

## KS-19245, LIST 1

### TELEPHONE ANSWERING SET

### MECHANICAL ADJUSTMENT AND MAINTENANCE

#### 1. GENERAL

1.01 This section is reissued to add information on lamp replacement.

1.02 The KS-19245, List 1 telephone answering set (Fig. 1) has been designed to facilitate maintenance by the use of plug-in assemblies. In general it is not recommended that replacement of component parts of these plug-in assemblies be attempted, since readjustments requiring special equipment and procedures will usually be required.

1.03 It is intended that CD- and SD-99806-01 be used with this section.

**Caution:** Before performing any maintenance on this set, disconnect power cord from the ac outlet.

1.04 Refer to Chart A for probable cause and corrective action of a trouble report. Table A lists replacement parts.

1.05 The stenciling on the front panel of KS-19245, List 1 telephone answering set may be

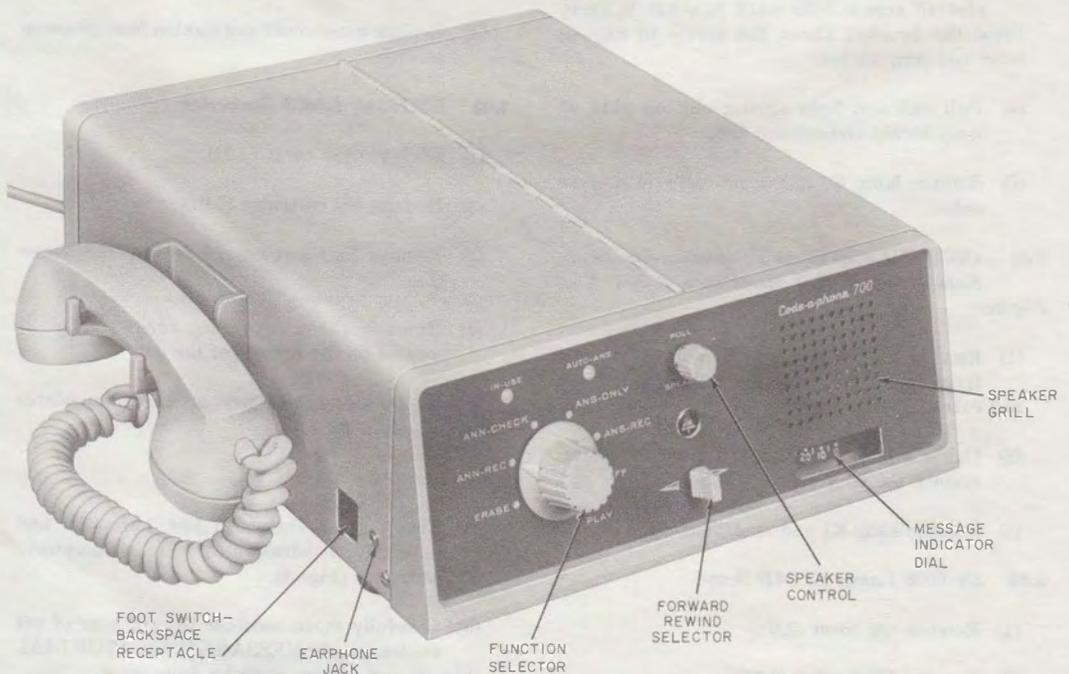


Fig. 1—KS-19245, List 1 Telephone Answering Set

protected from excessive wear by applying a coat of 639A flat clear lacquer or its equivalent.

## 2. REPLACEMENT OF LAMPS

### 2.01 ON-OFF Lamp E1 on Telephone Answering Sets With Serial Numbers 100 Through 15200:

- (1) Remove top cover.
  - (a) Remove four retaining screws.
  - (b) Lift cover from set.
- (2) Remove List 3 recorder (3.02).

**Note:** ON-OFF lamp E1 is mounted on a bracket with a slotted screw hole and is located directly beneath the speaker control switch.

- (3) Loosen the retaining screw (Fig. 10) in the slotted screw hole until bracket is free. Pivot the bracket about the screw to expose lamp and lamp socket.
- (4) Pull out and hold spring clip on side of lamp socket and remove lamp.
- (5) Replace lamp E1 and reassemble in reverse order.

### 2.02 ON-OFF Lamp E1 on Telephone Answering Sets With Serial Numbers 15201 And Higher:

- (1) Remove the Bell System Medallion from the front panel by grasping it from the front and extracting it.
- (2) Using a 553A switchboard lamp extractor, remove the lamp from its socket.
- (3) Replace lamp E1 and medallion.

### 2.03 IN-USE Lamp E2 (All Sets):

- (1) Remove top cover (2.01).
- (2) Remove ENA relay (3.04).
- (3) Pull out and hold spring clip on side of lamp socket and remove lamp E3 (Fig. 4).

- (4) Replace lamp E3, ENA relay and top cover.♦

## 3. REPLACEMENT OF PLUG-IN UNITS

### 3.01 KS-19245, List 2 Recorder:

- (1) Remove top cover (2.01).
- (2) Remove List 2 recorder (Fig. 3):
  - (a) Remove three retaining screws located on bottom of set (Fig. 2).
  - (b) Grasp List 2 recorder by its motor and chassis and carefully remove it from its plug-in receptacle.
- (3) Plug new recorder into the plug-in receptacle (Fig. 4).
- (4) Replace and tighten the three retaining screws.
- (5) Replace outer cover and tighten four retaining screws.

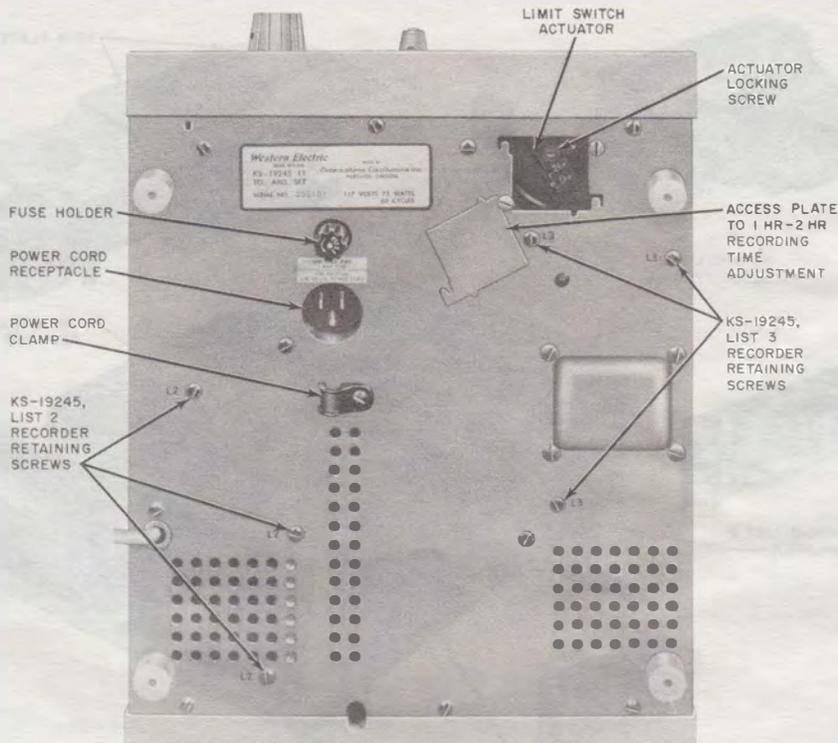
### 3.02 KS-19245, List 3 Recorder:

- (1) ♦Remove top cover (2.01).
- (2) Remove list cartridge (6.01).
- (3) Remove four screws and remove side cover (Fig. 7).
- (4) Remove three retaining screws (Fig. 2) located on the bottom of the set.



**Do not lift or pry on the trim plates (Fig. 3).**

- (5) Firmly grasp chassis of List 3 recorder and carefully withdraw until plug-in receptacle is disengaged (Fig. 4).
- (6) Carefully move recorder toward rear of set to clear plastic MESSAGE INDICATOR DIAL (Fig. 9) and remove recorder from set.♦
- (7) Plug new recorder into the plug-in receptacle (Fig. 4).



**Fig. 2—KS-19245, List 1 Telephone Answering Set, Bottom View**

- (5) Firmly grasp chassis of List 3 recorder and carefully withdraw until plug-in receptacle is disengaged (Fig. 4).
- (6) Carefully move recorder toward rear of set to clear plastic MESSAGE INDICATOR DIAL (Fig. 9) and remove recorder from set.
- (7) Plug new recorder into the plug-in receptacle (Fig. 4).
- (8) Replace and tighten the three retaining screws.
- (9) Replace List 6 cartridge (6.02).
- (10) Replace side and top covers.

### 3.03 *KS-19245, Lists 4 and 5 Amplifiers:*

- (1) Remove top cover of answering set (2.01).
- (2) Loosen retaining screws of the circuit board retainers.
- (3) Remove amplifier from its plug-in receptacle.
- (4) Plug new amplifier into plug-in receptacle (Fig. 4) and tighten screw of circuit board retainers.
- (5) Replace top cover.

