking or snagging.

2.17 ***Tape Guide Spring Pressure:*** Fig. 12(A)—With the tape guide resting against the drum, the pressure of the tape guide spring shall be

Min. 125 grams

Use the 79C gauge equipped with the 645A pull finger check as follows

(1) Insert the gauge tip through the notch in the cradle casting.

(2) Engage the hook in the hole in the tape guide spring as shown in Fig. 12.

(3) Read the gauge just as the spring leaves the tape guide.

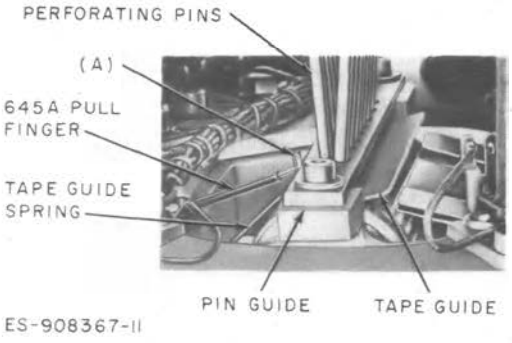

Fig. 12—Tape Guide Spring Pressure

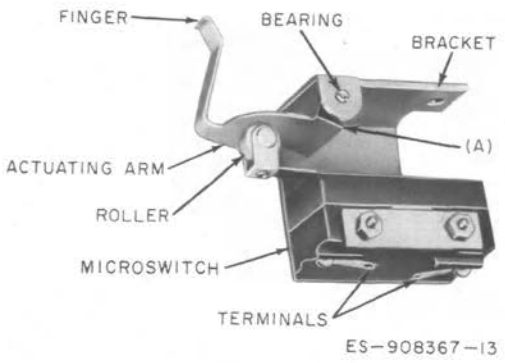

Fig. 13—Splice Contact Assembly

SPLICE CONTACT ASSEMBLY

2.18 ***Splice Contact Operation***

(a) With the perforator mounted in its normal operating position, the splice contact shall open when a section of KS-13887 perforator tape is inserted in the chute. The contact shall make when the leading edge of a splice window in the tape passes the end of the finger of the splice contact assembly and shall break when the rear edge of the window has reached the end of the finger.

Gauge by observing the associated lamp in test circuit SD-40040-01 or SD-95497-01.

(b) With the finger in the tape splice window and the play in the finger taken up in a direction to decrease the clearance between the nearer lengthwise edge of the window and the finger, and clearance between the finger and this edge shall be

Min 1/32 inch

Gauge by eye.

(c) The pressure of the roller of the microswitch lever against the actuating arm measured at the rivet below the roller just as the lever starts to move shall be

Max 10 grams

Use the 70F gauge.

TAPE CUTTER ASSEMBLY

KS-13882 L1 and L3 Perforators Only

2.19 ***Clearance Between Exit Tape Chute and Drum:*** Fig. 6(E)—The clearance between the short lip of the exit tape chute and the drum over the length of the drum shall be

Min 0.005 inch

Max 0.015 inch

Check in four positions of the drum 90 degrees apart.

Use the KS-6909 gauge.

2.20 ***Freedom of Rotary Knife Movement:*** Fig. 14(A)—The rotary knife shall move freely when operated manually and shall fully restore to the normal position when released slowly and the movement is lightly retarded by hand.

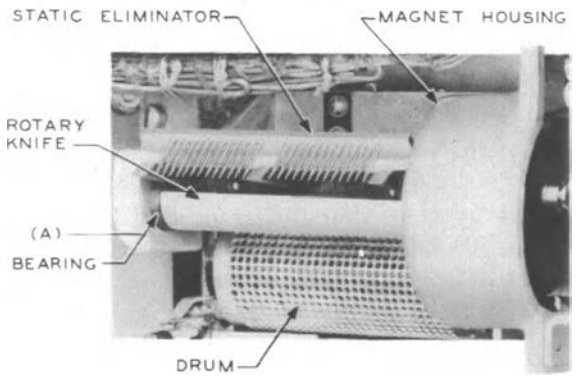

Fig. 14—Tape Cutter and Static Eliminator KS-13882 L1 and L3 Perforator

Gauge by feel.

2.21 ***Retractile Spring Tension:*** Fig. 15(B)—With the rotary knife in the normal position, the tension of the retractile spring against its stop shall be

Min 400 grams

Max 600 grams

Use the 79B gauge applied to the looped end of the spring.

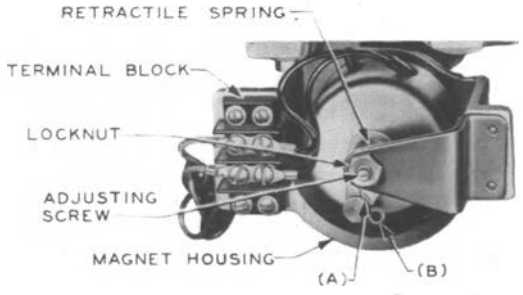

Fig. 15—Cutter Magnet—End View

2.22** ***Clearance Between Exit Tape Chute and Tape Guide: Fig. 16(A)—The clearance between the long lip of the exit tape chute and the tape guide shall be

Min 1/64 inch

This clearance shall be approximately the same across the entire length of the tape guide.

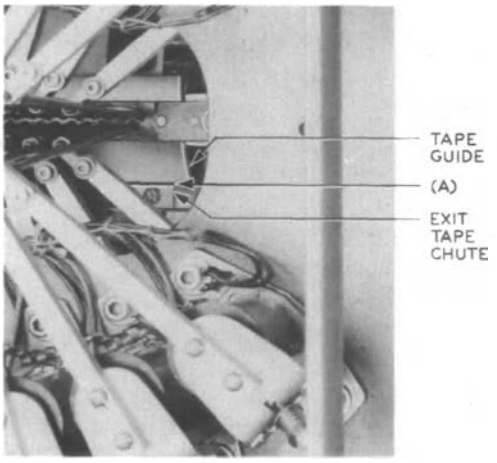

Fig. 16—Clearance Between Tape Guide and Exit Tape Chute

Gauge by eye.

