

ELECTRONIC SECRETARY® MODEL LP-TD-C  
INSTALLATION AND FIELD MAINTENANCE

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1. GENERAL . . . . .	1	1.01 This Section contains a description of the Model LP-TD-C ELECTRONIC SECRETARY Telephone Answering and Recording Set (Figure 1) and instructions pertaining to the installation and field maintenance of the unit. These instructions are arranged in separate Parts of this Section to enable easy access by those personnel concerned with installation and field maintenance of the unit.
2. DESCRIPTION . . . . .	1	1.02 A brief description of the unit's functional operation is also included in this Section. This information will familiarize the reader with the functional operation of the Model LP-TD-C.
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2. DESCRIPTION

2.01 The Model LP-TD-C ELECTRONIC SECRETARY Telephone Answering and Recording Set is a long-play telephone answering and recording unit. The unit is designed to receive a large number of incoming calls or messages of great length. The length of

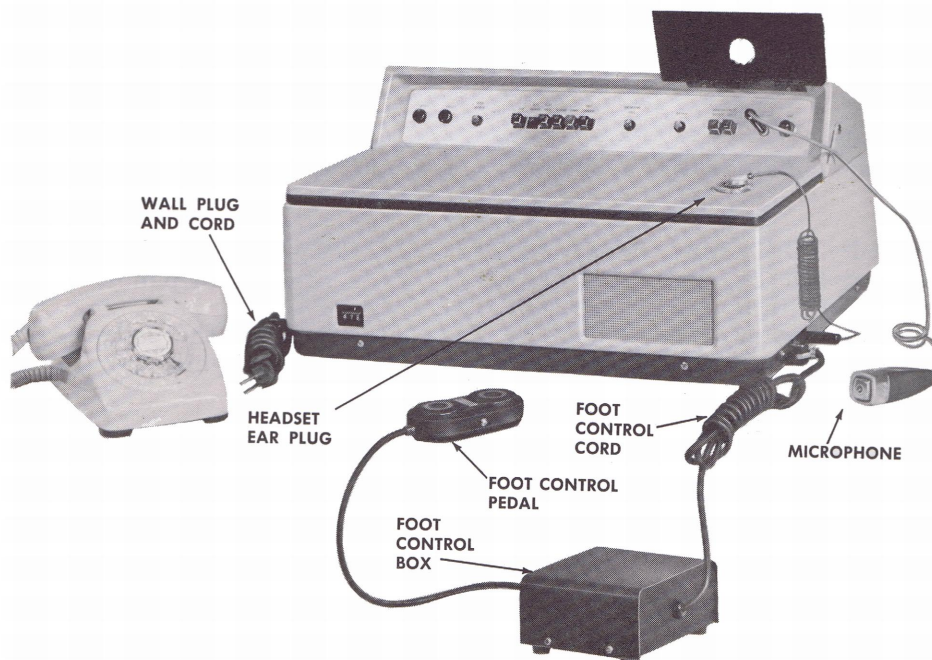


Figure 1. Model LP-TD-C With Optional Foot Control and Headset Earplug.

the incoming message can be as short as 10-seconds or as long as two hours. The incoming messages, when played back, are reproduced in a loudspeaker (or optional headset).

2.02 The unit answers all calls with a pre-recorded announcement message. Maximum announcement message recording interval is governed by the length of the tape in the endless loop tape cartridge. A 30-second tape is furnished as standard, but tape lengths from 30-seconds to 3-minutes are available. Announcement messages can be changed quickly and easily at any time with the hand microphone furnished with the unit.

2.03 The Model LP-TD-C features modular type construction, measures 20-inches wide, 16-inches deep, 10-1/2-inches high, and weighs 65 pounds. The steel cabinet is furnished in textured beige enamel.

2.04 Optional equipment for the unit consists of a foot control and headset. The foot control (WW-758-15) enables a transcriber to start, stop, rewind, and back-space the playback mechanism, leaving the hands free. The interval of back-spacing is adjustable. The foot control is also available without the back-spacing feature (WW-759-15). The headset eliminates office noise and assures privacy when playing back messages. Inserting the headset into the receptacle provided automatically mutes the playback speaker.