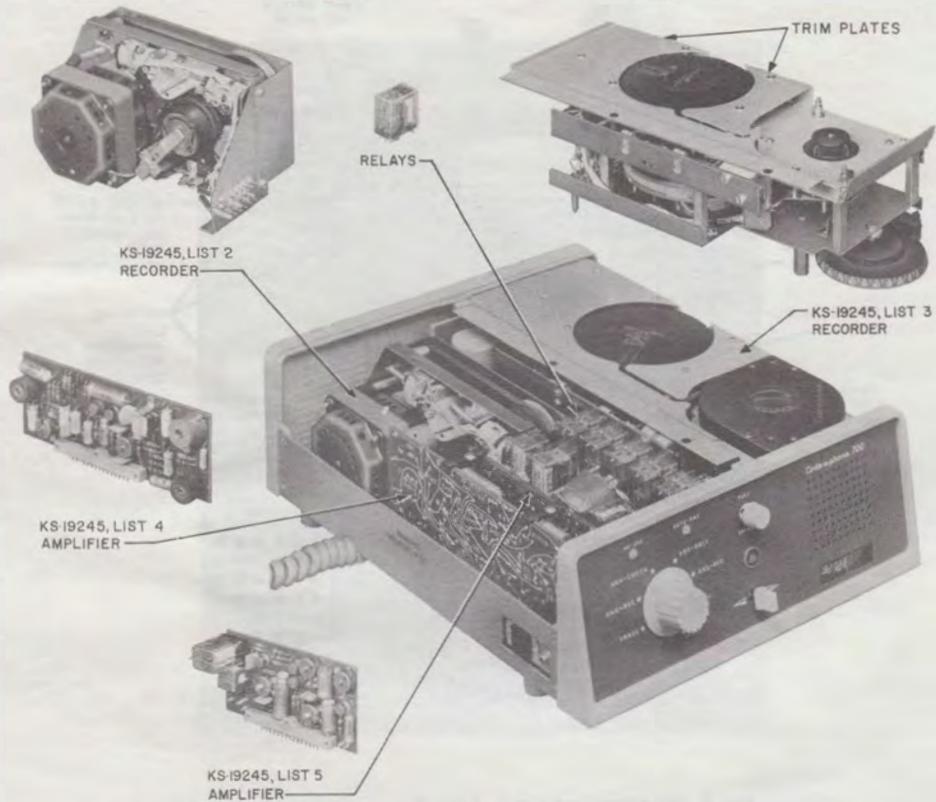


Fig. 3—KS-19245, List 1 Telephone Answering Set, Top Cover Removed

### 3.04 Replacement of AD, BD, DLY, ENA, ED, LS, or ADR relays (Fig. 4):

- (1) Remove top cover of answering set (2.01).
- (2) Slide wire spring retainer from relay.
- (3) Remove relay from its plug-in socket (Fig. 3).
- (4) Plug new relay into the plug-in socket (Fig. 4).
- (5) Engage wire spring retainer.
- (6) Replace top cover.

### 4. REPLACEMENT OF MOTOR

#### 4.01 KS-19245, List 2 Recorder (Fig. 5):

- (1) Unsolder motor leads.
- (2) Remove four nuts and lock washers.
- (3) Remove drive belt from motor pulley. Remove motor.
- (4) Install new motor. Replace drive belt on motor pulley.
- (5) Replace and tighten lockwashers and nuts.

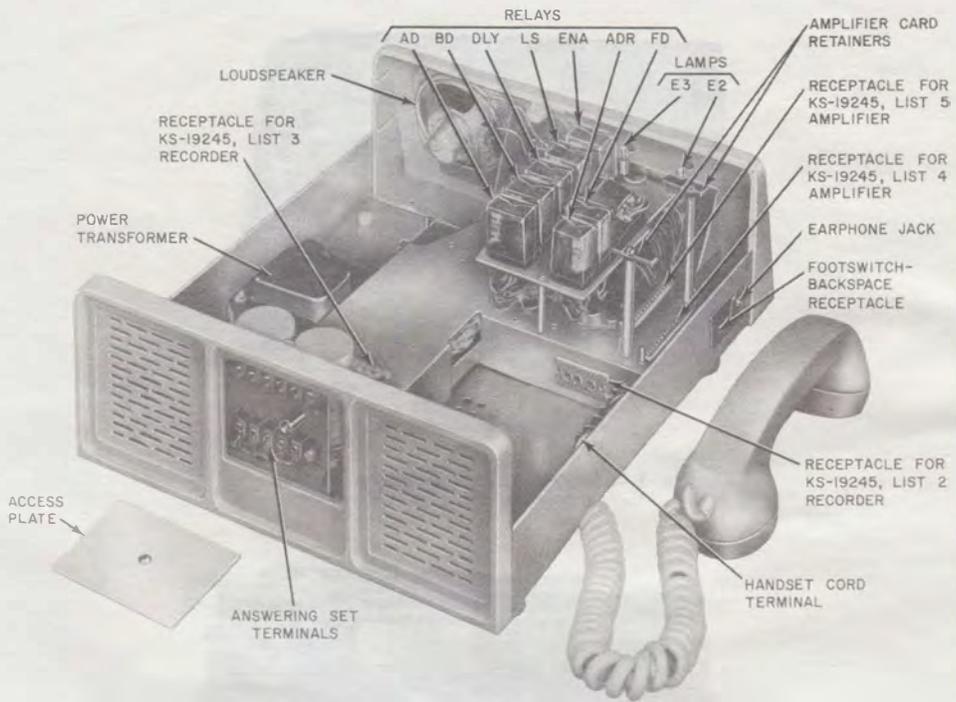


Fig. 4—KS-19245, List 1 Telephone Answering Set, Cover and Plug-In Components Removed

(6) Solder motor leads.

#### 4.02 KS-19245, List 3 Recorder (Fig. 6):

- (1) Unsolder motor leads.
- (2) Remove four nuts and lockwashers.
- (3) Remove the three drive belts from the motor pulley. Remove motor.
- (4) Install new motor. Replace the three drive belts on the motor pulley.
- (5) Replace and tighten lockwashers and nuts.
- (6) Solder motor leads.

#### 5. REPLACEMENT OF BELT ON KS-19245, LIST 2 RECORDER (Fig. 5)

##### 5.01 Capstan Flywheel Belt:

- (1) Remove motor (4.01).
- (2) Remove drive belt.
- (3) Remove faulty capstan flywheel belt and install new belt.
- (4) Install drive belt. Replace motor.

##### 5.02 Rewind Belt:

- (1) Remove motor (4.01).
- (2) Remove faulty drive belt.
- (3) Install new belt. Replace motor.

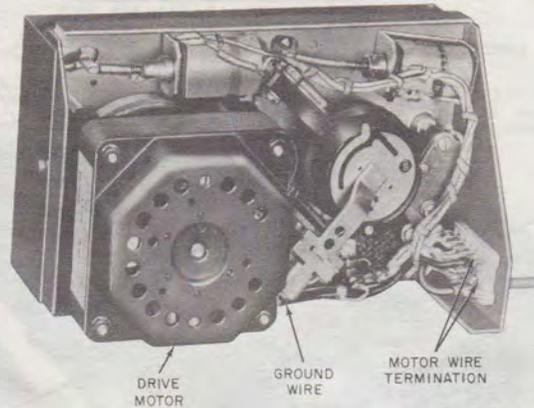


Fig. 5—KS-19245, List 2 Recorder, Motor Side



Fig. 6—KS-19245, List 3 Recorder, Motor Side

## 6. REPLACEMENT OF KS-19245, LIST 6 CARTRIDGE

### 6.01 Cartridge Removal:

- (1) Rewind tape into cartridge (0 setting on message indicator dial).
- (2) Set function selector to off.
- (3) Remove tape end from take-up reel by depressing and backing out of slot.

- (4) Turn cartridge hub clockwise by hand to rewind remaining tape into cartridge.

- (5) Grasp cartridge and lift up.

### 6.02 Cartridge Installation (Fig. 7):

- (1) Place cartridge over cartridge lock pins and hub, snap down into place.
- (2) Slide tape end through tape slot into slot of take-up reel and snap into place.



**Fig. 7—Resetting "0" Registration on Message Indicator Dial**

## 7. REPLACEMENT OF SPEAKER

**7.01** To replace speaker:

- (1) Remove top cover (2.01).
- (2) Remove KS-19245, List 3 recorder (3.02).
- (3) Unsolder speaker leads.
- (4) Remove four nuts and withdraw speaker (Fig. 4).
- (5) Install new speaker and tighten nuts.
- (6) Solder speaker leads.
- (7) Replace List 3 recorder.
- (8) Replace top cover.

## 8. RESETTNG 0 REGISTRATION ON MESSAGE INDICATOR DIAL

**8.01** Remove tape cartridge (6.01).

**8.02** Set dial to 0:

- (1) Rotate cartridge hub (Fig. 7) by hand in either direction to set dial at 0.

or

For more rapid resetting, run set in rewind as follows (Fig. 7):

- (a) Insert folded paper in take-up reel slot.
- (b) Rotate take-up reel by hand to allow folded paper to operate limit switch.

- (c) Plug in power cord.
- (d) Set selector to PLAY.
- (e) Restrain take-up reel and depress cartridge interlock switch.
- (f) Operate REWIND lever until 0 setting is obtained.

## 9. BROKEN OR ENTANGLED MESSAGE TAPE

9.01 Broken or entangled message tape should be replaced with a new KS-19245, List 6 cartridge. If necessary reset message indicator dial to 0. (Refer to Part 8.)