2.23** ***Clearance Between Angle and Lip of Exit Tape Chute: Fig. 17(A)—The clearance between the edge of the chromium plated angle mounted on the stationary knife and the adjacent lip of the exit tape chute shall be

Min 0.040 inch

Use the 92L gauge check as follows

(1) Remove the tape cutter assembly using the proper size Allen wrench.

(2) Insert the 92L gauge, through the chute so that the gauge projects beyond the chute toward the rotary knife

(3) Hold the gauge against the surface of the chute adjacent to the rotary knife while checking the requirement.

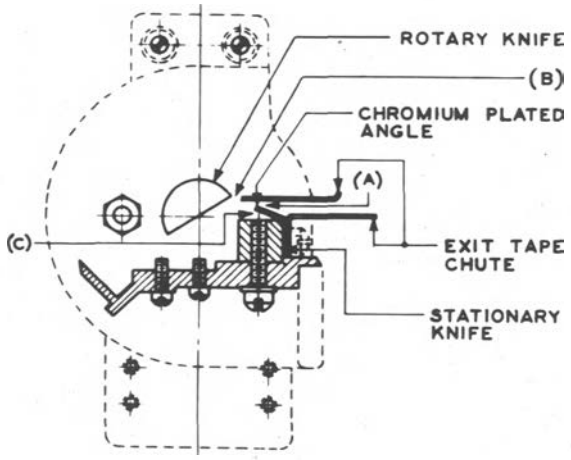

Fig. 17—Paper Cutter Assembly

2.24** ***Relation Between the Leading Edge of Rotary Knife and Exit Tape Chute: Fig. 17(B)—With the rotary knife in the normal position, the leading edge of the knife shall not extend in front of the opening of the tape chute.

Gauge by eye.

2.25** ***Clearance Between Chromium Plated Angle and Stationary Knife: Fig. 17(C)—The free edge of the chromium plated angle shall clear the stationary knife across the entire length of the angle.

Gauge by eye and check as follows

(1) Remove the tape cutter assembly using the proper size Allen wrench.

(2) Hold the cutter assembly so that the mounting bracket is away from the light source.

(3) Rotate the cutter arm slightly and sight through the opening between the stationary and rotary knives

PERFORATING UNITS

2.26 ***Mounting:*** The perforating units shall be securely fastened to the perforator frame.

Gauge by feel.

To check this requirement, grasp the pole piece of the unit and apply sidewise pressure.

2.27 ***Pin, Guide, and Drum Hole Alignment***

(a) All perforating pins shall line up centrally with the associated drum holes.

This requirement is met if there is no observable rotary movement of the drum when the perforating pins at each end of the drum are depressed manually so that the points seat firmly in the drum holes.

Gauge by eye.

(b) The perforating pins shall move freely through the pin guide. They shall release without hesitation when the perforating unit is operated manually with no tape on the drum and slightly retarded by hand as it is released.

Gauge by eye and feel.

(c) In the unoperated position of the pin there shall be a clearance between the pin and any adjacent pin or arm assembly of

Min 0.025 inch

Gauge by eye.

The clamp plate is approximately 0.060 inch thick.

2.28 ***Retractile Spring Position***

(a) Fig. 18(A)—The groove in the cup washer shall bear against the offset knife edge of the armature.

Gauge by eye.

(b) The inner end of the retractile spring shall be seated in the cup washer and the outer end shall rest wholly within the periphery of the spring guide.

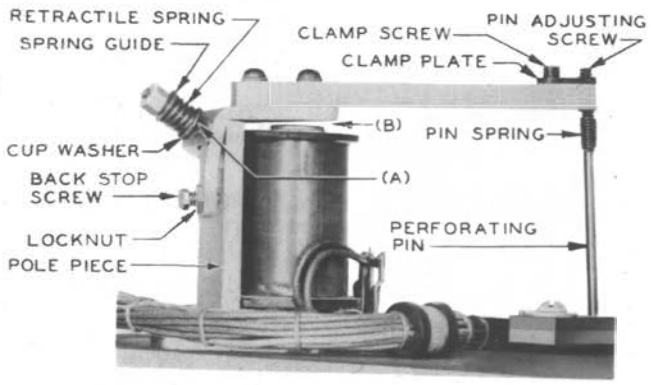

Fig. 18—Perforating Unit Assembly

Gauge by eye.

2.29 ***Operated Armature Gap:*** Fig. 18(B)—With the perforating magnet electrically energized on 150 ma for the list 1 and 2 perforators, and 300 ma for the list 3 perforator, the clearance between the armature and the pole face shall be

Min 0.007 inch

Max 0.011 inch

Use the 174A gauge and 35-type test set in conjunction with the perforator and reader test table per SD-40040-01 or SD-95497-01 check as follows.

(1) Insert the 0.007-inch blade of the gauge in the armature gap.

(2) With the magnet electrically energized on the specified current, the gauge shall fit loosely in the gap (a slight drag is permissible).

(3) Release the magnet and insert the 0.011-inch blade of the gauge in the armature gap

(4) When the magnet is electrically energized on the specified current, the gauge shall be held snugly.

2.30 ***Armature Backstop Screw Position:*** Fig. 19(A)—With the perforating unit electrically operated on the specified soak current of 150 ma for the list 1 and 2 perforators, and 300 ma for the list 3 perforator, the clearance between the armature backstop screw and the pole piece shall be

Min 0.026 inch

Max 0.032 inch

Use the 175A gauge.

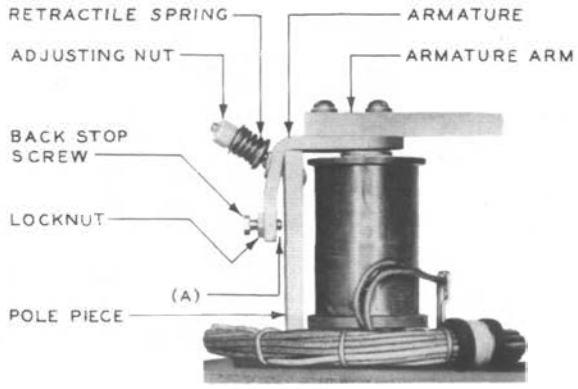

Fig. 19—Perforating Unit—Armature Operating

2.31 ***Electrical Requirements:*** The perforating unit shall meet the following electrical requirements.

