

AMA PERFORATOR TAPE HANDLING AND SPLICING

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1. GENERAL

1.01 This section covers the handling of AMA perforator tape in central offices and describes the method of splicing unperforated tape using the 604C tape splicer and KS-13981 heat sealing tape. This section also covers the use and description of Form E-4104 entitled Notification to Accounting EDP Center—AMA or CAMA Central Office Trouble or Activity.¶

1.02 This section is reissued for the following reasons.

- (a) To incorporate additional information pertaining to the use of Form E-4104 (1.06, 1.07, and 1.08).
- (b) To show revised Form E-4104 (Fig. 1).

(c) To delete reference to source for obtaining KS-13981 heat sealing tape (Part 2 and 3.02). The tape is no longer obtained from the accounting center.

(d) To change information regarding the cutting of 3:00 a.m. tape (10.01).

1.03 This section describes the procedures to be followed in all types of offices which are arranged for AMA and which use AMA perforator tapes.

1.04 Do not splice perforated tape in the central office.

1.05 When an upper bin is empty, transfer the filled bin in the lower position to the upper position, by proceeding as described in 4.05.

Caution: Before restoring the perforator to normal operation, be sure the slack tape arm is removed from holder. Check that the holder is not bent or worn.

1.06 ¶Form E-4104 (Fig. 1) shall accompany each shipment of tape to the accounting center. The form is a 3-copy, carbon-interfold assembly used to report central office trouble or routine activity related to AMA perforator tapes. Each copy has a distinctive color. In order of assembly, the copies are ACCOUNTING (white), EBAC (yellow), and FIELD (pink). The ACCOUNTING and EBAC copies shall be sent to the accounting center with each shipment of tapes. A shipment may include tapes for a single day if tapes are cut daily or for several days if tapes are cut less frequently. FIELD copies should be retained for three months to provide a trouble and activity history for analysis.

1.07 When making entries on Form E-4104, write on a smooth, hard surface, one assembly at a time. Do not erase errors; line them out or use a new assembly.¶

NOTIFICATION TO ACCOUNTING EDP CENTER
AMA OR CAMA CENTRAL OFFICE TROUBLE OR ACTIVITY

CENTRAL OFFICE _____ RECORDER GROUP _____
(CAMA MARKER GROUP)

* B U L K O F B U S	TAPE DATE(S)

(1) WAS THERE ANY INDICATION OF TROUBLE ON 3AM ENTRY?
If YES, explain in Item #5.

YES NO

(2) RECORDER TRANSFERRED OR MADE BUSY
DO NOT MAKE routine transfers or make busy during busy hour.

* Bulk of business
3:00AM to 2:59AM
the following day.

TAPE DATE	RECORDER			TIME	BY	REASON FOR TRANSFERS OR MAKE BUSY (✓)			GOOD TRANSFER OR BUSY PATTERN (✓)		GOOD RECORDER TEST PATTERN (✓)		GOOD ROUTINE END OF TAPE PATTERN (✓)		CONTROL MASTER TIMER E OR O
	NUMBER	TRANS-FERRED	MADE BUSY			ROUT	SYNC	TBL	YES	NO	YES	NO	YES	NO	
RESTORED →															
RESTORED →															
RESTORED →															
RESTORED →															

If not restored same day explain in Item #5

(3) WAS THERE ANY TROUBLE, NON-SYNC OR ACTIVITY?
If YES, explain in Item #5

YES NO

(4) REGISTER READING CALL COUNT PROCESS

RECORDER CAMA		DATA	READING	RECORDER CAMA		DATE	READING	RECORDER CAMA		DATE	READING		
GRP.	NO.			GRP.	NO.			GRP.	NO.				
										READING		REGISTER	
										TAKEN	VERIFIED	ZEROED	NUMBER

INITIAL →

(5) REPORT OF TROUBLE AND ACTIVITY (includes dates, and office index test) _____

(6) COULD TROUBLE OR ACTIVITY POSSIBLY AFFECT BILLING? (In Item #5)

YES NO

SUPERVISOR

ACCOUNTING COPY-WHITE EBAC COPY-YELLOW FIELD COPY-PINK

Fig. 1—Form E-4104

1.08 ♦ Make entries as follows.