*To recover recorded messages on broken tape, splice broken tape ends using splicing tape and tools obtained locally. After splicing tape, message indicator dial should be reset to 0. After messages are recovered tape cartridge should be replaced.*

## 10. ADJUSTMENTS

### 10.01 Message Recording:

- (1) Insert plug of power cord into ac outlet.
- (2) Run the set in rewind to obtain a message indicator dial reading of 0 (set will stop automatically).

**Caution:** *Before proceeding with adjustment, remove power cord from ac outlet.*

- (3) Remove access cover (Fig. 2).
- (4) Adjust limit switch actuator (Fig. 2):
  - (a) Loosen actuator locking screw.
  - (b) Slide actuator to desired setting (1 HR or 2 HR).
  - (c) Tighten actuator locking screw.
- (5) Replace access cover.

### 10.02 Announcement Recording:

- (1) Remove top cover (2.01).

- (2) Remove KS-19245, List 4 amplifier (3.03).
- (3) Release timer cap by carefully depressing timer arm.

**Caution:** *Do not rotate recorder motor by hand.*

- (4) Adjust recording capacity by carefully lifting tab of timer spring from slot and rotating to position of desired interval (Fig. 8).

**Caution:** *Do not lift tab over raised portion of timer cap. To increase interval, rotate tab clockwise. To reduce interval, rotate tab counterclockwise.*

- (5) Replace KS-19245, List 4 amplifier.
- (6) Replace top cover.

## 11. LUBRICATION

11.01 No lubrication should be done in the field on KS-19245, List 1 telephone answering sets.

## 12. CLEANING

12.01 Clean recording and erase heads by wiping with a clean KS-2423 cloth, moistened slightly with trichloroethane or approved equivalent. Remove all excess cleaner with a dry KS-2423 cloth.

12.02 Drive belts, capstans, and drive surfaces of pulleys shall be free of oil, dirt, or other foreign matter. To clean, use a KS-2423 cloth moistened with (type cleaner) 1, 1, 1, trichloroethane or approved equivalent.

12.03 Clean pinch rollers only if excessive build-up of foreign particles is present. Use KS-2423 cloth moistened slightly with (type cleaner) 1, 1, 1, trichloroethane. Wipe off any excess cleaner immediately with dry KS-2423 cloth and allow time for rubber surface to dry before running set.

## 13. ACCESSORIES

13.01 Limit maintenance on foot switch, head set, or backspace unit to correcting loose connections. Replace and return accessories to

Western Electric Company for repairs of any other troubles.

#### 14. CHECK POINTS



*Upon completion of any maintenance work the following steps should be taken to insure answering set is in proper operating condition.*

(1) Insert power cord into ac outlet. Refer to Division 514 section entitled: KS-19245, List 1 Telephone Answering Set, Operation, and check the following:

- (a) Announcement recording and erasure
- (b) Announcement check:
  - With handset
  - With speaker
- (c) Automatic answer—answer and record:
  - Automatic answer ready lamp
  - Ring-up
  - In-use lamp
  - Announcement monitoring in speaker
  - Transfer beep tone
  - Message monitoring in speaker
  - Talk-down tone
  - Voice control—time-out
  - Disconnect beep tone
- (d) Automatic answer—answer only:
  - Ring-up
  - Announcement monitoring in speaker
  - Disconnect at end of announcement
- (e) Message playback:
  - With handset

- With speaker
- With earphone (optional accessory)
- (f) Fast forward and rewind of message tape
- (g) Erase messages
- (h) Foot switch (optional accessory)
- (i) Back space unit (optional accessory)

#### 15. CHART A



*Before proceeding with operational procedure make the following visual inspection.*

#### VISUAL INSPECTION

- 15.01 Check connections for type of service.
- 15.02 Check that plug-in assemblies are properly installed, with plugs firmly in place:
  - List 2 Recorder
  - List 3 Recorder
  - List 4 Amplifier
  - List 5 Amplifier
  - Relays
  - List 6 Cartridge
- 15.03 ON-OFF (medallion) lamp lighted. Check following if otherwise:
  - Function selector—Any position other than OFF
  - Power cord properly installed
  - Fuse not blown
  - List 6 cartridge properly installed
  - Lamp bulb
- 15.04 Functions (Preliminary Check)

TABLE A

PART	ORDERING INFORMATION*	REMARKS
Recorder	KS-19245, List 2	Announcement recording mechanism
Motor M 201	B-559822	Component of KS-19245, List 2 Recorder
Belt (Drive belt)	B-559817-1	Component of KS-19245, List 2 Recorder
Belt (Capstan flywheel)	B-559817-2	Component of KS-19245, List 2 Recorder
Shock Mount, Motor	B-559821	Component of KS-19245, List 2 Recorder
Recorder	KS-19245, List 3	Incoming message mechanism
Motor M 301	B-650602	Component of KS-19245, List 3 Recorder
Motor Fan	B-558996	Component of KS-19245, List 3 Recorder
Shock Mount, Motor	B-559821	Component of KS-19245, List 3 Recorder
Dial Assembly	B-559988	Component of KS-19245, List 3 Recorder
Hub Cartridge Drive	B-559923	Component of KS-19245, List 3 Recorder
Take-up Spool Assembly	B-563465	Component of KS-19245, List 3 Recorder
Deck	B-559921	Component of KS-19245, List 3 Recorder
Island, Trim Deck	B-559922	Component of KS-19245, List 3 Recorder
Amplifier	KS-19245, List 4	Printed wiring card for recording and reproducing
Amplifier	KS-19245, List 5	Printed wiring card containing voice operated and calling party control circuits
Relay VC	Allied Control Co. or equiv. TS 154-C-C 8.5 MADC- 1000 ohms	Component of KS-19245, List 5 Amplifier
Relay CPC	B-560101	Component of KS-19245, List 5 Amplifier
Control Knob Assembly	B-560078	Function selector
Control Knob Assembly	B-560081	Speaker control
Knob Control	B-560070	Forward — rewind selector

\* Parts identified by B-numbers, order as: "B — Part of KS-19245, List 1 Telephone Answering Set."

TABLE A (Cont)

PART	ORDERING INFORMATION*	REMARKS
Power Cord	KS-19245, List 10	For use with a 2-wire 110-volt ac outlet
Power Cord	KS-19245, List 11	For use with a 3-wire parallel-blade, 110-volt ac outlet
Cartridge	KS-19245, List 6	Contains recording tape for incoming messages
Retainer, Circuit Board	B-560824	Secures KS-19245, List 4 and List 5 amplifiers
Hand Set (Furnished with Cord)	G-5KR-61	Used to record and monitor
Cord	H6E-61	Used with G-5KR-61 handset
Hanger, Handset	B-560066	Handset cradle
Speaker	Quam 3.2 ohms 3 inch diam, 30A05 or 09149	Monitors announcement and message tapes
Relay RU	Allied Control Co., Inc. SWX-63-13, 800 ohms	Component of chassis assembly
Relays AD,BD,DLY, ENA,FD, or LS	Allied Control Co., Inc. TF154-CC-CC 24 VDC-700 ohms	Component of chassis assembly
Relay ADR	Allied Control Co., Inc. TF154-C-C 24 VDC-700 ohms	Component of chassis assembly
Plate, Rectangular	B-560085	Access to mounting cord terminal board
Cover Access	B-560083	Access to 1 hr, 2 hr limit switch actuator of List 3 recorder
Operating Instruction Label	B-559781	Contains operating instructions of answering set, adheres to cover
Fuse Holder	Bussman Fuse Holder 342004; obtain locally	Located on bottom of set. Houses 1 lamp fuse
Fuse	3AG1 amp; obtain locally	Provides electrical protection
Lamp Miniature	No. 334-LSV† (Chicago Miniature Lamp Co.), GE #388†, or equivalent	IN-USE, AUTO-ANS and ON-OFF lamp bulbs
Foot	B-550086	Located on bottom of set

\* Parts identified by B-numbers, order as: "B — Part of KS-19245, List 1 Telephone Answering Set."

† 25,000 Hour Life

**A. Announcement Record and Announcement Check**

Following conditions should exist:

- Function Selector—ANN-REC or ANN-CHECK position
- ON-OFF (medallion) lamp lighted
- Forward limit switch on List 3 recorder not operated

(Message indicator dial reading less than 100 for 1-hour message recording adjustment and less than 200 for 2-hour message recording adjustment)

**B. Automatic Answer—Answer Only**

Following conditions should exist:

- Function Selector—ANS-ONLY position
- ON-OFF (medallion) lamp lighted
- AUTO-ANS lamp lighted
- Minute end of tape warning switch not operated

(Message indicator dial reading less than 90 for 1-hour message recording adjustment and less than 190 for 2-hour message recording adjustment)

**C. Automatic Answer—Answer and Record**

Following conditions should exist:

- Function Selector—ANS-REC position
- ON-OFF (medallion) lamp lighted
- AUTO-ANS lamp lighted
- 3-minute end of tape warning switch not operated

(Message indicator dial reading less than 90 for 1-hour message recording and less than 190 for 2-hour adjustment)

**D. Message Playback**

Following conditions should exist:

- Function Selector—PLAY position
- ON-OFF (medallion) lamp lighted
- Forward limit switch on List 3 recorder not operated

(Message indicator dial reading less than 100 for 1-hour message recording adjustment and less than 200 for 2-hour message recording adjustment)

**E. Fast Forward—Rewind**

Following conditions should exist:

- Function Selector—PLAY position or ERASE position
- ON-OFF (medallion) lamp lighted
- Fast forward—forward limit switch on List 3 recorder not operated

(Message indicator dial reading less than 100 for 1-hour message recording adjustment and less than 200 for 2-hour message recording adjustment)

**15.05 Lamp Bulbs (IN-USE, AUTO-ANS, and ON-OFF):**

General Electric No. 334 Lamp (rated 1000 hours) should be replaced by General Electric No. 388 or Chicago Miniature No. 334-LSV Lamp (both rated 25,000 hours).

