13A ANNOUNCEMENT SYSTEM
DESCRIPTION AND OPERATING PROCEDURES
COMMON SYSTEMS

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1. GENERAL

1.01 This practice describes the 13A Announcement System which is a completely electronic announcement system. The 13A has no moving parts like the 6A or 7A Announcement Systems. Therefore, there is no routine maintenance involved with the 13A.

1.02 This practice is reissued for the following reasons. This reissue is also a general revision so no revision arrows are used to show changes.

(a) To include new design information on the new UD4 and UD6 (Series 15 and higher) message module circuit packs

(b) Remove information on the UD5 circuit pack

(c) Remove information on recorded announcement frames

(d) Revise figures

(e) Incorporate trouble clearing information.

1.03 ***Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measure may be required to correct this interference.***

1.04 The 13A is a recorded announcement machine that has the capability of one to eight channels (Fig. 1). Each channel announces only one recording. The recording is recorded on a UD4 or UD6 message module circuit pack. Each announcement can be adjusted in 3-second lengths from 3 to 12 seconds for the UD6 and from 3 to 24 seconds for the UD4.

2. DESCRIPTION

2.01 The 13A Announcement System measures 21-3/8 inches long, 9-1/2 inches high, and 12 inches deep. A variety of mounting brackets allows installation on all standard ESS* switches and electromechanical central office frames.

2.02 Five types of circuit packs are used in the 13A. Three are common to each 13A Announcement System. These are for power, digital encoding, system control, and timing. The other two are types of message modules which allow a variety of announcement options.

2.03 ***UD1—Power Supply Circuit Pack:*** This circuit pack converts the −48 Vdc talk battery into the voltages needed to operate the 13A. Test points to measure the voltage levels are located on the front of the UD1 (Fig. 2). Other controls and indicators located on the front of the UD1 are listed and described in Table A.

2.04 ***UD2—Encoder-Driver Circuit Pack:*** This circuit pack has two functions. One function is to convert speech from analog to digital format for storage in memory. The other function is to generate rotating magnetic fields to operate the bubble memory of the UD4 or UD6 message module circuit packs with bubble memories (series 1 through 14).

2.05 ***UD3 and UD3B—Timing and Control Circuit Pack:*** The UD3 or UD3B circuit pack generates timing and control signals for the 13A. Certain controls and indicators located on the front edge of each circuit pack (Fig. 3) are for control functions. These controls and indicators are described in Table B.

2.06 ***UD4—VML (3-24) Message Module Circuit Pack:*** This circuit pack provides vari-

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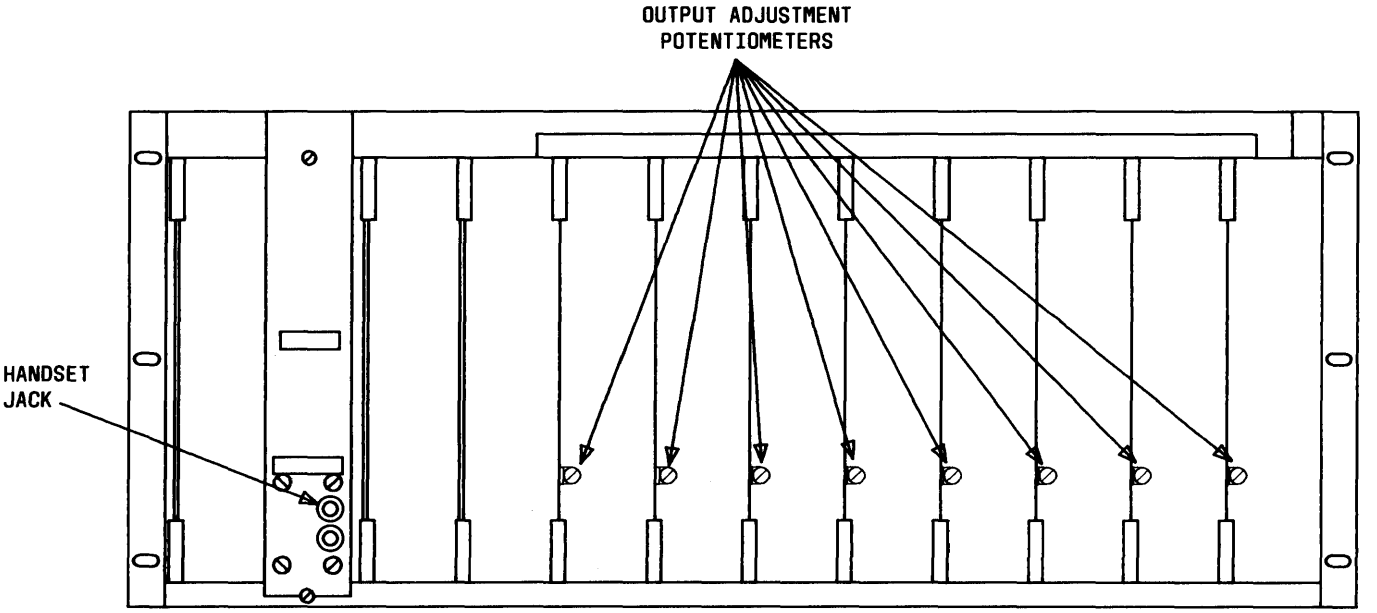


Fig. 1—13A Announcement System

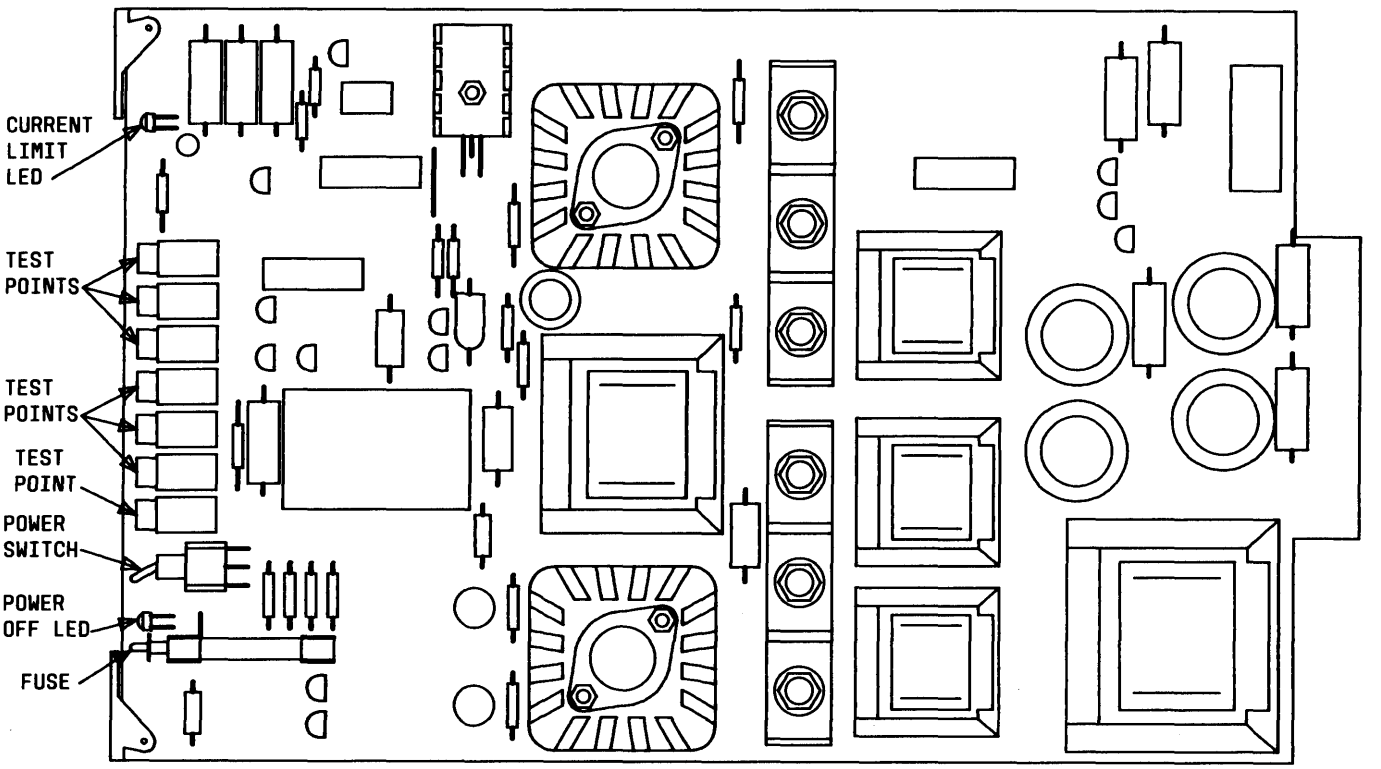


Fig. 2—UD1 Power Supply Circuit Pack

TABLE A UD1 POWER SUPPLY		
DEVICE	COLOR	FUNCTION
POWER Switch	—	Controls power to the 13A circuit packs.
POWER OFF LED	Red	Indicates state of power on the 13A, on or off.
CURRENT LIMIT LED	Red	Shows high current drain or high voltage on the 13A.
Fuse (F1)	—	Protects the 13A from damage from high current drain or high voltage.