- (a) **CENTRAL OFFICE:** Enter the common language designation of your office.
- (b) **RECORDER GROUP:** Enter the recorder group number. When tapes from more than one recorder group are forwarded, prepare a separate form assembly for each group.
- (c) **TAPE DATE(S):** Enter the tape date(s) for the bulk of business.
- (d) Complete all items (1) through (5), and (6) if applicable.

(1) **WAS THERE ANY INDICATION OF TROUBLE ON 3AM ENTRY?:** Any indication of trouble on 3:00 a.m. entry must be reported to the accounting center. If there was no trouble on 3:00 a.m. entry, check NO; if there was trouble, check YES and explain in item (5).

(2) **RECORDER TRANSFERRED OR MADE BUSY:** All transfer and make-busy entries (routine or trouble) must be reported to the accounting center. Include the exact time, the reason, and the master timer in control. Initial the action in the spaces provided. If there is no activity, enter the word *none* in this space.

(3) **WAS THERE ANY TROUBLE, NON-SYNC OR ACTIVITY?:** If no trouble was encountered during the above transfer or make-busy entries, check NO; if trouble was encountered, check YES and explain in item (5).

(4) **REGISTER READING CALL COUNT PROCESS:** The number of initial entries entered on the tapes of regular recorders during a 24-hour period is recorded on call count process control registers. Enter the readings from these registers in the appropriate spaces and initial the appropriate space(s) for the following activities: taking and verifying the readings and zeroing the registers.

(5) **REPORT OF TROUBLE AND ACTIVITY:** Record the details and data of all test entries and troubles. Report cut or torn tape

that has been interleaved due to trouble or to routine procedure. If there was no trouble or activity to report, enter the word *none* in this space.

(6) **COULD TROUBLE OR ACTIVITY POSSIBLY AFFECT BILLING?:** If trouble or activity recorded in item (5) could not affect billing, check NO; if it could affect billing, check YES.

(e) **SUPERVISOR:** Because correct billing is largely dependent upon AMA tape accuracy, this form should be reviewed and signed by a supervisor. However, when the form is prepared on holidays or off hours, the person preparing the form (or mailing the tape) may sign it. If there is an entry in item (5) or the YES block in item (6), the FIELD copy only must be directed to a supervisor for initialing before noon of the date the tape is mailed.♦

1.09 Mailing cases KS-15542 List 1 and List 2 are available for forwarding perforated tapes to the accounting center. The larger mailing case, KS-15542 List 2, is provided when 22-inch tape reels are used.

2. LIST OF TOOLS AND MATERIALS

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
322A (2 required)	Plug (Make-Busy)
604C	Tape Splicer
P-171289	Tape Handling Block
MATERIALS	
KS-13981	Heat Sealing Tape
Form E-4104	Notification to Accounting EDP Center — AMA or CAMA Central Office Trouble or Activity
—	Red Marking Pencil For Glazed Surface

3. PREPARATION

3.01 When tape is to be spliced, insert plug of 604C tape splicer into power outlet under perforator shelf. Allow 10 to 15 minutes for heater unit to attain proper temperature before splicing the tape.

3.02 Check that there is KS-13981 heat sealing tape on the tape splicer. If a new roll of sealing tape is required, proceed as follows. Remove weight and empty sealing tape spool from hub. Place a new roll of sealing tape on hub so that tape feeds from front of roll. Remount the weight on hub over new roll of sealing tape. Lead tape around vertical post and catch it under the lever of sealing tape guide.

4. REMOVING PERFORATOR TAPE FROM CARTON AND FILLING BIN

4.01 Remove carton of tape from shipping carton. Carefully slit gummed tape at top of carton and turn loosened flaps back. Move wrapping paper away from top of tape.

4.02 Place tape handling block on top of tape in open carton with recessed side of block up. Hold block in place on top of tape with one hand and invert carton so that opened part is down and handling block rests on floor or table with tape on top of block. Lift off carton and remove wrapping paper.

4.03 Inspect tape to see that it has no apparent flaws and is not wrinkled, torn, double folded, ragged at edges, or otherwise damaged or irregular. These conditions can be checked by inspecting edges of pack and fanning folds near ends. If tape has extra folds or is wrinkled, smooth it out, if possible. Remove sections of tape that are damaged, irregular, or of incorrect width, and splice tape as described in 6.01 through 6.07.

