RECORDER

KS-19125 L3

PIECE-PART DATA AND REPLACEMENT PROCEDURES

1. GENERAL

1.01 This section covers information necessary for ordering replacement parts for the maintenance of KS-19125 L3 recorders which are used in the digital recording of AMA data. It also covers approved procedures for replacing these parts.

1.02 Piece parts, other than mounting hardware, which can be replaced in the field are listed in the index at the end of Part 2. These parts are identified in Part 3 on illustrations which show the different parts together with their piece-part numbers and corresponding names. No text references are listed in the index for replacement procedures that are obvious and simple. Such procedures are adequately covered by the illustrations on which the parts are identified.

1.03 Part 3 covers the approved procedure for the replacement of the piece parts designated in Part 2. No attempt shall be made in the field to replace parts not designated.

2. PIECE-PART DATA

2.01 The illustrations to which references are made in this part show the various piece parts in their proper relation to the other parts of the recorder. The piece-part numbers of the various parts are given together with their names as listed by the manufacturer.

2.02 When ordering replacement parts, give both the drawing number and the name of the part and also specify the KS-19125 L3 recorder as shown in the following example:

B-896925 Solenoid for KS-19125 L3 Recorder

If a part is identified by other than a piece-part number, state the number, name of the part, the manufacturer's name, and the recorder as follows:

9/16-3 Clamp, Cable, Weckesser Co., Chicago, Ill., for KS-19125 L3 Recorder

Do not refer to the BSP number or to any information shown in parentheses on the illustrations.

2.03 Information enclosed in parentheses is not ordering information. This information may be references to notes, information pertaining to parts not considered replaceable, or part names in general use in the field if the names differ from those assigned by the manufacturer.

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INDEX (Cont)

3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
40	Double-End Offset Screwdriver
417A	3/8- and 1/4-Inch Open Double-End Flat Wrench
418A	5/16- and 7/32-Inch Open Double-End Flat Wrench
KS-6257	3/8-Inch Tee-Handle Socket Wrench
KS-6854	Screwdriver
R-1005	Jewelers Screwdriver
R-1471	No. 13 Twist Drill, Straight Shank
R-1770	1/2-Inch Open Double-End Flat Wrench
R-2670	3/32-Inch Allen Wrench
R-2671	1/8-Inch Allen Wrench

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
R-2812	3/16-Inch Allen Wrench
R-2958	5/64-Inch Allen Wrench
R-2959	1/16-Inch Allen Wrench
R-2975	Snap-Ring Pliers
R-3193	11/32-Inch Open Double-End Flat Wrench
—	3/32- and 1/8-Inch Drive Pin Punches, No. 565, L. S. Starrett Co. (or equivalent)
—	1/4-Inch Drill, No. 1495-WE, Albertson & Co. (or equivalent)
—	11/16-Inch Open Double-End Flat Wrench, No. 1092F, J. H. Williams Co. (or equivalent)
—	4-Ounce Riveting Hammer
—	4-Inch E Screwdriver
—	5-Inch E Screwdriver
—	APCO Mossberg Torque Screwdriver, 0 to 50 Inch-Pounds, 1/4-Inch Square Drive (or equivalent)
—	Adapter, 1/4-Inch Square Drive to 3/8-Inch Screwdriver Bit, No. TMC-106A, Snap-On Tool Co. (or equivalent)
—	P Long-Nose Pliers
GAUGES	
R-8550	6-Inch Steel Gauge
MATERIALS	
KS-2423	Cloth
KS-1904 L1	Antiseize Compound
—	Freon (TF Grade)
—	No. 6 Compound Lubricant, Dow Corning, Midland, Michigan
—	S-122 Flurocarbon Dry Lubricant, Miller Stephenson, Chicago, Illinois
—	Sealant (Loctite), Grade AA
—	Sealant (Loctite), Grade E

3.02 Before performing any replacement procedures, recording tape with AMA data must be removed from the machine and identified as specified in Section 034-360-301.

Warning: Hazardous voltage (208 volts 3 phase 60 Hz) is supplied to recorder. Unless otherwise specified, disconnect electrical power to prevent injury to personnel or damage to the equipment.

3.03 No procedure is given for removal of the recorder assembly (Fig. 1) from the AMA frame and associated equipment. All procedures covered in this section can be performed without removing the recorder assembly from the frame. To gain access to parts on the front of the tape transport, open the transparent cover door by pulling the latch outward. To gain access to parts on the rear of the tape transport, use the 4-inch E screwdriver to loosen the four captive screws (Fig. 2) and open the rear doors.

3.04 No instructions are given for replacement of screws or other parts where the procedure consists of a simple operation.

3.05 After replacement of any parts, the recorder assembly shall meet the requirements as specified in Section 034-360-701. Replacement operations may affect the adjustment of other parts. Therefore, such parts should be checked against requirements and adjusted if necessary. Restore power to the recorder in accordance with local instructions. Before returning the recorder to AMA service, the attendant shall request a system diagnosis of the recorder. The request for AMA diagnosis and system acknowledgment shall be in accordance with instructions given in the input message manual (IM-1A001) and the output message manual (OM-1A001).

