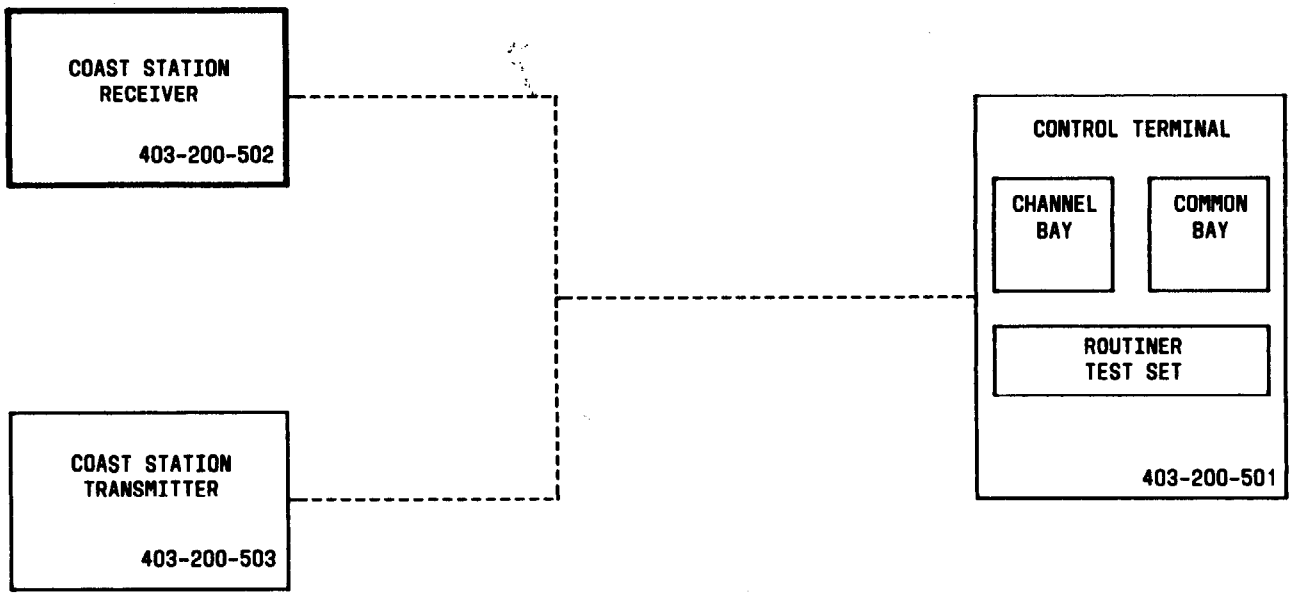
MM COASTAL HARBOR RADIO
TOP DOCUMENTATION
THREE VOLUMES



TPA 648578
BSP 403-200-502
DOC PLAN
40W X 26H

403-200-502
Issue 2, February 1979

Task Oriented Practice
(TOP)

MM COASTAL HARBOR RADIO SYSTEM

COAST STATION RECEIVERS

NOTE

Before using TOP for the first time, complete the TOP-USER Plant Training Course—PTC No. 278.

A short version of PTC No. 278 is in the back of this volume.

NOTICE
Not for use or disclosure outside the
Bell System except under written agreement

Printed in U.S.A.

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
CHECKLIST		DLP-500		DLP-535							
RTL-001		DLP-501		DLP-536							
RTP-002		DLP-502		DLP-537							
RTP-003		DLP-503		DLP-538							
RTP-004		DLP-504		DLP-539							
ATL-030		DLP-505		IXL-890							
ATP-031		DLP-506									
COL-050		DLP-507									
TIL-095		DLP-508									
TAP-100		DLP-509									
TAP-101		DLP-510									
TAP-102		DLP-511									
TAP-103		DLP-512									
TAP-104		DLP-513									
TAP-105		DLP-514									
TAP-106		DLP-515									
TAP-107		DLP-516									
TAP-108		DLP-517									
TAP-109		DLP-518									
TAP-110		DLP-519									
TAP-111		DLP-520									
TAP-112		DLP-521									
TAP-113		DLP-522									
TAP-114		DLP-523									
TAD-115		DLP-524									
TAP-116		DLP-525									
TAD-117		DLP-526									
TAP-118		DLP-527									
TAD-119		DLP-528									
TAP-120		DLP-529									
TAP-121		DLP-530									
TAP-122		DLP-531									
TAP-123		DLP-532									
TAP-124		DLP-533									
TAD-125		DLP-534									