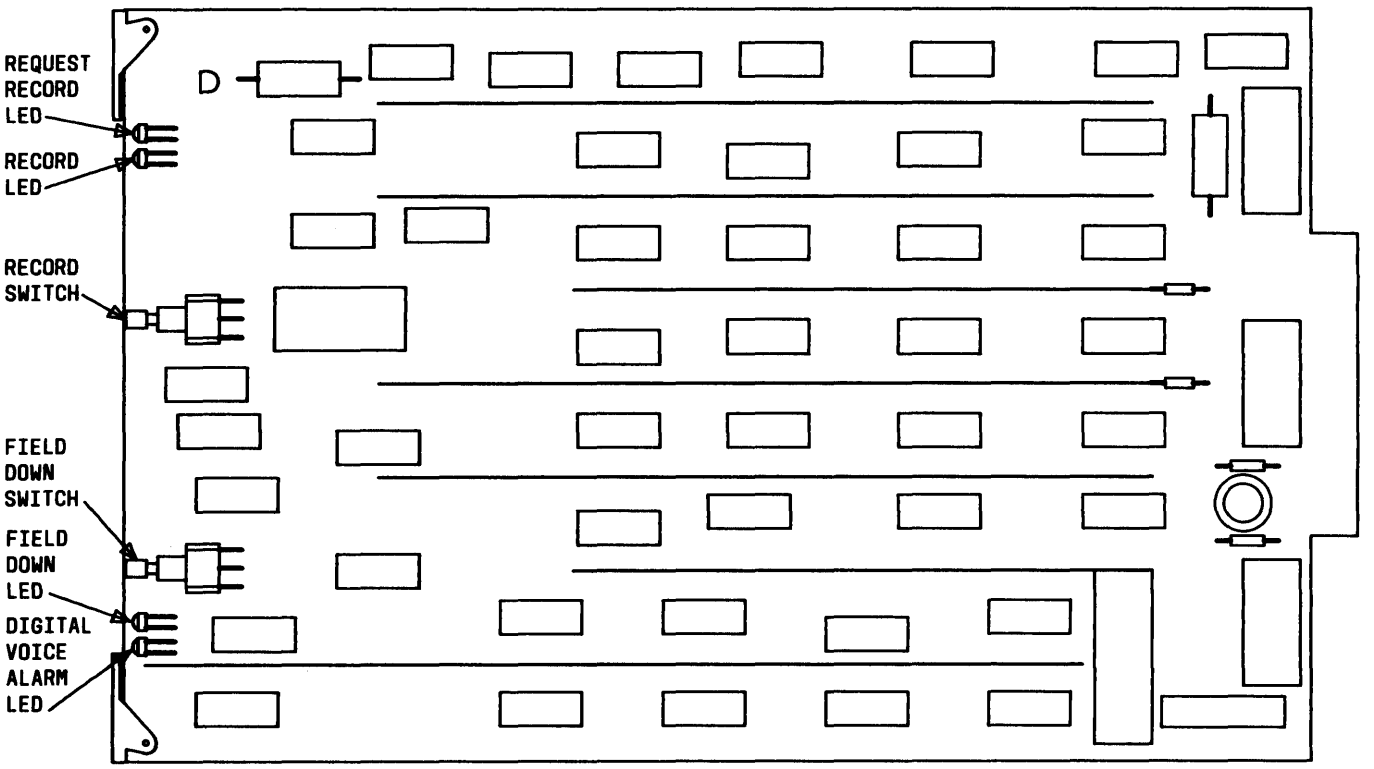


Fig. 3—UD3B Timing and Control Circuit Pack

TABLE B

UD3 AND UD3B TIMING AND CONTROL

DEVICE	COLOR	FUNCTION
REQUEST RECORD Switch	—	This pushbutton switch is used to initiate a request to record locally.
FIELD DOWN Switch	—	Operating this pushbutton switch stops the rotating magnetic fields of the 29A memory.
CUT-THROUGH LED	Green	This LED lights for 3 seconds and then is off for 12 seconds to show normal operation of the 13A.
REQUEST RECORD LED	Red	This LED lights to acknowledge a request to record locally.
FIELD DOWN LED	Red	This LED shows that the rotating magnetic field of the 29A bubble memory is turned off.
DIGITAL VOICE ALARM (DVA) LED	Red	This LED lights to show there is an error in the stored digital information on message modules series 1 through 14 (series 15 and higher do not use the DVA).

able message length (VML) storage for 3 through 24 seconds of recorded information. The storage length is variable in 3-second increments by operation of a thumbwheel switch mounted on the circuit pack. The controls and indicators mounted along the front edge of the pack (Fig. 4) are described in Table C.

2.07 The pins located on the backplane of each circuit pack are used for the following:

(a) Audio output on T1-R1.

(b) A start lead requiring a closure to ground to start the message output or to start the channel for remote recording.

(c) Cut-through contact closure to indicate the beginning of the message.

(d) Contact closure to indicate a voice alarm.

(e) Channel access lead requiring a ground to place the channel in a ready to record mode for remote recording.

(f) The MU2, MU3, and MU4 leads which close contacts between leads MU3 and MU4 during the announcement and open contacts during the silence period at the end of the announcement. The MU2 and MU3 combination provides the opposite state.

2.08 On a series 1 through 14 UD4, speech is stored in a digitized form on two 29A magnetic bubble memories. Each 29A stores 12 seconds of recorded speech.

2.09 Since the 29A magnetic bubble memory used to store the recorded announcements is a digital device, the speech is converted from analog to digital form during the recording process. Similarly, on playback, it is converted from digital to analog form for announcement. Adaptive delta modulation encoding and decoding circuitry is used to accomplish this conversion. The encoding circuitry is located on the UD2 encoder driver circuit pack. The decoding circuitry and 29A magnetic bubble memory package are located on the message module circuit packs along with the output amplifier needed for driving the associated trunk circuits.

2.10 The 29A bubble memory is a nonvolatile memory. It retains the stored information without requiring power. After a recording is made, the mes-