### 3. INSTALLATION

#### Location

3.01 Locate the Model LP-TD-C in accordance with the considerations outlined below.

3.02 The Model LP-TD-C may be located within easy reach of the customer's telephone set; however, this is not essential. A satisfactory location would be a desk or table sufficiently strong to support the unit's weight of approximately 65 pounds. (The unit is intended for desk or table installation and need not be fastened.) A desk or table location where the ventilation is not entirely restricted is adequate. Avoid locations that might subject the unit to excessive moisture, heat, or vibration.

3.03 Locate the Model LP-TD-C within the restrictions of the power cord. The Model LP-TD-C is equipped with an 8-foot power cord and 2-prong plug for connecting to standard AC outlets.

#### Power Supply

3.04 The Model LP-TD-C is designed to operate on a 117-volt (105-volt a-c to 135-volt a-c), 60-cycle a-c power supply. In no case should the unit be connected to a direct current (d-c) outlet. If only d-c current is available, refer the matter to the engineering department for advice before proceeding with the installation.

#### Connections

3.05 Do not connect the unit to the a-c outlet power supply until all of the installation work described below is completed:

- (1) Remove the four screws fastening the back panel to the cabinet; then remove the back panel to gain access to the terminal block.
- (2) Connect three-conductor station wire to the barrier type terminal block (TB1).
- (3) Connect the red (ring) lead to L1, green (tip) lead to L2, and yellow (ground) lead to G.
- (4) Secure the cable clamp and replace the back panel.
- (5) Connect the other end of the three-wire cable to the telephone line at the telephone connecting block (Table 1).
- (6) For 1A1 key system type of installations, connect the "A" and "A1" terminals on the telephone connecting block to the "A" and "A1" terminals on the terminal block (TB1) of the Model LP-TD-C.
- (7) Depress the STOP button on the control panel.
- (8) Plug the power cord into a 117-volt, 60-cycle a-c power supply outlet.

#### Loading Announcement Tape

3.06 Load the announcement tape as follows:

- (1) Place the announcement message cartridge on the "D" shaped spindle (Figure 2).
- (2) If the slotted section of tape is visible, pull it out of the cartridge, being careful not to twist it.

Table 1. Model LP-TD-C Telephone Line Connection.

Type of Service	L1 Red	L2 Green	Grd Yellow
* Individual, PBX, and other Bridged-Ringer Service	Ring	Tip	Tip
** 2-Party Selective Service Ring Party Tip Party	Ring Tip	Tip Ring	Grd Grd
* On PBX Trunks, connect the Model LP-TD-C ahead of any control equipment. ** Remove strap between terminals L2 and G at the barrier type terminal block (TB1).			

NOTE: If the slotted section of tape is not visible, proceed to load the tape as instructed, allowing the switch actuator arm to rest itself against the tape. Depress the ANNOUNCEMENT-CHECK button. The announcement motor will advance the announcement tape. When the slotted band appears, the actuator arm will drop into the slot to stop the motor. The unit will now be in "Standby" condition. Depress the STOP pushbutton.

- (3) Thread the slotted section of tape around the guide pillars and head assembly.
- (4) Pull the switch actuator arm back and allow it to seat itself in the slot.
- (5) Pull the pressure roller back and thread the tape between the rubber pressure roller and the capstan.
- (6) Release the pressure roller assembly, making sure that the tape is properly positioned in the guides.