**15.06 Drive Belt Slippage:** Silicone oil from the drive motors creeps along the shafts and eventually over the pulleys until it reaches the belts. This causes the belts to stretch somewhat and also reduces the friction between the belts and the pulleys, both of which causes warble. Stretched belts work satisfactorily if they and the pulley surfaces are cleaned per 12.02.

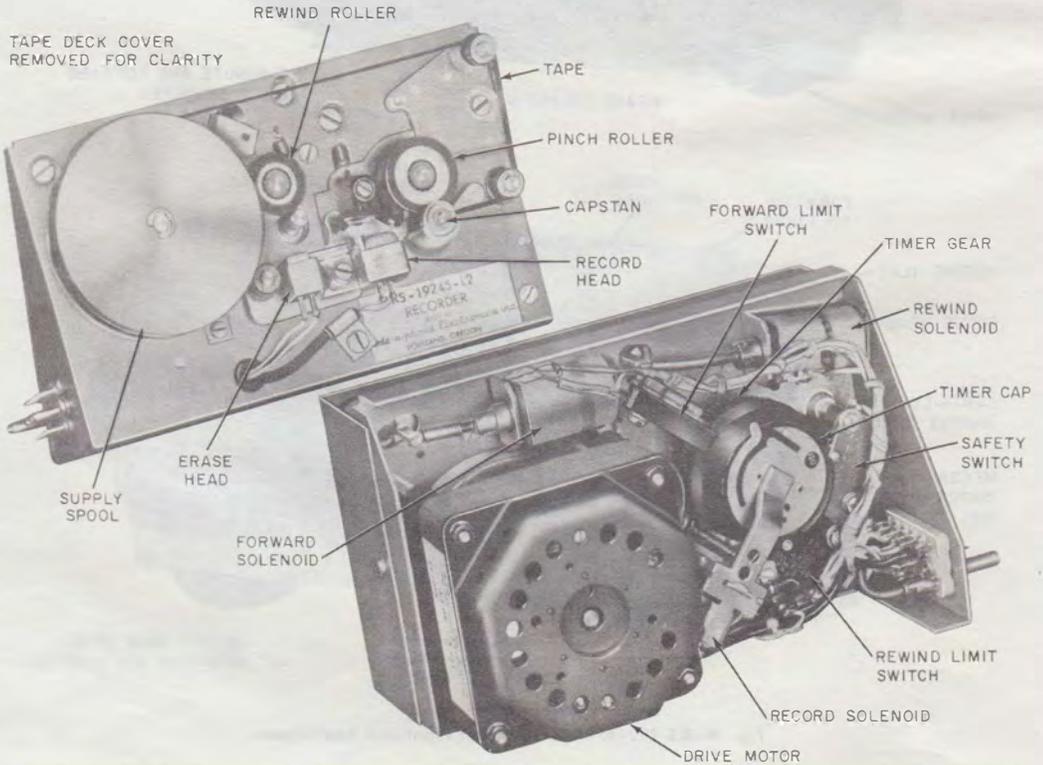
**16. OPERATIONAL PROCEDURE**

*The following tests require operation of the set with outer cover removed and 24 vdc on exposed terminals. Do not operate solenoids, tape reels or other mechanism parts by hand.*

**16.01** If securing of loose connections or replacement of fuse, lamp bulbs, List 2 recorder, List

3 recorder, List 4 amplifier, List 5 amplifier, List 6 cartridge, List 10 or 11 power cords, or plug-in relays does not correct trouble, return set to Distributing House.