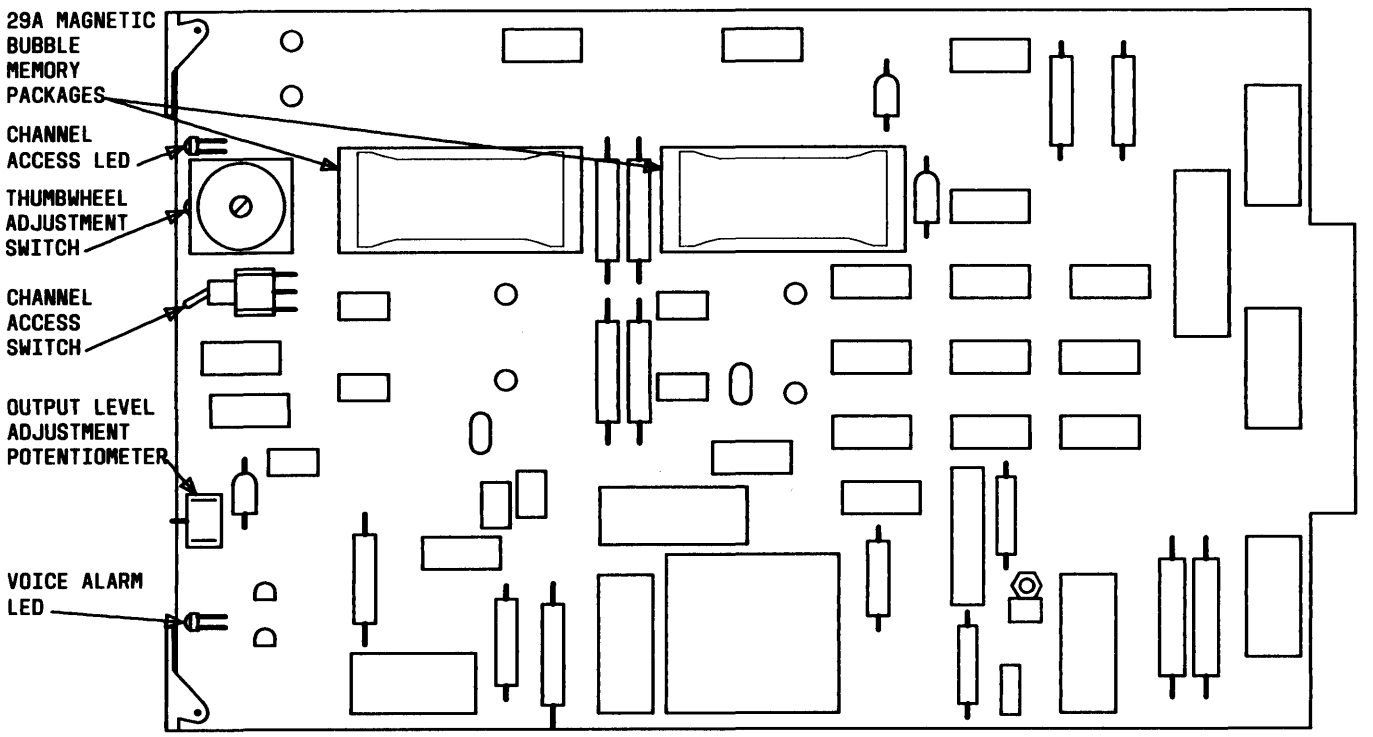


Fig. 4—UD4 VML Message Module Circuit Pack (Series 1 Through 14) With 29A Bubble Memories

sage module can be removed from one 13A Announcement System and installed in another. The nonvolatility feature permits centralized recording of message modules. The prerecorded message module could then be distributed to other 13A Announcement Systems at other locations.

2.11 Series 15 and higher message modules are a redesign of the bubble memory UD4. The main difference is that the 29A bubble memories of the bubble memory UD4 have been replaced in the newer UD4 by static random-access memories (RAMs) (Fig. 5). A battery backup gives the RAM memory UD4 the same nonvolatile message distribution to other 13A systems as the bubble memory UD4.

2.12 To prevent possible damage to the RAM memory, observe precautions for handling static sensitive devices when handling these RAM memory boards. Use of a grounding strap and handling these circuit boards by the edge is recommended.

2.13 The RAM memory UD4 is shipped and should be stored with the backup battery disengaged. To engage the battery in the circuit, the yellow plastic jumper must be installed on the two upper contacts as shown in Fig. 5.

2.14 ***UD6—VML (3-12) Message Module Circuit Pack:*** This circuit pack provides variable message length (VML) storage for 3 to 12 seconds of recorded information. Except for the length of storage, the circuit pack function, controls and indicators, and operation is the same as the UD4 (Table C).

2.15 For operation of the backup battery on the UD6 RAM memory, the yellow jumper must be installed on the two upper contacts as in the UD4. (See paragraph 2.13 and Fig. 5).

3. FUNCTION

3.01 Interconnection of circuit packs to input/output (I/O) terminals and between circuit packs is accomplished via a printed wiring backplane (Fig. 6). Connection from the 13A Announcement System to interconnecting circuits is via a field of

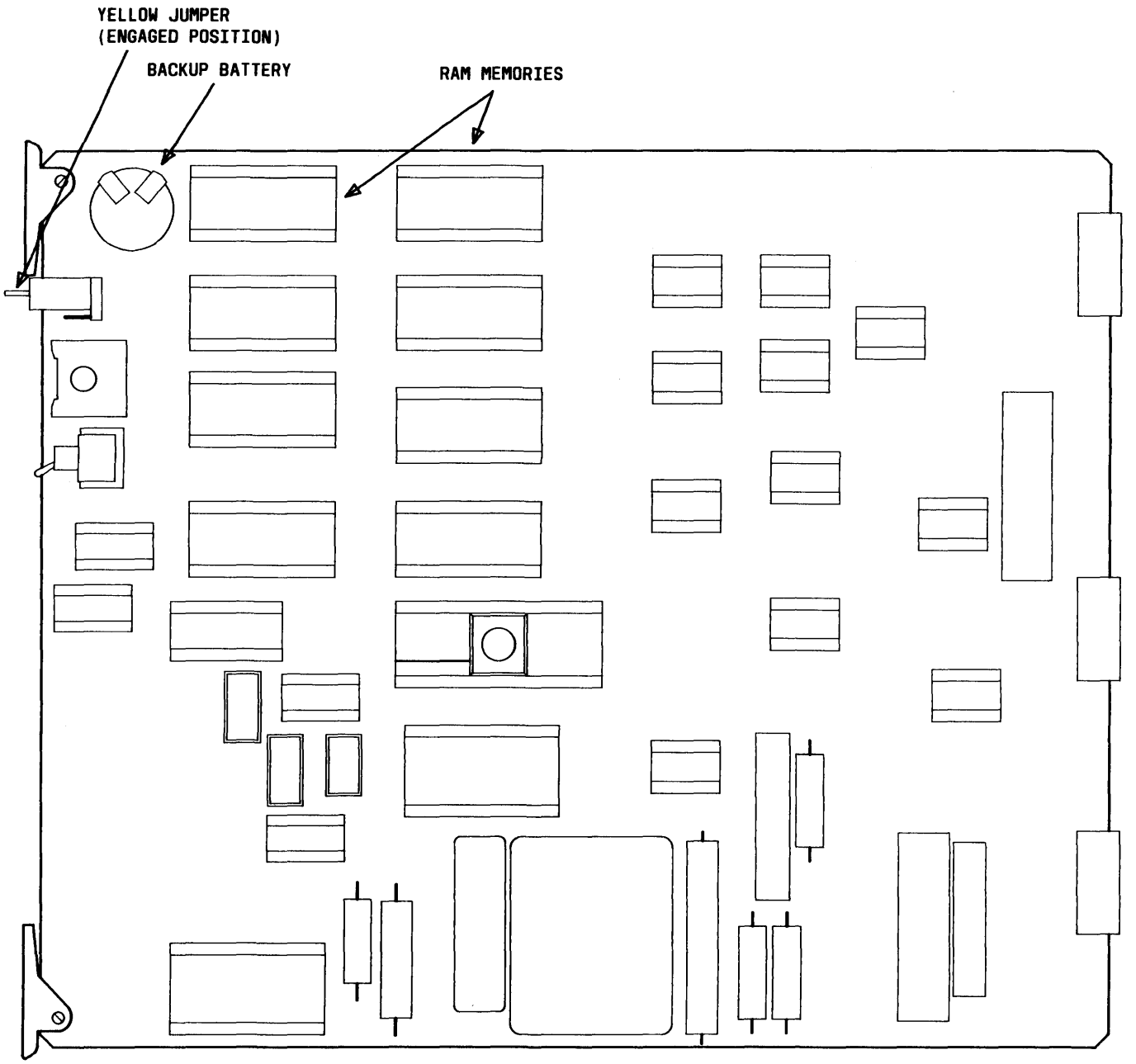


Fig. 5—UD4 VML Message Module Circuit Pack (Series 15 or Higher) With RAM Memories

0.045 inch square wire wrap pins on the backplane. The power lead connections are screw terminals.

3.02 The input, either from a handset or a tape recorder, is routed to the encoder driver circuit pack (UD2) which converts the speech to digital form and is routed along a common bus on the backplane. The channel or channels to be recorded access the bus via the CHANNEL ACCESS switch. System control signals between the common circuit packs (UD1, UD2, and UD3B) and the message modules control the record process. Indicators are provided for channel access, request record, and record.

3.03 System signals are provided from the backplane to indicate the record state. The input to the 13A Announcement System from the backplane parallels the HANDSET input jack on the front of the shelf assembly.

TABLE C

UD4 AND UD6 VML MESSAGE MODULES

DEVICE	COLOR	FUNCTION
CHANNEL ACCESS Switch	—	This switch permits access to record or monitor a recording on a channel.
CHANNEL ACCESS LED	Green	This LED indicates that the channel has been accessed for recording or monitoring.
VOICE ALARM LED	Red	This LED indicates that there is a problem in the audio output on message modules series 1-14. On message modules series 15 and higher, this LED indicates a problem in the audio output, data storage, or timing and control signals.
Message Length Adjustment Switch	—	This rotating thumbswitch adjusts the message length.
Output Level Adjustment Potentiometer	—	This potentiometer adjusts the channel output level.