4.04 In general, tape in one carton is continuous, but, to avoid waste, shorter lengths (not more than two per carton) are permitted. When a carton contains two lengths of tape, it should have been so marked on the outside of the carton and each length should have been separately banded. In such cases, it will be necessary to splice lengths together as described in 6.01 through 6.07. When tape is continuous, proceed as follows.

- (a) Remove paper bands holding package together.
- (b) Make sure edges and corners are lined up.
- (c) Pull out five folds from top of pack and lay them at end of pack but do not detach them.
- (d) Turn tape bin upside down and lower it over pack of tape with tape guide at end of bin on same end as pulled out tape.
- (e) Hold handling block against tape by grasping hand hold of block, and turn bin right side up.
- (f) Remove handling block from top of tape in bin.
- (g) Draw pulled out portion of tape through guide at end of bin and tuck it in pocket at bottom of bin.

4.05 To place a filled bin in cabinet, proceed as follows. Pull out three or four folds of tape from top of lower bin. Carefully remove tape from guide on end of upper bin and then remove upper bin. Transfer lower bin to upper position, and place filled bin in lower position with bin tape guides at front. Lay slack tape in folds on top of tape in upper bin. As soon as practicable, splice tape in upper bin to that in lower bin as described in 6.09 through 6.14. Place tape in tape guide at end of upper bin, and place slack tape in folds on top of tape in lower bin.

5. FEEDING TAPE INTO PERFORATOR

5.01 If the recorder is not busy as a result of circuit operation, insert 322A plug into MB jack of recorder.

5.02 Place slack tape arm (Fig. 2) in the holder directly above the rear end of tape tension rod and support bar. This prevents reel drive mechanism from running. Pull end of tape from the top of upper bin and feed it through spiral guide; turn it in a spiral to conform to the shape of the guide and take care to keep tape flat in guide. Insert tape into input tape chute of perforator until end comes out of output chute. Advance tape by operating AT key several times.

