

AMA PERFORATORS D-175914 AND D-176283 REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section is reissued to revise the requirements and procedures covering lubrication and to revise the List of Tools, Gauges, Materials, and Test Apparatus. Detailed reasons for reissue will be found at the end of the section.

1.02 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.

1.03 **Asterisk (*)**: Requirements are marked with an asterisk when to check for them would necessitate the dismantling or dismantling 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.

1.04 **One dip of KS-16832 L2 lubricant or KS-16326 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.

1.05 **One drop of KS-16326 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.

1.06 **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.

1.07 **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.

1.08 **The unoperated position of the splice contact** is that position where the rocker arm, see Fig. 12 and 13, is resting against the front edge of the opening in the tape chute or against

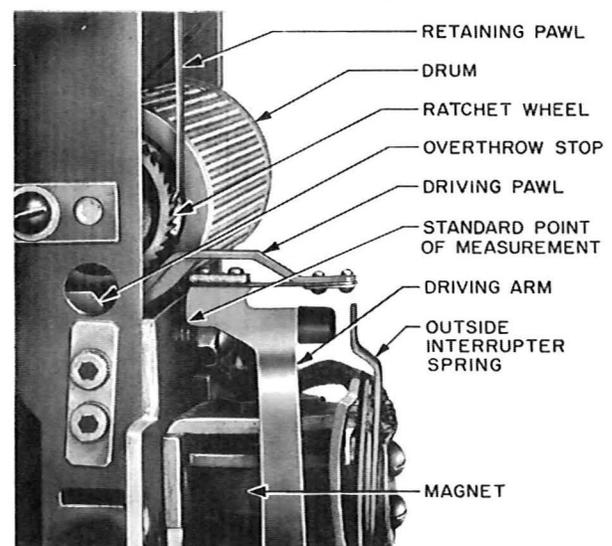


Fig. 1 - Drum Advance Mechanism

the frame of the perforator and the circuit through the contact is closed.

1.09 The operated position of the splice contact is that position where the end of the rocker arm is resting on tape passing over the drum and the circuit through the contact is open.

1.10 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.

1.11 Checking the requirements and making adjustments on these perforators require the facilities of the perforator test table per SD-95434-01. 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.

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

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

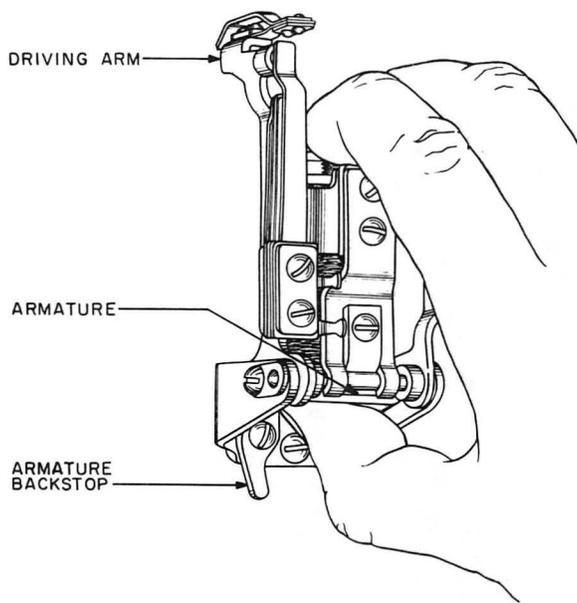


Fig. 2 – Method of Operating Drum Advance Mechanism Manually

1.14 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.

1.15 Use of 510C Portable Lamp and 376A Dental Mirror: The 510C portable lamp and the 376A dental mirror may be used to facilitate adjustment and gauging operations.

2. REQUIREMENTS

GENERAL

2.01 Cleaning

(a) (D-176283 perforators) 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) Other parts shall be cleaned when necessary.

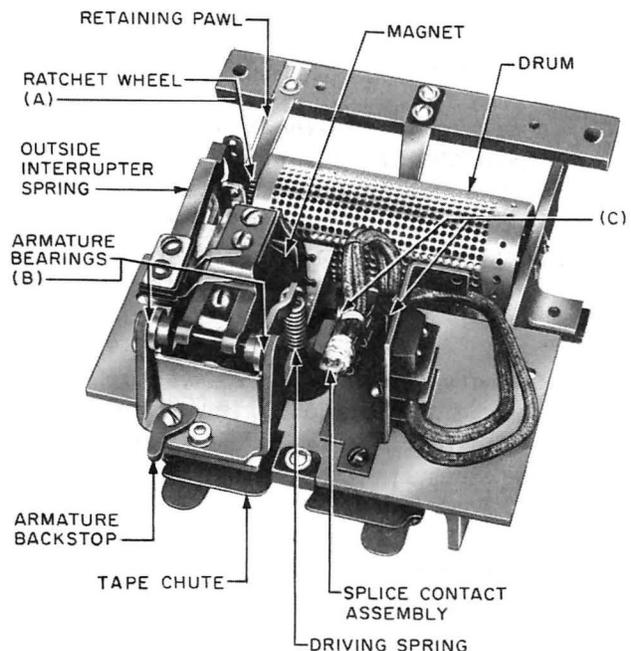


Fig. 3 – Drum Advance Mechanism and Splice Contact Assembly — D-176283 Perforator

2.02 Lubrication

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

- (1) Fig. 3(A) — One dip distributed evenly over the ratchet wheel teeth.
- (2) Fig. 3(B) — One dip divided between each side of the drum advance mechanism armature bearing.
- (3) Fig. 4(A) — One dip to the surface of the overthrow stop adjacent to the driving pawl.
- (4) Fig. 19 — 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.

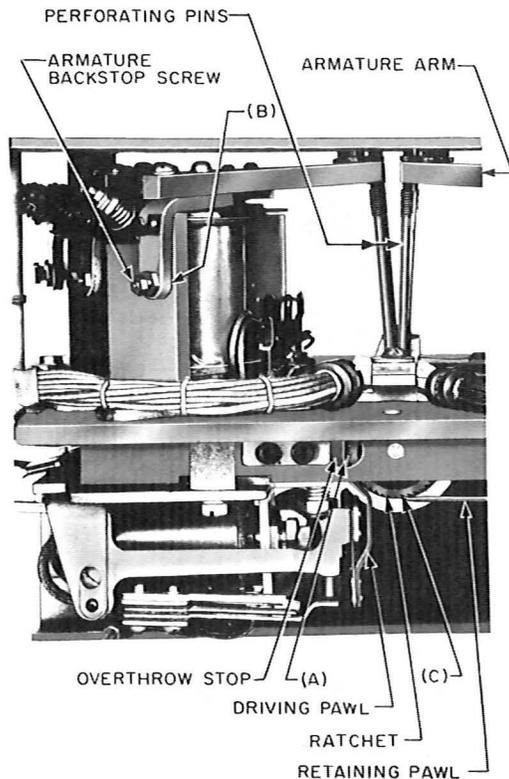


Fig. 4 — Perforating Units and Drum Advance Mechanism

(5) Fig. 4(B) — A light film on the tips of the armature backstop screws.

(b) **KS-16326 L1 Oil:** The following parts shall be adequately lubricated with KS-16326 L1 oil. When lubrication is necessary, the oil shall be applied as follows.

- (1) One drop to each drumshaft bearing.
- (2) Fig. 5 — One dip distributed over the polished surface of the cutter blade.
- (3) Fig. 3(C) and 5(A) — One drop to each splice contact bearing.
- (4) Fig. 3 — 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. 5 — One drop to each cutter assembly bearing.
- (6) Fig. 16(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) Fig. 4(C) — 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

Test — Max 0.010 inch

Readjust — Max 0.007 inch

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

Use the 74D gauge.