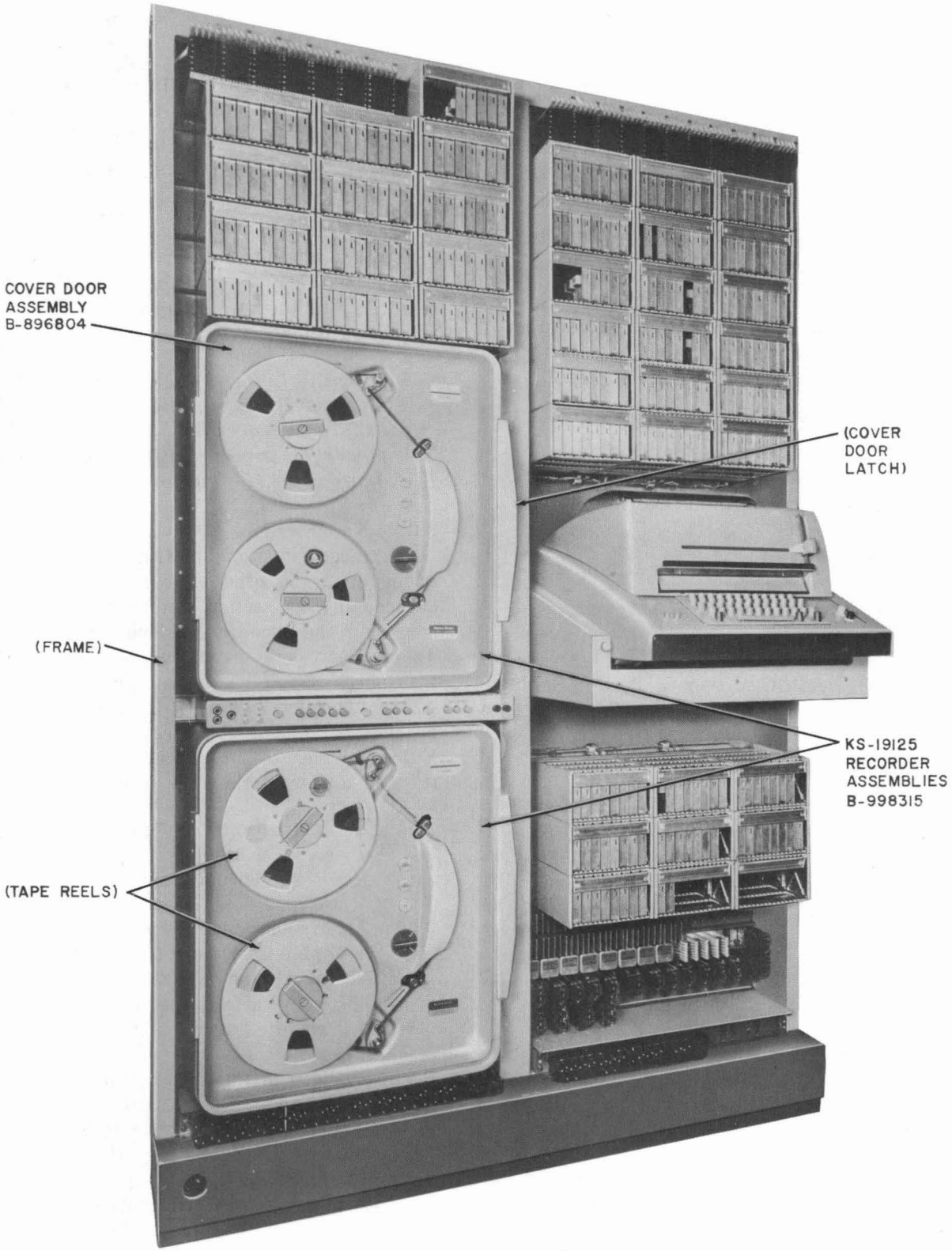


Fig. 1—KS-19125 L3 Recorder Assembly

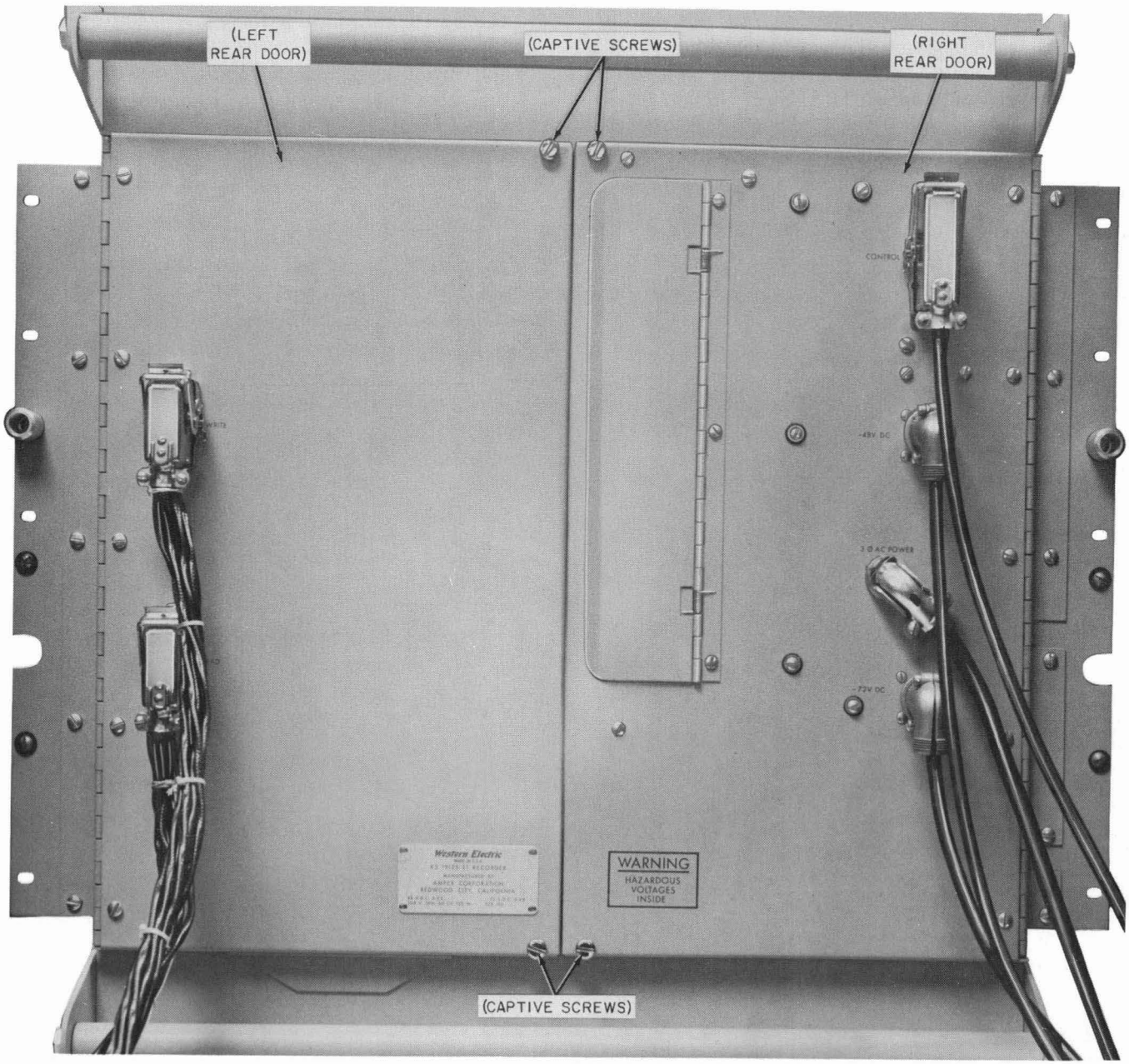


Fig. 2—Recorder Assembly—Rear View with Doors Closed

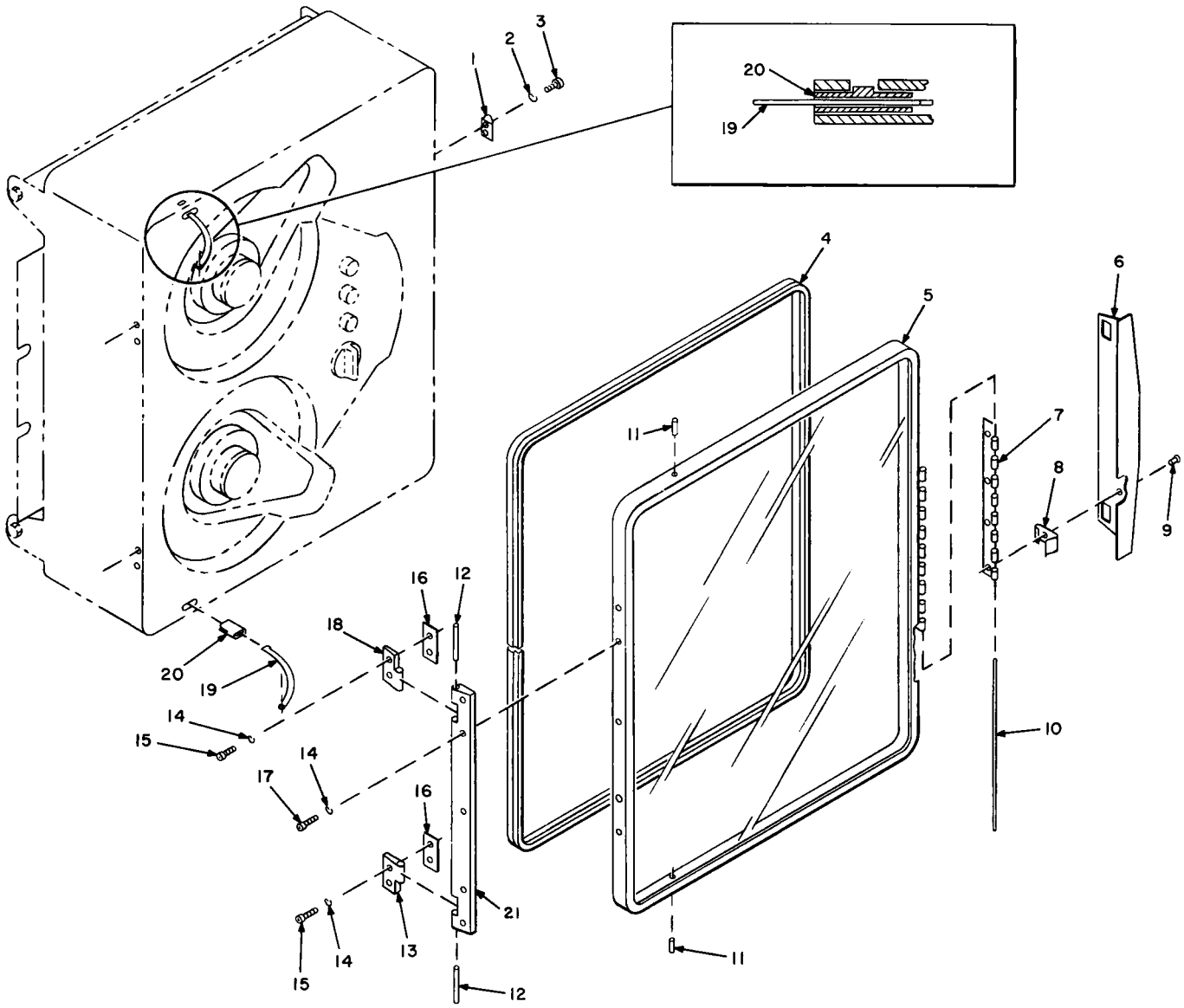
COVER DOOR ASSEMBLY AND ASSOCIATED PARTS

3.06 ***Cover Door Assembly:*** To replace cover door assembly (Fig. 1), proceed as follows.

(1) Before cover door assembly can be removed, the two stops (Fig. 3) must be disengaged from the recorder housing. Unlatch and open the door. Using the tip of the No. 40 offset screwdriver, press down through the upper access hole and force the stop insert forward (toward cover door assembly) along the stop until insert is free from the housing. Similarly disengage the lower stop. Support cover door assembly and, using the 3/32-inch Allen wrench, remove four screws and lockwashers holding the upper and lower hinge blocks. Then remove cover door assembly and hinge block shims, taking care to prevent bending the stops as they are drawn through the slots.

(2) To remount cover door assembly, apply KS-19094 L1 antiseize compound to the threads of the four hinge block screws (Fig. 3)

and place cover door assembly in position by inserting the stops through the slots in the recorder housing. Using the 3/32-inch Allen wrench, secure upper and lower hinge blocks and shims with the four screws and lockwashers. Using a screwdriver blade against the ear of the upper stop insert, force insert into slot until the ear engages the access hole. Similarly engage the lower stop insert, making certain that the insert ear is positioned in the lower access hole. Check that the cover door is centered on the front of the recorder when closed, and add or



1. B-896946 LATCH STRIKE
2. NO. 4, 1/8 x 5/16 x 0.032 PLAIN WASHER
3. 0.112-40 3/8 HEX SOCKET BUTTON HD STL SCREW
4. B-896809 GASKET
5. (PANEL, FRAME, AND HINGE HALF)
6. B-896815 LATCH
7. (HINGE HALF)
8. B-896818 LATCH SPRING
9. 0.186 x 0.250, 100° FCSK HD SEMI-TUBULAR ALUMINUM RIVET
10. (PIN, PART OF LATCH HINGE)
11. GP 24-187 x 0.375-12 GROOV-PIN
12. TYPE 24, 0.156 2-7/16 GROOV-PIN
13. B-896810 LOWER HINGE BLOCK
14. NO. 6 LOCKWASHER
15. 0.138 x 32 x 1/2 HEX SOCKET BUTTON HD STL SCREW
16. B-896955 HINGE BLOCK SHIM
17. 0.138 x 32 x 7/16 HEX SOCKET BUTTON HD STL SCREW
18. B-896811 UPPER HINGE BLOCK
19. B-896945 STOP
20. B-896944 STOP INSERT
21. B-896812 COVER DOOR HINGE

Fig. 3—Cover Door Assembly and Associated Parts—Exploded View

remove hinge block shims as required. It is not necessary to disengage stops to adjust shims. Using the 5/64-inch Allen wrench, adjust latch strikes so that gasket makes sealing contact along the full periphery of the cover door when the latch is in the fully closed position as shown in Fig. 1.

3.07 ***Cover Door Hinge Assembly:*** To replace cover door hinge, remove cover door assembly as described in 3.06 (1). Refer to Fig. 3, and use the 3/32-inch Allen wrench to remove the five screws holding the hinge to the frame and remove hinge assembly. Do not disassemble components of the hinge assembly. The hinge, two hinge blocks, and two groove pins shall be replaced as a single unit. Apply KS-19094 L1 antiseize compound to threads of the screws and secure new hinge assembly to the frame. Remount cover door assembly as described in 3.06(2).

3.08 ***Cover Door Latch:*** To replace cover door latch (Fig. 3), use the 1/8-inch drive pin punch to remove pin from latch hinge and remove the latch, hinge half, and latch springs. Use the R-1471 No. 13 drill bit and 1/4-inch electric drill to drill out the four rivets securing latch to hinge half. Observe positions of latch springs when removing the latch. Using four new rivets, reassemble the two latch springs, the hinge half, and the new latch; set the rivets by using a 4-ounce riveting hammer. Place new latch in position on cover door frame, align hinge halves, and replace pin.

3.09 ***Door Latch Springs:*** To replace door latch springs, remove cover door latch from frame as described in 3.08; using the R-1471 No. 13 drill bit and 1/4-inch electric drill, drill out the two end rivets (Fig. 3) holding the hinge half to the latch. Observe positions of old springs, and remove them from between the hinge half and the latch. Insert new springs into position, and replace rivets by using the 4-ounce riveting hammer to brad rivets. Remount cover door latch as described in 3.08.

3.10 ***Cover Door Gasket:*** To replace cover door gasket (Fig. 3), remove old gasket and clean the groove in the frame. Cut a new piece of gasket material about an inch longer than the old gasket. Press new gasket into groove so that joint is located approximately at the midpoint on the door hinge side of the frame. Trim gasket as required for the two ends to make firm contact with each other and to form an airtight seal.

DRIVE MOTOR AND ASSOCIATED PARTS

3.11 ***Drive Motor Assembly:*** To replace the drive motor assembly, proceed as follows.

(1) To gain access to the drive motor assembly, use the 4-inch E screwdriver to remove the six screws holding the suppressor cover (Fig. 4) and remove the cover. Disconnect and tag the seven leads of drive motor from terminals 5 through 11 of TB1 (Fig. 5). Remove the screw, washer, and cable clamp from the lower suppressor housing bracket; remove the screw holding the locking tab; and swing the suppressor network assembly out as shown in Fig. 6.

(2) Free the end of pinch roller pressure spring at the end which hooks into the spade bolt. This can be accomplished by grasping the flat end of the spade bolt with P long-nose pliers and tensioning the spring toward the spade bolt; then slip the screw retainer clip outward and away from the bracket which it engages. Do not alter the position of the nylon locknut during this procedure. Also disengage the hook of the pinch roller pressure spring from hole in the pinch roller arm.

(3) Using the KS-6257 wrench, unscrew the three motor mounting screws while supporting drive motor assembly; then carefully withdraw the motor straight back until the pinch roller assembly has cleared the opening in the transport casting.

(4) Before installing drive motor assembly, be sure that lockwashers are under the head of the three motor mounting screws. Position drive motor assembly with electrical leads toward bottom and carefully guide the pinch roller assembly through opening in transport casting while firmly supporting the motor; then, using the KS-6257 wrench, secure drive motor assembly to transport casting with the three motor mounting screws.

(5) Engage one end of the pinch roller pressure spring with pinch roller arm. Hook the other end of spring into the eye of spade bolt. Using the P long-nose pliers, grasp the flat end of spade bolt and tension the spring until it is

possible to engage the screw retainer clip with the pinch roller lock bracket.

(6) Swing suppressor network assembly into position as shown in Fig. 5, and secure with screw in locking tab, using the 4-inch E screwdriver. Connect leads of drive motor to terminals of TB1 as follows:

Shorter red lead to terminal 5

Shorter yellow lead to terminal 6

Shorter blue lead to terminal 7

Longer red lead to terminal 8

Longer yellow lead to terminal 9

Longer blue lead to terminal 10

White lead to terminal 11

Secure motor leads to lower suppressor housing bracket with screw, cable clamp, D-washer, and lockwasher. Install suppressor cover as shown in Fig. 4 and secure with the six screws, plain washers, and lockwashers. With a visual clearance between cam surface of pinch roller knob and pinch roller arm when the pinch roller arm is placed in the RUN position, adjust tension of pinch roller pressure spring (Fig. 6) to requirements described in Section 034-360-701.