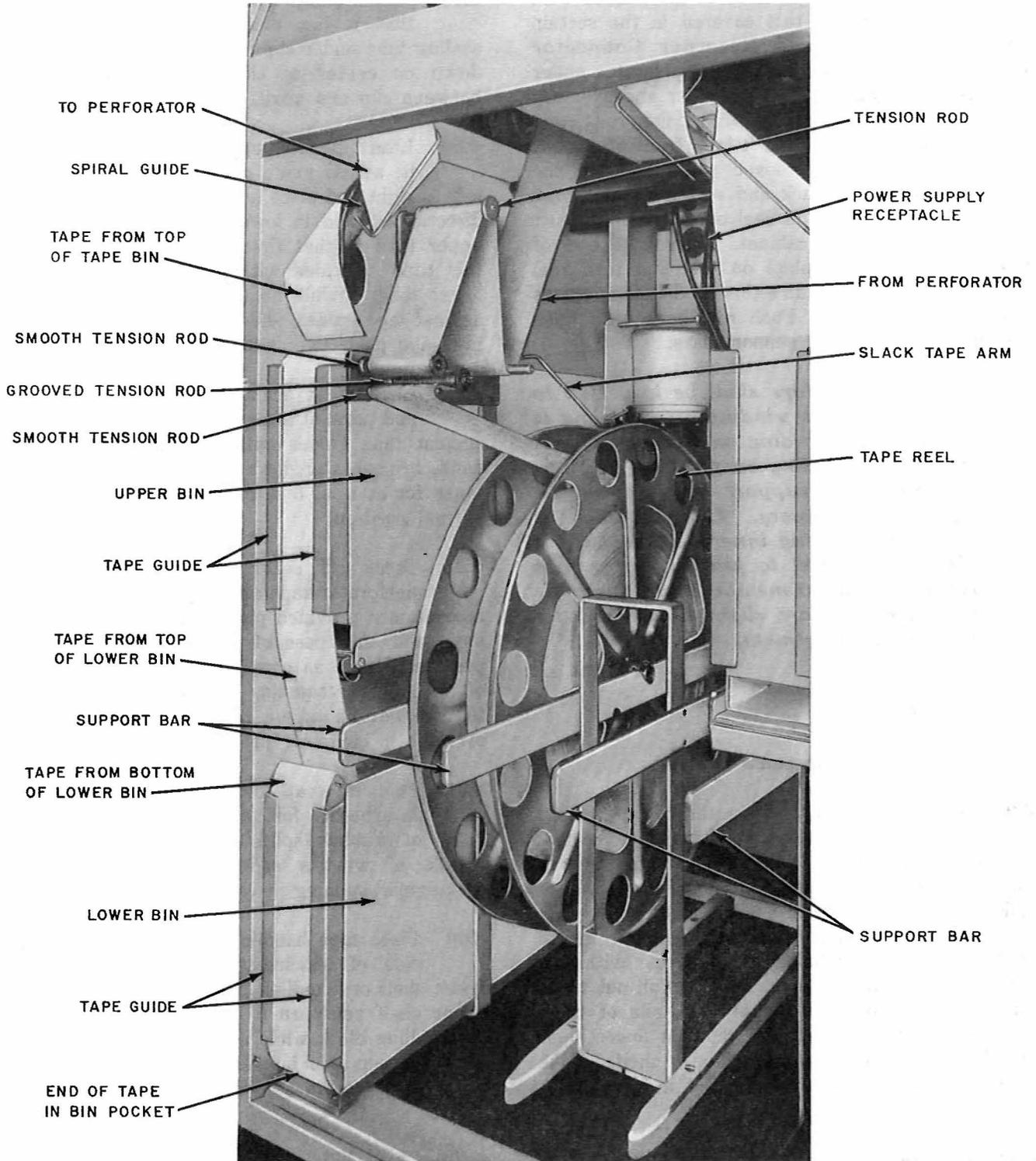


Fig. 2—Perforator Cabinet—Lower Section

5.03 Apply two test patterns in accordance with the operational test covered in the section entitled Recorder and Recorder Connector Circuits—Tests. Place tape from perforator under slack tape arm now at rest in holder and over top tension rod, two lower smooth tension rods, and grooved tension rod so that it is in front of smooth rods and in back of grooved rod. Remove the 322A plug from MB jack and **remove slack tape arm from holder**. Pull reel out on reel support bars to the front of cabinet. Place the end of tape under clamping plate on reel and turn reel one complete turn in a direction so that tape enters reel at the top side. Push reel back until hubs rest in grooves in reel support bars.

Caution: *The tape shall be inspected to ensure that it is winding properly and is not rubbing or riding on side of reel. If tape is not winding on reel properly, reel alignment on support bars should be adjusted if necessary. This adjustment is made by adjusting inner support bar for alignment of reel to provide proper tape winding. Support member mounting holes on inner bars are slightly oversized for purpose of adjustment.*

6. SPLICING TAPE

Two Lengths of Tape in Same Carton

6.01 When there are two lengths of tape in the same carton, each length is separately banded. Do not remove bands at this time and proceed as follows. Place one length across upper shelf of splicing table in line with and directly under guide plates (Fig. 3) of splicer. Place the other length on lower shelf of splicing table in line with and directly under tape on upper shelf. Pull out three folds of tape from the top of each pile of tape. Pull tape from right side of tape on lower shelf and from left side of tape on upper shelf. Take care not to tear tape when pulling it from under the bands.

6.02 Lead tape from lower shelf of splicing table, without twisting it, across guide plates of tape splicer from right to left. Position tape with first fold adjacent to edge of anvil and with edge of tape against tape guides. Place trimming weight on tape approximately 2 inches from anvil to hold tape in position.

6.03 Pull sealing tape over perforator tape so that it lies directly above anvil. Catch sealing tape under clip in front of anvil by pushing down on center of clip, inserting end of tape between clip and anvil, and then releasing clip.

6.04 Lead tape from upper shelf, without twisting it, across guide plates of tape splicer from left to right and place it on top of first tape. Note direction of fold in lower tape at anvil. Position upper tape so that first fold in same direction in this tape coincides with similar fold at anvil in lower tape. While holding both tapes in position against tape guides, slide weight from under upper tape and place it on top of both tapes.

6.05 Check that sealing tape is directly above and parallel to anvil. Hold perforator tapes against tape guides with one hand. With other hand, bring heater down and hold it firmly against tapes for at least 5 seconds. Return heater to its normal position.

6.06 Break off sealing tape at both sides of perforator tape and deposit broken off part in container provided on table. Move splice from anvil and onto base of splicer. Trim off excess perforator tape as close as possible to both sides of splice with trimming weight. Turn tape over to trim bottom tape. Deposit pieces of trimmed off tape in container provided on table.