To check for bind on the radial face of the tooth, lift the end of the pawl with the KS-6320 orange stick and observe that it returns to its original position when released. Use the 74D gauge to check for maximum 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. 4(C) — 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.

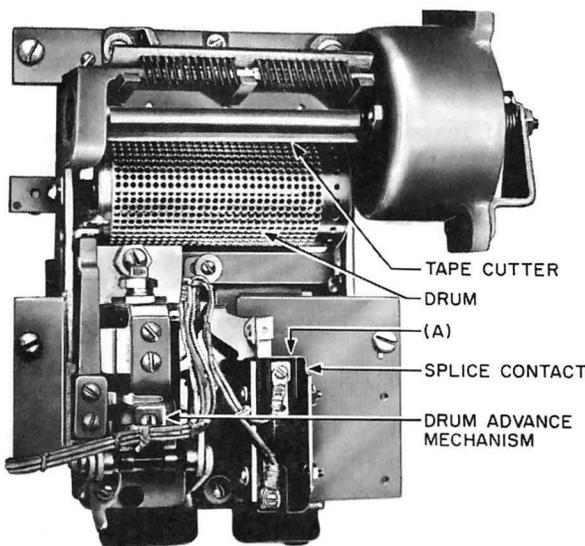


Fig. 5 – Drum Advance Mechanism and Tape Cutter

2.06 Armature Backstop Position

(a) Fig. 6(A) — 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.

To check this requirement, operate the drum advance mechanism electrically (step by step) to the required position. Grasp the upper end of the driving arm between the thumb and forefinger and move the driving arm gently approximately 1/32 inch from side to side. 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.

This requirement shall be checked on each tooth of the ratchet wheel.

Gauge by eye.

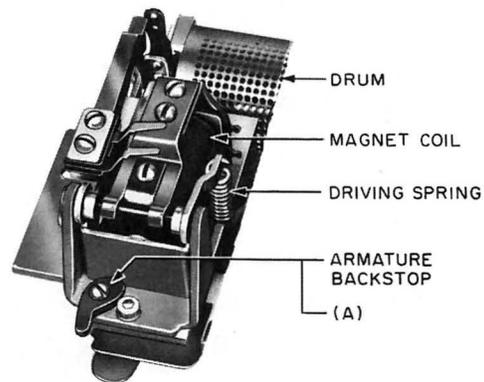


Fig. 6 – Armature Backstop Position

2.07 Operated Armature Air Gap

(a) With the drum advance magnet electrically energized and the overthrow or whip of the driving arm eliminated as covered in (b), the armature air gap shall be such that the driving pawl will engage any tooth of the

ratchet wheel when a 0.002-inch gauge is fully inserted between the armature and magnet core.

This requirement shall be checked in all positions of rotation.

Use the KS-6909 gauge.

To check this requirement, insert the 0.002-inch blade of the KS-6909 gauge between the armature and magnet core. Take care that the gauge completely covers the face of the core.

(b) Press lightly with the finger against the outside interrupter spring above the offset. The motion if not damped will produce a whip which will permit the driving pawl to take an effective stroke several thousandths of an inch longer than the actual distance between its position of rest and its operated position.

(c) With the drum advance magnet electrically energized and the overthrow or whip of the driving arm eliminated as covered in (b), the armature air gap shall be such that the driving pawl will not engage the next tooth of the ratchet wheel when a 0.006-inch gauge is fully inserted between the magnet core and the armature.

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

Use the KS-6909 gauge.

To check this requirement, insert the 0.006-inch blade of the KS-6909 gauge between the armature and magnet core. Take care that the gauge completely covers the face of the core.

2.08 Driving Spring Tension

(a) Fig. 7(A) — With the outside interrupter spring held away from the driving arm stud, the driving spring tension measured at the standard point of measurement 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.

To check this requirement, set the perforator on the bench with the tape chute downward. Place a toothpick between the interrupter

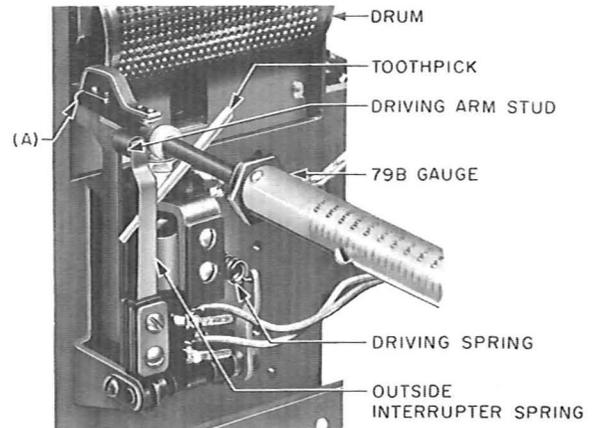


Fig. 7 — Method of Gauging Driving Spring Tension

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. Apply the 79B gauge to the standard point of measurement and hold the gauge horizontally as shown in Fig. 7. Read the tension at the instant the driving pawl drops over the next tooth of the ratchet wheel. It is advisable to check each measurement two or three times because of the likelihood of the gauge twisting at the point where it is attached to the driving arm.

(b) Without tape on the drum, 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 in the direction opposed to the pull of the driving spring.

Use the 79B gauge.

2.09 Driving Pawl Tension: Fig. 8(B) — With the armature of the drum advance magnet electrically operated, the tension of the driving pawl against the ratchet wheel shall be

Test — Min 125 grams, Max 200 grams

Readjust — Min 150 grams, Max 200 grams

Use the 79B gauge.

To check this requirement, apply the gauge to the straight portion of the pawl at the bend near the

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

2.10 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) Fig. 8(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.

2.11 Clearance Between Driving Arm Stud and Outside Interrupter Spring: Fig. 8(D) —

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.

2.12 Outside Interrupter Spring Tension: Fig. 8(A) —

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.

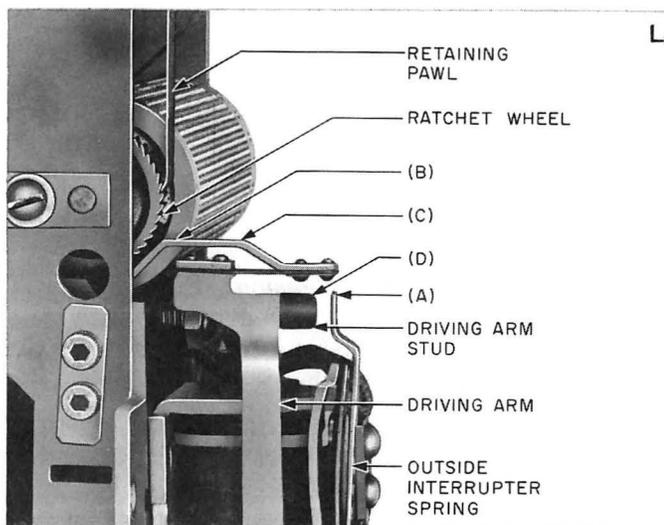


Fig. 8 — Driving Pawl and Associated Parts

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

2.13 Electrical Requirements: 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 ma.

Use the 35-type test set in conjunction with the SD-95434-01 perforator test circuit.

Tape Guides and Springs

*2.14 **Positioning Spring Tension:** Fig. 10(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.

2.15 Clearance Between Guide Springs and Tape Chute: Fig. 10(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.

2.16 Pressure Plate Tension

(a) Fig. 10(C) — The force required to lift each end of the pressure plate from contact with the drum shall be

Min 40 grams

Max 80 grams

Use the 79C gauge applied under the front corner of the pressure plate.

(b) Fig. 11(A) — The spring at the exit side of the pressure plate shall bear on the pressure plate with a tension of

Min 40 grams

Max 80 grams

Use the 70J gauge.