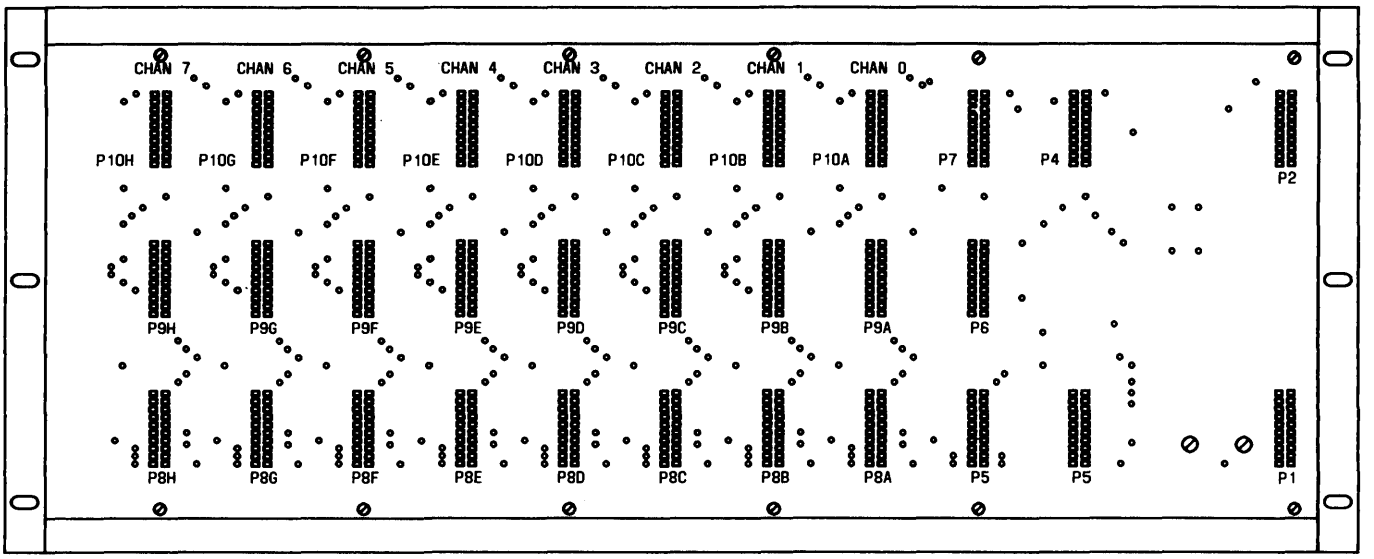


Fig. 6—13A Printed Wiring Backplane

3.04 The audio output from a channel is routed to the HANDSET jack via a common bus on the backplane. The CHANNEL ACCESS switch connects the desired channel to the common bus. In the case of the UD4 or UD6, the CHANNEL ACCESS switch also provides the start signal required to start the announcement.

4. POWER REQUIREMENTS

4.01 The power required for the operation of the 13A Announcement System is −48 Vdc. The −48 Vdc must be provided by talk battery through a separate dedicated filter located in the frame containing the 13A Announcement System.

4.02 The current drain on the −48 Vdc supply is 1.15 amperes for a 13A fully loaded with series 15 or higher message modules and 1.6 amperes for a 13A fully loaded with series 1 through 14 message modules.

5. APPLICATIONS

5.01 Each message module can announce up to 500 trunk circuits simultaneously provided that good distribution design rules are followed. (See SD-97753-01, Circuit note 107.) Each announcement is protected by a dedicated voice alarm circuit. If the announcement level falls below an acceptable level, a voice alarm will be initiated. A voice alarm is also initiated for any power failure.

5.02 The 13A Announcement System has a variety of mounting brackets for installing the unit on all standard frames in electromechanical central offices and ESS switches.

5.03 The 13A Announcement System is equipment coded and the circuit packs are apparatus coded. The basic equipment code is J1C121A-1. List numbers are provided to allow equipping the system as desired. List 1 provides the following:

- Shelf assembly
- Backplane
- Front door
- Power supply circuit pack (UD1)
- Encoder driver circuit pack (UD2)
- Timing and control circuit pack (UD3B).

Lists 2 through 4 provide a selection of mounting brackets for mounting the 13A Announcement System on various equipment frames. The remaining Lists 40 through 47 and 60 through 67 provide for equipping the 13A Announcement System with the various UD4 and UD6 VML message module options that are available.

5.04 The 2-digit list number refers to the type of message module and the position it occupies. For example, a List 40 is a UD4 message module in channel 0.

5.05 The options that are available were designed to emulate the features of specific announcement systems. Lists 40 through 47 and 60 through 67 (VML message modules) were designed to mimic the features provided by the 7A Announcement System. These message modules are compatible with all interconnecting circuits. Lists 50 through 57 (manufacture discontinued) were designed to mimic the features provided by the KS-12068, L6 Recorder/Reproducer.

6. RESTRICTIONS

6.01 The following three restrictions apply to the 13A Announcement System:

(1) Keep the loop resistance of the T1 and R1 output cables low (paragraph 5.01).

(2) Filter the −48 Vdc power through a dedicated filter located on the frame housing the 13A.

(3) Use twisted pair for all wire connections to the 13A.

More information is found in the circuit notes in SD-97753-01.

7. OPERATION

A. Measuring Power

7.01 To measure power on the UD1 power supply circuit pack:

(1) Operate POWER switch to ON (Fig. 2). POWER OFF LED goes off.

(2) Measure the voltages at the test points in Table D.

TABLE D

UD1 POWER SUPPLY TEST POINT VOLTAGES

TEST POINTS		VOLTAGE READINGS	
FROM	TO	MIN	MAX
TP1	TP3	+15V	+16.5V
TP2	TP3	+5V	+5.4V
TP4	TP3	-3.8V	-4.2V
TP5	TP3	-7.6V	-8.4V
TP6	TP3	-15V	-16.5V
TP7	TP3	-42.5V	-52.5V

B. Monitoring Announcements

7.02 To monitor an announcement on a UD4 or UD6 message module circuit pack:

(1) Connect a handset in the HANDSET jack on the front of the shelf assembly (Fig. 1).

(2) Operate CHANNEL ACCESS switch to ACCESS. CHANNEL ACCESS LED lights.

(3) Operate CHANNEL ACCESS switch to NORMAL when through.

C. Recording Announcements

Recording with a Handset

7.03 To record an announcement with a handset:

(1) Operate POWER switch to ON on the UD1 circuit pack.

(2) Connect handset in HANDSET jack on the front of the shelf assembly.

(3) Operate CHANNEL ACCESS switch to ON on the channel to be recorded. CHANNEL ACCESS LED lights.

(4) Adjust MESSAGE LENGTH ADJ thumbswitch to 24 seconds for UD4 or 12 seconds for UD6.

Note: When the RECORD pushbutton switch is operated, the red REQUEST RECORD LED lights. In a few seconds, the green RECORD LED lights. When it lights, begin the recording immediately.

(5) Operate the RECORD pushbutton switch on the UD3 or UD3B circuit pack. Red REQUEST RECORD LED lights.

(6) Record the announcement when the green RECORD LED lights.

(7) Monitor the announcement and rerecord, if necessary.

(8) Adjust MESSAGE LENGTH ADJ thumbswitch to time closest to the length of the recording.

(9) Operate CHANNEL ACCESS switch to NORMAL. CHANNEL ACCESS LED extinquishes.

Recording with a Tape Recorder

7.04 Tape recorded announcements are generally recorded on the 13A using a KS-22566, L2 Interface Unit. General information on how to use the KS-22566, L2 Interface Unit is found in AT&T Practices 780-200-024 and 780-200-026.

D. Transferring a Series 1 Through 14 Recorded Message Module

7.05 A message module can be transferred from one 13A to another one without the loss of the recorded announcement.

Removing a Series 1 Through 14 Recorded Message Module

7.06 To remove a recorded series 1 through 14 message module:

(1) Depress and hold FIELD DOWN switch on the UD3 or UD3B circuit pack until the FIELD DOWN LED lights.

(2) Release the FIELD DOWN switch.

(3) Operate POWER switch to OFF on the UD1 circuit pack. POWER OFF LED lights.

(4) Remove message module.