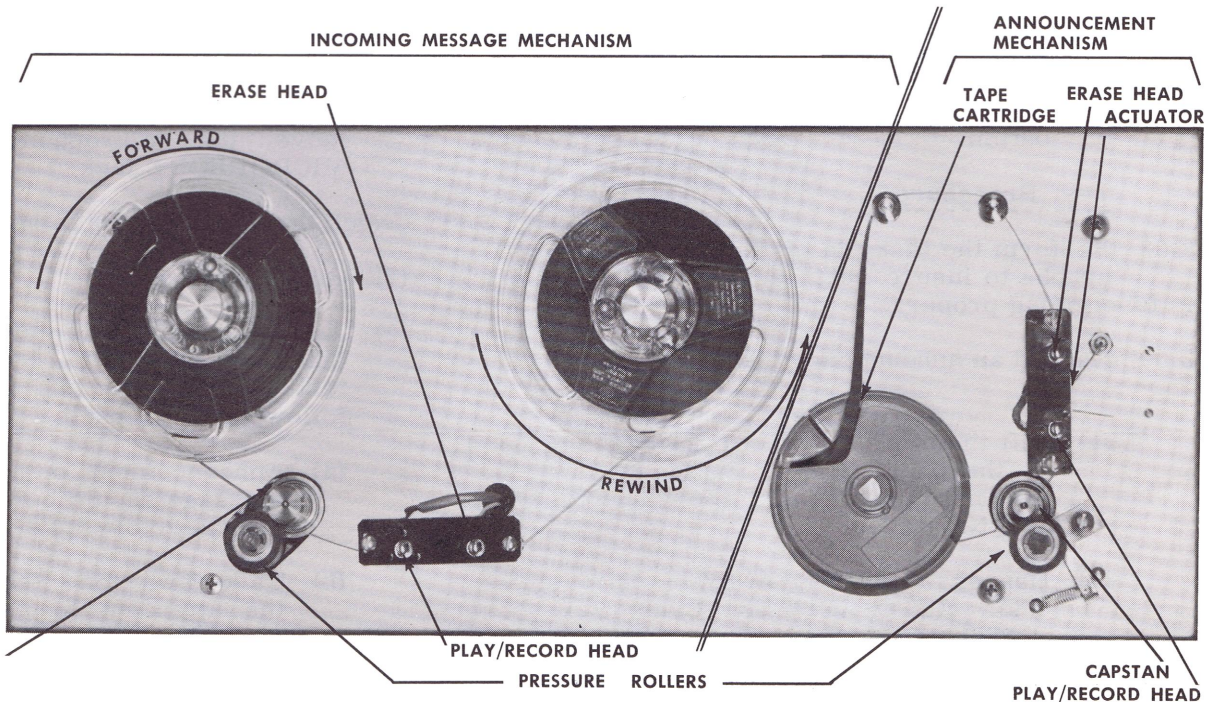


Figure 2. Model LP-TD-C Tape Deck - Top View.



Loading the Incoming Message Tape

3.07 Install the incoming message tape as follows:

- (1) Before installing the incoming message tape cartridge, preset the Elapsed Tape Indicator to read "9-7-0" by depressing the REWIND and RESET buttons.
- (2) Disconnect the power plug.
- (3) Remove the locking screws from both tape reels (Figure 2).
- (4) Place empty reel on left hand (take-up) reel platform, being sure side one of reel is facing up.
- (5) Place full reel of tape on right hand (supply) reel platform, and thread free end of tape around the guide pillars, erase and record heads, and between the rubber pressure roller and capstan.
- (6) Insert free end of tape into the hub slot of the take-up reel; wind reel manually one or two turns clockwise.
- (7) Plug power cord into a-c power supply outlet.
- (8) Momentarily depress the FAST FORWARD and RESET buttons until the Elapsed Tape Indicator shows "0-0-0." Then push the STOP button.

Test Procedure

3.08 Perform the tasks in the following paragraphs to insure that the Model LP-TD-C is functioning properly.

3.09 Record an announcement message:

- (1) Lift the black cover on the right side of the panel (Figure 3) and insert the microphone into the MICROPHONE jack.
- (2) Depress the AUTO-ANSWER button. The AUTO-ANSWER lamp will illuminate.
- (3) Depress and hold the ANNOUNCEMENT DICTATE button (green) and begin talking when the DICTATE lamp lights. Dictate your message

in a normal tone of voice, holding the microphone approximately 4-inches from mouth.