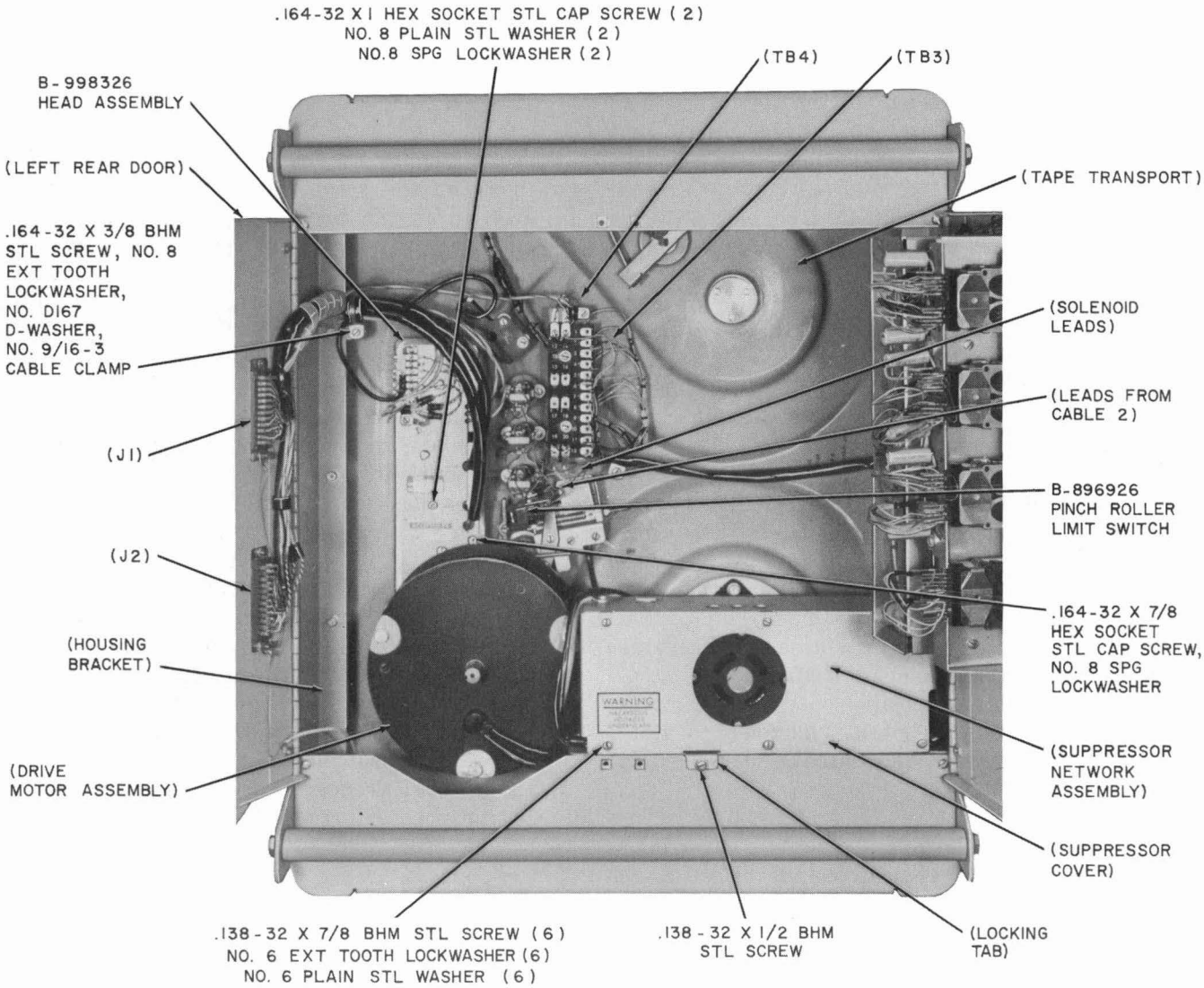


Fig. 4—Recorder Assembly—Rear Doors Open

3.12 ***Pinch Roller Arm Assembly:*** To replace pinch roller arm assembly, proceed as follows.

(1) Remove drive motor assembly as described in 3.11.

(2) Using the 11/16-inch open-end wrench, unscrew pinch roller arm shaft (Fig. 7) from drive motor; then remove pinch roller arm assembly. Screw the shaft of new pinch roller arm assembly into drive motor, and tighten with the 11/16-inch open-end wrench.

(3) Install drive motor assembly on tape transport as described in 3.11.

3.13 ***Pinch Roller Assembly:*** To replace the pinch roller assembly (Fig. 8), use the blade of the R-1005 jewelers screwdriver to pry bearing cover retainer (Fig. 7) from the internal groove; remove retainer and bearing cover. Using the 1/8-inch Allen wrench, remove pinch roller assembly from pinch roller arm. Install new pinch roller assembly and tighten with the 1/8-inch Allen wrench. Replace bearing cover and bearing cover retainer.