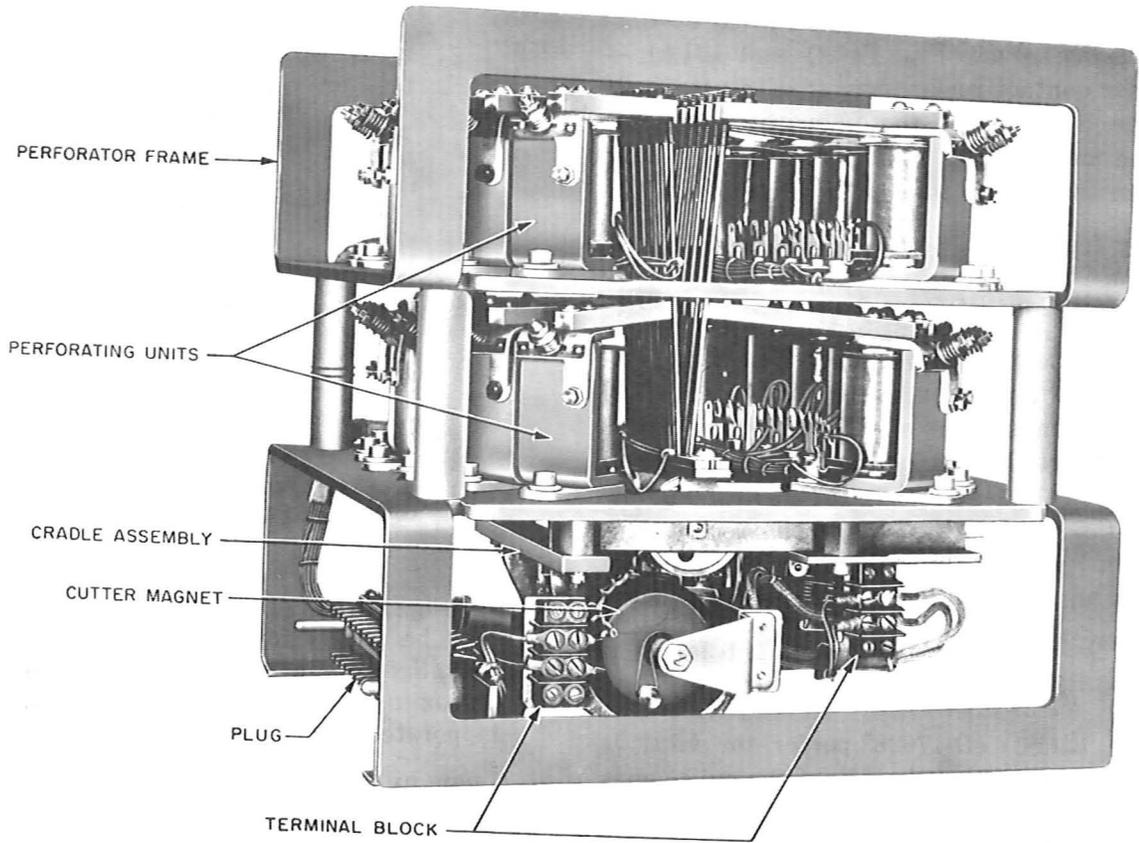


Fig. 9 - D-175914 Perforator — Side View

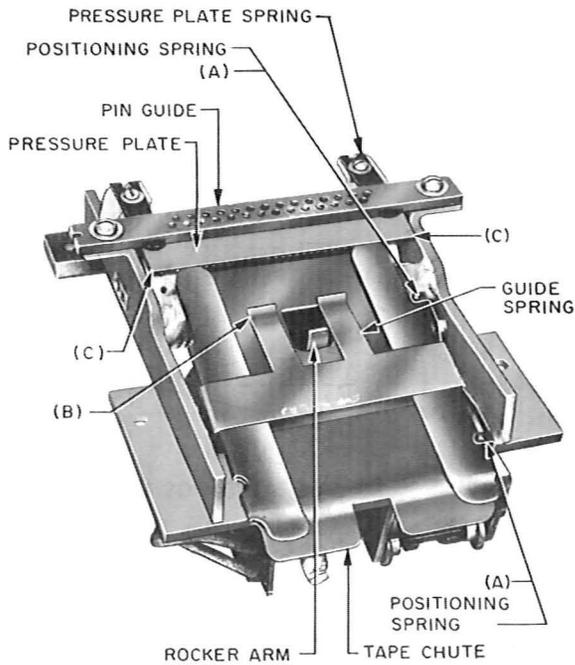


Fig. 10 - Cradle Assembly — Top View

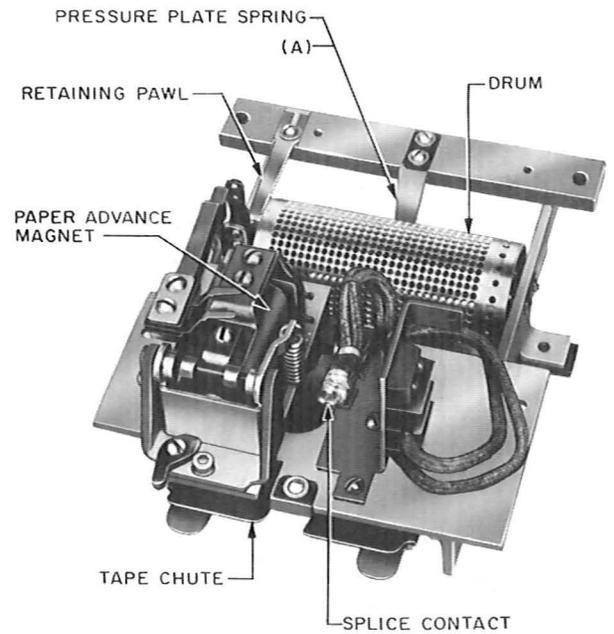


Fig. 11 - Cradle Assembly — Bottom View — D-176283 Perforator

Splice Contact Assembly

2.17 Freedom of Movement of Splice Contact

Rocker Arm: Fig. 12(A) and 13(A) —

The splice contact rocker arm shall move freely from the operated to the unoperated position when the movement is lightly retarded by hand and when there is no tape in the chute.

Gauge by feel.

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 rocker arm and shall break when the rear edge of the window has reached the end of the rocker arm.

Gauge by observing the associated lamp in the SD-95434-01 test circuit.

(b) Fig. 12(B) : (D-176283 perforator only) —

The spring clips shall hold the splice contact snugly but shall not be tight enough to prevent removing and reinserting the splice contact with the fingers.

Gauge by feel.

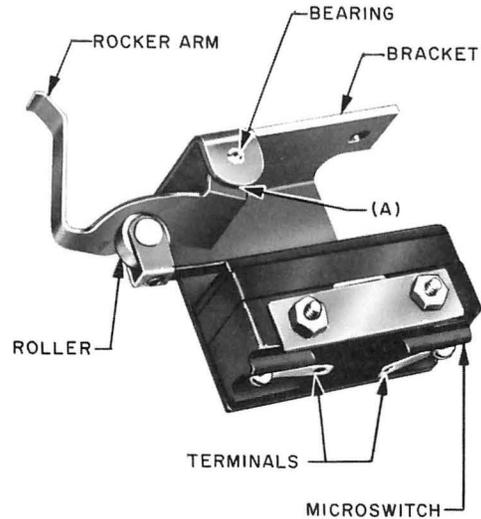


Fig. 13 — Splice Contact Assembly — D-175914 Perforator

(c) Fig. 14(A) : (D-176283 perforator only) —

The angles formed by the center line of the splice contact with the horizontal shall be approximately the same in the operated and unoperated position of the contact.

Gauge by eye.