NOTE: Sample test announcement message. This is (Telephone number). Go ahead with your test message.

- (4) After dictating the announcement message, release the ANNOUNCEMENT DICTATE button. The required 2-seconds of tone will then be automatically recorded.

NOTE: TONE lamp will light if 2-seconds of tone has been recorded. If lamp fails to light, announcement message must be shortened and redictated to permit the required 2-seconds of tone. Redictating an announcement message automatically erases the preceding message.

3.10 Check the announcement message:

- (1) Adjust the VOLUME control for a suitable listening level.
- (2) Depress and hold the ANNOUNCEMENT CHECK button until the beginning of the message is heard. The button may then be released.
- (3) If the message is satisfactory, remove the microphone from the MICROPHONE jack.

3.11 Check the automatic functions:

- (1) Call the test desk.
- (2) Ask the attendant to place a call into the Model LP-TD-C. Request that a test message be left and that the following be checked:
  - (a) Announcement message. The message should be clear and at a satisfactory level.
  - (b) Talk-down tone feature. Ask the attendant to pause for 4-seconds during his test message. After 4-seconds he should hear a low level, 1,400-cycle tone signal. Continuing his message should cause the tone to disappear.

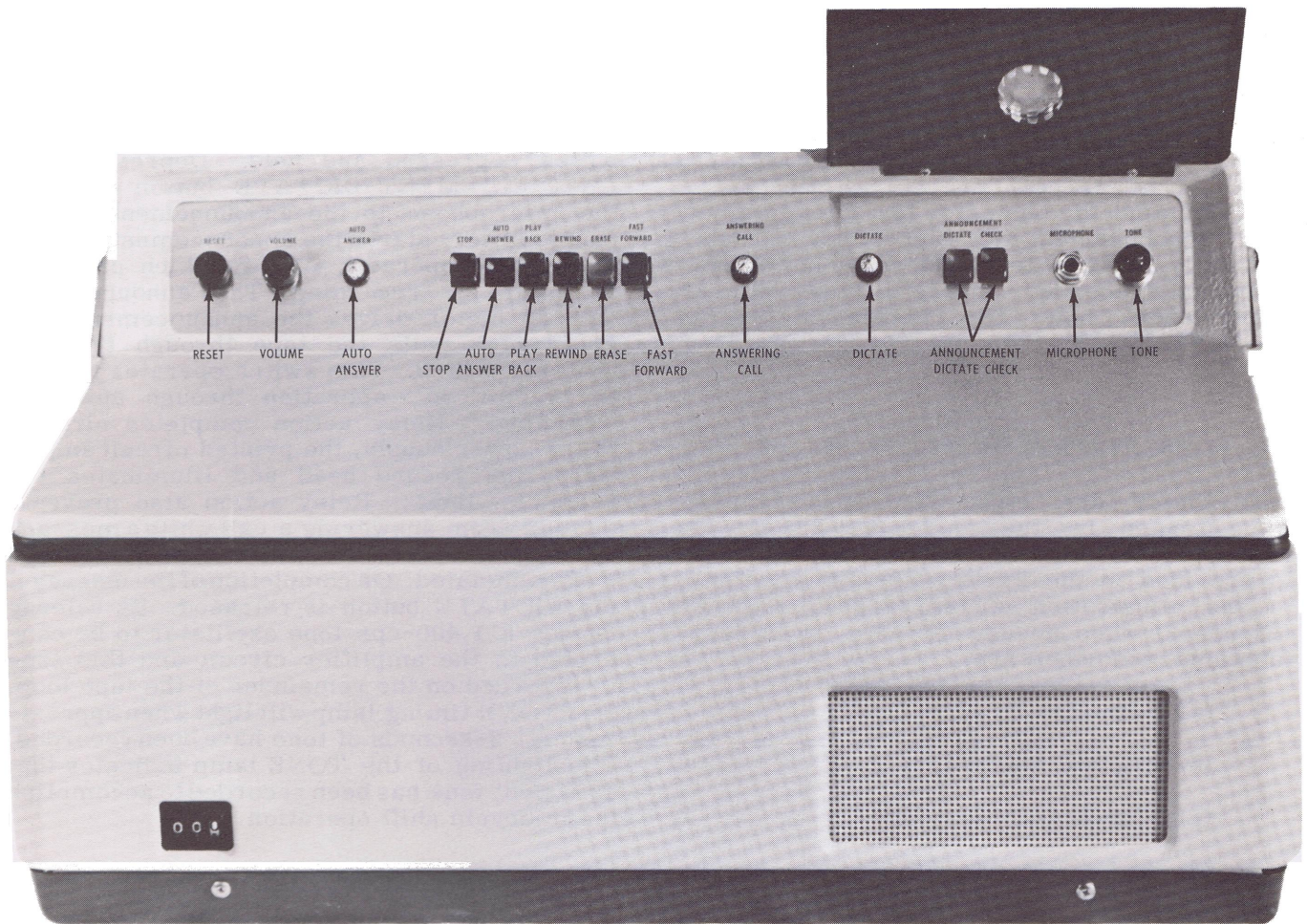


Figure 3. Model LP-TD-C Controls.

(c) Time-out feature. After the attendant completes his test message, ask him to remain silent and allow the answering set to time itself out. After 4-seconds of silence the talk-down tone should be heard, and it should continue to be heard for an additional 8-seconds, at which time the answering set will disconnect itself from the telephone line. (A total silent period of 12-seconds is required for the Model LP-TD-C to time itself out.)

### 3.12 Check the Rewind, Automatic Stop, and Playback functions:

- (1) Depress the REWIND button and allow the Automatic Stop feature to stop the mechanism.
- (2) Depress the PLAYBACK and RESET

buttons simultaneously until the Elapsed Tape Indicator reaches "0-0-0"; then release the RESET button.