(5) Operate POWER switch to ON on the UD1 circuit pack. POWER OFF LED extinguishes.

Installing a Series 1 Through 14 Recorded Message Module

7.07 To install a series 1 through 14 recorded message module:

(1) Depress and hold FIELD DOWN switch on the UD3 or UD3B circuit pack until the FIELD DOWN LED lights.

(2) Release FIELD DOWN switch.

(3) Operate POWER switch to OFF on the UD1 circuit pack. POWER OFF LED lights.

(4) Install message module.

(5) Operate POWER switch to ON on the UD1 circuit pack. POWER OFF LED extinguishes.

E. Transferring a Series 15 or Higher Recorded Message Module

7.08 To transfer a series 15 or higher message module with RAM memory, leave the yellow plastic jumper in the engaged position (Figure 5).

Removing a Series 15 or Higher Recorded Message Module

7.09 To remove a series 15 or higher recorded message module:

(1) Operate POWER switch to OFF on the UD1 circuit pack. POWER OFF LED lights.

(2) Remove message module.

(3) Operate POWER switch to ON on the UD1 circuit pack. POWER OFF LED extinguishes.

Installing a Series 15 or Higher Recorded Message Module

7.10 To install a series 15 or higher recorded message module:

(1) Operate POWER switch to OFF on the UD1 circuit pack. POWER OFF LED lights.

(2) Install message module.

(3) Operate POWER switch to ON on the UD1 circuit pack. POWER OFF LED extinguishes.

F. Measuring and Adjusting Channel Output Level

7.11 The channel output level is measured on the T1 and R1 pins located on the 13A backplane (Fig. 6). The T1 and R1 pins are clearly numbered for each channel. The output is adjusted by rotating the OUTPUT LEVEL potentiometer located on each channel.

7.12 To measure and adjust the channel output level:

(1) Connect a transmission measuring set (TMS) to the T1 and R1 pins for the channel being measured (Table E).

Note: Set the TMS to the 600-ohm position for 600-ohm trunks and the 900-ohm position for 900-ohm trunks.

(2) Set the CHANNEL ACCESS switch of the channel to be measured to ACCESS. The CHANNEL ACCESS LED lights.

(3) Read the output on the TMS.

(4) Adjust the OUTPUT LEVEL potentiometer (if necessary) with a small standard screwdriver.

(5) Set the CHANNEL ACCESS switch to NORMAL when through.

TABLE E

CHANNEL T1 AND R1 PIN NUMBERS

CHANNEL	PIN NUMBERS	
	T1	R1
0	16	15
1	30	29
2	44	43
3	58	57
4	72	71
5	86	85
6	100	99
7	114	113

8. MAINTENANCE

8.01 Since the 13A Announcement System is completely electronic, maintenance that is normally required for lubrication, adjustments, or parts replacement has been eliminated. Therefore, no routine periodic maintenance has to be done.

9. TROUBLE ANALYSIS

9.01 Since the 13A Announcement System is completely electronic, trouble analysis is simplified. Troubles are indicated by system alarms, TTY messages, and lighted indicators on the 13A. Careful analysis of these indicators can help locate the trouble area. Once the trouble area is located, most problems are solved by replacing circuit packs.

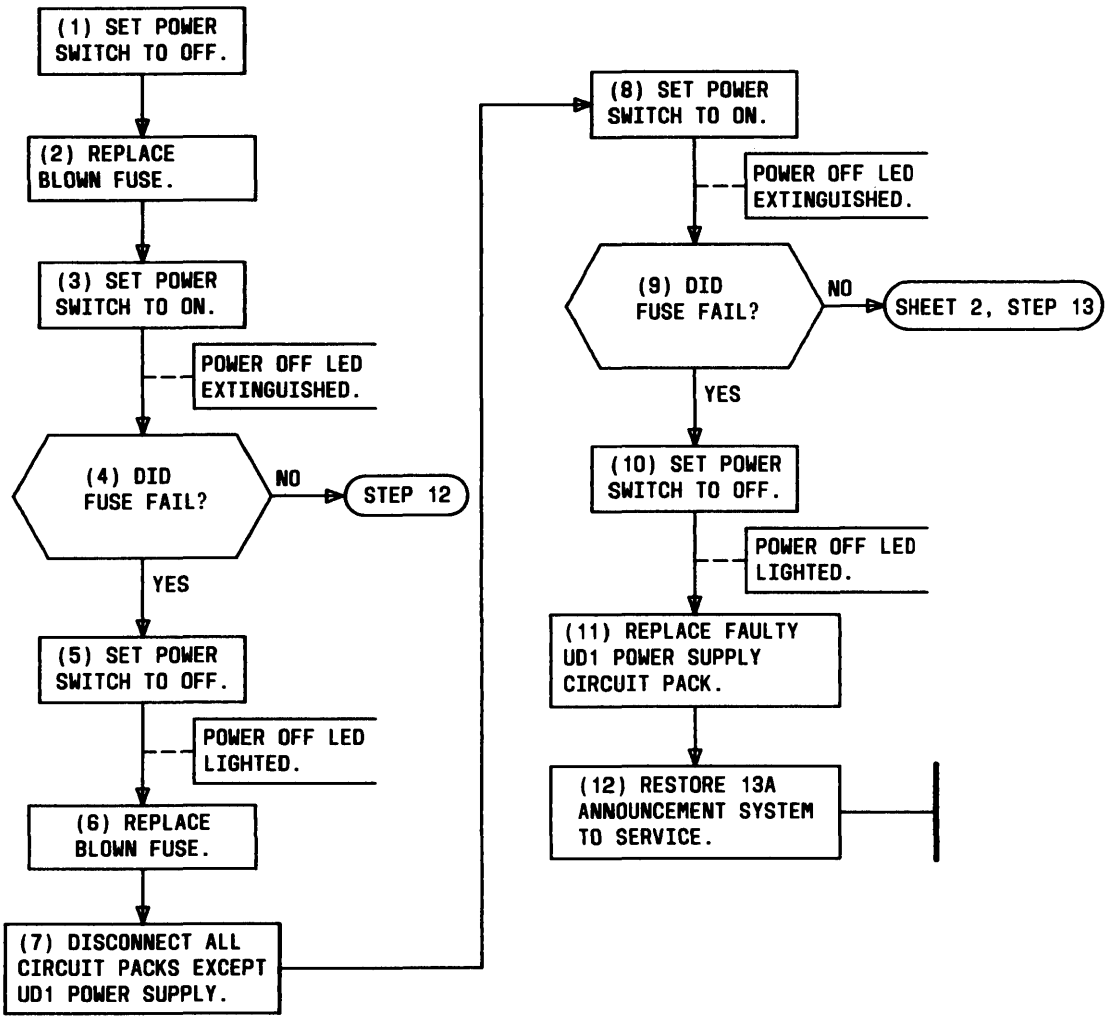
9.02 The most common troubles and the trouble clearing procedures for them are listed in Table F.

9.03 *Note:* These trouble clearing procedures are general and are to be used with trouble clearing procedures documented for each office environment.