Cutter Mechanism (D-175914 perforator only)

2.19 Cutter Assembly Mounting: Fig. 15(A) —

The cutter assembly shall be securely mounted on the perforator frame so that the tape enters the slot between the rotor and stationary blade and moves freely through the slot as the drum advance magnet releases.

Gauge by eye.

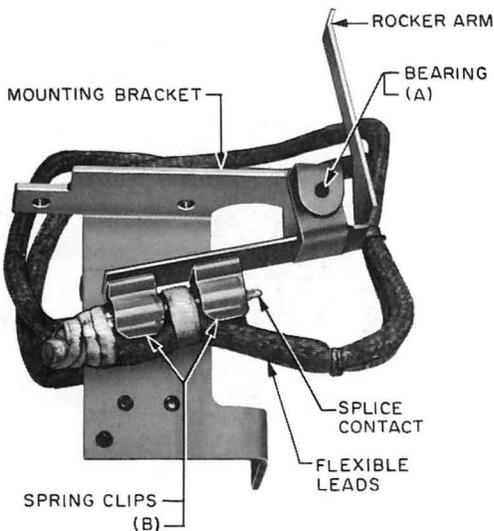


Fig. 12 — Splice Contact Assembly — D-176283 Perforator

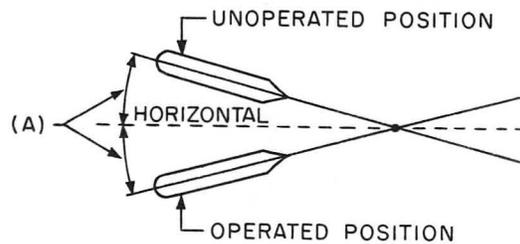


Fig. 14 — Splice Contact Position

2.20 Freedom of Rotary Knife Movement:

Fig. 15(B) — The rotary knife shall move

freely when operated manually and shall fully

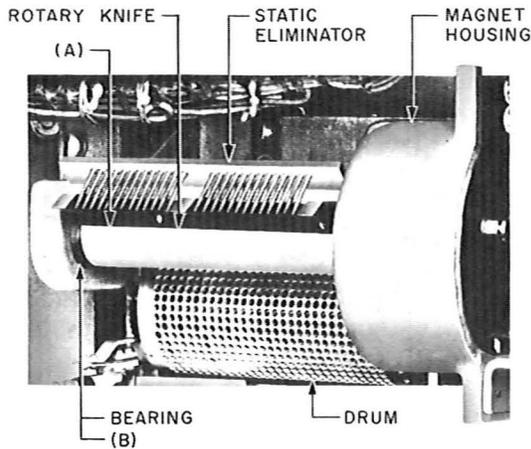


Fig. 15 - Tape Cutter and Static Eliminator

restore to the normal position when released slowly and the movement lightly retarded by hand.

Gauge by feel.

2.21 Retractable Spring Tension: Fig. 16(A) — 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 free end of the spring.

2.22 Clearance Between Drum and Exit Tape Chute: The clearance between the drum and exit tape chute over the length of the drum shall be

Min 0.005 inch

Max 0.010 inch

Use the 74D gauge

Check in four positions of the drum approximately 90 degrees apart.

Perforating Units

2.23 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.

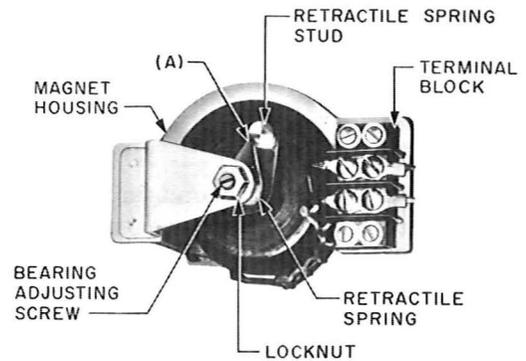


Fig. 16 - Cutter Magnet — End View

2.24 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 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.

2.25 Pin Clearance

(a) There shall be a clearance between the pin and any adjacent pin or arm assembly in unoperated position of

Min 0.025 inch

Gauge by eye.

The clamp plate is approximately 0.060 inch thick.

* (b) The pins when in the operated position shall not touch the edges of the holes in the pressure plate.

Gauge by eye and feel.

2.26 Retractable Spring Position

(a) Fig. 17(A) — The groove in the cup washer shall bear against the offset knife edge on 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.

Gauge by eye.

(c) With the perforating unit in final adjustment, there shall be a clearance between the turns of the retractile spring.

Gauge by eye.

2.27 Clamp Position

(a) Fig. 17(B) — The end of the clamp plate beneath the clamp screw shall rest on the armature arm.

Gauge by eye.

(b) There shall be a clearance between the end of the clamp plate through which the pin screw passes and the upper surface of the armature arm.

Gauge by eye.

2.28 Pin Spring Tightness: Fig. 17(C) — The pin spring shall hold the pin firmly against its bearing on the pin adjusting screw.

This requirement is met if there is a perceptible clearance between the coils of the pin spring at or below the center of the spring.

Gauge by eye.

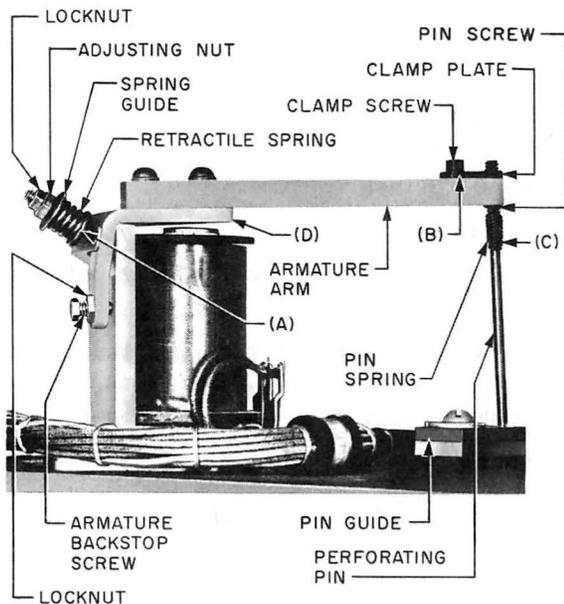


Fig. 17 - Perforating Unit Assembly

2.29 Operated Armature Gap: Fig. 17(D) —

With no tape on the drum and with the perforating magnet electrically energized on 150 ma, the clearance between the armature and the pole face shall be

Min 0.007 inch

Max 0.011 inch

Use the 174A gauge and the 35-type test set in conjunction with the perforator test table per SD-95434-01.

To check this requirement, insert the 0.007-inch blade of the 174A gauge in the armature gap. With the magnet electrically energized on the specified current, the gauge shall fit loosely in the gap (a slight drag is permissible). Release the magnet and insert the 0.011-inch blade of the 174A gauge into the armature gap. When the magnet is electrically energized on the specified current, the gauge shall be held snugly.

2.30 Armature Backstop Screw Position: Fig.

18(A) — With the perforating unit electrically operated on a current of 150 ma and with no tape on the drum, 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.

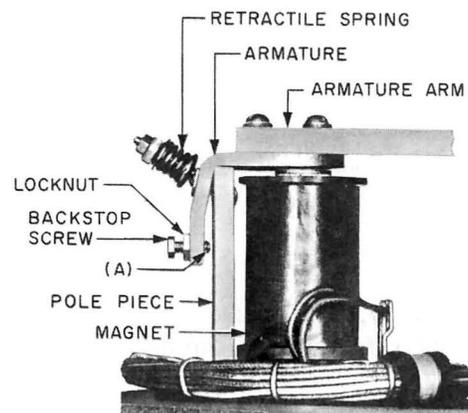


Fig. 18 - Perforating Unit — Armature Operated

2.31 Electrical Requirements: With no tape on the drum, the perforating unit shall meet the following electrical requirements.