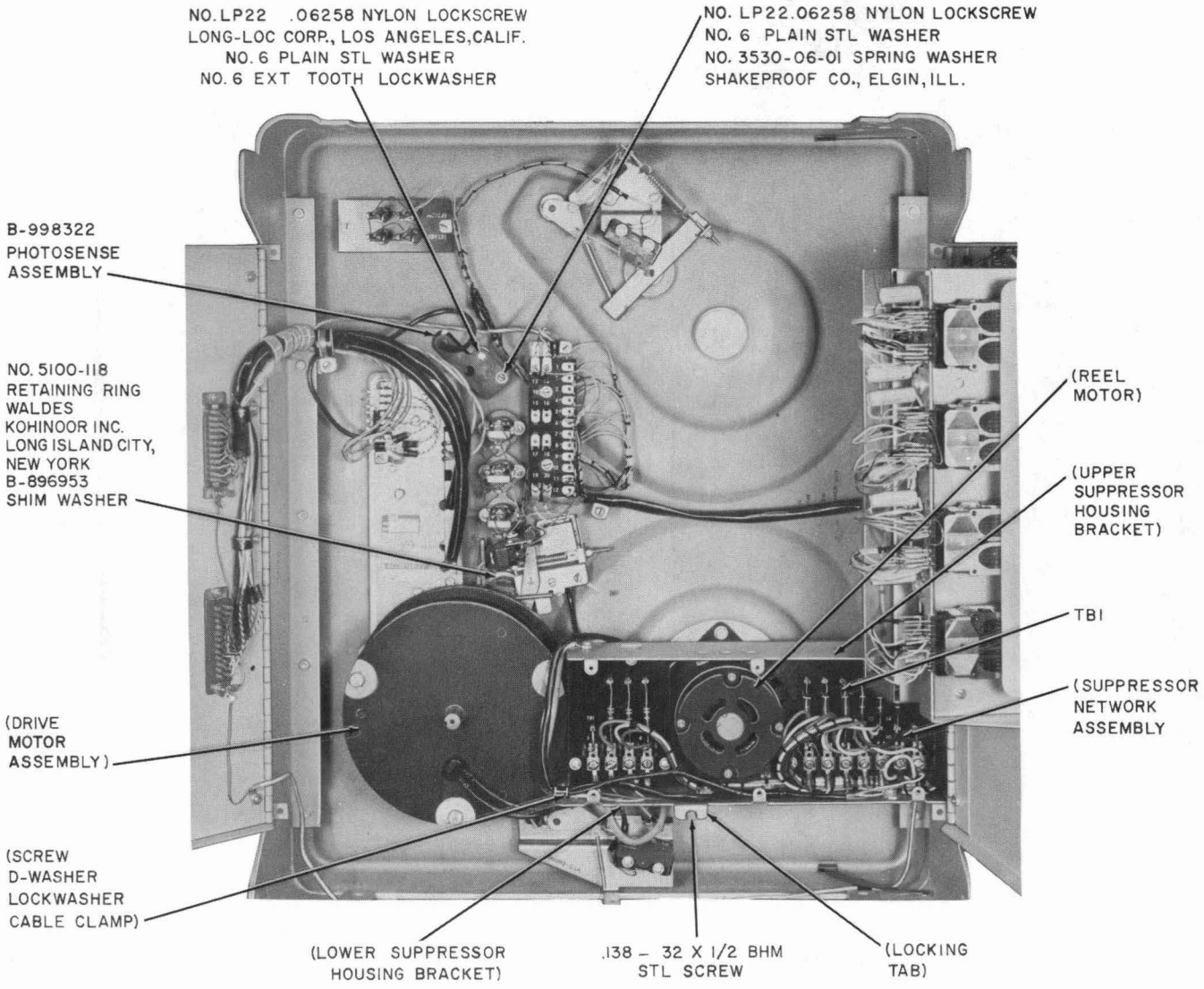


Fig. 5—Recorder Assembly—Rear Internal View

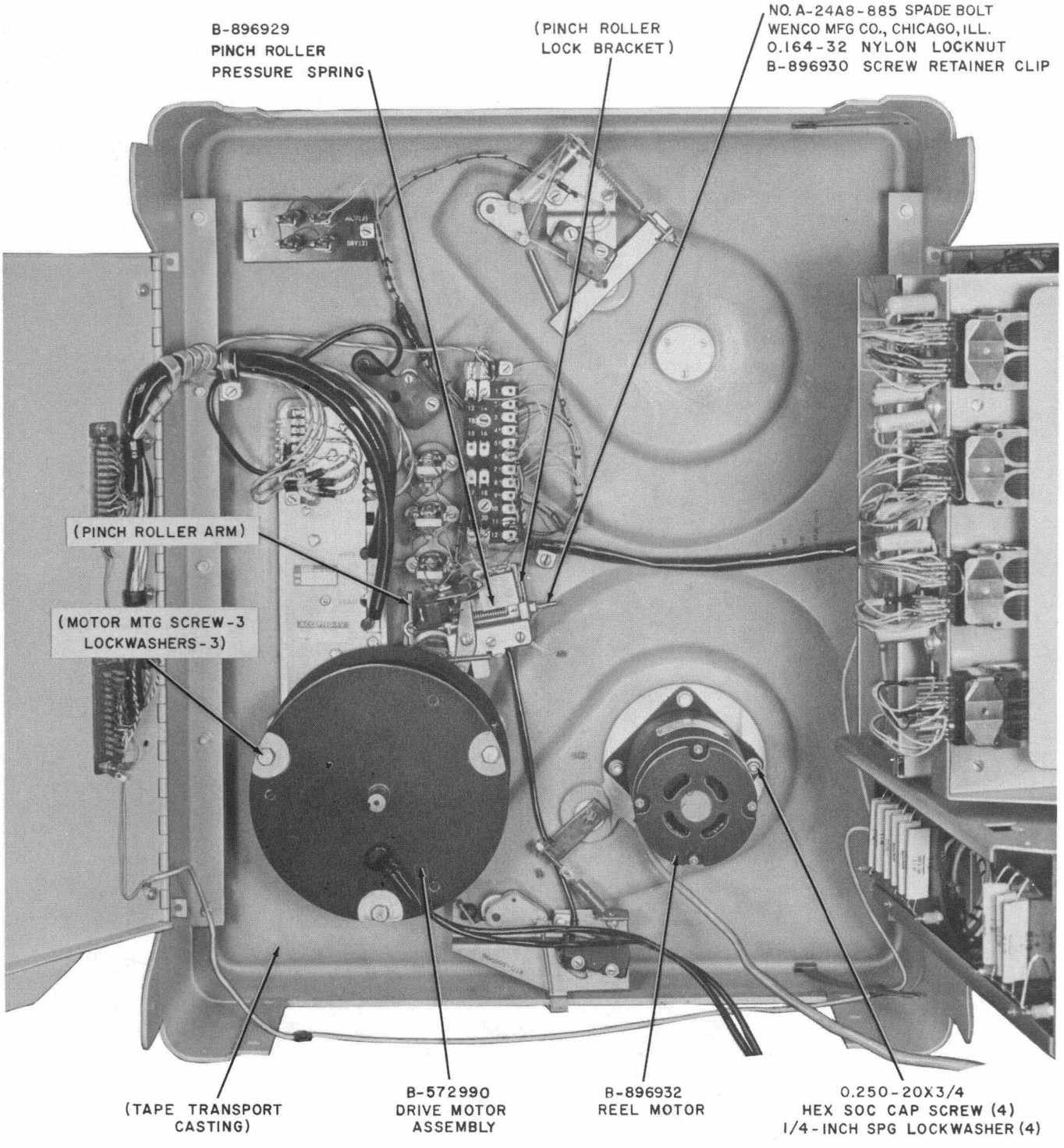


Fig. 6—Recorder Assembly—Rear View of Tape Transport

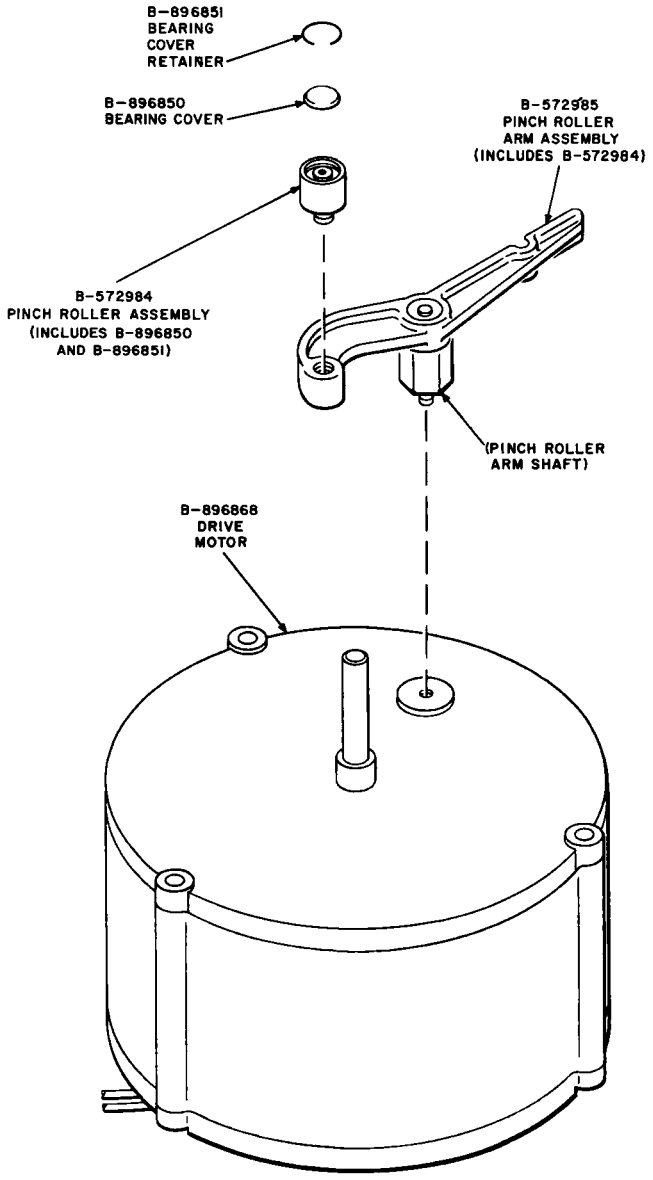


Fig. 7—Drive Motor Assembly—Exploded View

Adjust pinch roller pressure to meet requirements described in Section 034-360-701.

REEL TURNTABLES AND ASSOCIATED PARTS

3.14 ***Reel Turntables:*** To remove reel turntable and KS-19125, L101 (ASA) reel hold-down knob assembly (Fig. 8), proceed as follows.

Caution: Use extreme care to prevent damage to braking surface of reel turntable (Fig. 9).

(1) During disassembly of reel hold-down knob, take care not to mar the slotted area of the special left-hand threaded flathead screw (Fig. 10). Using the 5-inch E screwdriver, remove the screw by turning it clockwise while holding the hold-down bar.

(2) Unscrew the hold-down bar by turning it counterclockwise; remove hold-down bar, two hardened steel washers, thrust bearing, and hold-down cap from stud.

(3) Using the 4-inch E screwdriver, remove three screws and lockwashers and the hold-down base and ring assembly from turntable.

Note: Steps (1) through (3) are sufficient for making reel turntable alignment measurements specified in Section 034-360-701. To reinstall hold-down knob, proceed with (13) through (15). If removal of turntable is required, refer to (4) and (5).

(4) To remove turntable (Fig. 9), use the 5/64-inch Allen wrench to loosen setscrew in turntable; hold brake lever (Fig. 8) away from braking surface of turntable; remove turntable and key (Fig. 9) from shaft.

(5) To install turntable, insert key in shaft; holding brake lever (Fig. 8) to provide clearance, slide turntable onto shaft with mounting holes for reel base to the outside. Adjust position of turntable on shaft as described in Section 034-360-701.

(6) If necessary, remove hold-down ring (Fig. 10) from hold-down base by sliding the ring off the base.

(7) Using a clean KS-2423 cloth moistened with Freon (TF grade), clean end of stud to remove antiseize compound from the threads.

Caution: Only if necessary should the hold-down base and stud be disassembled.

(8) To disassemble hold-down base from stud, the jam nut which is cemented to the stud must be broken loose. Using the 418A wrench and the 5-inch E screwdriver, unscrew jam nut from stud by turning the wrench counterclockwise. Do not try to turn stud with screwdriver before jam nut is removed from stud threads. Then hold the hold-down base and unscrew stud from base.

(9) Using a clean KS-2423 cloth moistened with Freon (TF grade), clean threads of stud and hold-down base. If the old stud is to be reused, be sure all old sealant is removed from threads.

(10) Using the 5-inch E screwdriver, thread stud into hold-down base until head of stud bottoms securely on hold-down base. (Refer to Fig. 10.)

(11) Apply Loctite AA sealant to approximately five threads of the stud nearest the hold-down base. Then thread jam nut over the sealant; using the 418A wrench and the 5-inch E screwdriver, tighten jam nut securely against hold-down base.

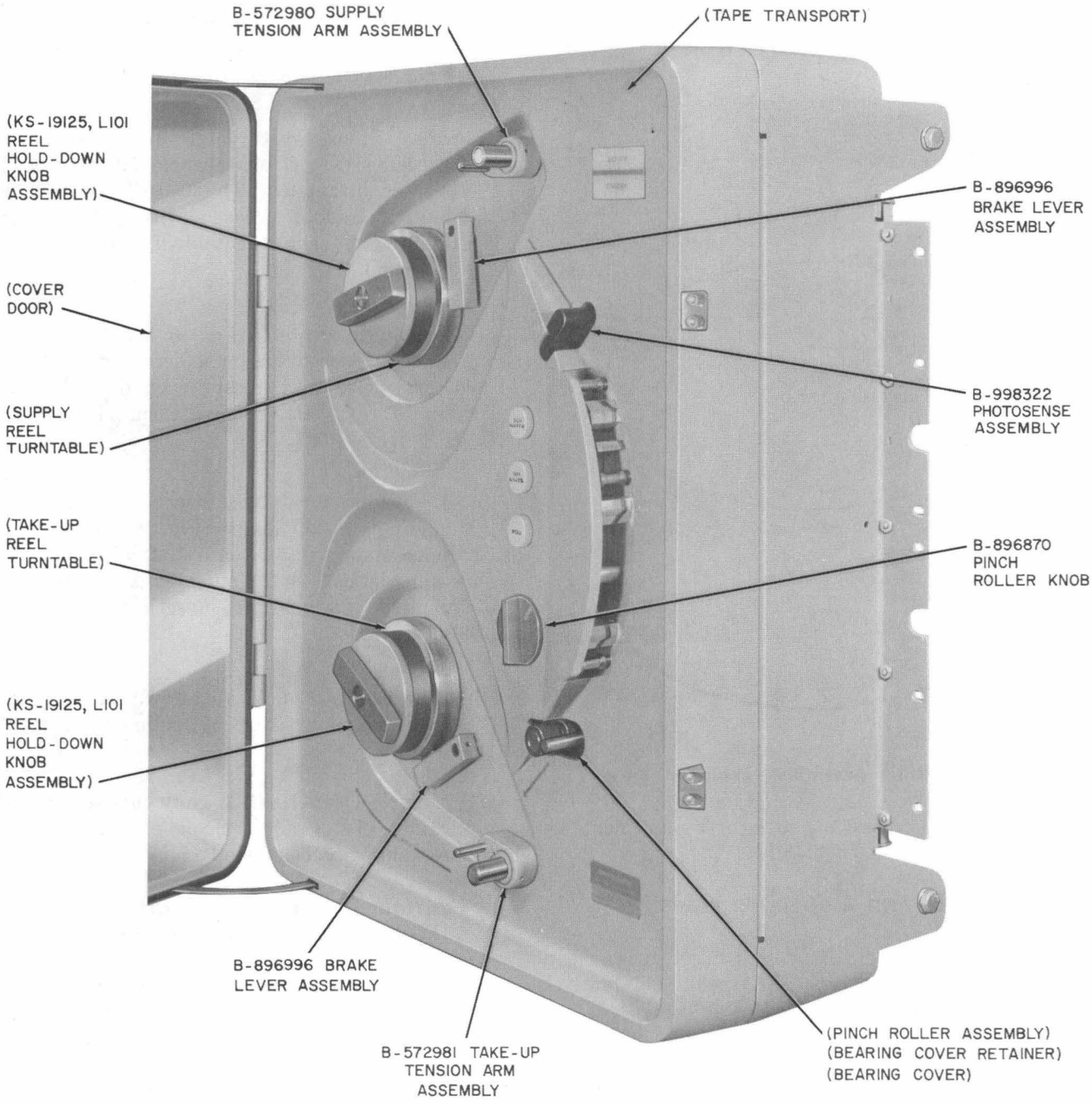


Fig. 8—Recorder Assembly—Front View

(12) Using a clean KS-2423 cloth, clean the outermost surface of hold-down base and the inside surface of hold-down ring. Then, in an area separate from the recorder and any other electrical apparatus, spray these surfaces with S-122 flurocarbon dry lubricant and slide ring onto base. Wipe off any excess lubricant with the cloth.

(13) Using the 4-inch E screwdriver, install hold-down base and ring assembly with three screws and external tooth lockwashers on turntable (Fig. 9).

(14) Refer to Fig. 10 and install hold-down cap, two washers, and thrust bearing. Apply KS-19094 L1 antiseize compound to approximately five threads nearest the end of the stud. Then thread hold-down bar onto stud, taking care that washers and thrust bearing are in proper alignment before tightening.

(15) Apply Loctite E sealant to threads of special left-hand threaded flathead screw. Install screw by threading it counterclockwise into the end of the stud while holding the hold-down bar. Take care not to mar the slotted area of the screw, and tighten to a torque of 18 to 20 inch-pounds using the APCO Mossberg torque screwdriver with a 3/8-inch screwdriver bit. To measure counterclockwise torque, set screwdriver to torque desired and rotate handle counterclockwise back to zero.

3.15 ***Reel Motor:*** To replace reel motor, proceed as follows.

(1) Remove take-up reel turntable (Fig. 8 and 9) as described in 3.14.