**16.02** Refer to Fig. 8 and 9 for reference with operational procedure.



**Fig. 8—KS-19245, List 2 Recorder Front and Rear Views**

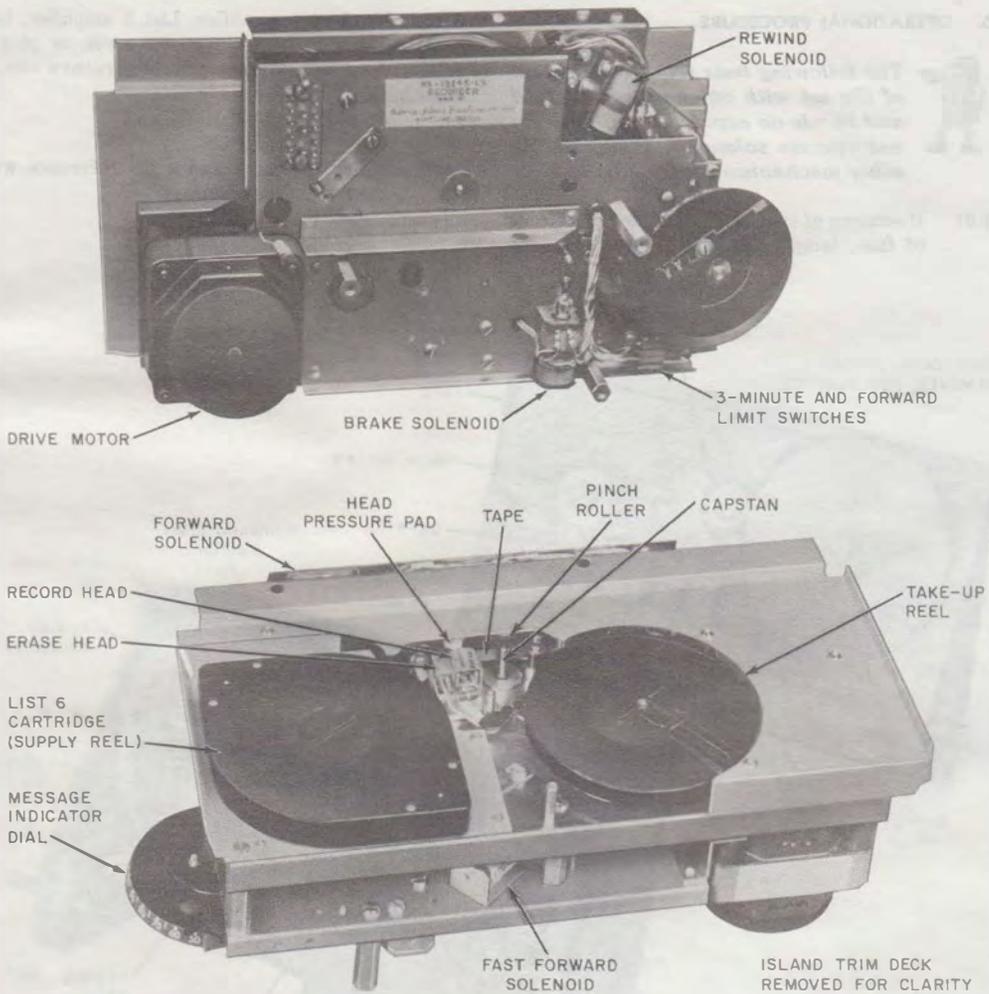


Fig. 9—KS-19245, List 3 Recorder Front and Rear Views

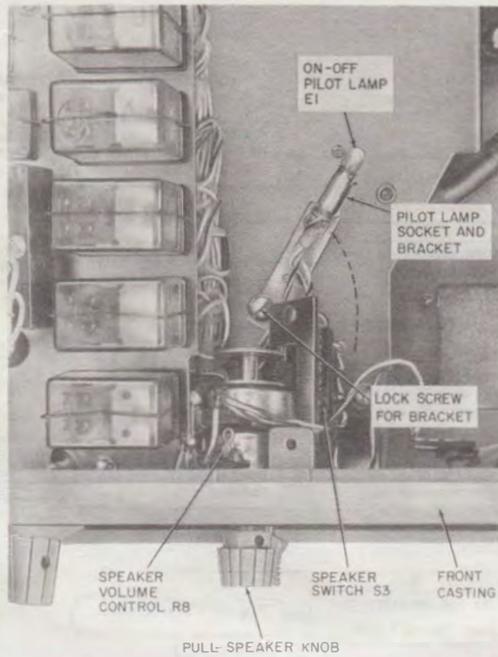


Fig. 10—ON-OFF Lamp E1 on Pivoted Position

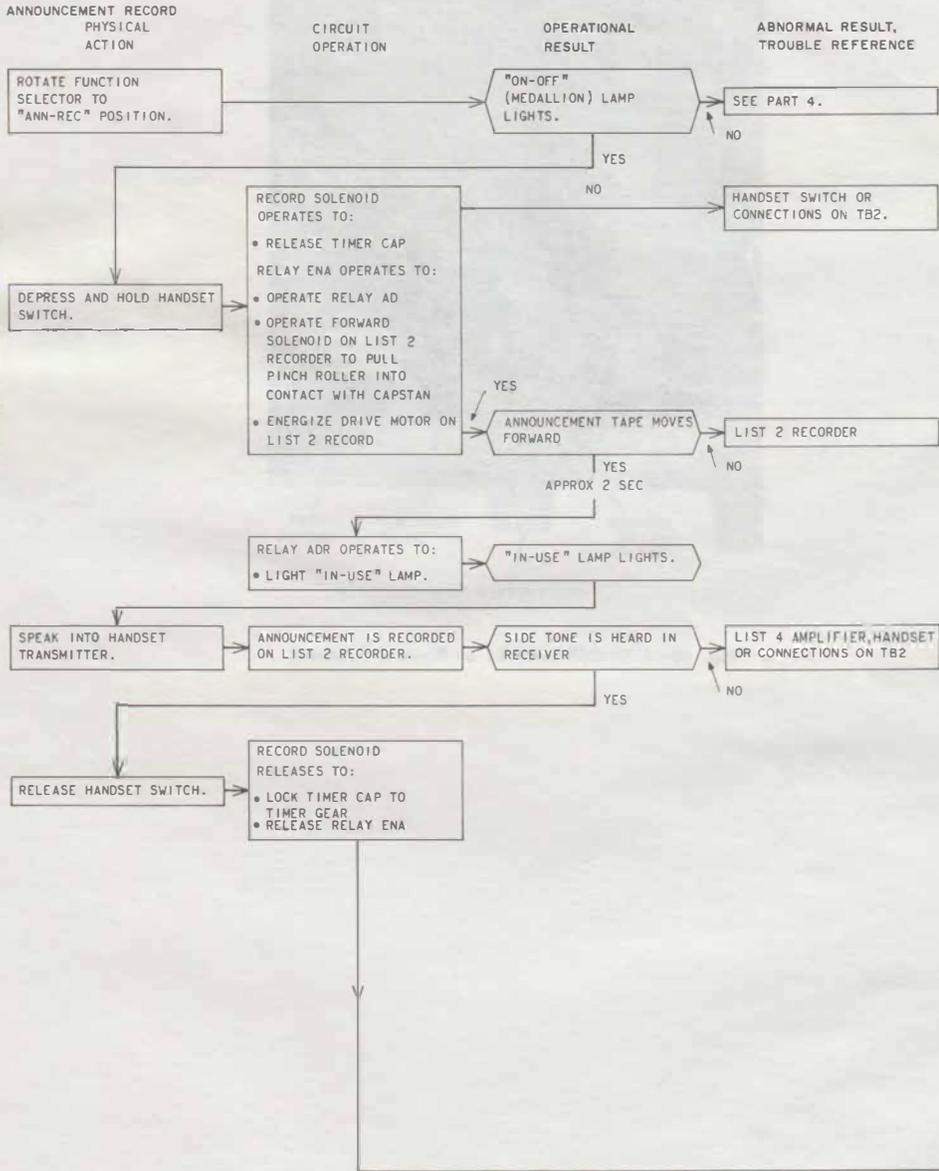


Fig. 11—Chart A (Sheet 1)

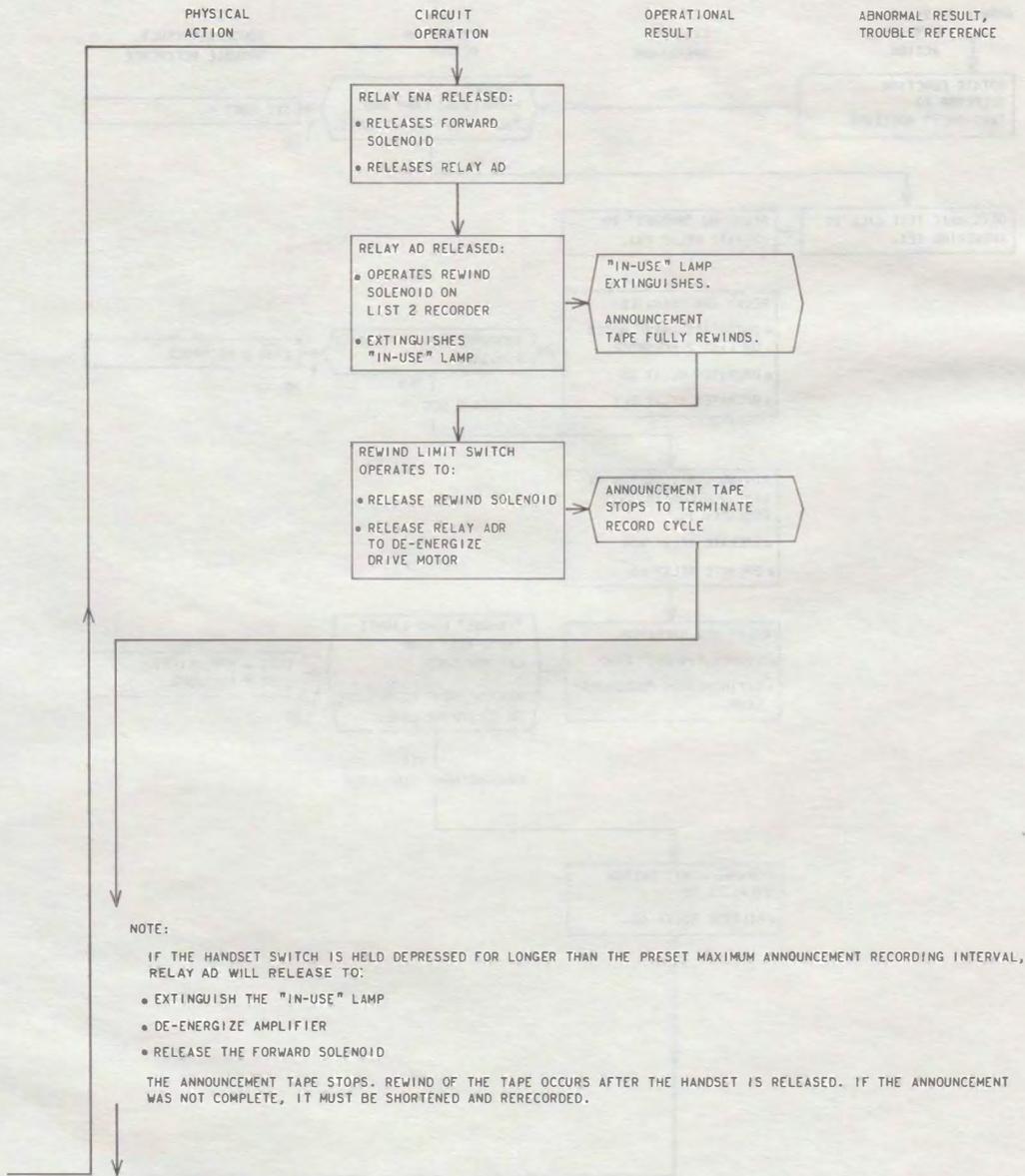


Fig. 11—Chart A (Sheet 2)