- (3) Adjust the VOLUME control for a suitable listening level. Listen to the playback of the message recorded by the attendant.

### 3.13 Erase the test message and prepare the Model LP-TD-C for service:

- (1) Depress the ERASE and REWIND buttons. The test message will be erased as the incoming message is rewound.
- (2) For full recording capacity, allow the rewind motor to rewind the tape until the Elapsed Tape Indicator reaches "0-0-0." (If the tape is rewound beyond "0-0-0," depress the PLAYBACK and RESET buttons

until the Elapsed Tape Indicator returns to "0-0-0.")

- (3) At "0-0-0," depress the AUTO-ANSWER button. The Model LP-TD-C is now ready for service.

3.14 Remind the customer to redictate a new announcement message, which will automatically erase the test announcement message previously recorded. Insure that the customer understands how to operate the Model LP-TD-C.

#### 4. DESCRIPTION OF OPERATION

4.01 There are eight basic functions performed by the Model LP-TD-C. A general description of each of these functions is provided in the Parts which follow. Refer to the illustration of the Model LP-TD-C (Figure 3) when necessary. The eight basic functions performed are:

- (a) Standby
- (b) Dictate Announcement
- (c) Check Announcement
- (d) Automatic Answer and Record
- (e) Playback
- (f) Rewind
- (g) Fast Forward
- (h) Erase Message

##### Standby

4.02 The Model LP-TD-C is capable of remaining in a standby condition, during which time the unit is "on" but waiting to perform a function. To condition the unit for "Standby" operation, all "mode" pushbuttons are in their unoperated position. When the power cord is plugged into the power supply, power is applied to the unit. The rewind and forward motors are connected in series with about 15 volts impressed across each one. As they rotate in opposite directions, they tend to keep a slight tension in the tape, taking up any slack or loop in the tape. Because the impressed voltage is so small, these motors do not exert enough torque to wind the tape from one reel to another - even in an unbalanced condition with all the tape on one reel.