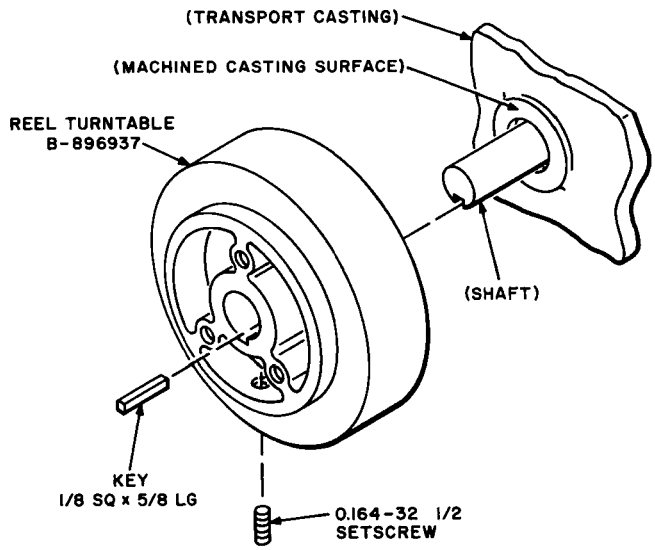


Fig. 9—Reel Turntable and Mounting Details

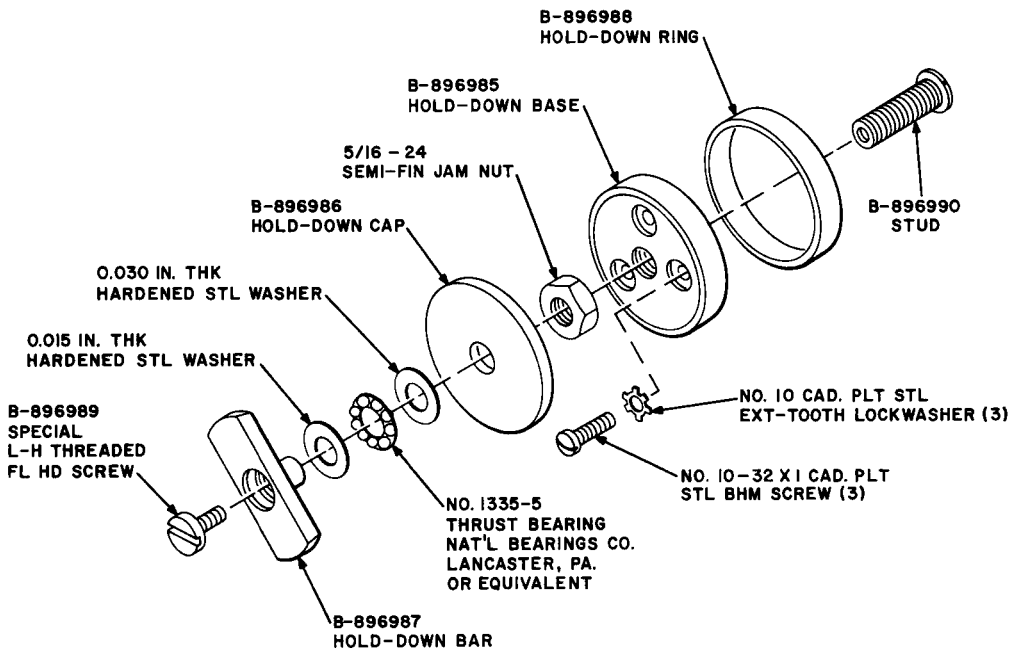


Fig. 10—KS-19125, L101 (ASA) Hold-Down Knob—Exploded View

(2) To gain access to reel motor, use the 4-inch E screwdriver to remove the six screws, lockwashers, and plain washers holding the suppressor cover (Fig. 4) and remove the cover. Disconnect and tag the four leads of reel motor from terminals 1, 2, 3, and 4 of TB1 (Fig. 5). Remove the screw, washers, and cable clamp from the lower suppressor housing bracket. Remove the screw holding the locking tab, and swing the suppressor network assembly out as shown in Fig. 6.

(3) To remove reel motor, use the 3/16-inch Allen wrench to remove four hex socket screws and lockwashers holding motor; then remove motor from transport casting.

(4) To install reel motor, place motor in position with the electrical leads extending toward the bottom left and with mounting holes in motor flange aligned with threaded holes in transport casting. Using the 3/16-inch Allen wrench, secure motor to transport casting with the four screws and lockwashers.

(5) Swing suppressor network assembly to the position shown in Fig. 5, and secure with screw in locking tab, using the 4-inch E screwdriver. Connect leads from motor to TB1 as follows:

White lead to terminal 1

Red lead to terminal 2

Yellow lead to terminal 3

Blue lead to terminal 4

Secure motor leads to lower suppressor housing bracket with screw, cable clamp, D-washer, and lockwasher. Install suppressor cover as shown in Fig. 4, and secure with six screws, plain washers, and lockwashers.

(6) Install reel turntable and associated parts as described in 3.14.

3.16 ***Reel Brake Assembly:*** To replace reel brake assembly, proceed as follows.

(1) To remove supply reel brake assembly, unhook tension arm control spring (Fig. 11) from brake arm assembly. Using the 417A wrench, remove hex locknut, spade bolt, and brake tension spring from brake arm assembly. Using the 1/16-inch Allen wrench, loosen setscrew in the end of brake lever assembly (Fig. 8 and 12); remove brake lever and shim washer. From the rear of the transport, slide brake arm assembly out of brake shaft bushing, and remove spring washer and shim washer.

(2) To gain access to take-up reel brake assembly, use the 4-inch E screwdriver to remove screw holding the locking tab (Fig. 4); then swing suppressor network assembly out as shown in Fig. 6. Using the 417A wrench, remove hex locknut, spade bolt, and brake tension spring (Fig. 13) from brake arm assembly. Using the 1/16-inch Allen wrench, loosen setscrew in end of brake lever assembly (Fig. 8 and 12); remove brake lever and shim washer. From the rear, slide brake arm assembly out of brake shaft bushing, and remove spring washer and shim washer.

(3) Before installing reel brake assembly, clean the shaft with a clean KS-2423 cloth.

Caution: When installing reel brake assembly, the spring washer (Fig. 12) should not be completely compressed.

(4) Install shim washer and spring washer on shaft of brake arm assembly (Fig. 12), and insert shaft through brake shaft bushing. From the front of the transport, install shim washer and brake lever assembly on shaft with the lever bottomed on shaft. Using the 1/16-inch Allen wrench, tighten setscrew in the end of brake lever arm while applying slight pressure from the rear.

(5) For the supply reel brake assembly, hook loose end of tension arm control spring (Fig. 11) to brake arm assembly. Assemble brake tension spring and spade bolt to brake arm assembly and secure with hex locknut by using the 417A wrench. Adjust brake pressure as described in Section 034-360-701.

(6) For the take-up reel assembly, assemble brake tension spring and spade bolt to brake arm assembly (Fig. 13) and secure with hex locknut, using 417A wrench. Adjust brake pressure as described in Section 034-360-701. Return suppressor network housing assembly to position shown in Fig. 4; using the 4-inch E screwdriver, secure locking tab with screw.

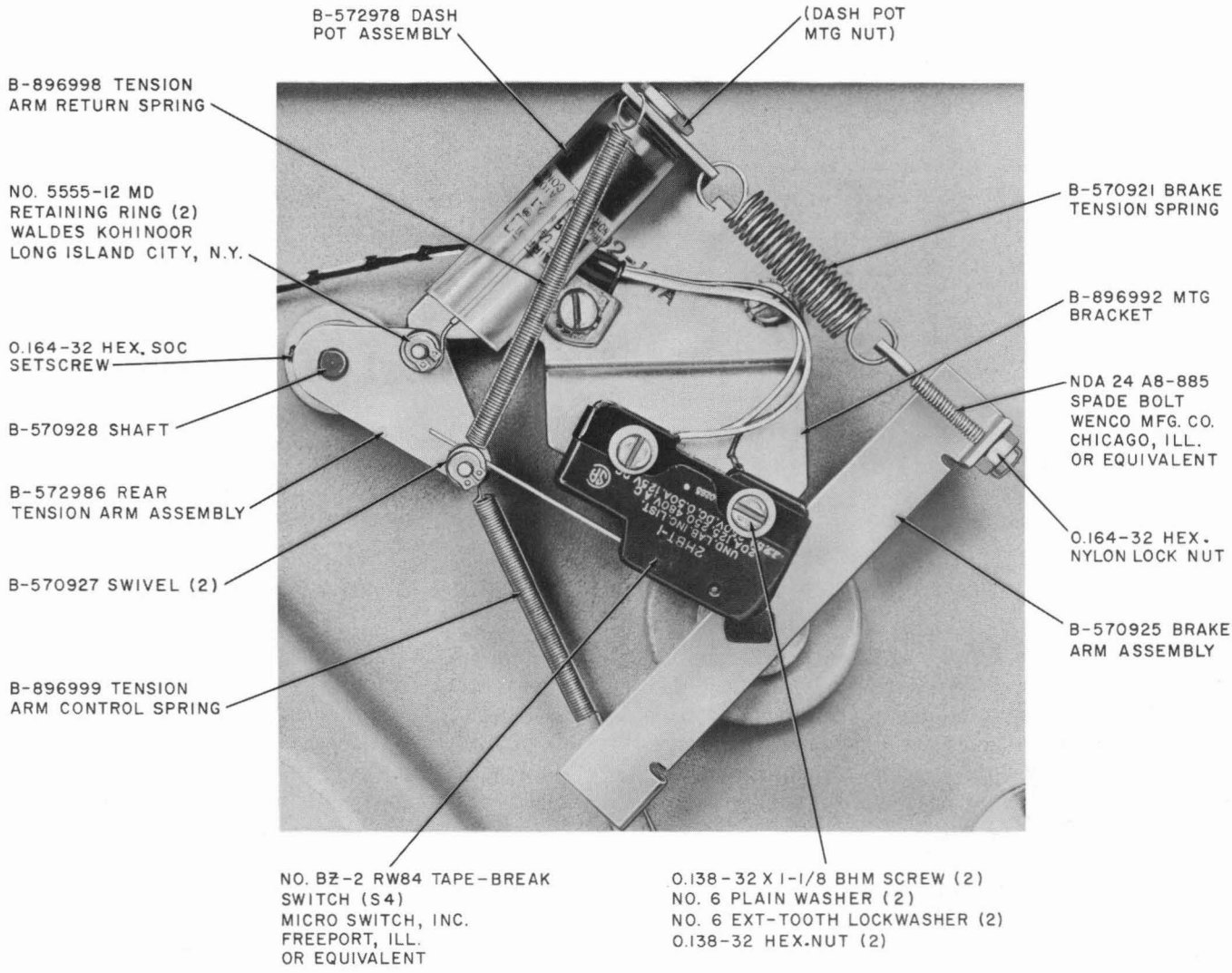


Fig. 11—Supply Reel Brake and Tension Arm Assembly

TENSION ARMS AND ASSOCIATED PARTS

3.17 ***Supply Tension Arm Assembly:*** To replace supply tension arm assembly and associated parts, proceed as follows.

(1) To remove supply tension arm assembly (Fig. 8), use the R-2975 snap-ring pliers to remove outermost retaining ring (Fig. 14), and slide swivel of supply tension arm return spring from shaft. Using the R-2975 snap-ring pliers, remove retaining ring from shaft holding dash pot swivel. Using the R-1770 wrench, loosen mounting nut of dash pot (Fig. 11), and remove dash pot from dash pot mounting bracket. With dash pot free, slide dash pot swivel from shaft. Unhook the tension arm control spring from supply brake arm assembly. Using the 1/16-inch Allen wrench, loosen setscrew located in the end of rear tension arm assembly (Fig. 14); then slide rear tension arm assembly, spring washer, and shim washer from the shaft. Remove supply tension arm assembly (Fig. 8) from the front of the tape transport. Remove shim washer from shaft of supply tension arm assembly.

(2) Before installing supply tension arm assembly, clean the shaft with a clean KS-2423 cloth.

Caution: When installing supply tension arm assembly, the spring washer (Fig. 14) should not be completely compressed.