KS-13882 L1 and L2 Perforators

	AFTER SOAK	TEST	READJUST
Operate	—	85 ma	80 ma
Release	150 ma	23 ma	26 ma
Hold	150 ma	35 ma	30 ma

KS-13882 L3 Perforator

Operate	—	235 ma	225 ma
Release	300 ma	52 ma	57 ma
Hold	300 ma	75 ma	66 ma

Use the 35-type test set in conjunction with the perforator and reader test table per SD-40040-01 or SD-95497-01 and as covered in Section 034-306-501 or 034-306-502.

DRUM ADVANCE CHECKING MECHANISM (KS-13882 L2 perforator only)

2.32 ***Clearance Between Finger and Drum Surface:*** Fig. 20(A)—With the play in the drum taken up so that the clearance is at a minimum and with the checking mechanism in the unoperated position, the clearance betwen the tip of the finger and the surface of the drum shall be

Min 0.010 inch

Max 0.015 inch

This requirement shall be met when the finger is opposite a solid portion of the drum.

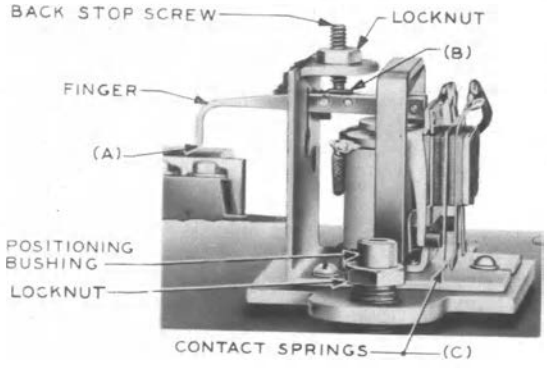

Fig. 20—Drum Advance Checking Mechanism Cover Removed KS-13882 L2 Perforator

Use the KS-6909 gauge.

2.33 ***Alignment of Finger With Drum Holes:*** When the drum is in a position where a drum hole is opposite the finger and the magnet is electrically operated, the finger shall not touch the sides of the drum hole.

This requirement shall be checked in four positions of the drum approximately 90 degrees apart.

Gauge by eye.

2.34 ***Armature Backstop Gap:*** Fig. 20(B)—With the checking mechanism electrically operated and the finger in a drum hole, the backstop gap shall be

Min 0.020 inch

Max 0.025 inch

Use the KS-6909 gauge.

2.35 ***Contact Make***—Fig. 20(C)

(a) With the checking mechanism de-energized and a 0.012-inch gauge inserted between the backstop screw and the finger, no contact shall close.

Use the KS-6909 gauge.

(b) With the checking mechanism de-energized and a 0.015-inch gauge inserted between the backstop screw and the finger, both contacts shall close.

Use the KS-6909 gauge.

2.36 ***Tension of Moving Contact Springs:*** Fig. 20(C)—With the checking mechanism in the unoperated position, each moving spring shall rest against its armature stud but the tension measured behind the contact just as the spring leaves the stud shall be

Max 5 grams

Use the 70F gauge.

2.37 ***Electrical Requirements:*** With the cover on, the magnet shall meet the following electrical requirements with the drum positioned so that the finger enters a drum hole.

	SOAK	TEST	READJUST
Operate	—	18 ma	17 ma
Release	30 ma	3 ma	4 ma

Use the 35-type test set in conjunction with perforator and reader test circuit SD-40040-01 or SD-95497-01 and as covered in Section 034-306-501 or 034-306-502.

OVERALL PERFORATOR OPERATION

2.38 ***Operation Test***

(a) The operation test shall be made using perforator and reader test circuit SD-40040-01 or SD-95497-01 in accordance with the instructions supplied with the test circuit for making the operation test of the perforator or in accordance with Section 034-306-501 or 034-306-502.

(b) The perforator shall faithfully reproduce on the tape the pattern supplied by the test circuit at the speed and percent break imposed by the test circuit at 50 volts. The perforator shall advance the tape smoothly and uniformly and there shall be no light or missing perforations. The perforations in the pattern formed on the tape by the perforator shall be uniform in size. The conical embossings at the surface of the tape shall be circular in shape and uniform in size. The perforation shall be concentric with the base of the embossing.

Gauge by eye.

Note: When testing the list 2 perforator using the test table circuit SD-40040-01, and a test reader, alternate sections only of the test pattern test tape will be faithfully reproduced.

KS-13882 L1 and L3 Perforators Only

(c) The tape shall enter the slot between the rotary and stationary blades and move freely through the slot as the drum advance magnet releases.

Gauge by eye.

(d) The cutter shall operate and cut tape perforated with the splice pattern under the circuit conditions provided for this purpose in the perforator test table.

(e) When the perforator is continuously reperforating the splice pattern at the speed and percent break provided by the test reader, and the splice contact finger enters a splice window in the tape, there shall be

Min 12 lines

of perforations between the perforating pins and the leading edge of the tape window.

PERFORATOR CABINET

2.39 ***Spiral Tape Guide:*** All perforator cabinets which are equipped with spiral tape guides having two tape retaining wires should be adjusted so that the clearance between the incoming end retaining wire and the spiral wire is 0.250. The clearance between the outgoing end retaining wire and the spiral wire should be 0.180. Use a R-8550 6-inch scale per Fig. 21 .