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

Use the 35-type test set in conjunction with the perforator test table per SD-95434-01.

DRUM ADVANCE CHECKING MECHANISM (D-176283 perforator only)

2.32 Clearance Between Finger and Drum Surface: Fig. 19(B) — 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 between 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.

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. 19(C) —

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. 19(A)

(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.

19(A) — 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 when the perforator is mounted on its side with the magnet coil approximately horizontal.

	TEST	READJUST
Operate	30 ma	25 ma
Release	open current	open current

Use the 35-type test set in conjunction with the test table per SD-95434-01.

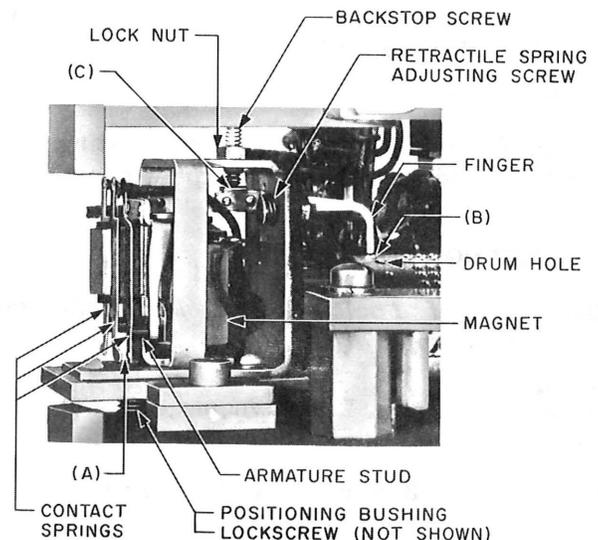


Fig. 19 — Drum Advance Checking Mechanism — Cover Removed

SECTION 034-300-701

Overall Perforator Operation

2.38 Operation Test

(a) The operation test shall be made using the SD-95434-01 test circuit in accordance with the instructions supplied with the test circuit for making the operation test of the perforator.

(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 embossing 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.

D-175914 Perforator Only

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

(d) When the perforator is continuously re-perforating splice pattern at the speed and percent break provided by the test reader and the splice contact rocker arm enters a tape window, there shall be

Min 12 lines

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

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

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
359	Magnet Core and Armature Cleaning Tool
363	Spring Adjuster
376A	Dental Mirror
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
485A	Smooth-Jaw Pliers
486A	Oilcan
510C	Portable Lamp [equipped with 561A straight tip and W2BL (48V) cord]
→643A (or the replaced D-176938)	0.062-Inch Socket Screw Wrench
→643B (or the replaced D-176939)	0.078-Inch Socket Screw Wrench
→644A (or the replaced D-176940)	5/32-Inch Socket Screw Ratchet Wrench
KS-2993	Flat Brush
KS-6320	Orange Stick
KS-14164	Brush
R-1760	Adjuster
R-1770	1/2- and 9/16-Inch Open Double-End Flat Wrench
R-2485	5/32-Inch Allen Socket Screw Wrench
R-2670	3/32-Inch Allen Socket Screw Wrench
R-2671	1/8-Inch Allen Socket Screw Wrench

CODE OR SPEC NO.	DESCRIPTION	CODE OR SPEC NO.	DESCRIPTION
TOOLS			
†R-2967	1/8-Inch Allen Straight Wrench	175A	0.026- and 0.032-Inch Thickness Gauge ←
†R-2968	5/32-Inch Allen Straight Wrench	KS-6909	Thickness Gauge Nest
R-3415	7/64-Inch Allen Socket Screw Wrench ↗	MATERIALS	
R-3416	9/64-Inch Allen Socket Screw Wrench	KS-2423 (or the replaced D-98063)	Cloth ←
†R-3449	9/64-Inch Allen Straight Wrench ↘	KS-7188	Cleaning Paper
R-5850	5/8- and 3/4-Inch Hex. Double-End Offset Wrench	KS-7860	Petroleum Spirits
—	3-Inch C Screwdriver (or the replaced 3-inch cabinet screwdriver) ←	KS-13887	Perforator Tape
—	No. 607 Handle With 5-Inch Long 3/32-Inch Hex. Blade, Allen Manufacturing Co ←	—	Test Tape (KS-13887 perforator tape perforated with special test pattern)
—	No. 18F Carborundum Stone	KS-16326 L1	Oil ←
—	Pressure Cleaning Cabinet	KS-16832 L2	Lubricant ←
GAUGES			
70F	10-0-10 Gram Gauge ←	—	Pipe Cleaner
70H	0-30 Gram Gauge	—	Hardwood Toothpicks, Flat at One End, Pointed at the Other
70J (or the replaced D-175270)	0-150 Gram Gauge ←	—	Twine
74D	Thickness Gauge Nest	TEST APPARATUS	
79B	0-1000 Gram Push-Pull Tension Gauge	35 Type	Test Set ←
79C	0-200 Gram Push-Pull Tension Gauge	—	SD-95434-01 Test Circuit
112A	0.040- and 0.050-Inch Double-End Thickness Gauge	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. ↘	
174A (or the replaced D-176941)	0.007- and 0.011-Inch Thickness Gauge ←	3.01 <i>Cleaning</i> (Reqt 2.01) 3.02 <i>Lubrication</i> (Reqt 2.02)	

†The R-2967, R-2968, and R-3449 Allen straight-wrenches with handle 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.

- (1) **General Cleaning:** Before cleaning or lubricating individual parts of the perforator, clean the lint and other debris from the perforator using the cleaning cabinet provided for this purpose. Take care that connections to the terminals are not broken.
- (2) Clean contacts in accordance with the section covering cleaning of relay contacts.
- (3) Make sure that the container of KS-16832 L2 lubricant has been shaken as covered in 1.06. ↘

(4) **Magnet Core Gap:** Insert the 359 cleaning tool between the armature and core and apply a sufficient pressure to the bottom of the armature to force it upward against the cleaning tool as shown in Fig. 20. Then forcibly withdraw the cleaning tool. Repeat this operation several times so as to remove dust and loose galvanizing scales which may have accumulated between the armature and core.

(5) **Ratchet Wheel and Armature Bearings:**

If upon inspection there is found to be an accumulation of gummy oil or grease at ratchet wheel or armature bearings which was not removed by the general cleaning operation, apply KS-7860 petroleum spirits sparingly with the KS-14164 brush to soften the matter so that it may be removed. Take care to keep the petroleum spirits from coming in contact with the spoolhead of the magnet. Remove the gummy oil or grease with a KS-2423 cloth slightly moistened with KS-7860 petroleum spirits. This may be facilitated by using the cloth wrapped around the KS-6320 orange stick. Allow the wearing parts to dry and re-lubricate as covered in (6).

(6) Distribute the specified quantity of lubricant over the ratchet wheel teeth using the KS-14164 brush. After lubrication, place the perforator in the test table per SD-95434-01 and operate it for a few minutes with tape on the drum to distribute the lubricant more evenly over the ratchet wheel teeth.