6.07 Fold tape at fold adjacent to splice and insert this fold as far as it will go into track of window splice cutter. Press down on handle of window splice cutter. This cuts a rectangular opening in center of tape at splice.

6.08 Place tape handling block on floor at right side of splicing table. Place tape from lower shelf on handling block. Remove tape from upper shelf and turn it over on top of tape now on handling block while at same time folding slack tape between two bundles of tape. Inspect tape and place it in bin as described in 4.03, 4.04, and 4.05.

Splicing Tape Between Bins

6.09 Move portable splicing table in front of cabinet with one side of table toward cabinet and the guide plates of splicer in line with bin in cabinet. Place bin which has been filled with tape on lower shelf of splicing table with tape guide

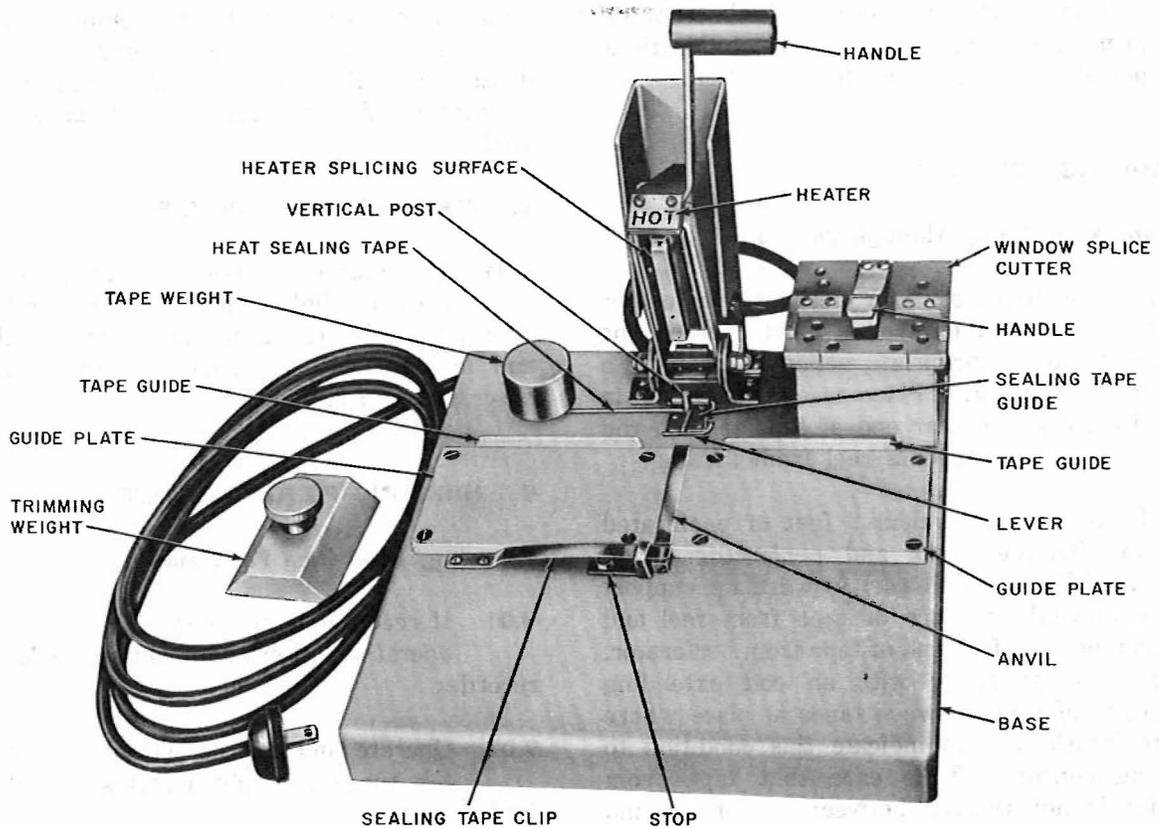


Fig. 3—604C Tape Splicer

end of bin away from cabinet and with bin in line with guide plates of splicer.

6.10 Remove tape from pocket of upper bin and lead it, without twisting it, across guide plates of tape splicer. Position tape with first fold adjacent to edge of anvil and with edge of tape against tape guides. Place trimming weight on tape approximately 2 inches from anvil to hold tape in position.