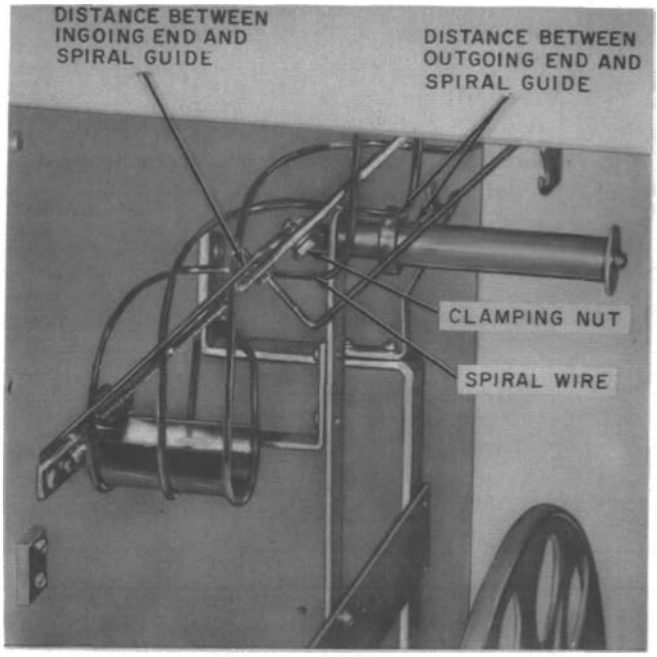

Fig. 21—Requirement For Spiral Tape Guide

3. ADJUSTING PROCEDURES

3.001 *List of Tools, Gauges, Materials, and Test Apparatus.*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
245	3/8- and 7/16-Inch Open Double-End Flat Wrench
303	Spring Adjuster
325B	Adjuster
363	Spring Adjuster
379A	Adjuster
388A	3/16- and 1/4-Inch Open Double-End Offset Wrench
417A	1/4- and 3/8-Inch Open Double-End Flat Wrench
418A	5/16- and 7/32-Inch Open Double-End Flat Wrench
485A	Smooth-Jaw Pliers
486A	Oilcan
643A	0.062-Inch Allen Socket Screw Wrench
643B	0.078-Inch Allen Socket Screw Wrench
644A	5/32-Inch Socket Screw Ratchet Wrench
645A	Pull Finger
649A	Pin Locking Tool
KS-6320	Orange Stick
KS-14131	Carrying Case
KS-14164	Brush
R-1760	Adjuster
R-2485	5/32-Inch Allen Socket Screw Wrench
R-2670	3/32-Inch Allen Socket Screw Wrench
†R-2967	1/8-Inch Allen Straight Wrench
†R-2968	5/32-Inch Allen Straight wrench
R-3415	7/64-Inch Allen Socket Screw Wrench
R-3416	9/64-Inch Allen Socket Screw Wrench
†R-3449	9/64-Inch Allen Straight Wrench
R-5850	5/8- and 3/4-Inch Hex. Double-End Offset Wrench
—	3-Inch C Screwdriver (or the replaced 3-inch cabinet screwdriver)
—	No. 607 Handle With 5 Inch long 3/32-Inch Hex. Blade, Allen Manufacturing Co.

†The R-2967, R-2968, and R-3449 straight Allen wrenches with handles are intended to supplement the Allen socket screw wrenches specified herein when parts are inaccessible or when sufficient torque cannot be developed using the Allen socket screw wrenches.

CODE OR SPEC NO.	DESCRIPTION
GAUGES	
70F	10-0-10 Gram Gauge
74D	Gauge Nest
79B	0-1000 Gram Push-Pull Tension Gauge
79C	0-200 Gram Push-Pull Tension Gauge

CODE OR SPEC NO.	DESCRIPTION
GAUGES	
92A	0.010-Inch Nonmagnetic Offset Thickness Gauge
92L	0.040-Inch Nonmagnetic Offset Thickness Gauge
92S	0.002-Inch Nonmagnetic Offset Thickness Gauge
92T	0.005-Inch Nonmagnetic Offset Thickness Gauge
92W	0.008-Inch Nonmagnetic Offset Thickness Gauge
112A	0.040- and 0.050-Inch Double End Thickness Gauge
174A	0.007- and 0.011-Inch Thickness Gauge
175A	0.026- and 0.032-Inch Thickness Gauge
KS-6909	Thickness Gauge Nest
MATERIALS	
KS-2423	Twill Cloth
KS-13887	Perforator Tape
KS-7470	Oil
KS-19587 L2	Lubricant
—	Bond Paper
—	Hardwood Toothpick, Flat at One End, Pointed at the Other
—	Twine
—	3 x 5 File Cards
R-8550	6 Inch Scale
TEST APPARATUS	
35-Type	Test Set
—	Test Table per SD-40040-01 or SD-95497-01

3.002 Where reference is made in the procedures to the use of an Allen Wrench, select the proper size Allen socket screw or straight wrench from among those listed in 3.001.

GENERAL

3.01 ***Cleaning*** (Reqt 2.01)

3.02 ***Lubrication*** (Reqt 2.02)

(a) Clean the contacts in accordance with the section covering cleaning of relay contacts.

(b) Clean other parts of the perforator in accordance with Section 069-370-801.

(c) Make sure the container of KS-19587 L2 lubricant has been shaken as covered in 1.07

(d) ***Ratchet Wheel Teeth:*** To lubricate the Ratchet Wheel teeth proceed as follows.

(1) Distribute the specified quantity of lubricant over the ratchet wheel teeth using the KS-14164 brush.

(2) After lubrication, place the perforator on the turntable of the test table per SD-40040-01 or SD-95497-01.

(3) Operate it for a few minutes with tape on the drum to distribute the lubricant more evenly over the ratchet wheel teeth.

(e) ***Overthrow Stop:*** To lubricate the overthrow stop proceed as follows.

(1) Operate the drum advance magnet manually.

(2) Apply the specified lubricant to the surface of the overthrow stop using the KS-14164 brush.

(f) ***Armature Bearings:*** To lubricate the armature bearings proceed as follows.

(1) Apply the specified quantity of lubricant to each side of the armature bearing using the KS-14164 brush.

(2) When lubricating KS-13882 L2 perforators, use the residue on the brush to lubricate the drum advance checking mechanism backstop screw and rectractile spring as covered in (i).

(g) ***Cutter Bearings:*** To lubricate the cutter bearings proceed as follows.

(1) Apply the specified quantity of lubricant to each bearing with the 486A oilcan.

(2) Operate the cutter several times to work the lubricant into the bearings.

(3) Wipe off excess lubricant with the KS-2423 cloth.

(h) ***Rectractile Spring:*** To lubricate the rectractile spring proceed as follows.

(1) Lift the rectractile spring from the groove in the stud.

(2) Apply the specified quantity of the lubricant with the 486A oilcan to the groove at the point where the spring rests.

(i) ***Drum Advance Checking Mechanism Backstop Screw and Rectractile Spring:*** To lubricate proceed as follows:

(1) Remove the cover from the drum advance checking mechanism using the 3-inch C screwdriver.