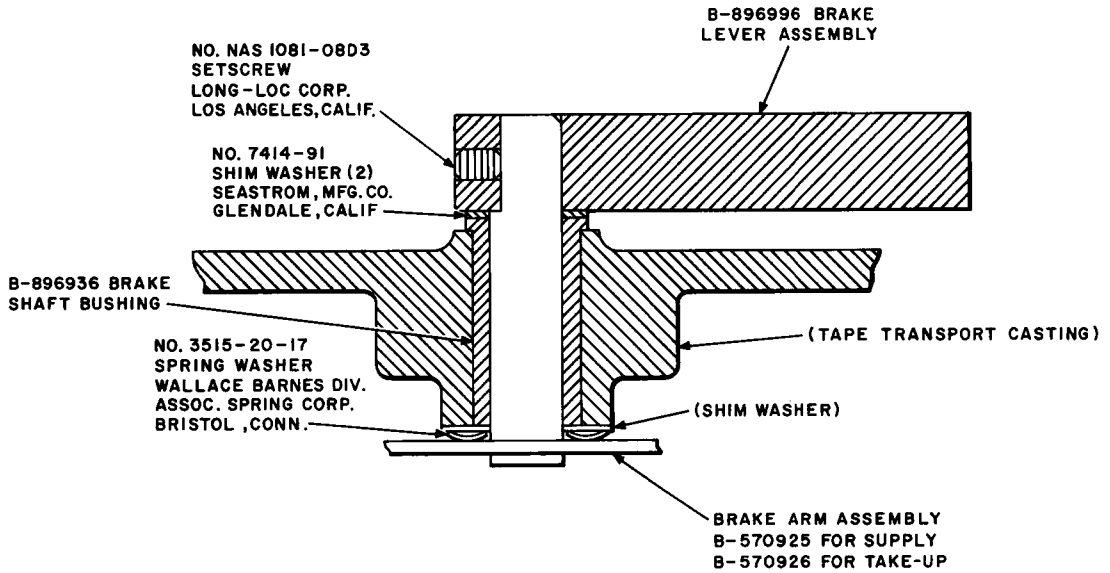


Fig. 12—Sectional View of Supply or Take-Up Reel Brake Assembly

(3) To replace supply tension arm assembly (Fig. 8), install shim washer on shaft (Fig. 14); insert shaft of supply tension arm assembly from front of tape transport through flanged bearings. Install shim washer, spring washer, and rear tension arm assembly onto shaft of supply tension arm assembly. Using the 1/16-inch Allen wrench, tighten setscrew in the end of rear tension arm assembly while applying 1/2- to 2-pound preload pressure against the flanged bearings. Check the shaft for longitudinal play and observe that spring washer is not completely compressed. If this has occurred, remove rear tension arm; replace spring washer with a new one; reinstall rear tension arm; and recheck shaft for play. Hook the loose end of tension arm control spring in the hole provided in brake arm assembly (Fig. 11). Install the dash pot on the dash pot mounting bracket, using the R-1770 wrench to tighten mounting nut. Slide dash pot swivel on the short shaft (Fig. 14); then, using the R-2975 snap-ring pliers, install retaining ring 1/4 inch from end of shaft. Install tension arm return spring swivel on the long shaft; then, using the R-2975 snap-ring pliers, install retaining ring 1/16 inch from end of shaft.

(4) Adjust supply spring tension as described in Section 034-360-701.

(5) To replace tape-break switch S4 (Fig. 11), tag and remove three soldered leads; use the 4-inch E screwdriver to remove the two screws, plain washers, external tooth lockwashers, and hex nuts holding switch on mounting bracket. Position new switch as shown and secure to mounting bracket with two screws, plain washers, external tooth lockwashers, and hex nuts. Replace leads by soldering to the proper terminals, and remove tags.

3.18 ***Take-Up Tension Arm Assembly:*** To replace take-up arm assembly and associated parts, proceed as follows.

(1) Using the 4-inch E screwdriver, remove screw holding locking tab (Fig. 4); swing suppressor network assembly out as shown in Fig. 6. Use the R-2975 snap-ring pliers to remove retaining ring (Fig. 13), and slide take-up arm return spring swivel from shaft. Using the 1/16-inch Allen wrench, loosen setscrew in the end of rear take-up tension arm assembly (Fig. 15); remove tension arm assembly, spring washer, and shim washer from shaft. Remove take-up tension arm assembly (Fig. 8) from front of tape transport. Remove shim washer from shaft of take-up tension arm.

(2) Before installing take-up tension arm assembly, clean shaft with a clean KS-2423 cloth.

Caution: When installing take-up tension arm assembly, the spring washer (Fig. 15) should not be completely compressed.

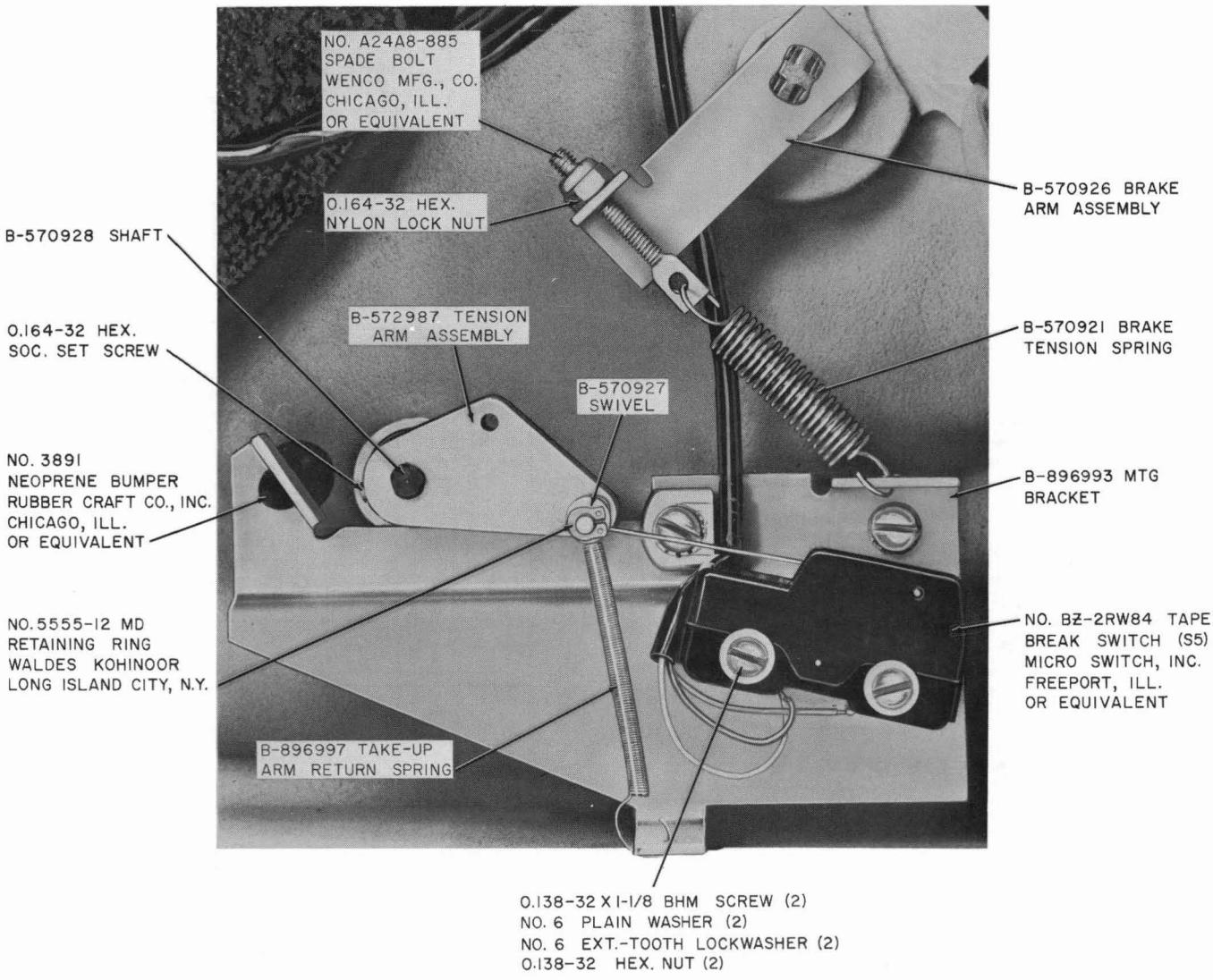


Fig. 13—Take-Up Reel Brake and Tension Arm Assembly

(3) Install shim washer on shaft of take-up tension arm assembly, and insert shaft through the flanged bearings from front of tape transport. Install shim washer, spring washer, and rear tension arm assembly on shaft as shown in Fig. 15. While applying 1/2- to 2-pound preload pressure against the flanged bearings, use the 1/16-inch Allen wrench to tighten setscrew in the end of rear take-up tension arm assembly. Check the shaft for longitudinal play, and observe that the spring washer is not completely compressed. If this has occurred, remove rear tension arm assembly and replace spring washer with a new one; reinstall rear tension arm assembly; and recheck shaft for play. Install take-up arm return spring swivel on the shaft; then, using the R-2975 snap-ring pliers, install retaining ring 1/16 inch from end of shaft.

(4) Adjust take-up spring tension as described in Section 034-360-701.

(5) To replace tape-break switch S5 (Fig. 13), tag and remove soldered leads; use the 4-inch E screwdriver to remove two screws, plain washers, external tooth lockwashers, and hex nuts holding switch. Position new switch on mounting bracket as shown in Fig. 13, and secure with two screws, plain washers, external tooth lockwashers, and hex nuts. Replace leads by soldering to proper terminals, and remove tags.

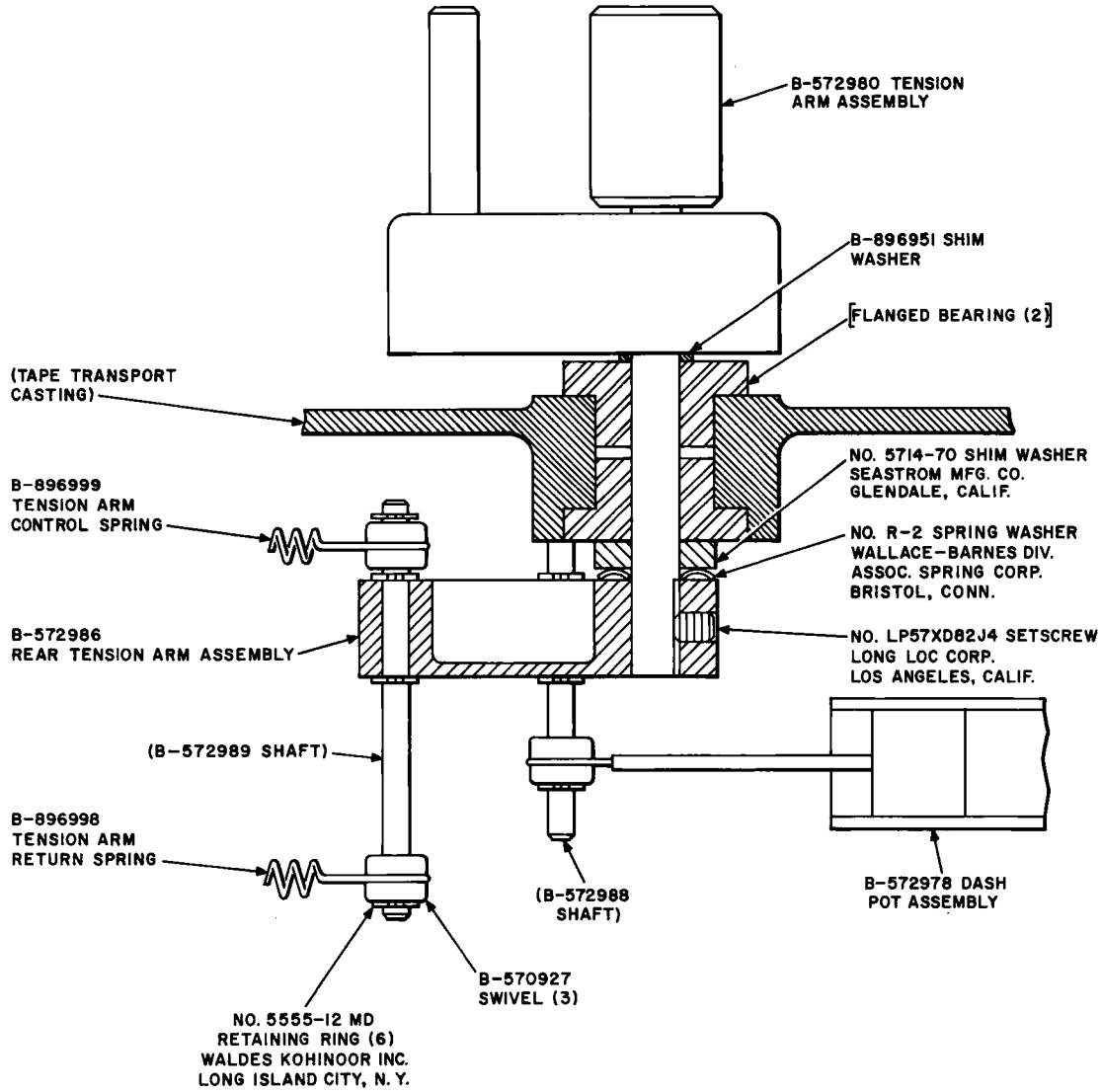


Fig. 14—Sectional View of Supply Tension Arm and Associated Parts

(6) Return suppressor network housing assembly to position shown in Fig. 4 and, using the 4-inch E screwdriver, secure locking tab with screw.