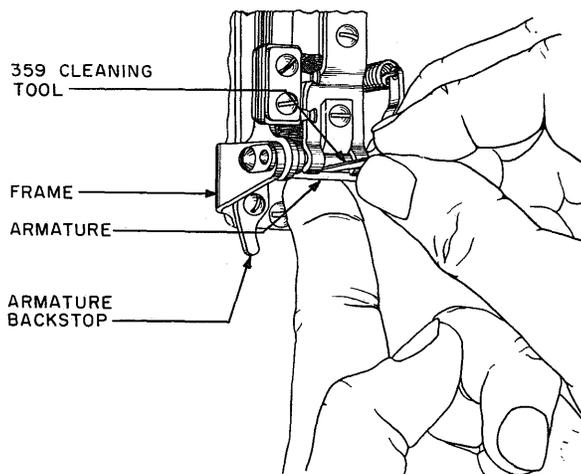


Fig. 20 – Method of Cleaning Magnet Core and Armature

(7) **Drumshaft Bearings:** If cleaning other than by air pressure as covered in (1) is not necessary, insert the nozzle of the 486A oilcan through a hole in the drum and apply the specified quantity of oil at the point on the shaft where the shaft enters the bearings at each end of the drum. If further cleaning is necessary, proceed as covered in (8), (9), and (10).

(8) Remove the cutter assembly or the drum advance checking mechanism by disconnecting the leads from the associated terminal block using the 3-inch C screwdriver and removing the mounting screws with the proper size Allen wrench. Loosen the shaft locking plate screw at the ratchet wheel end of the shaft and remove the shaft plate screw at the opposite end of the shaft using the 3-inch C screwdriver. Loosen the retaining pawl mounting screw sufficiently to permit moving the retaining pawl away from the ratchet. Withdraw the shaft from the drum and remove the drum. Wipe the shaft with a KS-2423 cloth slightly moistened with KS-7860 petroleum spirits. Remove the old lubricant from the bearing holes in the drum as follows using a common pipe cleaner. Dip one end of the pipe cleaner in KS-7860 petroleum spirits and, after allowing the excess to drain off, insert the saturated part of the cleaner into the hole. Work the cleaner back and forth a few times to loosen the old lubricant and then, using a dry cleaner, remove the excess KS-7860 petroleum spirits from the hole in the drum. Remove any lint left in the hole by blowing through it.

(9) Remove the pressure plate and clean the lint from the ends of the pins and the pin guide using the KS-2993 brush. Wipe the surfaces of the pressure plate with the KS-2423 cloth. Remount the pressure plate, taking care that the studs on the plate are properly engaged in the holes in the pressure plate tension springs. Observe that the pins are approximately centered in the holes in the pressure plate. If necessary, adjust the position of the pressure plate as covered in 3.24 through 3.26.

(10) Using the KS-14164 brush, apply a light coating of KS-16326 L1 oil to the drum shaft. Place the drum in position and insert the shaft. Take up the play downward and tighten the locking screws at each end of the

drum, being sure that the locking plate at the ratchet wheel end of the drum is properly positioned on the end of the shaft. Move the retaining pawl into position and tighten the mounting screws securely. Check that requirement 2.04, retaining pawl position, is met and make adjustments as required as covered in 3.04. Remount the cutter assembly or the drum advance checking mechanism and check all associated requirements.

(11) **Drum Advance Mechanism Armature**

Bearings: Apply the specified quantity of lubricant to each side of the armature bearing using the KS-14164 brush. When lubricating the D-176283 perforator, use the residue on the brush to lubricate the drum advance checking mechanism backstop screw and retractile spring as covered in (17).

(12) **Overthrow Stop:** Operate the drum advance magnet manually and apply the specified lubricant to the surface of the overthrow stop using the KS-14164 brush.

(13) **Splice Contact Bearings:** Clean the bearings by flushing with KS-7860 petroleum spirits applied with the KS-14164 brush. Operate the contact several times to work the cleaning fluid into the bearing, then wipe off the excess with a clean, dry KS-2423 cloth. Apply the specified lubricant to each bearing using the 486A oilcan. Operate the contact a few times to work the oil into the bearing and wipe off any excess oil with the KS-2423 cloth.

(14) **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 non-operated position. Apply the specified quantity of lubricant to the tip of each armature backstop screw as follows. Place enough lubricant on a piece of KS-13887 perforator tape using a KS-14164 brush to cover an area approximately 1 inch in diameter. Manually operate the armature. Insert the oiled portion of the tape under the screw with the oiled surface toward the screw. Release and reoperate the armature. Remove the tape and release the

armature. Lubricate the other backstop screws in the same manner using the same lubricated surface of the tape.

(15) **Cutter Bearings:** Clean the bearings by flushing with KS-7860 petroleum spirits applied with the KS-14164 brush. Operate the cutter several times to work the cleaning fluid into the bearings, then wipe off the excess with a clean KS-2423 cloth. Apply the specified quantity of lubricant to each bearing with the 486A oilcan. Operate the cutter several times to work the lubricant into the bearings and wipe off excess lubricant with the KS-2423 cloth.

(16) **Drum Advance Mechanism Driving Spring and Lugs:**

Apply the specified quantity of oil to the loops at each end of the driving spring using the 486A oilcan. Apply the nozzle to the loop in the spring where the spring is in contact with the lug.

(17) **Drum Advance Checking Mechanism Backstop Screw and Retractable Spring:**

Remove the cover from the drum advance checking mechanism using the 3-inch C screwdriver. Operate the checking mechanism manually and apply the specified lubricant between the end of the backstop screw and the finger with the KS-14164 brush. Release the armature. Using a toothpick, move the tip of the retractile spring away from the slot at the under side of the finger and apply the specified lubricant between the bottom of the slot and the retractile spring. Release the retractile spring. Remount the cover, tightening the cover mounting screws securely.

(18) **Cutter Magnet Retractable Spring:** Lift the retractile spring from the groove in the stud and apply the specified quantity of the lubricant with the 486A oilcan to the groove at the point where the spring rests.

(19) **Cutter Blade Surface:** Using the KS-14164 brush, spread the specified quantity of lubricant over all polished blade surfaces. Avoid touching the polished surfaces with the fingers before or after lubricating.

3.03 Record of Lubrication (Reqd 2.03)

No procedure.

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** *Operated Armature Air Gap* (Reqt 2.07)

(1) Loosen the retaining pawl screw with the 3-inch C screwdriver. Operate the drum advance magnet and ten or more of the perforating units electrically.

(2) Holding the perforating units operated, set the position of the retaining pawl so that it rests lightly against the face of its associated tooth. Tighten the retaining pawl mounting screw securely. When retightening the mounting screw, take care that the ratchet end of the pawl rests wholly within the surface of the ratchet wheel and is parallel to the ratchet wheel teeth.

(3) To readjust the retaining pawl tension, apply the 485A pliers to the base of the pawl as near as possible to the point where the pawl is fastened to the frame of the drum advance mechanism.

(4) To change the position of the armature backstop, tap the bottom of the backstop with the R-1760 adjuster. If considerable movement is required, loosen the armature backstop mounting screw slightly with the 3-inch C screwdriver, then position the armature backstop and tighten the mounting screw.

(5) If necessary to change the position of the overthrow stop, loosen the two overthrow stop mounting screws with the proper size Allen wrench. Position the overthrow stop so that the proper clearance is obtained. Tighten the overthrow stop mounting screws securely and check that the armature backstop position is satisfactory. If it is not satisfactory, adjust as covered in (4) and recheck the requirements.

(6) To adjust the operated armature gap, loosen the magnet clamping screw with the proper size Allen wrench and the magnet adjusting locknut with the R-5850 wrench. Then adjust the air gap as required by turning the magnet adjusting bushing using the 245 wrench. Retighten the magnet clamping screw and the magnet adjusting locknut and recheck the adjustment. Repeat this operation until the required adjustment is obtained, mak-

ing sure that the electrical requirement and operation test are met.

3.08 *Driving Spring Tension* (Reqt. 2.08)

(1) Adjust the driving spring lug on the frame of the drum advance mechanism using the 379A adjuster as shown in Fig. 21 (do not adjust the driving spring arm). 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.