● REVISED OR ADDED ITEM □ CANCELED ITEM

Issue 2 | FEB 1979

403-200-502 | CKL

CHECKLIST

PAGE 1 of 1 | 000

JOB NO.	ROUTINE TASKS	CLASS.	FREQ	PROCEDURE NUMBER
	MEASURE RECEIVER AFC, S/N THRESHOLD, CODAN, AND RF SIGNALING LEVEL	MW	3M	RTP-002
	SET AGC REFERENCE LEVEL	MW	3M	DLP-500
	MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL	MW	3M	DLP-502
	TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING	MW	1M	DLP-504
	MEASURE RECEIVER POWER SUPPLY VOLTAGES	MW	3M	DLP-513
	MEASURE RECEIVER OSCILLATOR FREQUENCIES	MW	3M	DLP-514
	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	MW	3M	DLP-516
	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES	MW	3M	DLP-517
	MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE	MW	3M	DLP-518
	MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL	MW	3M	DLP-519
	MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	MW	3M	DLP-520
	MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL	MW	3M	DLP-521
	TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING	MW	1M	RTP-003
	TEST RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING	MW	3M	RTP-004
	SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS	MW	3M	DLP-525

ROUTINE TASK LIST — COAST STATION RECEIVERS

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)	DLP-515
2	SET S/N THRESHOLD LEVEL	DLP-501
3	TEST RECEIVER CODAN	DLP-505
4	TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING	DLP-530

MEASURE RECEIVER AFC, S/N THRESHOLD, CODAN, AND RF LEVEL SIGNALING

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING	DLP-506
2	TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING	DLP-507
3	TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING	DLP-508
4	TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING	DLP-509

TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE COMMANDS FROM CONTROL TERMINAL	DLP-510
2	TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL	DLP-511
3	TEST RECEIVER RESPONSE TO FREEZE COMMAND FROM CONTROL TERMINAL	DLP-512