PINCH ROLLER LOCK SOLENOID AND ASSOCIATED PARTS

3.19 ***Pinch Roller Knob:*** To replace pinch roller knob (Fig. 8), proceed as follows.

(1) Remove drive motor assembly as covered in 3.11.

(2) Turn the knob to the RUN position. Using the R-2975 snap-ring pliers, remove retaining ring (Fig. 5) from pinch roller knob; remove the knob from front of tape transport (Fig. 8).

(3) Before installing new knob, lubricate cam surface with thin film of No. 6 compound lubricant. Insert new knob so that it will seat in the RUN position, and reinstall the retaining ring to secure knob.

(4) Install drive motor assembly on tape transport as covered in 3.11.

3.20 ***Pinch Roller Lock Solenoid, Limit Switch, and Springs:*** To remove the pinch roller solenoid, switch, and springs, proceed as follows.

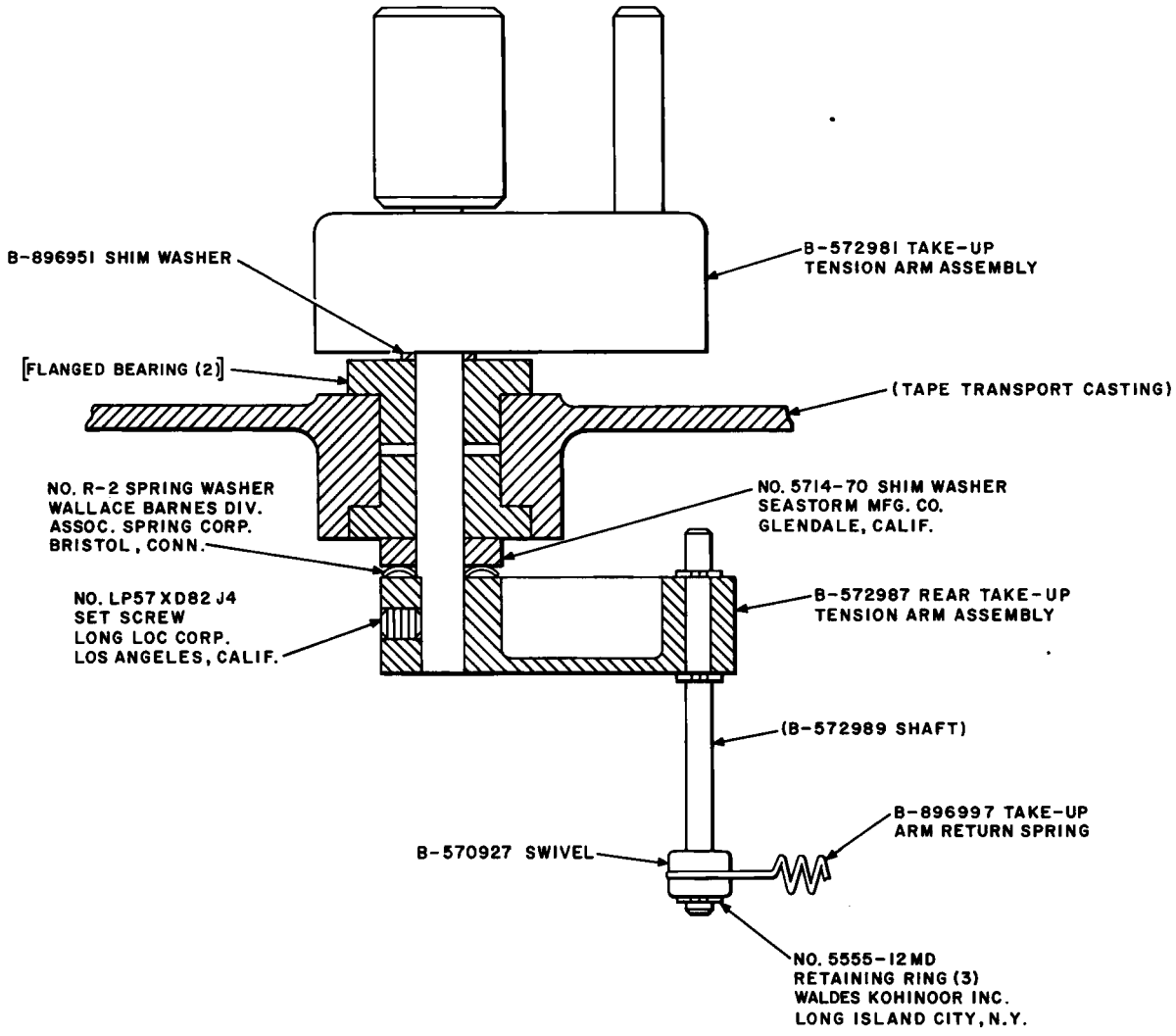


Fig. 15—Sectional View of Take-Up Tension Arm and Associated Parts

(1) Tag and disconnect the two solenoid leads (Fig. 4) from terminals 19 and 20 of TB3 and the four leads from terminals of pinch roller limit switch.

(2) Free the end of pinch roller pressure spring (Fig. 16) at the end which hooks into the spade bolt. This can be accomplished by grasping the flat end of the spade bolt with P long-nose pliers and tensioning the spring toward the spade bolt; then slip the screw retainer clip outward and away from the bracket which it engages. Do not alter the position of the nylon locknut during this procedure. Also disengage the hook of the pinch roller pressure spring from hole in the pinch roller arm and remove the spade bolt, screw retainer clip, and pressure spring.

(3) Unhook cam return spring from pinch roller lock bracket. Using the 4-inch E screwdriver, remove the two screws holding the bracket to the transport casting; remove the bracket, solenoid, pinch roller limit switch, arm return spring, and locking arm as a group. Use the 3/32-inch drive pin punch to remove groove pin (Fig. 17) from solenoid plunger. Using the 4-inch E screwdriver, remove two screws, lockwashers, and plain washers holding solenoid to bracket; remove solenoid.

(4) To install pinch roller lock solenoid, place new solenoid (Fig. 17) on bracket so that the screw holes in the bracket are aligned with those in the solenoid. Then use the 4-inch E screwdriver to secure solenoid with the two screws, plain washers, and external tooth

lockwashers. Install the groove pin securing the locking arm to solenoid plunger, using the 3/32-inch drive pin punch and the 4-ounce riveting hammer. Place the bracket, solenoid, switch, arm return spring, and locking arm as a group in the position shown in Fig. 16. Secure bracket to transport casting with the two screws, plain washers, and external tooth lockwashers, using the 4-inch E screwdriver. Hook cam return spring to the lock bracket; reinstall pinch roller pressure spring, spade bolt, and screw retainer clip in reverse order of removal.

(5) Connect electrical leads as follows:

Leads of solenoid to terminals 19 and 20 of TB3

Slate lead from cable 2 to normally open terminal of switch

Black lead from cable 2 to common terminal of switch

Two white-yellow leads from cable 2 to normally closed terminal of switch

(6) Adjust pinch roller pressure and operation of switch as described in Section 034-360-701.

RECORDING HEAD AND SENSOR

3.21 ***Head Assembly:*** To remove head assembly, proceed as follows.

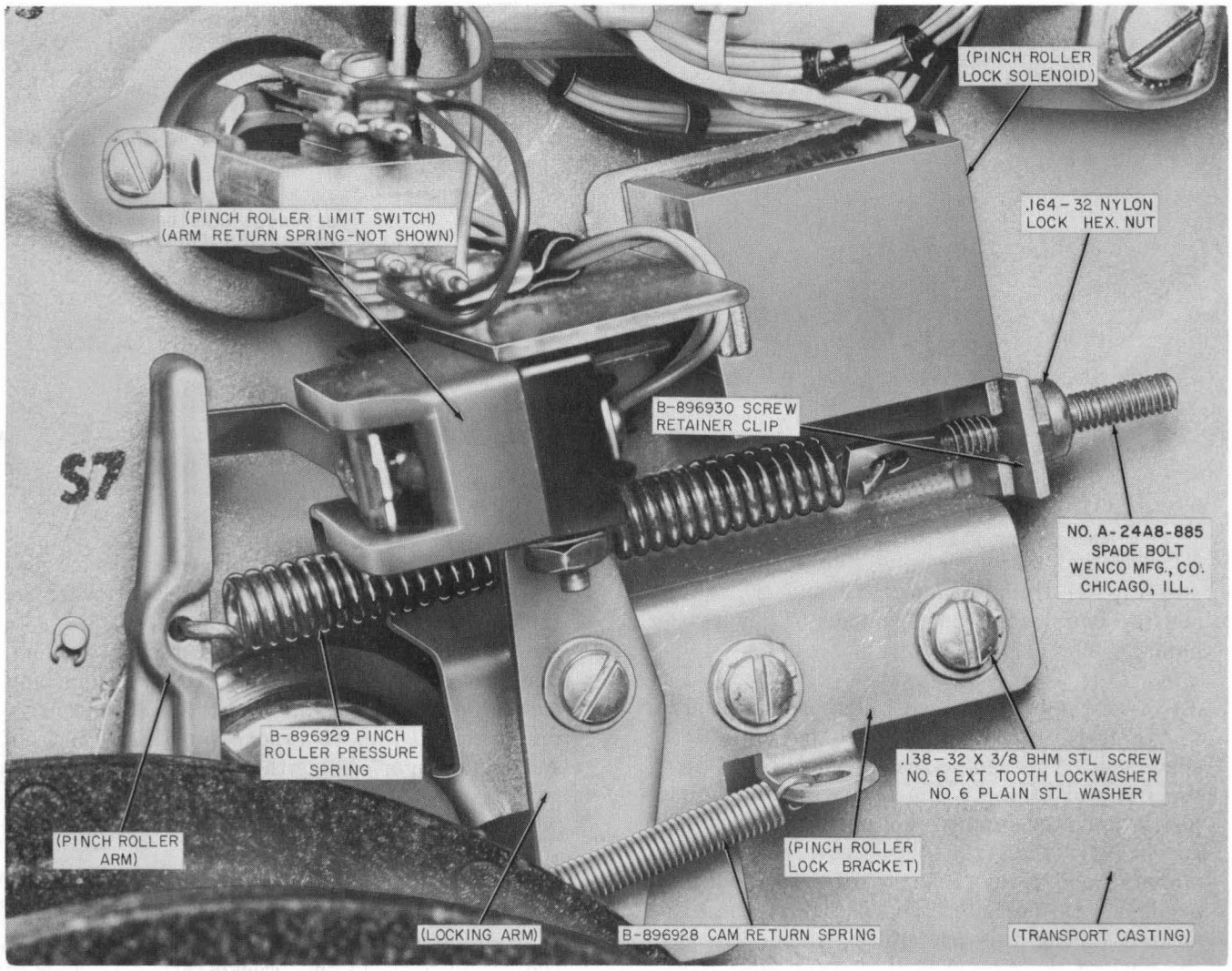


Fig. 16—Pinch Roller Lock Solenoid and Associated Parts—Mounted on Transport Casting