(2) Operate the checking mechanism manually.

(3) Apply the specified lubricant between the end of the backstop screw and the finger with the KS-14164 brush.

(4) Release the armature.

(5) Using a toothpick, move the tip of the rectractile spring away from the slot at the underside of the finger.

(6) Apply the specified lubricant between the bottom of the slot and the rectractile spring.

(7) Remount the cover, tightening the cover mounting screws securely.

(j) ***Drumshaft Bearings:*** To lubricate drumshaft bearings proceed as follows.

(1) Insert the nozzle of the 486A oilcan through a hole in the drum.

(2) Apply the specified quantity of oil at the point on the shaft where the shaft enters the bearings at each end of the drum.

(k) ***Splice Contact Bearings:*** To lubricate splice contact bearing proceed as follows.

(1) Apply the specified lubricant to each end of the bearing pin using the 486A oilcan.

(2) Operate the contact a few times to work the oil into the bearing.

(3) Wipe off any excess oil with the KS-2423 cloth.

(l) ***Cutter Blade Surface:*** To lubricate the cutter blade surface proceed as follows.

(1) Spread the specified quantity of lubricant over all polished blade surfaces using the KS-14164 brush.

(2) Avoid touching the polished surfaces with the fingers before or after lubricating.

(m) ***Armature Backstop Screw Tips:*** Before lubricating the armature backstop screw tips, clean the pole pieces under the screws and the tips of the screws by passing a piece of bond paper between the pole piece and the backstop screw with the armature in the nonoperated position. Apply the specified quantity of lubricant to the tip of each armature backstop screw as follows.

(1) Place enough lubricant on a piece of KS-13887 perforator tape.

(2) Use a KS-14164 brush to cover an area approximately 1 inch in diameter.

(3) Manually operate the armature.

(4) Insert the oiled portion of tape under the screw with the oiled surface toward the screw.

(5) Release and reoperate the armature.

(6) Remove the tape and release the armature.

(7) Lubricate the other backstop screws in the same manner using the same lubricated surface of the tape.

(n) ***Drum Advance Mechanism Driving Spring and Lugs:*** To lubricate drum advance mechanism driving spring and lugs proceed as follows.

(1) Apply the specified quantity of oil to the loops at each end of the driving spring using the 486A oilcan.

(2) Apply the nozzle to the loop in the spring where the spring is in contact with the lug.

3.03 ***Record of Lubrication*** (Reqt 2.03)

DRUM ADVANCE MECHANISM

3.04 ***Retaining Pawl Position*** (Reqt 2.04)

3.05 ***Retaining Pawl Tension*** (Reqt 2.05)

3.06 ***Armature Backstop Position*** (Reqt 2.06)

3.07 ***Engagement of Driving Pawl With Ratchet Wheel Teeth*** (Reqt 2.07)

(a) ***Retaining Pawl Position:*** To adjust the position of the retaining pawl proceed as follows.

(1) Loosen the retaining pawl mounting screw with the proper size Allen wrench.

Note: When adjusting for clearance between the pawl and the ratchet tooth, operate the drum advancement magnet and ten or more of the perforating units electrically. [This will not be necessary when adjusting the retaining pawl to meet requirement 2.04(b) and (c)].

(2) Shift the pawl so that it rests against the radial face of the associated tooth and the end of the pawl rests wholly on the surface of the ratchet wheel and is parallel to the edge of the ratchet wheel teeth.

(3) Tighten the mounting screw securely taking care that the position of the pawl has not changed.

(b) ***Retaining Pawl Tension:*** To readjust the retaining pawl tension proceed as follows.

(1) Apply the 303 spring adjuster to the base of the pawl as near possible to the point where the pawl is secured to the frame.

Note: In the case of the list 1 and 3 perforators it will be necessary to remove the tape cutter assembly mounting screws with the proper size Allen wrench and then remove the assembly before adjusting the pawl as described above. After making the necessary adjustment, securely remount the cutter assembly if it was removed.

(c) ***Armature Backstop:*** To change the position of the armature backstop tap the bottom of the backstop with the R-1760 adjuster.

Note: If considerable movement is required, proceed as follows.

(1) Loosen the armature backstop mounting screw slightly with the proper size Allen wrench.

(2) Position the backstop as required and tighten the mounting screw.

Note: If it is necessary to change the position of the overthrow stop procced as follows.

(1) Loosen the two overthrow stop mounting screws with the proper size Allen wrench.

(2) Position the overthrow stop so that the proper clearance is obtained.

(3) Tighten the overthrow stop mounting screws securely.

(4) Check that the armature backstop position is satisfactory. If it is not, adjust as covered above.

(d) ***Engagement of Driving Pawl With Ratchet Wheel Teeth:*** To check the engagement of the driving pawl with the ratchet wheel proceed as follows.

(1) Loosen the magnet clamping screw with the proper size Allen wrench.

(2) Loosen the magnet adjusting locknut with the R-5850 wrench.

(3) Position the magnet as required, turning the magnet adjusting bushing with the 245 wrench.

(4) Tighten the magnet clamping screw and the magnet adjusting locknut.

(5) Check that the requirement is met.

(6) Make sure that the requirements covering electrical and operation test are met.

3.08 ***Position of Magnet*** (Reqt 2.08)

If the armature does not strike the core at the edge farthest from the armature bearing when the magnet is electrically operated, reposition the magnet as follows.

(1) Loosen the magnet clamping screw with the proper size Allen wrench and the magnet adjusting locknut with the R-5850 wrench.

(2) Position the magnet as required with the 245 wrench.

(3) Tighten the magnet clamping screw and the magnet adjusting locknut.

(4) Check that the requirement is met.

(5) Make sure that the electrical requirement and operation test are met.

3.09 ***Driving Spring Tension*** (Reqt 2.09)—Adjust the driving spring lug on the frame of the drum advance mechanism using the 379A adjuster as shown in Fig. 22 (Do not adjust the driving spring arm).

Caution: Exercise care in adjusting the lug since it is possible to spring the frame of the drum advance mechanism, thereby affecting other adjustments. Take care not to bend the lug out of alignment with the arm on the armature to which the other end of the driving spring is attached. Misalignment of these parts will cause excessive friction in the armature bearings. Make sure that the electrical requirement and operation test are met.