TEST RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING

ACCEPTANCE TASKS	PROCEDURE NUMBER
ACCEPT RADIO RECEIVER	ATP-031

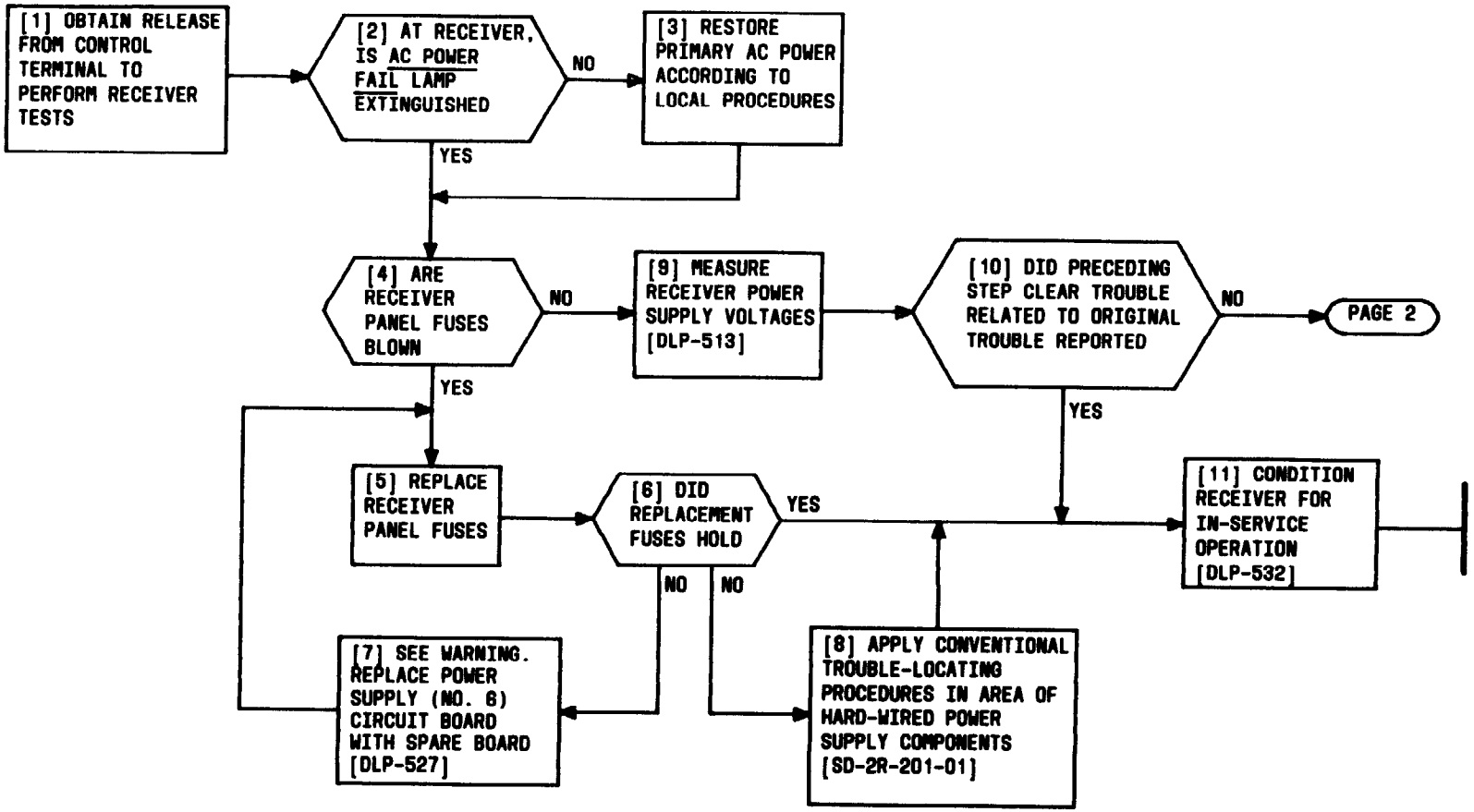
ACCEPTANCE TASK LIST – COAST STATION RECEIVERS

ITEM	SUBTASKS	PROCEDURE NUMBER
1	MEASURE RECEIVER POWER SUPPLY VOLTAGES	DLP-513
2	MEASURE RECEIVER OSCILLATOR FREQUENCIES	DLP-514
3	SET AGC REFERENCE LEVEL	DLP-500
4	SET S/N THRESHOLD LEVEL	DLP-501
5	MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL	DLP-502
6	TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)	DLP-515
7	MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL	DLP-503
8	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	DLP-516
9	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES	DLP-517
10	MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE	DLP-518
11	TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING	DLP-504
12	TEST RECEIVER CODAN	DLP-505
13	TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING	DLP-506
14	TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING	DLP-507
15	TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING	DLP-508
16	TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING	DLP-509
17	TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING	DLP-530
18	TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE COMMANDS FROM CONTROL TERMINAL	DLP-510
19	TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL	DLP-511
20	TEST RECEIVER RESPONSE TO FREEZE COMMAND FROM CONTROL TERMINAL	DLP-512