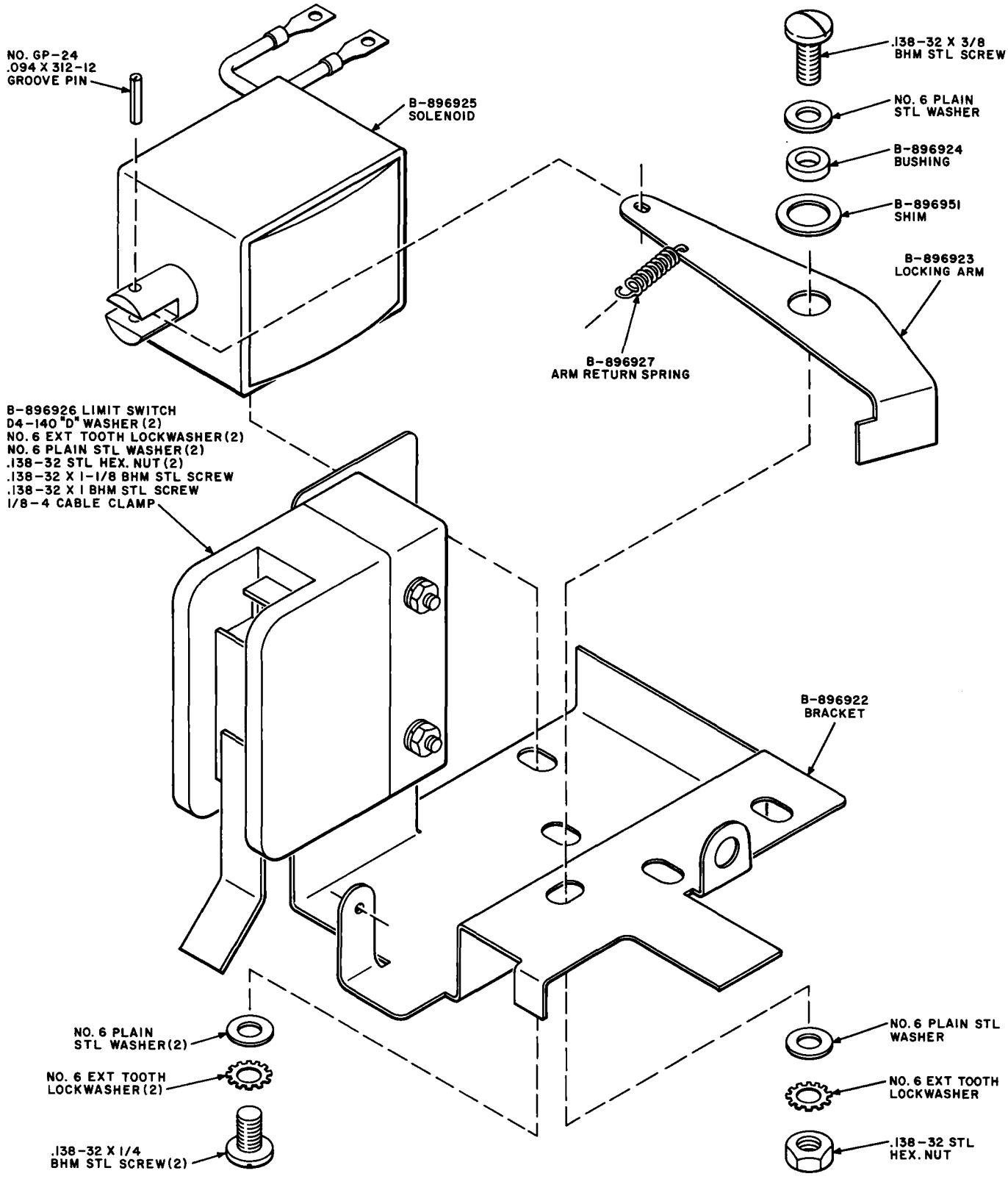


Fig. 17—Pinch Roller Lock Group—Exploded View

(1) Disconnect all cable connectors at rear of the recorder (Fig. 2).

(2) Position the pinch roller knob (Fig. 8) to RUN.

(3) Free the end of pinch roller pressure spring (Fig. 16) at the end which hooks into the spade bolt. This can be accomplished by grasping the flat end of the spade bolt with P long-nose pliers and tensioning the spring toward the spade bolt; then slip the screw retainer clip outward and away from the bracket which it engages. Do not alter the position of the nylon lock hex nut during this procedure. Disengage the spade bolt from hook of pinch roller pressure spring.

(4) Using the KS-6257 wrench, loosen three motor mounting screws (Fig. 6). Hold drive motor carefully in position and remove the three motor mounting screws and lockwashers. Withdraw drive motor straight back from the transport casting until the pinch roller assembly has cleared the opening in the casting; then gently lower the motor to the bottom of recorder housing.

(5) Refer to Fig. 18 and, using a KS-6854 screwdriver, loosen the two screws securing terminal lugs of fanning strip (TB4); then disengage fanning strip from terminal board (TB3).

(6) Use a KS-6854 screwdriver to loosen six screws on terminal board (TB6), and disconnect fanning strip (TB7) from TB6.

(7) Use a 5-inch E screwdriver to remove cable clamp (Fig. 18), screw, D-washer, and lockwasher which secure cable leads to the transport casting.

(8) To remove both cable clamps from left rear door, use a 5-inch E screwdriver to remove screw, D-washer, lockwasher, and hex nut which mount each clamp.

(9) To dismount cable connectors J1 and J2, use a 4-inch E screwdriver and 418A wrench to remove two screws, lockwashers, and hex nuts which secure each cable connector. The grounding lug at lower mounting screw of each connector is dismounted during this procedure.

(10) Using the 1/8-inch Allen wrench, remove three hex socket cap screws, plain washers, and lockwashers which secure head assembly on transport casting; remove head assembly and its associated cabling from tape transport.

(11) To install new head assembly, position head assembly on transport casting with H3 (WRITE) head at top as shown in Fig. 4; using the 1/8-inch Allen wrench, secure head assembly at the two upper mounting holes with two 1-inch hex socket cap screws, plain washers, and lockwashers. Secure at the lower mounting hole with the 7/8-inch hex socket cap screw and lockwasher.

(12) Install 9/16-inch cable clamp on transport casting (Fig. 18); route all head cable leads and photosense cable through this clamp. Mount this clamp loosely with screw, D-washer, and lockwasher.

(13) Route all head cable leads, except the erase head cable with fanning strip (TB4), through two cable clamps on inside of left rear door. The upper clamp (9/16 inch) and lower clamp (3/8 inch) shall be mounted loosely with screws, D-washers, lockwashers, and hex nuts as shown in Fig. 18. Spiral wrapping on the head cable leads should be between the clamp on the transport casting and the upper clamp on rear door.

(14) Place the J1 and J2 connectors into position on left rear door with terminal 1 of each connector positioned at top. Grounding lugs from the cable terminations shall be mounted to the lower mounting screw of their respective connectors. Use a 4-inch screwdriver and 418A wrench to secure both connectors with mounting hardware removed in (9).

(15) Connect fanning strip (TB7) of the photosense assembly to the terminal board (TB6) at the upper left of head assembly. The two white leads on TB7 should be connected at terminals 5 and 6 of TB6. Use the KS-6854 screwdriver to tighten the six screws on TB6 after the lugs of TB7 have been engaged.

(16) Connect the erase head fanning strip (TB4) to terminal board (TB3) as shown in Fig. 18, and tighten the two screws on TB3 with the KS-6854 screwdriver.

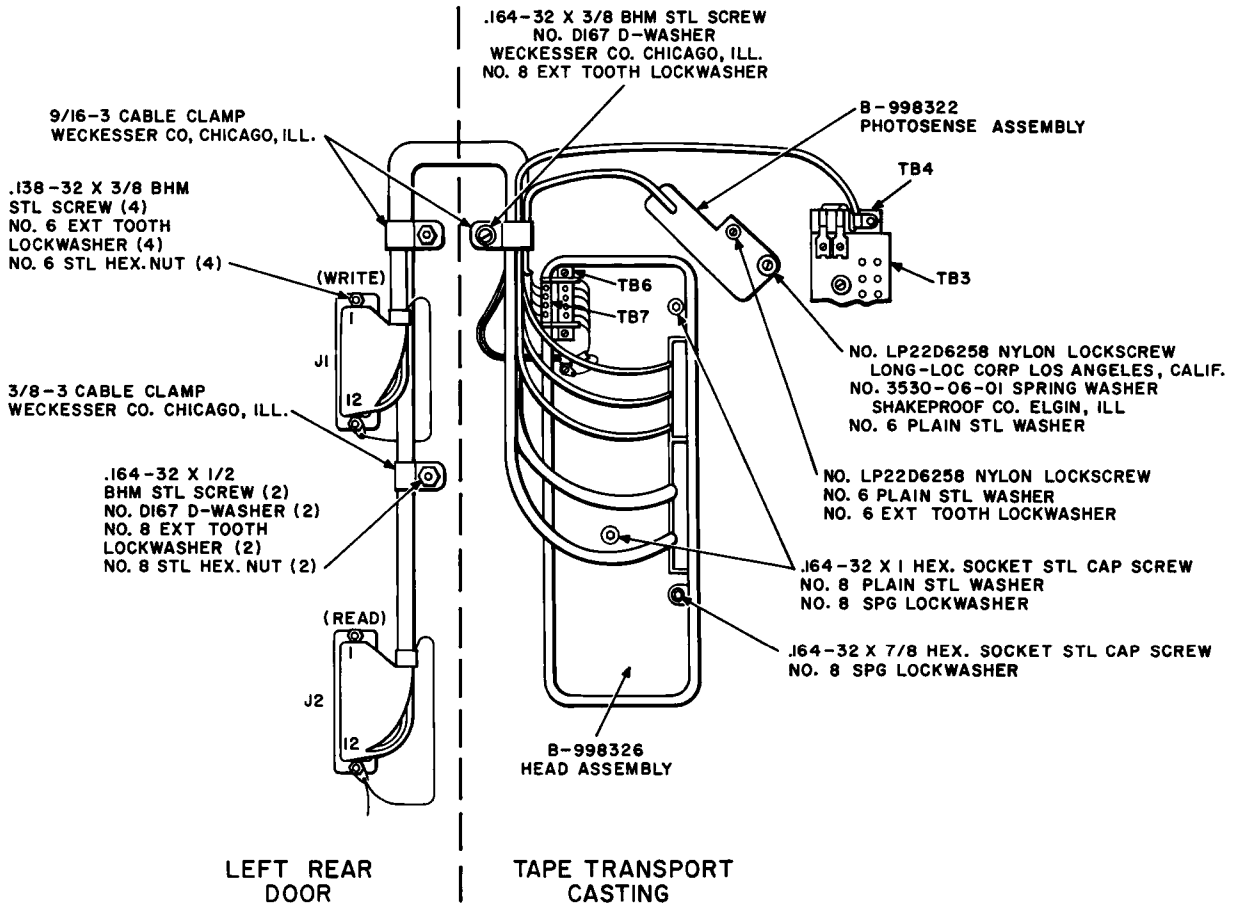


Fig. 18—Recording Head Assembly and Mounting Details

(17) Reinstall the drive motor and pinch roller pressure spring in reverse order of removal described in (3) and (4).

(18) Neatly dress all cables, and then tighten the three cable clamps mounted in (12) and (13).

(19) Connect all cable connectors at rear of the recorder (Fig. 2).

3.22 ***Photosense Assembly:*** To remove photosense assembly, proceed as follows.

(1) Disconnect cable clamp as described in 3.21(7).

(2) Disconnect photosense cable fanning strip (TB7) from terminal board (TB6) as described in 3.21(6).

(3) Use a 4-inch E screwdriver to remove the two nylon lockscrews (Fig. 18) and washers holding the photosense assembly, and remove the assembly from transport casting.

(4) Place new photosense assembly into the opening vacated by the old assembly. Using the 4-inch E screwdriver, loosely mount the assembly at the upper mounting hole with nylon lockscrew, plain washer, and external tooth lockwasher. At the lower mounting hole in the photosense assembly, loosely mount the assembly with nylon lockscrew, plain washer and spring washer.

(5) Place a reel of tape on the supply turntable of the transport, and thread the tape in normal manner. Tension the tape by manually rotating the take-up reel in the take-up (clockwise) direction for a turn or two. Stop turning, thus

allowing the tape to assume a standby tension condition.

(6) Center the new photosense assembly in the hole in the casting through which it passes. Its position with respect to the narrow dimension of the hole may be centered by eye. In the long dimension, use a 6-inch steel scale to locate the lamp and photocell face of the assembly a reasonably accurate 1/8-inch from the back (nonoxide) side of the tape with the tape tensioned as described in (5).

Caution: The cupped spring washer at the lower mounting hole of the photosense assembly must not be completely compressed. The purpose of this is to permit thermal changes in dimensions and material shrinkage to occur without overstressing the material.

(7) Final tightening of the photosense assembly mounting screws can now be done; first, securely tighten the upper mounting screw; then tighten the lower mounting screw, making certain that the cupped spring washer is ***not*** compressed solid.

(8) Connect photosense cable fanning strip (TB7) with terminal board (TB6) as described in 3.21(15).

(9) Reinstall cable clamp as described in 3.21(12), and then tighten clamp mounting screw with a 5-inch E screwdriver.