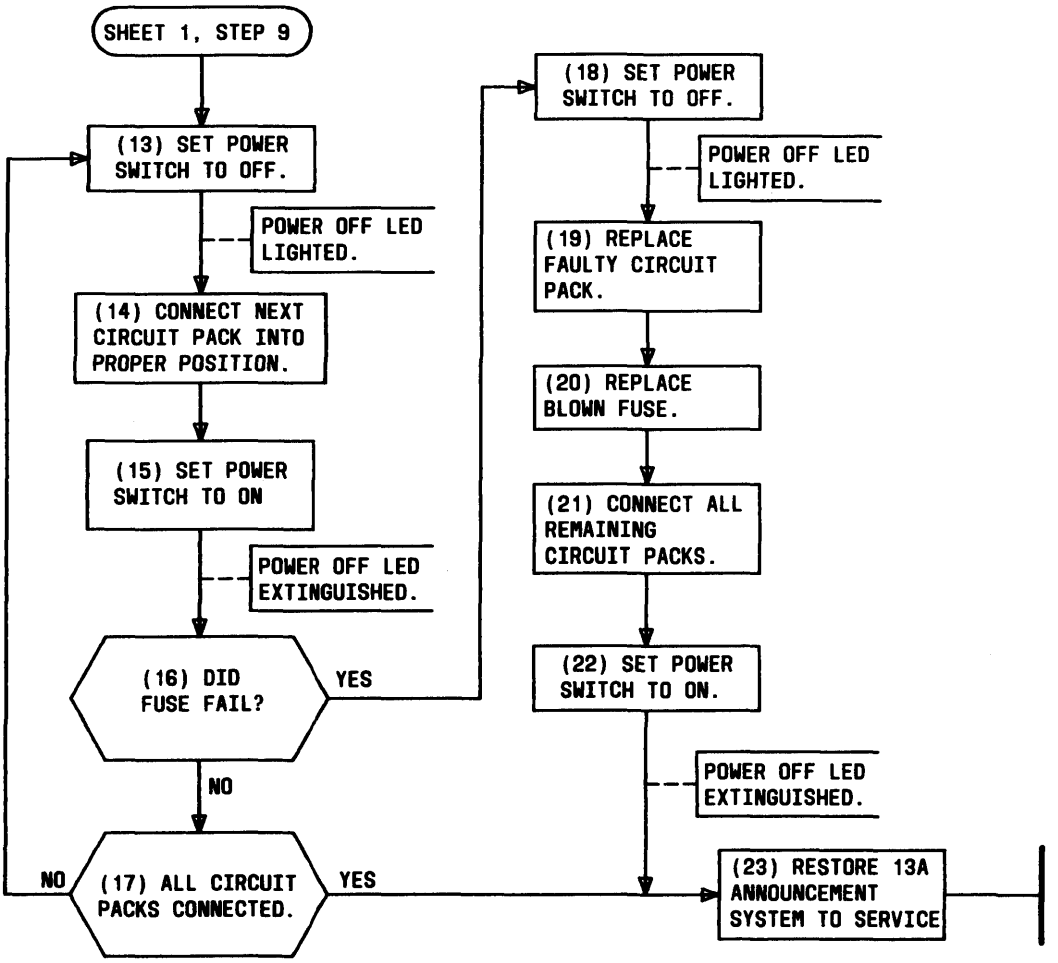
TABLE F

13A COMMON SYSTEMS TROUBLE CLEARING

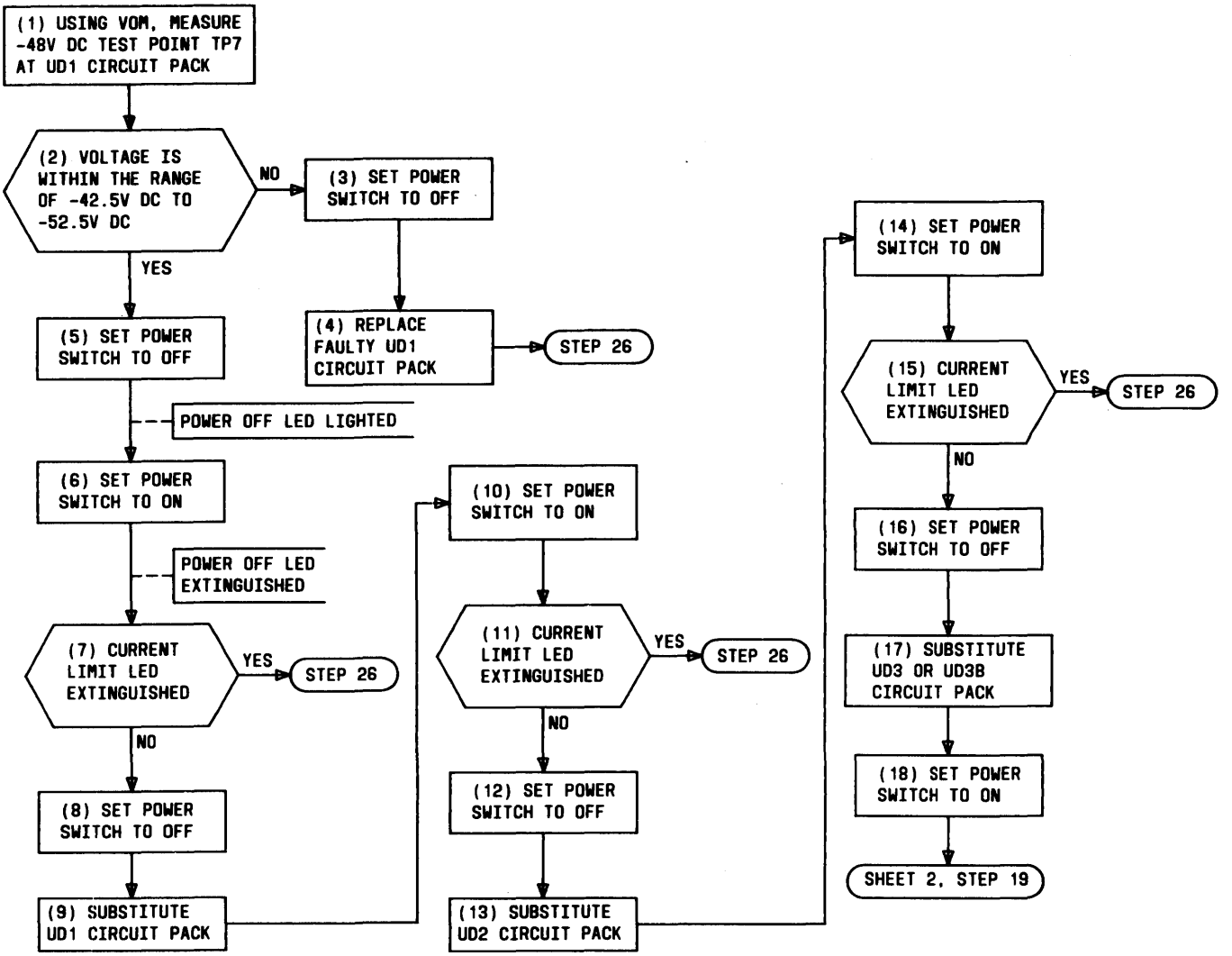
TROUBLE	COMMENT	FLOWCHARTS
VOICE ALARM LED lighted — blown fuse (F1)	Fuse F1 is located on UD1 circuit pack.	Flowchart 1.
VOICE ALARM LED lighted — no audio on all channels	CURRENT LIMIT LED lighted.	Flowchart 2.
	FIELD DOWN LED lighted.	Flowchart 3.
VOICE ALARM LED lighted — no audio on one channel (message modules series 1 through 14)	Rerecord message. Replace message module, if required.	—
DIGITAL VOICE ALARM lighted (message modules series 1 through 14)	Other VOICE ALARM LEDs may also be lighted.	Flowchart 4.
VOICE ALARM LED lighted on one or more channels (message modules series 15 or higher)	Audio may or may not be present.	Flowchart 5.



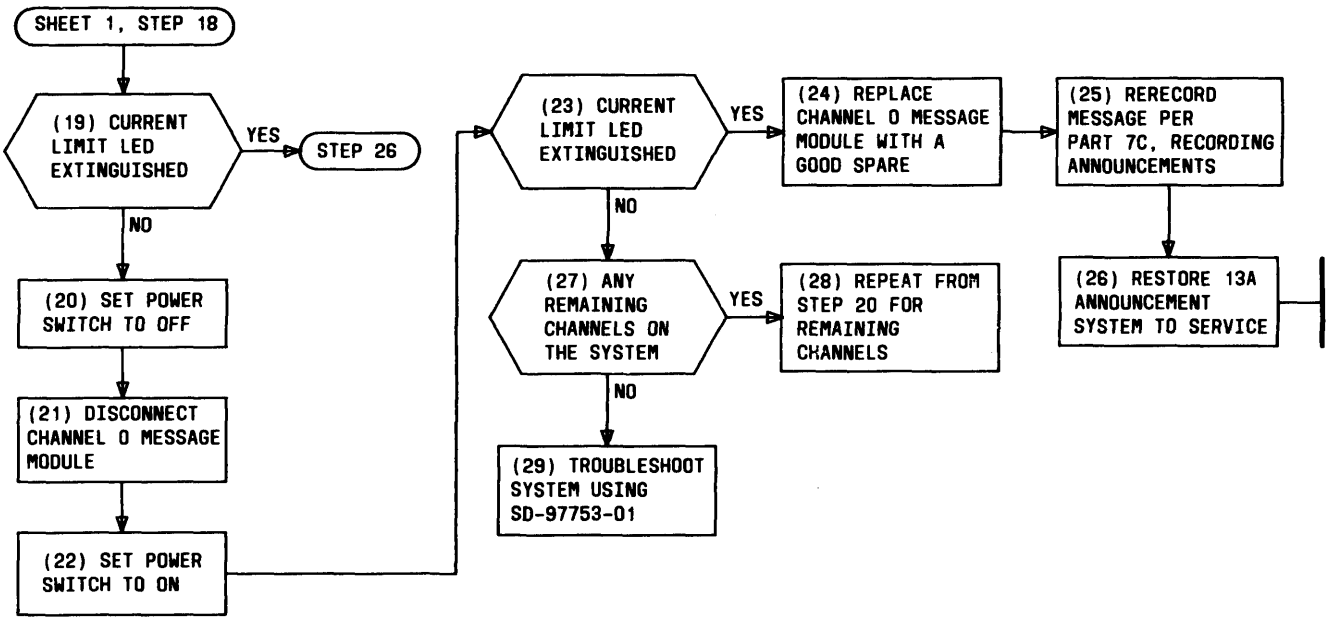
Flowchart 1—Blown Fuse (Sheet 1 of 2)