COMPANY ORDER TASKS	PROCEDURE NUMBER
NONE REQUIRED	

CIRCUIT ORDER LIST – COAST STATION RECEIVERS

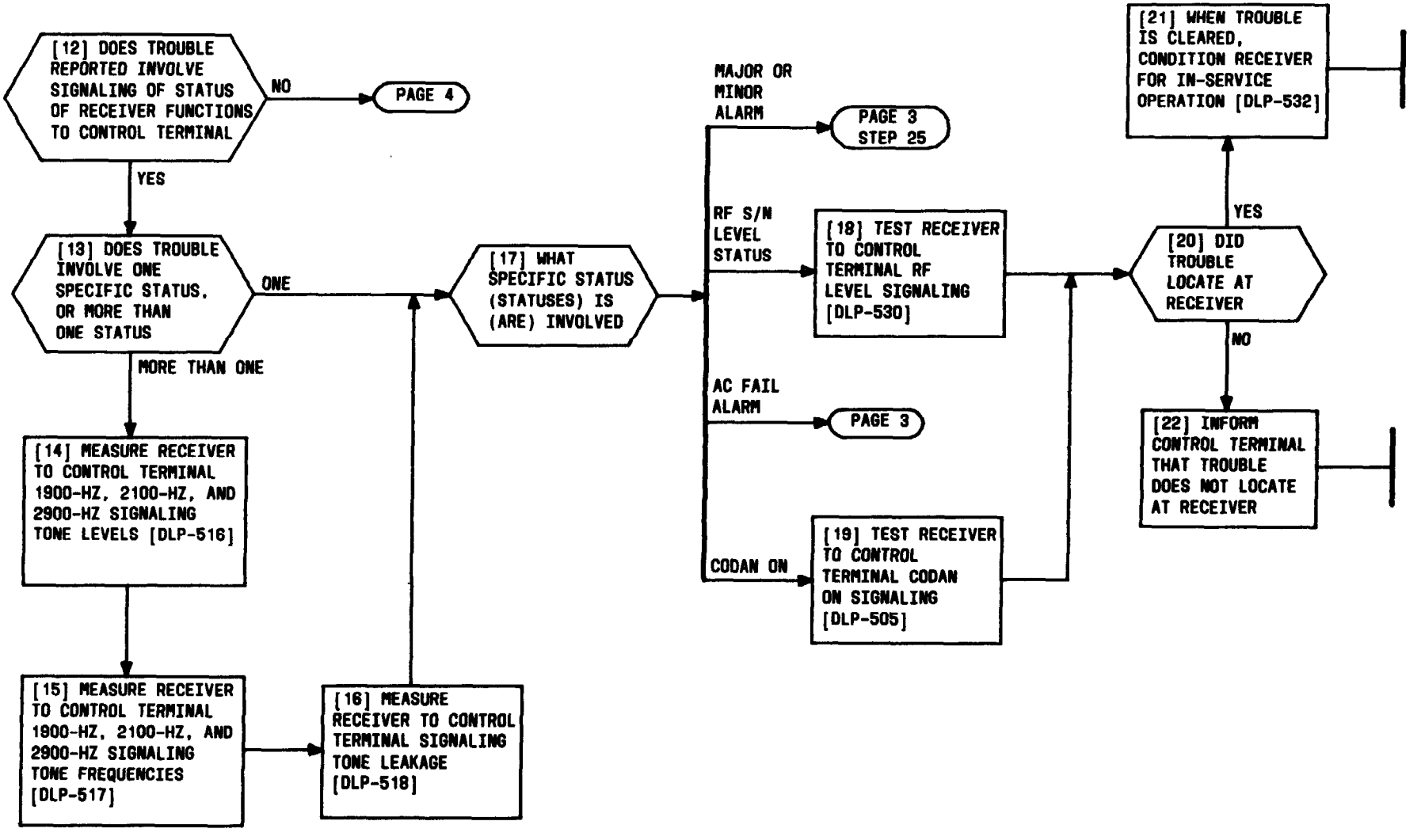
TROUBLE INDICATED	MAY ALSO BE REPORTED AS	PROCEDURE NUMBER
MAINTENANCE PHILOSOPHY		TAD-102
TROUBLE REPORTS LOCATE RECEIVER FAULT FROM TROUBLE REPORT		TAD-100