3.10 ***Driving Pawl Tension*** (Reqt 2.10)

3.11 ***Driving Pawl Position*** (Reqt 2.11)

(a) ***Driving Pawl Tension:*** To adjust the driving pawl tension proceed as follows.

(1) Hold the portion of the drivng pawl which is riveted to the pawl spring with the 485A pliers.

(2) Apply the 325B adjuster to the sloping portion of the driving pawl adjacent to the reed spring as shown in Fig. 22.

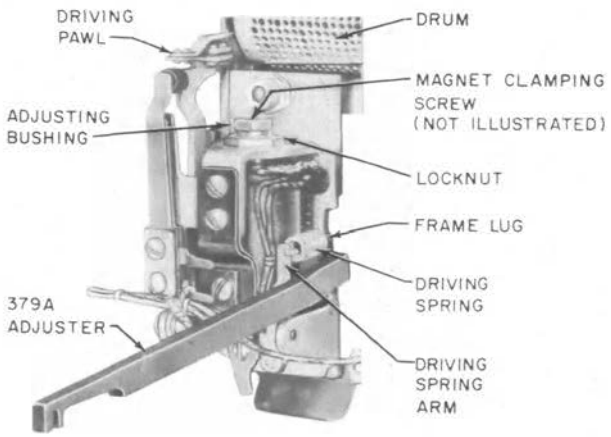

Fig. 22—Method of Adjusting Driving Spring Tension

(3) Adjust the driving pawl until the required tension is obtained. Adjusting the pawl upward increases the tension and downward, decreases the tension.

(b) ***Driving Pawl Position:*** To adjust the driving pawl position proceed as follows.

(1) If the sides of the driving pawl are not parallel with the side of the ratchet wheel, apply the R-1760 adjuster to the driving arm beneath the point where the pawl spring is attached to the arm. Adjust the driving arm as required.

(2) If the end of the driving pawl does not lie wholly within the face of the ratchet wheel tooth, apply the R-1760 adjuster to the driving arm between the armature and the stud and adjust as required.

(3) If the driving pawl engages the ratchet wheel teeth with a twisting motion, hold the armature of the drum advance mechanism in the operated position, apply the 485A pliers to the midsection of the pawl, and adjust as required.

3.12 ***Clearance Between Driving Arm Stud and Outside Interrupter Spring*** (Reqt 2.12)

3.13 ***Outside Interrupter Spring Tension*** (Reqt 2.13)

(a) Before adjusting the clearance between the driving arm stud and the outside interrupter spring, observe how close the clearance is to the specified limit. When only a slight adjustment is required to bring the clearance within the limits, adjust the interrupter spring with the 303 spring adjuster. When a considerable amount of adjusting is required proceed as follows.

(1) Adjust the spring stop with the 379A adjuster.

(2) Apply the 379A adjuster to the spring stop from the side nearer the magnet coil as shown in Fig. 23 and adjust the stop as required.

(3) Take care not to throw the lip of the spring perceptibly out of parallel with the base of the driving arm stud.

(b) ***Outside Interrupter Spring Tension:*** Adjust the tension of the outside interrupter spring using the 303 spring adjuster applied close to the base of the spring.

3.14 ***Electrical Requirement*** (Reqt 2.14)

If the requirement is not met, it is an indication that the engagement of the driving pawl with the ratchet wheel teeth as covered in requirement 2.07 is not satisfactory or that the driving spring tension as covered in requirement 2.09 is excessive. Readjust as required.

TAPE GUIDES AND SPRINGS

3.15 ***Tape Positioning Spring Tension*** (Reqt 2.15)

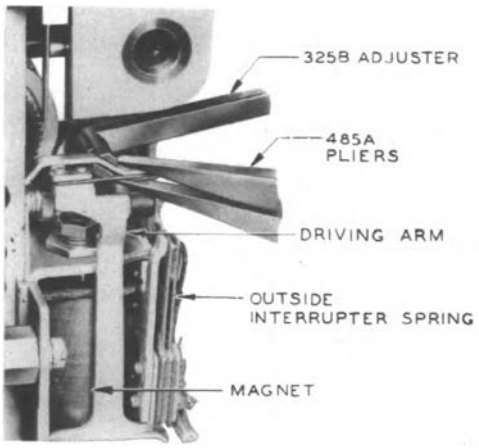

Fig. 23—Method of Adjusting Driving Pawl Tension

3.16 ***Clearance Between Guide Springs and Tape Chute*** (Reqt 2.16)

(1) If these requirements are not met, refer the matter to the supervisor.

3.17 ***Tape Guide Spring Pressure*** (Reqt 2.17)—To remove the tape guide spring pressure proceed as follows.

(1) Remove the spring mounting screw with the proper size Allen Wrench.

(2) Remove the spring from the perforator.

(3) Using the fingers, change the angle of the bend at the mounting end of the spring to increase the pressure of the spring against the tape guide.

(4) Remount the spring taking care that it rests properly in the slot in the frame and tighten the mounting screw securely.

SPLICE CONTACT ASSEMBLY

3.18 ***Splice Contact Operation*** (Reqt 2.18)

(a) If the splice contact does not make and break properly proceed as follows.

(1) Loosen the nuts on the micro switch mounting screws with the 417A wrench.

(2) Insert a short section of unperforated KS-13887 perforator tape in the chute.

(3) Set the micro switch so that the contact is operated with the tape in the chute and is released as the tape is withdrawn.

(4) Tighten the mounting screw nuts securely using the 3-inch C screwdriver, if necessary to hold the screw while the nut is being tightened.

(b) If the clearance between the nearer lengthwise edge of the tape splice window and the side of the finger is not satisfactory, loosen the splice contact assembly bracket mounting screws using the R-2670 wrench. Shift the assembly as required and securely tighten the screws.

(c) If the pressure of the roller on the actuating arm is excessive, adjust the roller as required using the 485A pliers.

TAPE CUTTER ASSEMBLY

(KS-13882 L1 and L3 Perforators only)

3.19 ***Clearance Between Exit Tape Chute and Drum*** (Reqt 2.19)

(a) To adjust the clearance between the exit tape chute and drum proceed as follows.