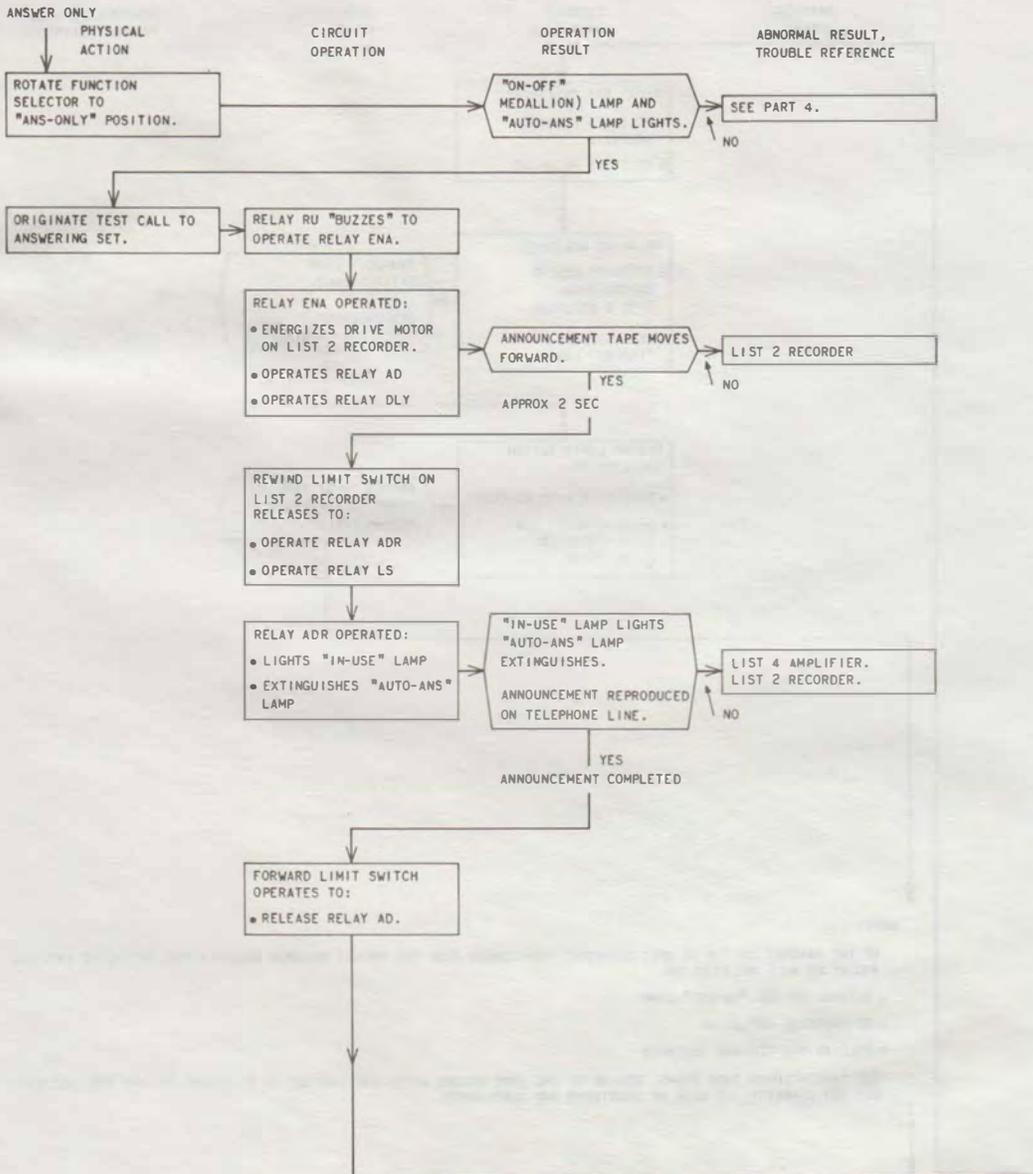


Fig. 11—Chart A (Sheet 3)†

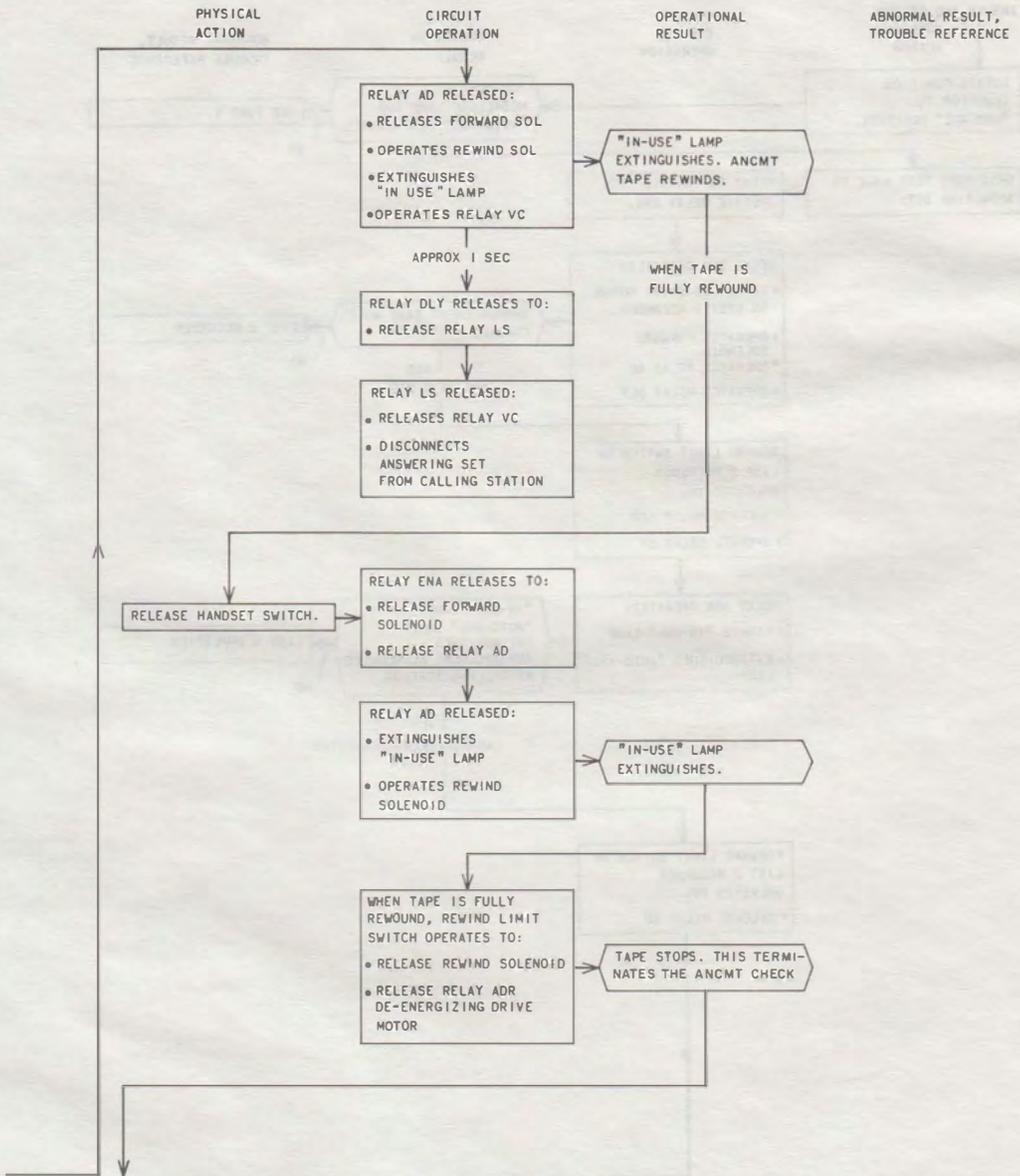


Fig. 11—Chart A (Sheet 4)

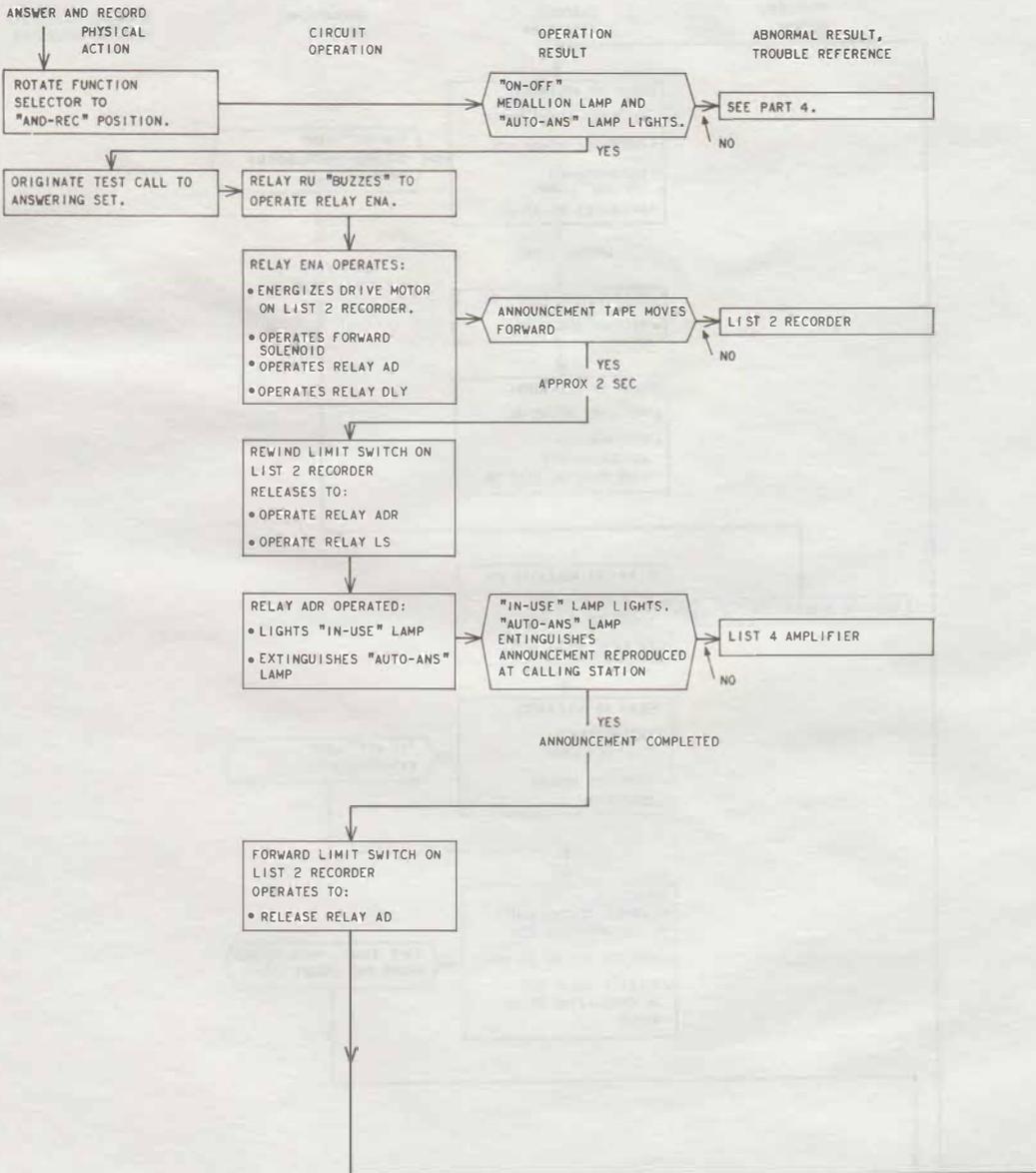


Fig. 11—Chart A (Sheet 5)