##### Dictate Announcement

4.03 The unit must be in the automatic answer condition, AUTO-ANSWER button depressed, and the ANNOUNCEMENT DICTATE button depressed and held. Depressing the ANNOUNCEMENT-DICTATE button connects the microphone to the announcement record preamplifier, starts the announcement capstan motor, and operates a relay which prepares the unit for recording. The announcement capstan motor drives the announcement capstan which pulls the tape through the tape actuated switch. This switch operates to keep the motor in operation through auxiliary switching. Relay action completes circuits to the power supply, the printed circuit amplifiers, the record head and illuminates the DICTATE lamp. Relay action also prevents the unit from answering a call while a message is being recorded. The announcement message is then dictated. On completion of the message, the DICTATE button is released. Its release causes a 1,400-cps tone oscillator to be connected to the amplifier circuit and this tone is recorded on the remainder of the tape loop. The TONE timing lamp will light when approximately 2-seconds of tone have been recorded. The lighting of the TONE lamp indicates that sufficient tone has been recorded to accomplish the midcycle shift operation.

##### Check Announcement

4.04 To check the announcement message, depress the ANNOUNCEMENT CHECK button. This starts the announcement capstan motor, actuates the tape switch (as described in Paragraph 4.03), and operates a relay which prevents the unit from answering a call while the announcement message is being checked. In addition, depressing the pushbutton initiates the switching necessary to connect the playback head to the loudspeaker through the announcement check amplifier.

##### Automatic Answer and Record

4.05 To set the unit for automatic answer, depress the AUTO-ANSWER button. The unit will then function as follows. When the ringing current is applied, relay action starts the announcement capstan motor. The motor drives the capstan to advance the tape and operate the tape switch as before. The tape switch operates a relay which latches the announcement capstan motor, completes an A-C path to the power transformer, and operates the line seizing relay. The line seizing relay trips the ringing circuit and seizes the telephone line. The announcement is taken from the announcement message mechanism, amplified and delivered to the



telephone line. The tone which was previously recorded on the tape is delivered to the telephone line for a period of approximately 1-second. This tone operates a relay which in turn initiates the mid-cycle shift.

4.06 The mid-cycle shift relay operates and energizes the incoming message recorder mechanism and prepares the unit to record the incoming message. A portion of the incoming voice signal is shunted from the incoming record head to the voice control and talk-down amplifier. The action of the voice control is such as to keep the unit in cycle for the time necessary for the calling party to complete his call. If the calling party should be silent for 4-seconds, a low tone is returned over the telephone line. If he then resumes talking, the tone will disappear and the voice control will reset itself for continued operation. However, if the calling party does not talk for a period of 8-seconds after the talk-down tone is heard, the unit will disconnect itself from the telephone line, turn off the mechanisms and reset itself for a new call. If the calling party has hung up, the unit immediately disconnects itself from the telephone line after the calling party disconnect.

#### Playback

4.07 The PLAYBACK button, when depressed, connects AC power to the playback capstan motor and DC power to relays which energize to operate the playback pressure roller magnets. The pressure roller magnets cause the pressure roller to be pulled against the playback capstan which enables the tape to be pulled across the heads from the supply reel to the take-up reel. In addition, the forward and rewind motors are connected in series. Low torque is therefore applied to the forward and rewind motors to provide a constant back pressure of the tape on the heads. When the PLAYBACK button is released, relay action occurs to disconnect the capstan motor and the pressure roller mechanism assembly immediately, and to apply DC braking voltage to the rewind and forward motors, thus stopping the mechanism and reverting it to "Standby."

#### Rewind

4.08 When the REWIND button is depressed, relay action supplies power to the rewind motor which rewinds the tape from the take-up reel to the supply reel. A light DC drag voltage is applied to the forward motor to insure a tight wind of the tape.

4.09 When the STOP button is depressed or when the Elapsed Tape Indicator reaches

the "0-0-0" position, 115-volt AC power to the rewind motor is disconnected due to the release of a relay. However, the release of a second relay is delayed for approximately 2-seconds. During this time, DC is applied to the forward motor and 30-volts AC is applied to the rewind motor, thus bringing the mechanism to a stop.