(1) Loosen the cutter assembly mounting screws with the proper size Allen wrench.

(2) Insert the 0.007-inch blade of the 74D gauge in the gap between the short lip of the exit tape chute and the drum at one end of the drum.

(3) Move the cutter so that the gauge is held lightly in the gap.

(4) Tighten the mounting screw at this end sufficiently to hold the assembly in position.

(5) Repeat with the gauge at the opposite end of the drum.

(6) Tighten the mounting screws securely and check that the requirement is met over the length of the drum.

3.20 ***Freedom of Rotary Knife Movement*** (Reqt 2.20)

3.21 ***Retractile Spring Tension*** (Reqt 2.21)

(a) If the rotary knife fails to restore to normal due to apparent bind in the bearings, clean and relubricate the parts as covered in 3.01-3.02. Examine the chute and knife blades and remove any bits of paper which may be present. If the bind is due to improper setting of the knife blades proceed as follows.

(1) Loosen the stationary knife mounting screws.

(2) Move the knife as required to relieve the bind.

(3) Operate the rotary knife manually.

(4) While holding the stationary knife against the rotary knife, tighten the mounting screws securely.

(5) Release the rotary knife.

(6) Insert a section of KS-13887 perforator tape in the chute.

(7) Check that the cutter cuts the tape when operated manually.

(b) ***Retractile Spring Tension:*** To adjust the retractile spring tension, loosen the retractile spring stud locknut with the 417A wrench while holding the stud with the 3-inch C screwdriver. Turn the stud clockwise to increase the tension or counterclockwise to decrease the tension and tighten the locknut securely.

3.22 ***Clearance Between Exit Tape Chute and Tape Guide*** (Reqt 2.22)

3.23 ***Clearance Between Angle and Lip of Exit Tape Chute*** (Reqt 2.23)

3.24 ***Relation Between the Leading Edge of Rotary Knife and Exit Tape Chute*** (Reqt 2.24)

3.25 ***Clearance Between Chromium Plated Angle and Stationary Knife*** (Reqt 2.25)

(a) Remove the tape cutter assembly using the proper size Allen wrench. If the clearance between the long lip of the exit tape chute and the tape guide, the clearance between the angle and the adjacent lip of the tape chute, or the relation between the leading edge of the rotary knife and the chute is not satisfactory, proceed as follows.

(1) Loosen the chute mounting screws with the 3-inch C screwdriver.

(2) Shift the chute as required.

(3) Tighten the screws securely.

If this does not correct the condition, the trouble may be due to a bent chute, in this case proceed as follows.

(1) Remove the chute.

(2) Using the fingers, bend the lip of the chute as required to correct the condition.

(3) Remount the chute and securely tighten the mounting screws.

(4) Recheck the requirements.

If the free edge of the angle does not clear the stationary knife satisfactorily proceed as follows. Loosen the chute and angle mounting screws and shift the angle as required. Tighten the screws securely. If this does not correct the condition proceed as follows.

(1) Remove the chute and angle mounting screws and remove the chute and angle.

(2) Bend the angle with the fingers in a direction to correct the condition.

(3) Remount the angle and chute.

(4) Recheck all requirements affected.

(5) Remount the tape cutter assembly and securely tighten all screws.

PERFORATING UNITS

3.26 ***Mounting*** (Reqt 2.26)

3.27 ***Pin, Guide, and Drum Hole Alignment*** (Reqt 2.27)

(a) To correct proceed as follows.

(1) Loosen the perforator unit mounting screws with the 644A and the proper size Allen wrenches.

(2) Reposition the unit taking care that the pin is in proper alignment with the pin guide and with adjacent pins.

(3) Tighten the unit mounting screws securely and check that the pins release satisfactorily when the magnet is operated manually and released.

3.28 ***Retractile Spring Position*** (Reqt 2.28)

(a) To position the retractile spring proceed as follows.

(1) Turn the adjusting screw with the 417A wrench until the retractile spring is fully extended.

(2) Move the parts into proper relation with each other.

(3) Readjust the tension of the retractile spring to meet the electrical requirements as covered in 3.31.

3.29 ***Operated Armature Gap*** (Reqt 2.29)

(a) To check the armature gap proceed as follows

(1) Loosen the clamp screw with the 643B wrench or the No. 607 handle with the 5-inch long 3/32 inch Allen blade.

(2) While holding the armature firmly against the knife edge, insert the 0.011-inch blade of the 174A gauge in the armature gap and energize the magnet on the specified current.

If the gap is below the minimum value proceed as follows.

(3) Turn the pin adjusting screw in a clockwise direction using the 643A wrench until the gauge fits loosely in the gap.

(4) Then turn the screw in a counterclockwise direction until the gauge is held snugly.

(5) Do step 7-9.

If the gap is in an excess of the maximum value proceed as follows.

(6) Turn the screw in a counterclockwise direction until the gauge fits snugly in the gap.

(7) Tighten the clamp screw securely.

(8) Remove the gauge and release the magnet.

(9) Recheck the requirements.

3.30 ***Armature Backstop Screw Position*** (Reqt 2.30)

(1) Loosen the backstop screw locknut with the 417A wrench while holding the backstop screw with the 388A wrench. Turn the backstop screw out to increase the clearance or in to decrease the clearance as required. Tighten the locknut securely while holding the screw in position with the 388A wrench.

3.31 ***Electrical Requirements*** (Reqt 2.31)

(1) To meet the operate and hold requirements, turn the retractile spring adjusting nut in a counterclockwise direction using the 417A wrench. To meet the release requirement, turn the adjusting nut in a clockwise direction using the wrench.

DRUM ADVANCE CHECKING MECHANISM (KS-13882 L2 perforator only)

3.32 ***Clearance Between Finger and Drum Surface*** (Reqt 2.32)

(1) To adjust the clearance between the finger and the drum, loosen the positioning bushing lockscrew with the proper size Allen wrench. Using the 245 wrench, turn the positioning bushing in a clockwise direction to increase the clearance or in a counterclockwise direction to decrease the clearance. Tighten the lockscrew securely and recheck the requirement.