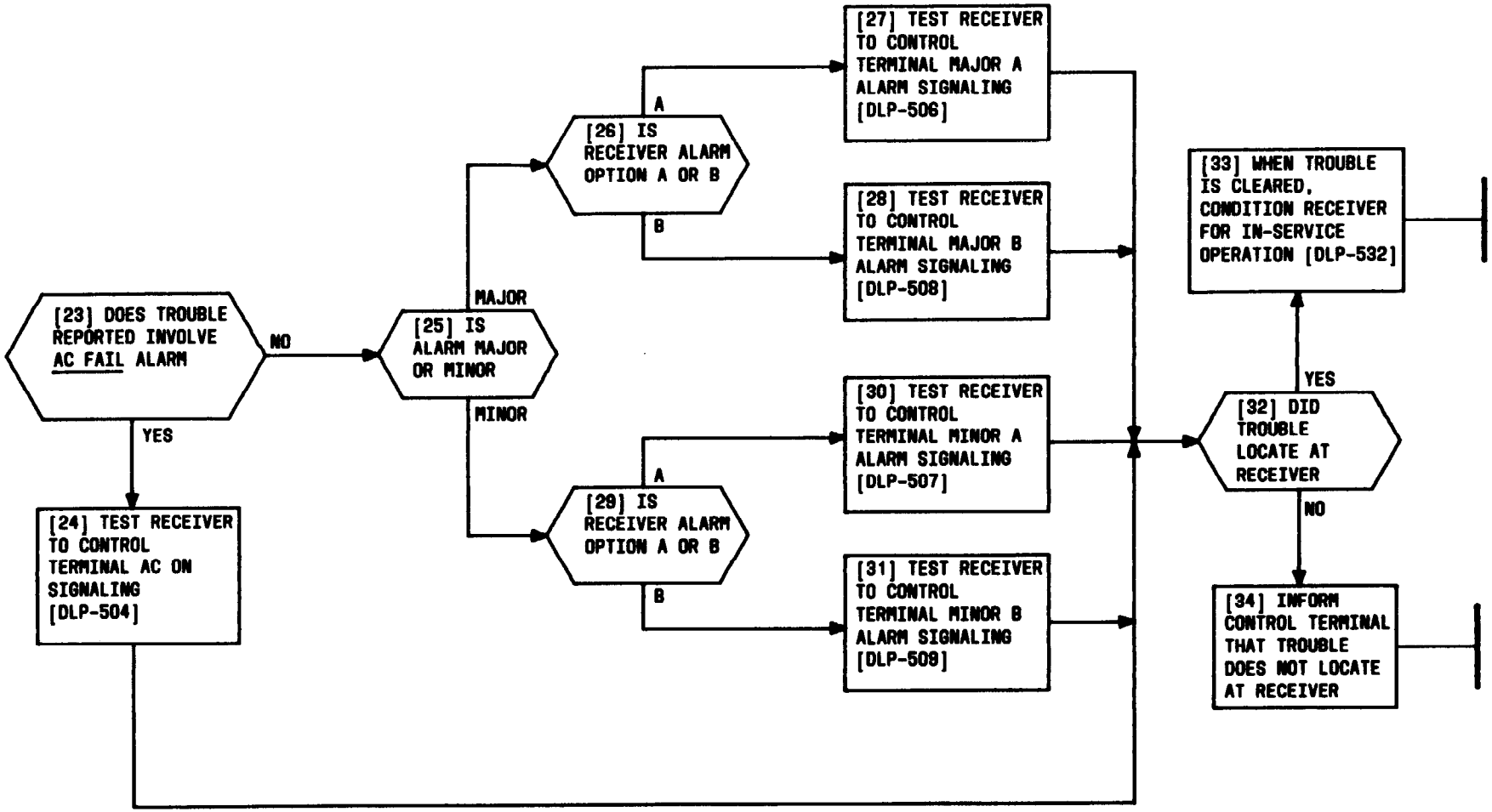
WARNING

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