#### Fast Forward

4.10 When the FAST FORWARD button is depressed, relay action applies 115-volt AC power to the forward motor causing the tape to wind onto the take-up reel. A light DC drag voltage is applied to the rewind motor to insure a tight wind of the tape.

4.11 When the FAST FORWARD button is released, 115-volt AC power is removed from the forward motor, due to the release of a relay. However, the release of a second relay is delayed for approximately 2-seconds. During this time, DC braking voltage will be applied to the rewind motor bringing the mechanism to a stop.

#### Erase Message

4.12 To erase the incoming messages, after they have been transcribed, the ERASE and REWIND buttons are depressed. The erase oscillator is then energized as the tape is being rewound onto the supply reel. The tape is thereby erased completely during the rewind operation.

4.13 If the ERASE button is not depressed, the old messages will be automatically erased as new messages are being recorded. However, in this event it is possible to retain short bursts of previously recorded messages between the new recordings.

### **5. FIELD MAINTENANCE**

5.01 To help insure good customer relations, maintenance involving dismantling of the unit should not be undertaken on the customer's premises. In addition to checking obvious trouble sources such as loose power or telephone line terminations, perform the maintenance operations outlined in the following paragraphs.

5.02 Inspect the tapes to assure they are not kinked or scratched, and that the spliced joints are secure. No foreign material should be present on the tape surfaces except for the lubricant applied at the time of manufacture. The clear areas on the tapes should be

reasonably clean. Should tape condition be otherwise, replacement is indicated.

5.03 Assure that the capstans, pressure roller surfaces, pillars and heads are clean. If cleaning is required, remove the tape cartridges from the mechanism. Use a soft lintless cloth moistened with denatured

alcohol to clean the surfaces.

5.04 When in the mechanisms, the tapes should move freely around the pillars and heads. Assure that the tapes do not bind in the cartridges and that there is sufficient tape slack ("A" factor) consistent with the running time (Figure 4).

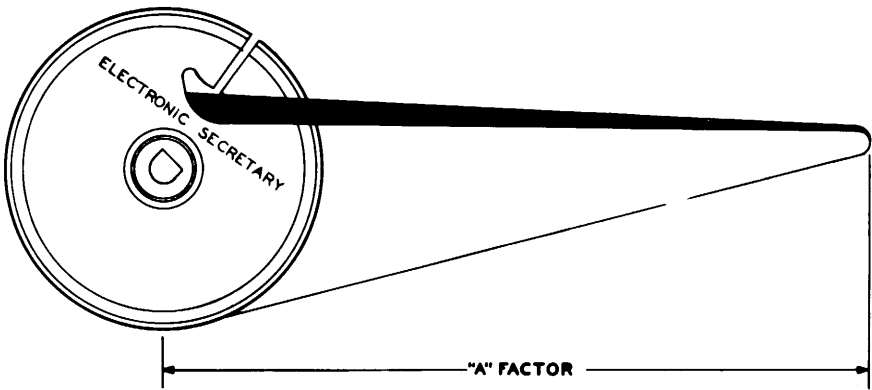


Figure 4. "A" Factor.

RUNNING TIME	"A" FACTOR LENGTHS
* 30 SECOND TAPE	- - 7½ INCHES
45 SECOND TAPE	- - 7½ INCHES
60 SECOND TAPE	- - 7½ INCHES
75 SECOND TAPE	- - 8¼ INCHES
90 SECOND TAPE	- - 9 INCHES
105 SECOND TAPE	- - 9¾ INCHES
120 SECOND TAPE	- - 10½ INCHES
135 SECOND TAPE	- - 11¼ INCHES
150 SECOND TAPE	- - 12¼ INCHES
175 SECOND TAPE	- - 13¾ INCHES
180 SECOND TAPE	- - 14 INCHES

\* Standard Tape