3.33 ***Alignment of Finger With Drum Holes*** (Reqt 2.33)

(a) To adjust the alignment of the finger with the drum hole, loosen the three bracket mounting screws with the 3-inch C screwdriver. Move the bracket assembly as required and tighten the mounting screws securely.

3.34 ***Armature Backstop Gap*** (Reqt 2.34)

(a) To adjust the backstop gap, hold the armature backstop screw with the 643A wrench and loosen the associated locknut with the 418A wrench. Turn the backstop in to decrease the gap or out to increase the gap, as required, and tighten the locknut securely. After making the necessary adjustments, check that requirement 2.32 is met and if necessary, readjust.

3.35 ***Contact Make*** (Reqt 2.35)

(a) Adjust for contact make using the 363 spring adjuster applied to the stationary contact springs as close as possible to the insulators.

3.36 ***Tension of Moving Contact Springs*** (Reqt 2.36)

(a) Adjust the tension of the moving springs using the 363 spring adjuster applied to the spring as close as possible to the insulators.

3.37 ***Electrical Requirements*** (Reqt 2.37)

(a) If the electrical operate or release requirements are not met, check that the finger does not bind in the slot in the frame in any position of its travel. If necessary, adjust the finger as required using the 485A pliers.

(b) If the electrical requirements still are not met, readjust the tension of the retractile spring. To do this, remove the cover mounting screws with the 3-inch C screwdriver and remove the cover. Hold the retractile spring adjusting screw with the proper size Allen wrench and loosen the associated locknut with the 418A wrench. Adjust the spring by turning the adjusting screw as required. Turning the screw in a clockwise direction increases the retractile spring pressure. Take care that the spring is seated in the slot on the finger and avoid turning the adjusting screw more than necessary to

meet the requirement. Tighten the locknut securely, remount the cover, and check that the electrical requirements are met.

OVERALL PERFORATOR OPERATION

3.38 ***Operation Test*** (Reqt 2.38)

(1) If individual perforations are found which are unsatisfactory, it is an indication that the particular perforating unit requires readjustmeent. In this case, check that the pins are all aligned in the same plane, and if necessary, relocate the pin on which unsatisfactory perforations are encountered. Loosen the mounting screws of the unit with the 644A wrench and the proper size Allen wrenches and shift the unit so that the pin is in alignment with all other pins in both the operated and unoperated positions. In making this adjustment, be sure that the pin is centered in the hole in the pin guide and does not bind in the hole in the tape guide. To check this, hold the pin against one side of the hole with the KS-6320 orange stick. Operate the armature manually and observe that the pin moves away from the side of the hole in the pin guide as the point seats in the drum. Repeat this check at four points on the drum approximately 90 degrees apart. Tighten the mounting screws securely. If the requirement is still not met, check all mechanical requirements on the drum advance mechanism, and readjust as required.

(2) If the tape is not advanced smoothly and uniformly, it is an indication that the drum advance mechanism requires readjustment. Check all mechanical and electrical requirements on the particular part on which the failure is encountered and readjust as required.

(3) ***KS-13882 L1 and L3 Perforators:*** If the tape does not move freely through the tape chute, it may be due to a collection of lint or clippings from the tape in the exit chute. Remove the cutter assembly from the perforator by disconnecting the leads from the terminal block using the 3-inch C screwdriver and removing the cutter assembly mounting screws with the proper size Allen wrench. Inspect the exit tape chute and remove all foreign material with the KS-6320 orange stick. Remount the cutter assembly and check that requirements 2.19 through 2.25 applying to the cutter mechanism are met.

(4) ***KS-13882 L1 and L3 Perforators:*** If the cutter fails to properly cut the tape under the circuit conditions imposed by the test circuit, check requirements 2.19 through 2.25.

(5) If the splice contacts do not close at the correct time, loosen the assembly mounting screws with the proper size Allen wrench and reset the position of the splice contact so that the requirement is met. Tighten the mounting screws securely.

3.39 ***Clearance of Spiral Tape Guide***

(1) To adjust the incoming end retaining wire of spiral tape guide, use a 245 wrench and proceed as follows. Loosen the two clamping nuts holding the legs of the retaining wire, slide the legs through the holes in the pins to obtain the correct adjustment, and retighten the clamping nuts.

(2) To adjust the outgoing end retaining wire, use a 418A wrench and proceed as follows. Loosen the two upper nuts on the threaded legs of the retaining wire, tighten or loosen the two lower nuts to obtain the correct adjustment, and retighten the upper nuts.

Caution: The end of the retaining wire legs shall not project above the plane generated by the spiral wires of the paper guide. Should this occur, the legs of the retaining wire must be shortened.

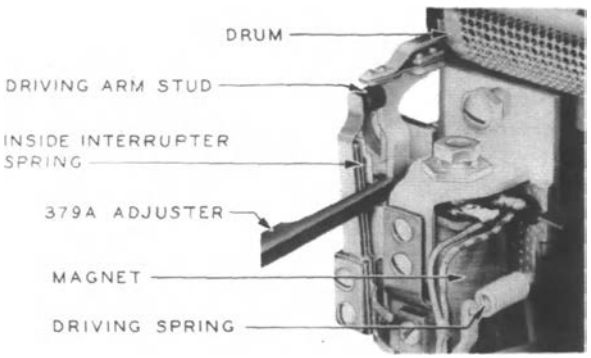

Fig. 24—Method of Adjusting Spring Stop

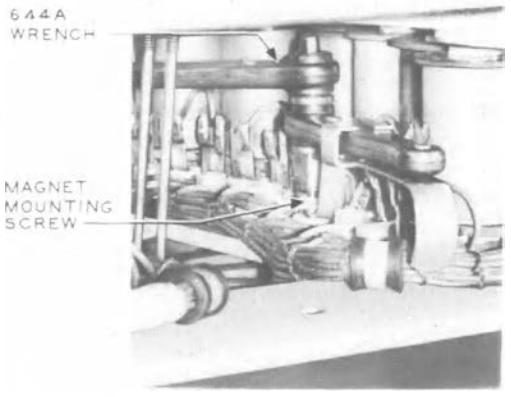

Fig. 25—Method of Tightening Inner Magnet Mounting Screws