6.11 Pull sealing tape over perforator tape so that it lies directly above anvil. Catch sealing tape under clip in front of anvil by pushing down on center of clip, inserting end between clip and anvil, and then releasing clip.

6.12 Grasp end of tape at top of full bin and, without twisting it, place it over tape on guide plates of splicer. Note direction of fold in lower tape at anvil. Position upper tape so that first fold in same direction as fold at anvil in

lower tape coincides with this fold in lower tape. While holding both tapes in position against tape guides, slide weight from under upper tape and place it on top of both tapes.

6.13 Check that sealing tape is directly above and parallel to anvil. Hold tapes against tape guide with one hand. With other hand, bring heater down and hold it firmly against tapes for at least 5 seconds. Return heater to its normal position.

6.14 Break off sealing tape and trim off excess ends of perforator tape as described in 6.06. Cut a splice window in tape as described in 6.07.

6.15 Move the splicing table out of the way and place full bin in lower position in cabinet. Place slack tape between two bins in folds on top of tape in lower bin.

6.16 Disconnect heater cord from socket and, if no more splicing is to be done at this time, return portable splicing table to its station.

7. HANDLING TORN TAPE

Tape Torn After Going Through Perforator

7.01 If tape becomes torn between perforator and reel, first determine what caused tape to tear and take appropriate action to prevent a repetition of tearing. Place slack tape arm in holder directly above rear end of tape tension rod support bar. This prevents reel from turning.

7.02 If there is more than 9 feet of perforated tape between tear and perforator drum, proceed as follows. Pull reel forward on support bars and unwind one turn of tape from reel and place this tape over free end of tape from perforator. Place a piece of paper with an end extending beyond edge of tape between tapes at place where they are interleaved to indicate this condition to accounting center. Take care that tape from perforator is not twisted between perforator and reel. Partially rewind reel leaving enough slack to permit placing tape around tension rods and under slack tape arm. Push reel back until hubs rest in grooves of reel support bars. Place tape on tension rods and under slack tape arm as described in 5.03. *Remove slack tape arm from holder.*

7.03 If there is less than 9 feet of perforated tape between tear and perforator drum, proceed as follows. Place slack tape arm in holder to prevent reel from turning. Apply test patterns in accordance with the operational test covered in the section entitled Recorder and Recorder Connector Circuits—Tests until approximately 9 feet of tape extends beyond perforator. Then proceed to place tape as described in 7.02.

Tape Torn Before Going Through Perforator

7.04 If tape becomes torn between tape bin and perforator, NP (no paper) lamp on recorder lights and a major alarm sounds when torn end of tape reaches perforator. First determine what caused tape to tear and take appropriate action to prevent a repetition of tearing. If tape is not completely through perforator, operate AT key until it is through.

7.05 Trim torn end of tape coming from bin so that it is square across end. Feed tape as described in Part 5, except that free end of tape is interleaved with tape on reel as described in 7.02.

8. PERFORATOR OUT OF TAPE

8.01 If perforator runs out of tape, NP lamp on recorder lights and a major alarm sounds. Proceed as described in Part 5 except that free end of tape is interleaved with tape on reel as described in 7.02.

9. HANDLING PERFORATED TAPE

Removing Tape from Perforator

9.01 If recorder is not busy as a result of circuit operation, insert 322A plug into MB jack of recorder.

9.02 Operate and release AT key approximately ten times to apply a series of 010101 tape feed entries.

9.03 Place slack tape arm in holder directly above rear end of tape tension support bar to disengage reel drive mechanism.

9.04 Cut unperforated tape at input chute to perforator.

9.05 Operate drum advance mechanism ten times by finger pressure against armature which is located directly below right edge of perforator input chute. This clears perforated tape from drum. Then remove tape from perforator by pulling on output end.

Replacing Tape in Perforator

9.06 If tape has been removed from perforator for routine perforator maintenance purposes and not because of trouble, proceed as outlined in 9.08.

9.07 If tape has been removed from perforator because of trouble as covered in the section entitled Recorder and Recorder Connector Circuits — Taking Equipment Out of Service, mark XXX on blank portion of tape using a red marking pencil.

9.08 Feed end of unperforated tape into input chute of perforator. Advance tape over drum by operating and releasing AT key five times.