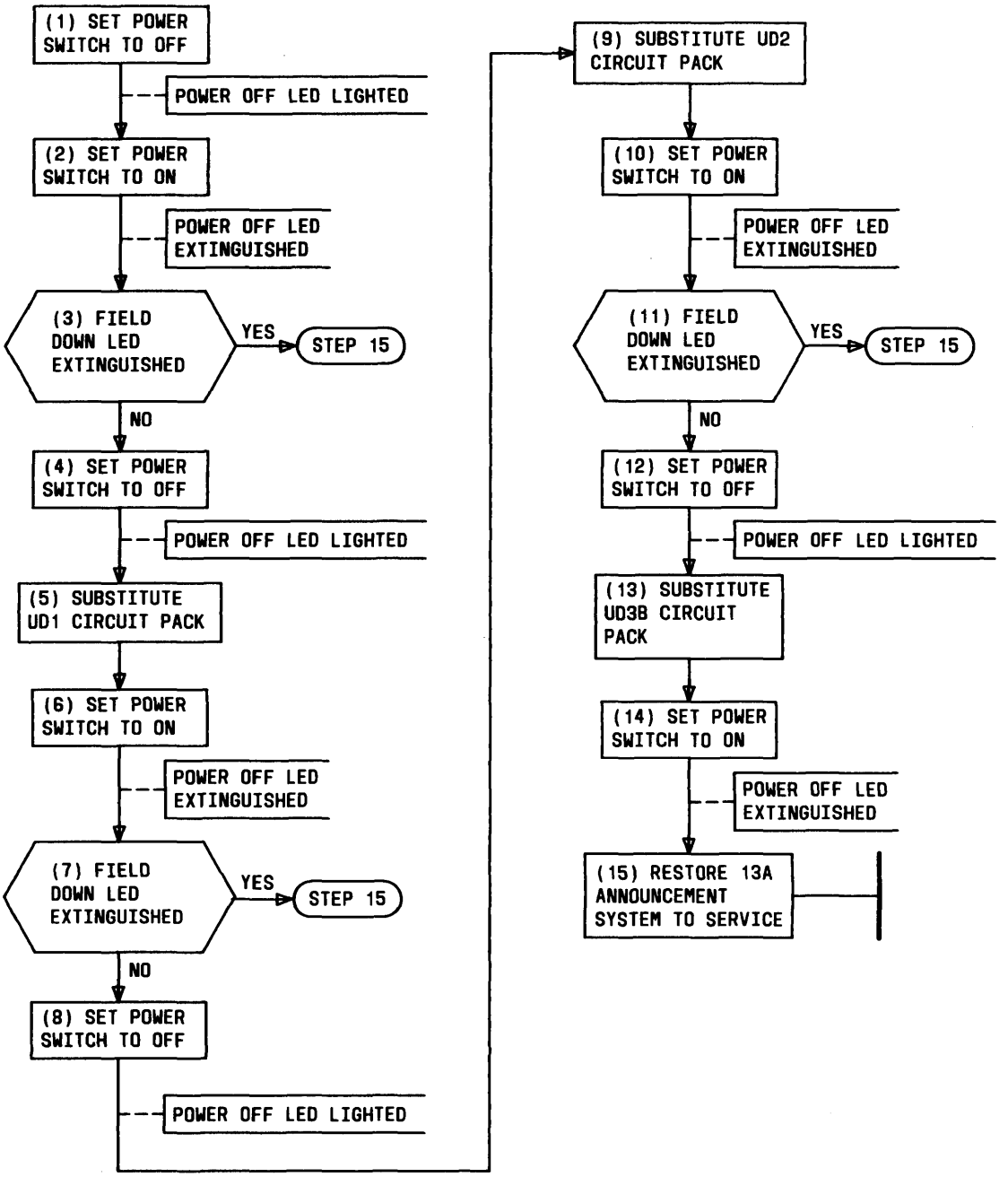
Flowchart 1—Blown Fuse (Sheet 2 of 2)



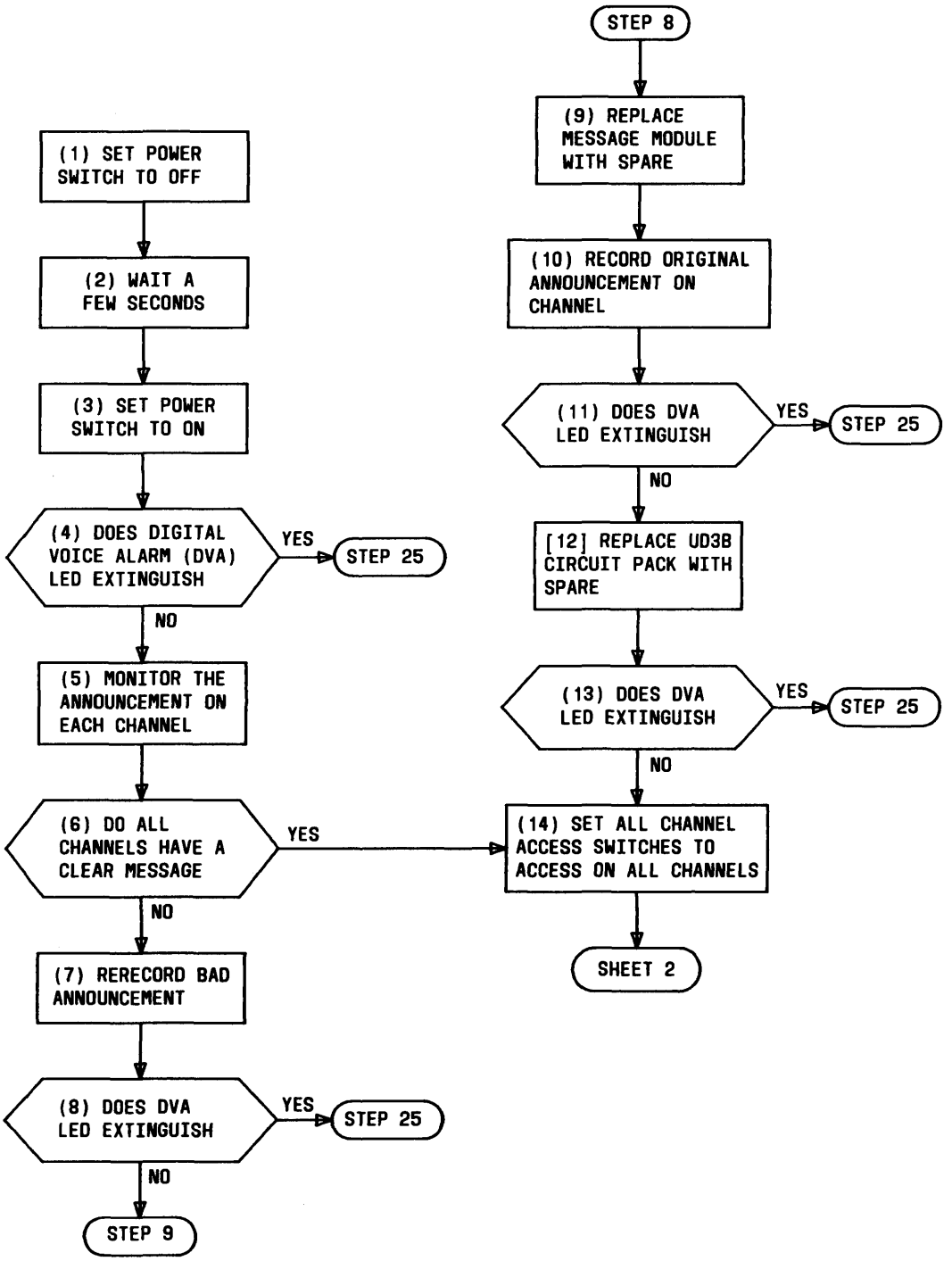
Flowchart 2—Current Limit LED (Sheet 1 of 2)