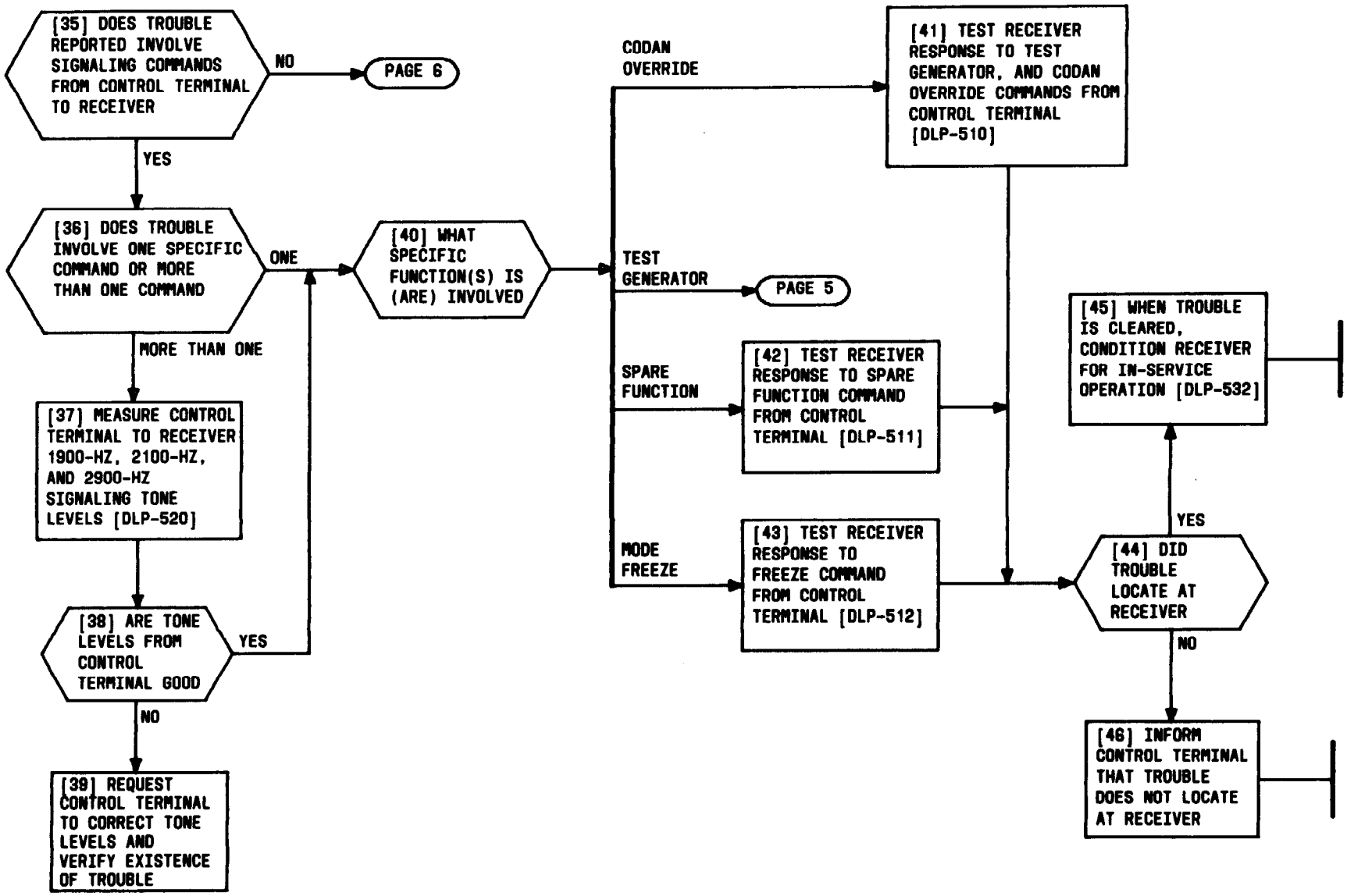
LOCATE RECEIVER FAULT FROM TROUBLE REPORT



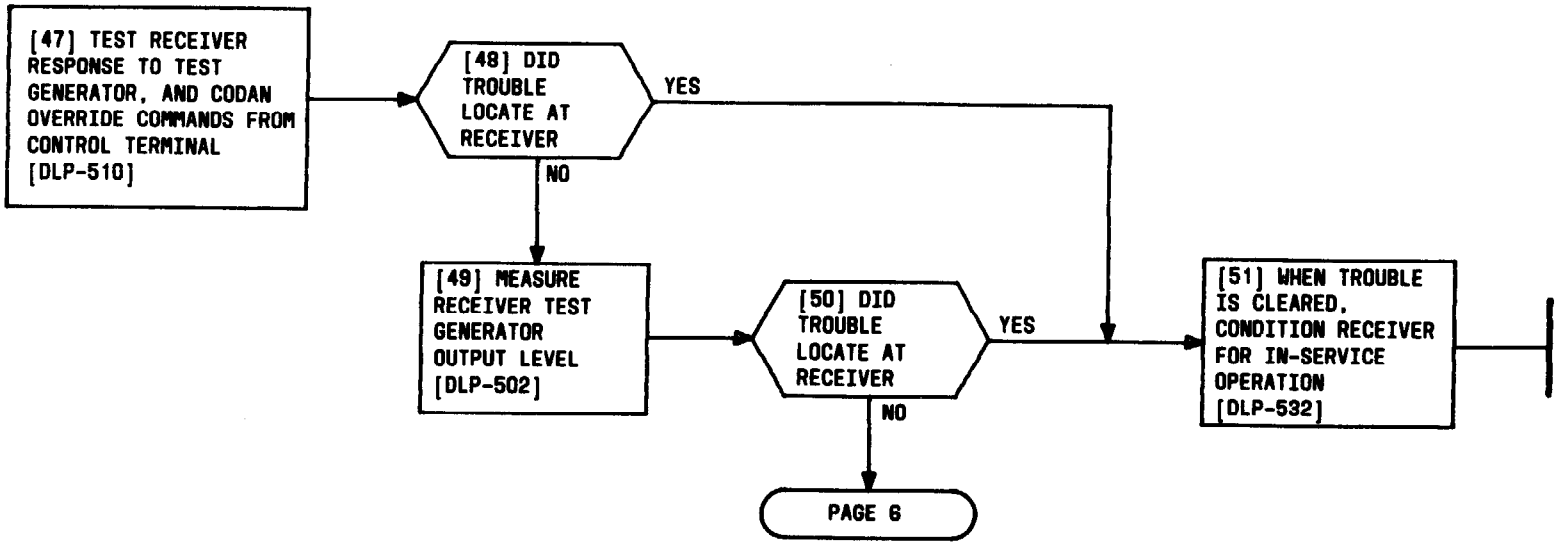