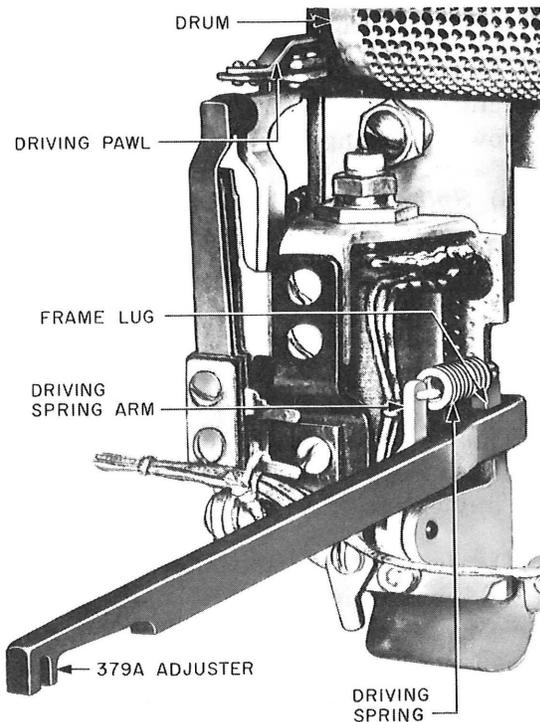


Fig. 21 – Method of Adjusting Driving Spring Tension

- 3.09** *Driving Pawl Tension* (Reqt. 2.09)
- 3.10** *Driving Pawl Position* (Reqt. 2.10)

(1) *Driving Pawl Tension:* Hold the portion of the driving pawl which is riveted to the pawl spring with the 485A pliers. Apply the 325B adjuster to the sloping portion of the driving pawl adjacent to the reed spring as shown in Fig. 22. Adjust the driving pawl

until the required tension is obtained. Adjusting the pawl upward increases the tension and downward decreases the tension.

(2) **Driving Pawl Position:** If the sides of the driving pawl are not parallel with the sides of the ratchet wheel, apply the R-1760 adjuster to the driving arm beneath the point where the pawl spring is attached to the driving arm. Adjust the driving arm 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 and apply the 485A pliers to the midsection of the pawl and adjust as required.

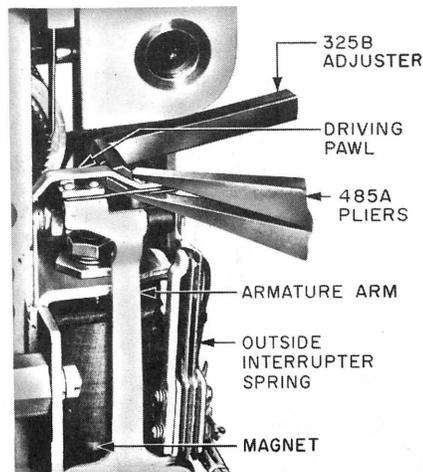


Fig. 22 – Method of Adjusting Driving Pawl Tension

3.11 Clearance Between Driving Arm Stud and Outside Interrupter Spring (Req. 2.11)

3.12 Outside Interrupter Spring Tension (Req. 2.12)

(1) 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 a slight adjustment is required, adjust the outside interrupter spring with the 303 spring adjuster. When a considerable amount of adjusting is required to bring the clearance between the limits, adjust the spring stop with the 379A adjuster. Apply the 379A adjuster to the spring stop from the side nearest the magnet

coil as shown in Fig. 23 and adjust the spring stop as required. In making this adjustment, take care not to throw the lip perceptibly out of parallel with the base of the driving arm stud.

(2) Adjust the tension of the outside interrupter spring using the 303 spring adjuster applied close to the base of the spring.

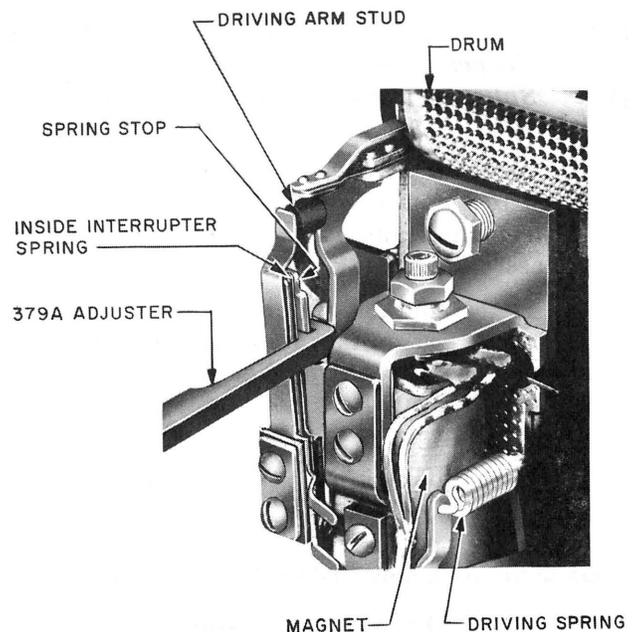


Fig. 23 – Method of Adjusting Spring Stop

3.13 Electrical Requirements (Req. 2.13)

(1) If the requirement is not met, it is an indication that driving spring tension is too high or that the armature gap is excessive, in which case adjust the armature gap as covered in 3.04 through 3.07 or the driving spring tension as covered in 3.08.

Tape Guides and Springs

3.14 Positioning Spring Tension (Req. 2.14)

3.15 Clearance Between Guide Springs and Tape Chute (Req. 2.15)

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

3.16 Pressure Plate Tension (Reqt. 2.16)

- (1) Adjust the tension of the pressure plate tension springs using the 485A pliers applied close to the point where the spring is attached to the frame. Take care in making this adjustment that the position of the pressure plate is not changed so that the plate touches the perforating pins when they operate.

Splice Contact Assembly**3.17 Freedom of Movement of Splice Contact Rocker Arm** (Reqt. 2.17)**3.18 Splice Contact Operation** (Reqt. 2.18)

- (1) If the splice contact binds, clean and relubricate as covered in 3.01 and 3.02. Also check to be sure that there is no interference between the leads of the mercury contact and the associated parts.
- (2) If the contact does not tilt far enough to cause the contact to operate in the proper manner, adjust the rocker arm as required using the 485A pliers.
- (3) If the contact mounting clip is too tight or too loose, adjust the prongs as required with the 485A pliers.

Tape Cutter Assembly (D-175914 perforator only)**3.19 Cutter Assembly Mounting** (Reqt. 2.19)

- (1) Loosen the cutter assembly mounting screws with the 3-inch C screwdriver and shift the position of the cutter assembly as required. Tighten the bracket mounting screws securely.

3.20 Freedom of Rotary Knife Movement (Reqt. 2.20)**3.21 Retractable Spring Tension** (Reqt. 2.21)**3.22 Clearance Between Drum and Exit Tape Chute** (Reqt. 2.22)

- (1) 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 and 3.02. Adjust the tension of the retractile spring using the 485A pliers applied close to the point where the retractile spring is attached to the framework.
- (2) If the requirement is not met due to nicks or other irregularities of the cutting surfaces, smooth out these irregularities using the

No. 18F Carborundum stone. Do not attempt to grind out the nicks and take care to maintain a sharp cutting edge.

- (3) To adjust the clearance between the drum and the exit tape chute, loosen the cutter assembly mounting screws with the proper size Allen wrench. Insert 0.007-inch blade of the 74D gauge in the gap at one end of the drum and move the cutter assembly so that the gauge is held lightly in the gap. Tighten the mounting screws sufficiently to hold the assembly in position and repeat with the gauge at the opposite end of the drum. Tighten both mounting screws securely and check that the requirement is met over the length of the drum.