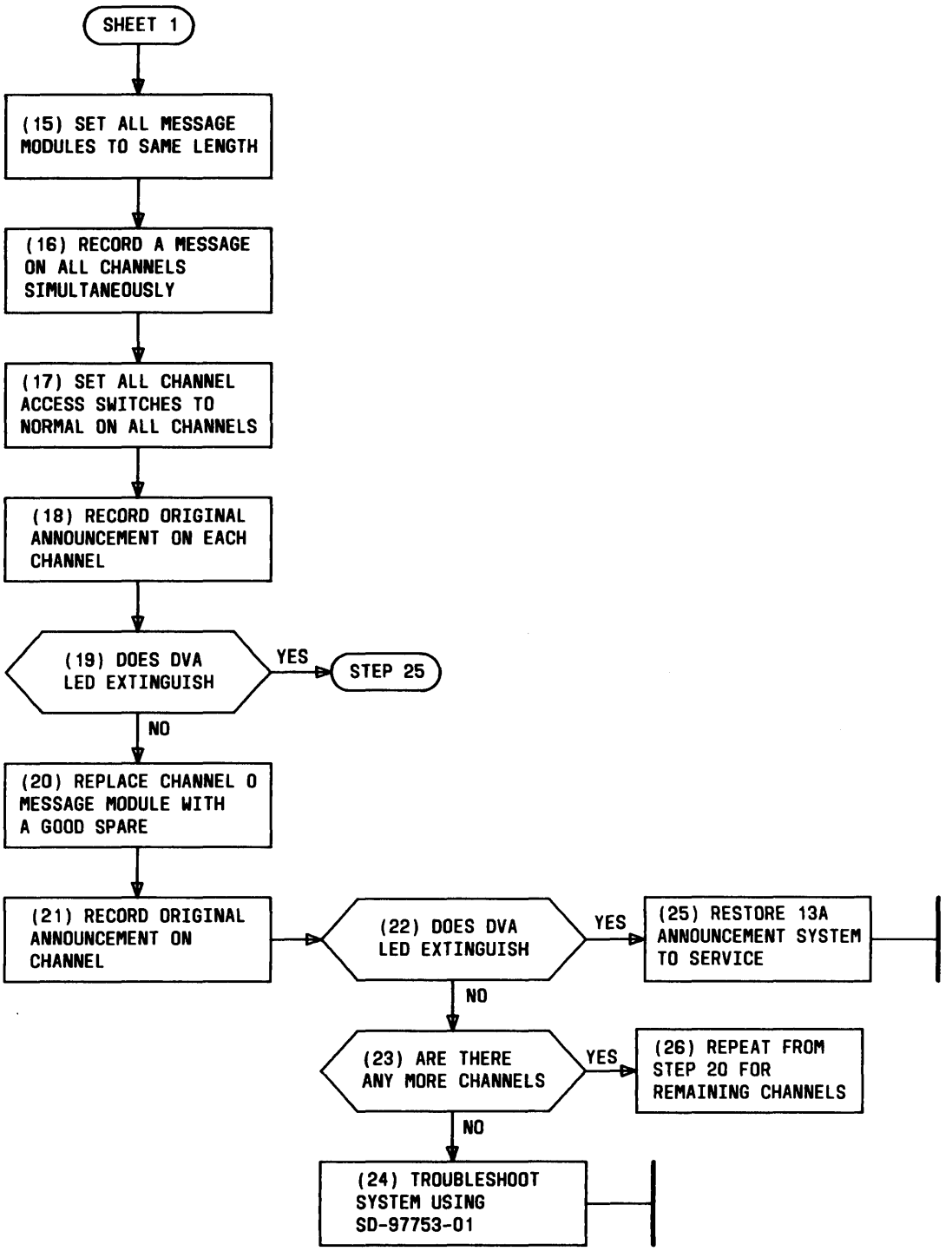
Flowchart 2—Current Limit LED (Sheet 2 of 2)



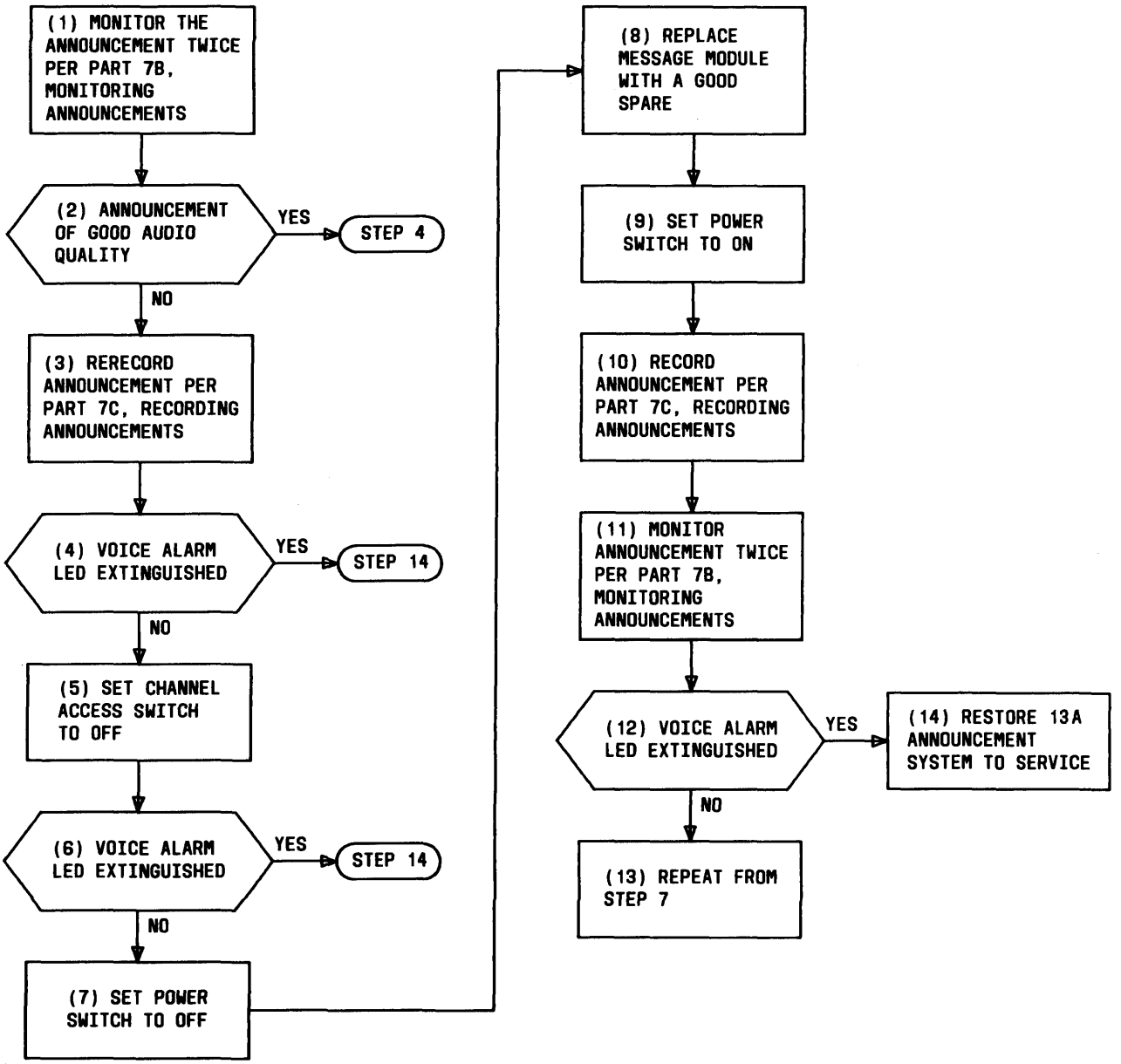
Flowchart 3—Field Down LED



Flowchart 4—Digital Voice Alarm LED—Message Modules Series 1 Through 14 Only (Sheet 1 of 2)



Flowchart 4—Digital Voice Alarm LED—Message Modules Series 1 Through 14 Only (Sheet 2 of 2)



Flowchart 5—Voice Alarm LED—Message Modules Series 15 or Higher