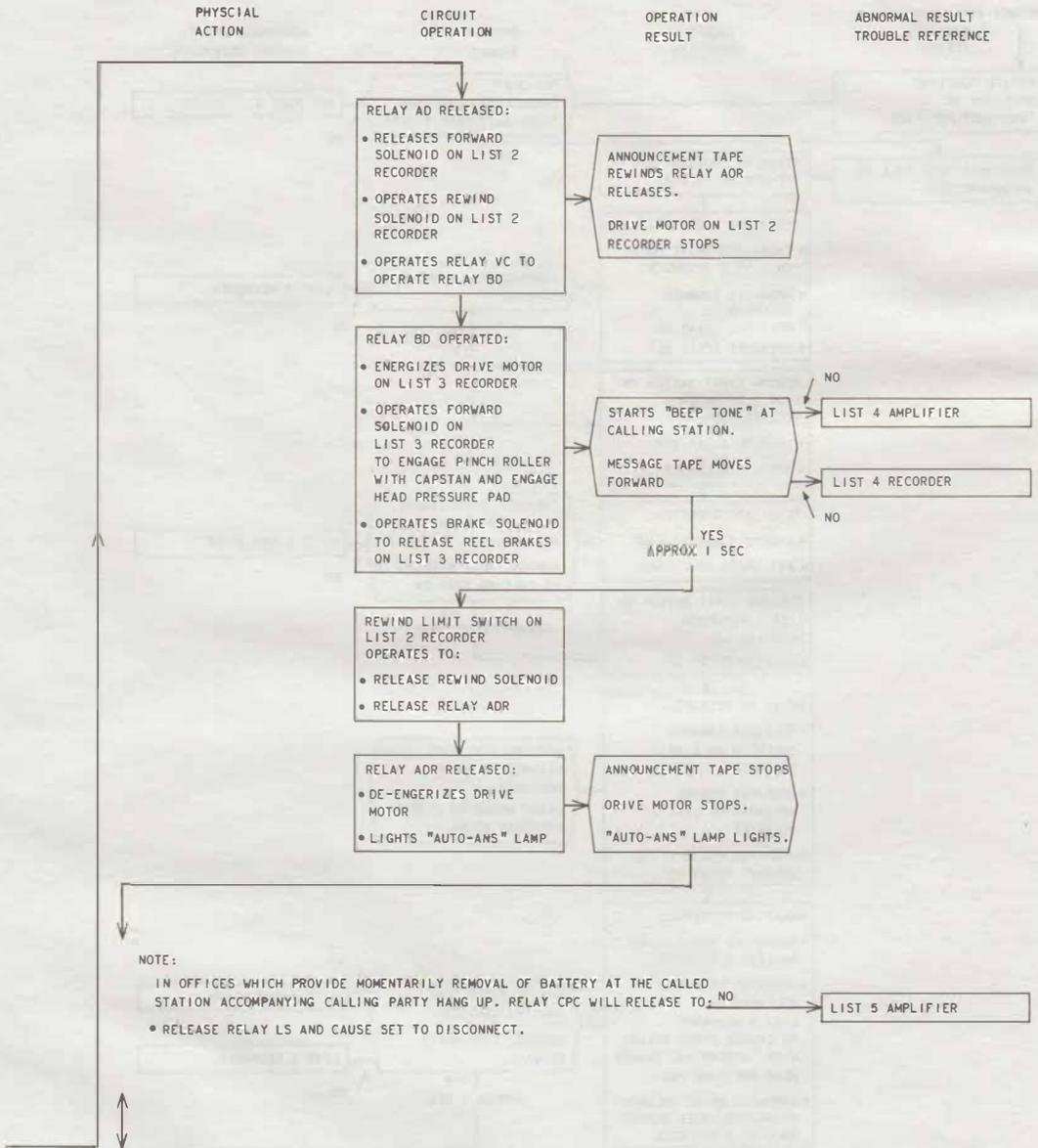


Fig. 11—Chart A (Sheet 6)

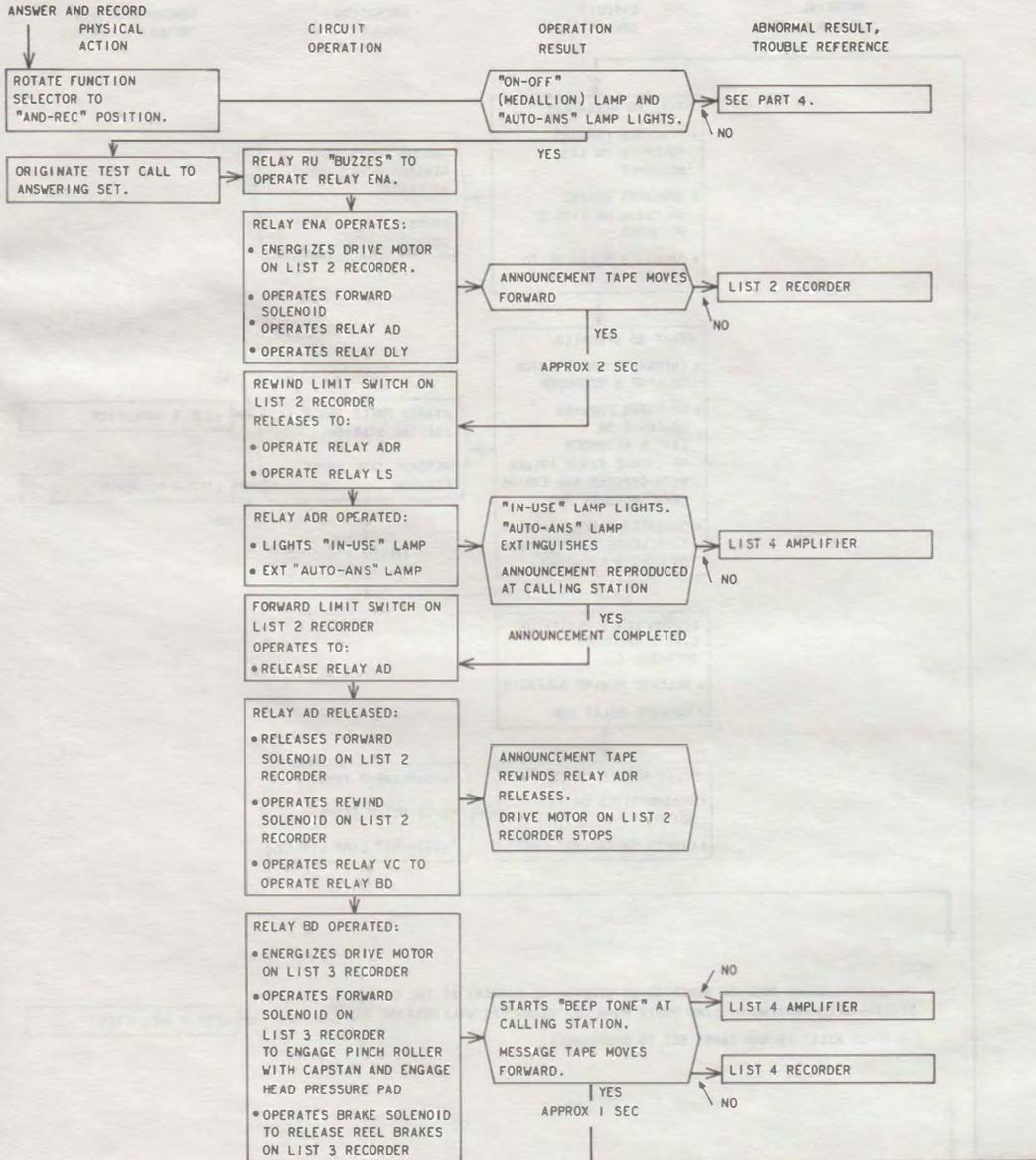


Fig. 11—Chart A (Sheet 7)