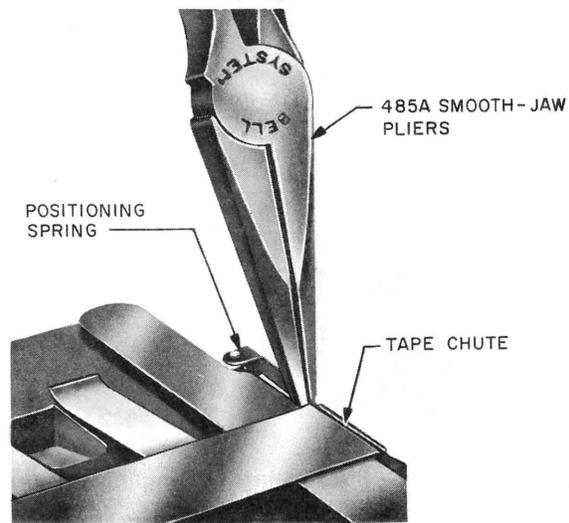


Fig. 24 – Method of Tightening Inner Magnet Mounting Screws

Perforating Units**3.23 Mounting** (Reqt. 2.23)

- (1) Tighten loose mounting screws using the 644A wrench as shown in Fig. 24 for screws on the inside of the arc of magnets and the proper size Allen wrench for screws on the outside of the arc. Take care when tightening the screws that the pins are in proper alignment with each other and that the specified clearance between the pins and adjacent armatures is maintained.

3.24 Pin, Guide, and Drum Hole Alignment

(Reqt. 2.24)

3.25 Pin Clearance (Reqt. 2.25)**3.26 Retractable Spring Position** (Reqt. 2.26)

(1) If all or nearly all of the pins fail to meet the requirement, reset the position of the driving pawl of the drum advance mechanism as follows. Loosen the retaining pawl mounting screw with the 3-inch C screwdriver. Loosen the pawl positioning screw with the proper size Allen wrench. Using the 417A wrench, turn the positioning bushing so that the holes in the drum are lined up with those in the pin guide. Tighten the pawl positioning screw securely. Reset the retaining pawl and tighten the mounting screw securely. Recheck all requirements applying to the drum advance mechanism and readjust as required.

(2) If individual perforating pins do not clear the pin guide, loosen the perforator unit mounting screws with the 644A ratchet wrench or the proper size Allen wrench. Reposition the magnet taking care that the pin is in proper alignment with the pin guide and with adjacent pins. Tighten the unit mounting screws securely and check that the pins clear the pin guide when the magnet is manually operated.

(3) To obtain clearance between the pins and the hole in the pressure plate, loosen the mounting screws which hold the upper pressure plate springs with the 3-inch C screwdriver. Move the pressure plate as required, taking care that the studs on the pressure plate are seated in the holes in the end of the spring. Tighten the spring mounting screws securely.

(4) To position the retractile spring loosen the locknut with the 388A wrench and turn the adjusting screw with the 417A wrench until the retractile spring is fully extended. Move the parts into proper relation with each other. Readjust the tension of the retractile spring to meet the electrical requirement as covered in 3.31.

3.27 Clamp Position (Reqt 2.27)

(1) If the clamp plate does not rest on the armature arm under the clamp screw, tighten the clamp screw using the 643B wrench.

(2) If there is no clearance between the armature and the tip of the clamp plate, remove the clamp screw with the 643B wrench and turn the clamp plate one complete turn in a counterclockwise direction. Tighten the clamp screw securely and check that requirements 2.29 and 2.30 are met.

3.28 Pin Spring Tightness (Reqt. 2.28)

(1) Loosen the clamp screw with the 643B wrench. Using the 643A wrench, turn the pin adjusting screw in a clockwise direction until it is out of the armature arm. Remove the pin from the perforator and, while holding the lower turns of the spring with the 485A pliers, turn the pin adjusting screw into the spring until the turns of the spring are observed to separate slightly. Reinstall the pin in the perforator and adjust the magnet to meet requirements 2.29 through 2.31.

3.29 Operated Armature Gap (Reqt. 2.29)

(1) Loosen the clamp screw with the 643B[†] wrench or the No. 607 handle with the 5-inch long 3/32-inch Allen blade, 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. Using the 643A wrench, turn the pin setscrew until, as determined by feel, the gauge is clamped tightly between the armature and the core. Tighten the clamp screw securely. Remove the gauge, release the magnet, and recheck the requirement.

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 requirement, loosen the retractile spring adjusting screw locknut with the 388A wrench and turn the retractile spring adjusting nut in a counterclockwise direction using the 417A

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wrench. When the requirement is met, tighten the locknut securely while holding the adjusting nut in position.

(2) To meet the release requirement, loosen the retractile spring adjusting screw locknut with the 388A wrench and turn the adjusting nut in a clockwise direction using the 417A wrench. When the requirement is met, tighten the locknut securely while holding the adjusting nut in position. After making this adjustment, recheck all electrical requirements and if necessary repeat the adjustment.

DRUM ADVANCE CHECKING MECHANISM (D-176283 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 lock screw 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 lock screw securely and recheck the requirement.

↳

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

(1) 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)

(1) To adjust the backstop gap, hold the armature backstop screw with the 643A wrench and loosen the associated locknut with the 417A 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)

(1) 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)

(1) 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)

(1) 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.

(2) 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 417A 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 readjustment. In this case, check that the pins are all aligned in the same plane and, if necessary, relocate the pin on which the 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 touch the hole in the pressure plate. To check this adjustment, 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 in four points on the pin 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.

D-175914 Perforator

(3) 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 materials using the KS-6320 orange stick. Remount the cutter assembly and check that requirements 2.19 through 2.22, which apply to the cutter mechanism, are met.

(4) If the cutter fails to properly cut the tape under the circuit conditions imposed by the test circuit, refer the matter to the supervisor.

(5) If the splice contacts do not close at the correct time, loosen the assembly mounting screws with the 3-inch C screwdriver and reset the position of the splice contact so that the requirement is met. Tighten the mounting screws securely.

REASONS FOR REISSUE

1. To omit the description of one dip of KS-8559 lubricant or KS-7470 oil (1.05 of previous issue).
2. To add the description of one dip of KS-16832 L2 lubricant or KS-16326 L1 oil. (1.04.)

3. To omit the description of one drop of KS-7470 oil (1.06 of previous issue).
4. To add the description of one drop of KS-16326 L1 oil (1.05).
5. To add the method of preparation of KS-16832 L2 lubricant (1.06).
6. To revise the requirements covering lubrication [2.02(a) and (b)].
7. To revise the requirements covering recommended lubrication intervals [2.02(c)].
8. To omit a requirement covering armature backstop position [2.07(a) of previous issue].
9. To revise the requirement covering outside interrupter spring tension (2.12).
10. To revise the requirements covering positioning spring tension (2.14).
11. To revise the requirements covering clearance between guide springs and tape chute (2.15).
12. To revise the requirements covering armature backstop screw position (2.30).
13. To revise the requirements covering alignment of finger with drum holes (2.33).
14. To add the requirements and procedures covering armature backstop gap (2.34 and 3.34).
15. To revise the requirements and procedures covering contact make (2.35 and 3.35).
16. To omit the requirements covering operation test [2.38(c) and (d) of previous issue].
17. To revise the List of Tools, Gauges, Materials, and Test Apparatus (3.001) and to add an associated paragraph (3.002).
18. To revise the procedures covering cleaning and lubrication (3.01 and 3.02).
19. To revise the procedures covering positioning spring tension and clearance between guide springs and tape chute (3.14 and 3.15).
20. To revise the procedures covering operated armature gap (3.29).
21. To revise the procedures covering clearance between finger and drum surface (3.32).
22. To omit a procedure covering operation test [3.38(3) of previous issue].