9.09 Apply two test patterns in accordance with the operational test covered in the section entitled Recorder and Recorder Connector Circuits—Tests. Operate and release AT key approximately ten times to apply a series of 010101 tape feed patterns. Apply one additional test pattern in accordance with the operational test covered in the section entitled Recorder and Recorder Connector Circuits—Tests.

9.10 If desired, a cord clip or a similar clamp should be placed on the end of reel support bar to prevent reel from falling from support bars. Pull reel forward on support bar and, if necessary, unwind one turn of tape from reel. Place this tape over free end of tape from perforator. Place piece of paper with the end extending beyond edge of tape between tapes at the place where they are interleaved to indicate this condition to accounting center.

9.11 Partially rewind reel leaving enough slack to permit placing tape around tension rods and under slack tape arm. Push reel back until hubs rest in grooves of reel support bars. Place tape on tension rods as described in 5.03. Remove 322A plug from MB jack and *remove slack tape arm from holder.*

10. CUTTING 3:00 A.M. TAPE

10.01 Once a day, at 3:00 a.m. when traffic is low, a series of special lines are recorded on all tapes. This 3:00 a.m. tape pattern provides adequate space for cutting tape in preparation for transportation to accounting center. These special lines start with one set of identification entries followed with approximately 6 feet of a uniform splice pattern. ♦When cutting the tape for splicing, allow approximately 1 foot of splice pattern for the splicing operation. This arrangement will ensure that the tape identification pattern is available on both sides of the cut after splicing has been performed.♦

10.02 The tape need not be cut every day, but upon recognition of 3:00 a.m. end-of-tape pattern it may be cut at that point at any convenient time.

10.03 When tape is to be cut, place slack tape arm in holder to disengage reel drive mechanism.

10.04 Move commercial table (2 feet by 3 feet) or T-wagon in front of perforator cabinet.

Note: If commercial table or T-wagon is not available, use suitable support such as floor.

Caution: Exercise particular care when bringing reel forward on support bars to prevent reel from rotating forward and falling off arms, thereby possibly damaging tape.

Pull reel forward on support bars; use care not to exert pressure on tape in perforator. Unwind sufficient tape to allow reel to be placed flat on table.

10.05 Unwind tape from reel until the 6 feet of 3:00 a.m. tape pattern is located. Cut tape ♦in uniform splice pattern as described in 10.01.♦

10.06 Wind free end of tape on reel. Disengage one side of reel and remove tape.

Note: Two types of reels are encountered in central office perforator equipment. One type contains reel spool P-379832 which is placed on hub of reel. Tape is wound on plastic spool. When one side of reel is disengaged, spool containing tape is removed and an empty spool is placed on hub. The other type of reel is designed so that tape is wound on hub. When reel is disengaged, a part of hub is removed with side of reel. The tape is then easily removed.

Bind perforated tape with a tape identity band containing recorder group number, recorder number, and date. Place tape in tape mailing case.

10.07 Reassemble reel and move reel to support bars at front of cabinet. Place end of tape from perforator under clamping plate on reel and wind tape so that tape enters reel at top side. Take care not to exert pressure on tape in perforator during winding operation.

10.08 Push reel back until hubs rest in grooves in reel support bars. Observe Caution in 5.03. *Remove slack tape arm from holder.*

11. REPORT TO ACCOUNTING CENTER

11.01 Prepare Form E-4104 (Fig. 1) to be attached to each tape when it is removed at next cutting. Any trouble or activity affecting central office AMA tapes is recorded under REPORT OF TROUBLE OR ACTIVITY. When no trouble or activity is to be reported, enter the work *none* in this space. Indicate on the form that any cut or torn tape has been interleaved due to trouble or routine procedure. Also include information pertaining to a tape which has been marked XXX to denote that perforator was removed due to improper perforations or defective perforations because of circuit trouble conditions.

11.02 Transfer of recorders due to any cause are included under RECORDER TRANSFERRED.

Exact time of transfer and restoral are entered in appropriate spaces provided on form.

11.03 The number of initial entries and test calls entered on tapes of regular recorders during a 24-hour period are furnished on call count process control or transverter registers. Readings from these registers are entered in appropriate spaces under REGISTER READING—CALL COUNT PROCESS.

11.04 Completion of the form is described in 1.07 and 1.08. The completed forms shall accompany each shipment of tapes to the accounting center as covered in 1.06.