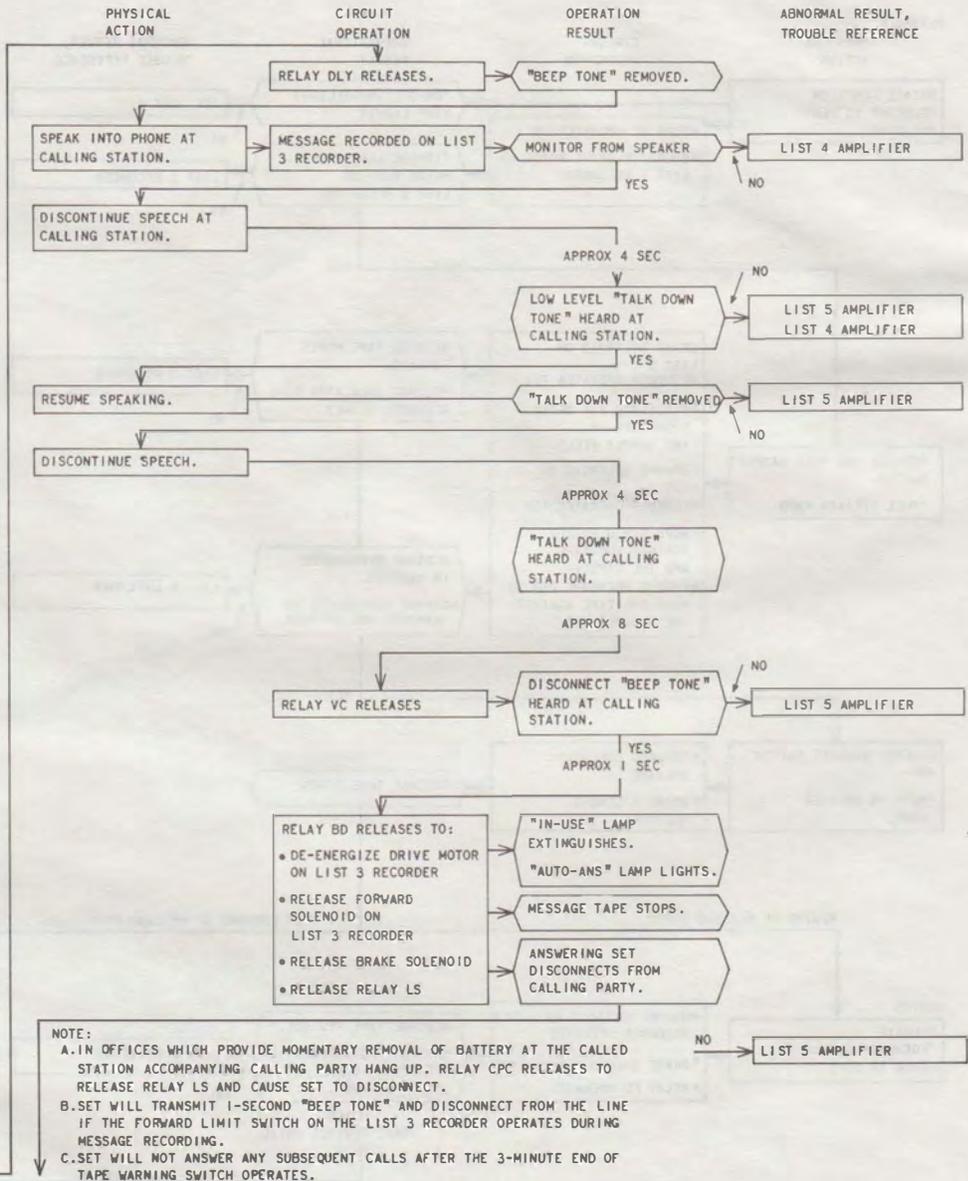


Fig. 11—Chart A (Sheet 8)

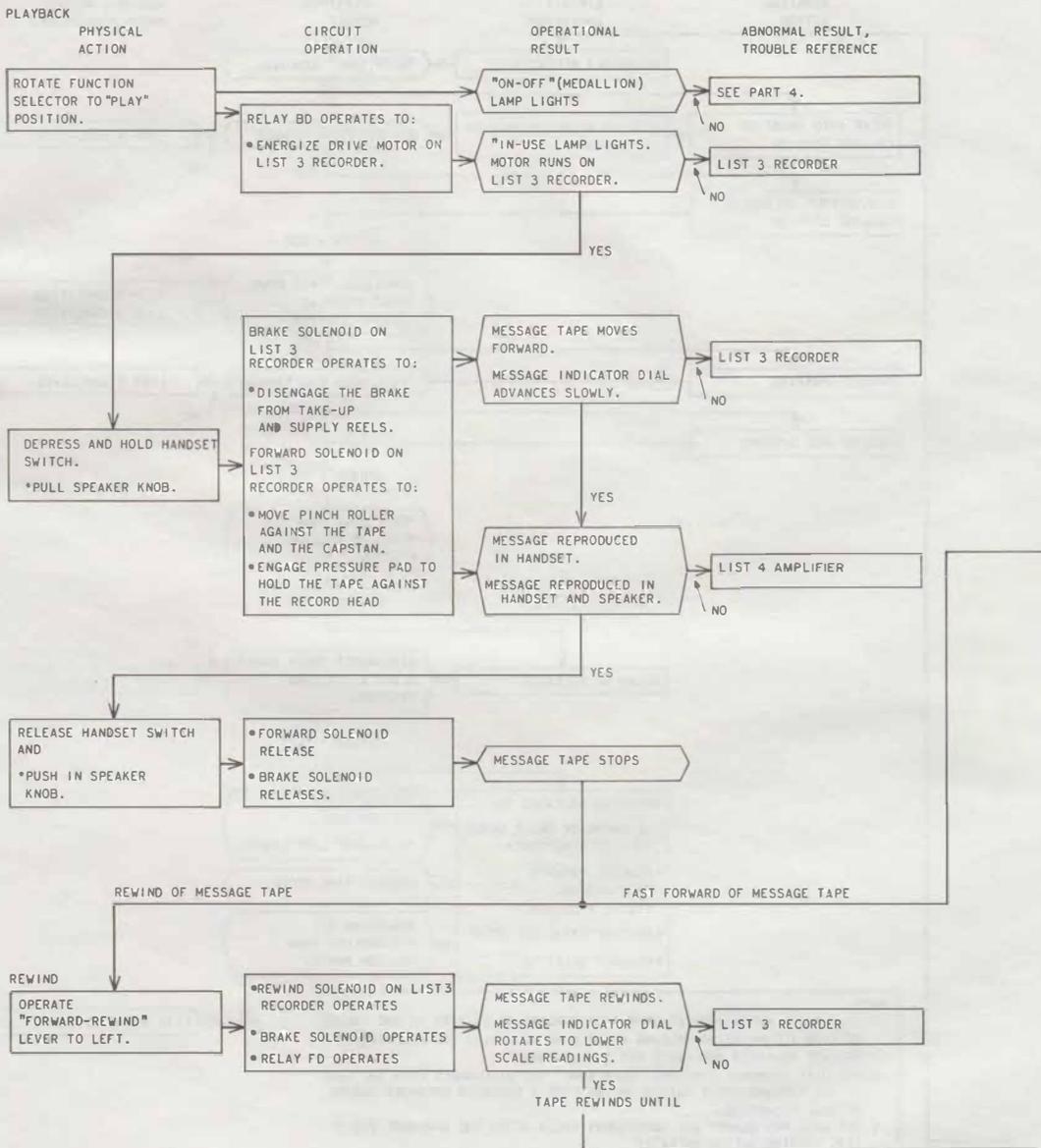


Fig. 11—Chart A (Sheet 9)¶

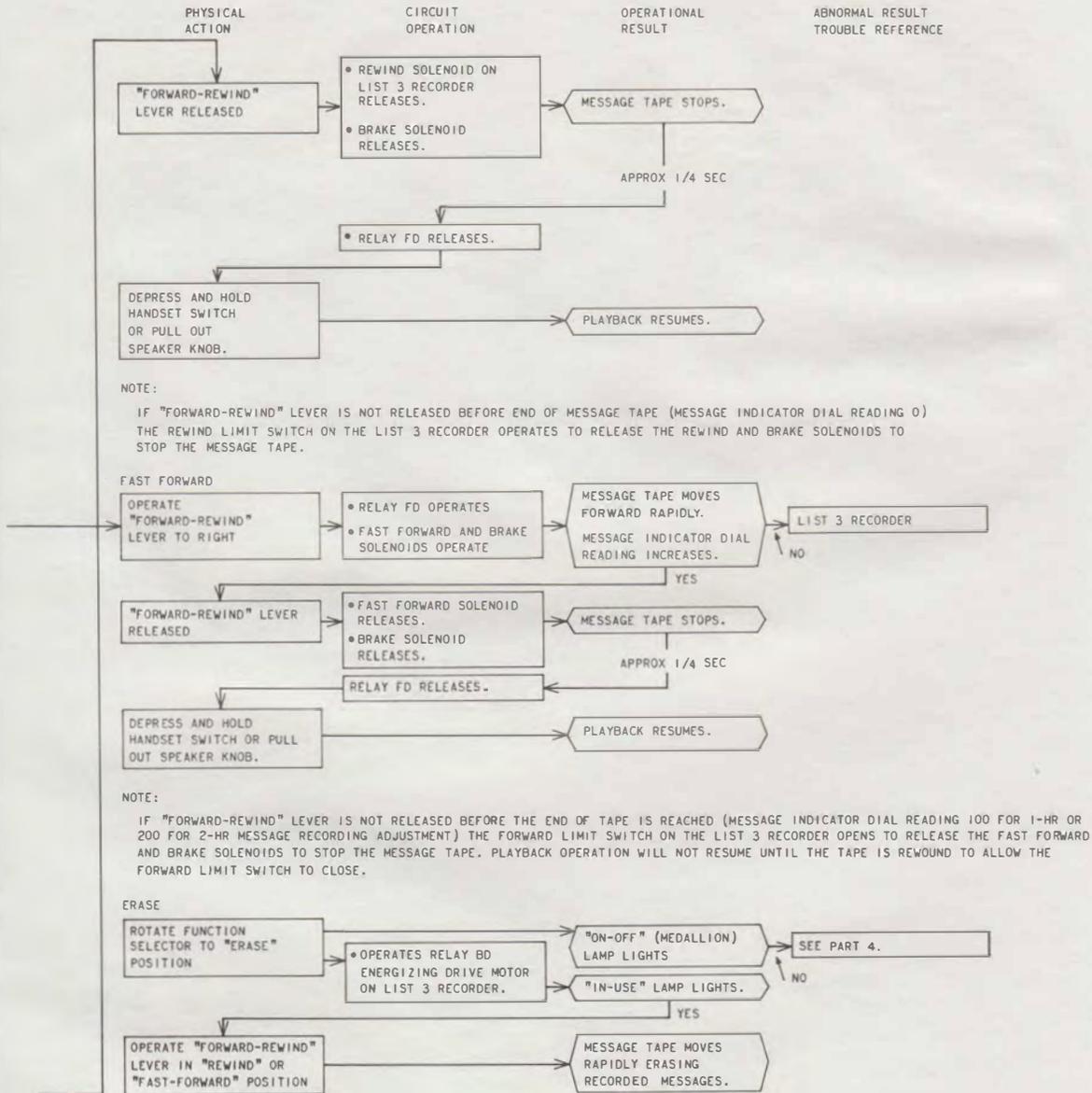


Fig. 11—Chart A (Sheet 10)¶