LOCATE RECEIVER FAULT FROM TROUBLE REPORT



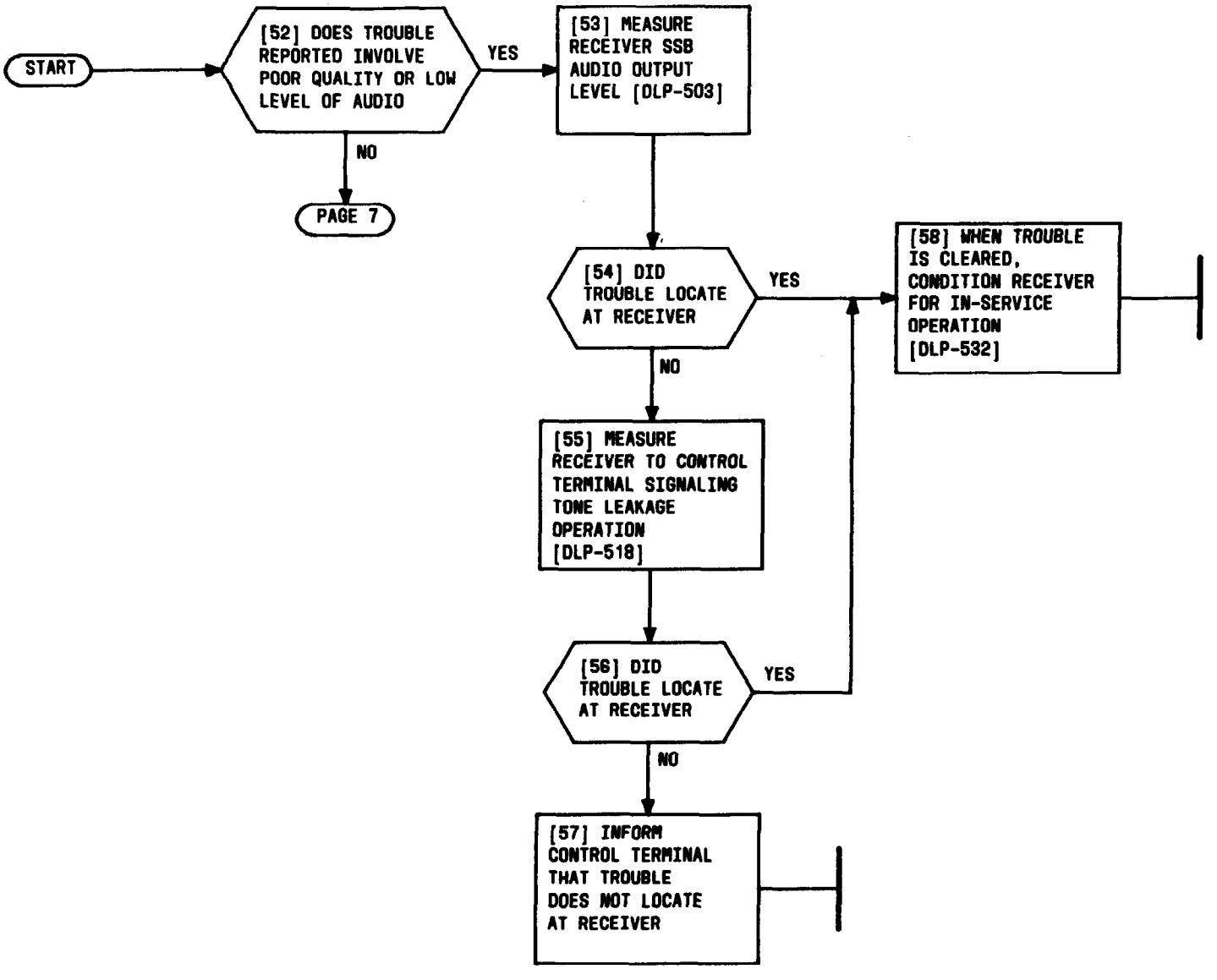
LOCATE RECEIVER FAULT FROM TROUBLE REPORT



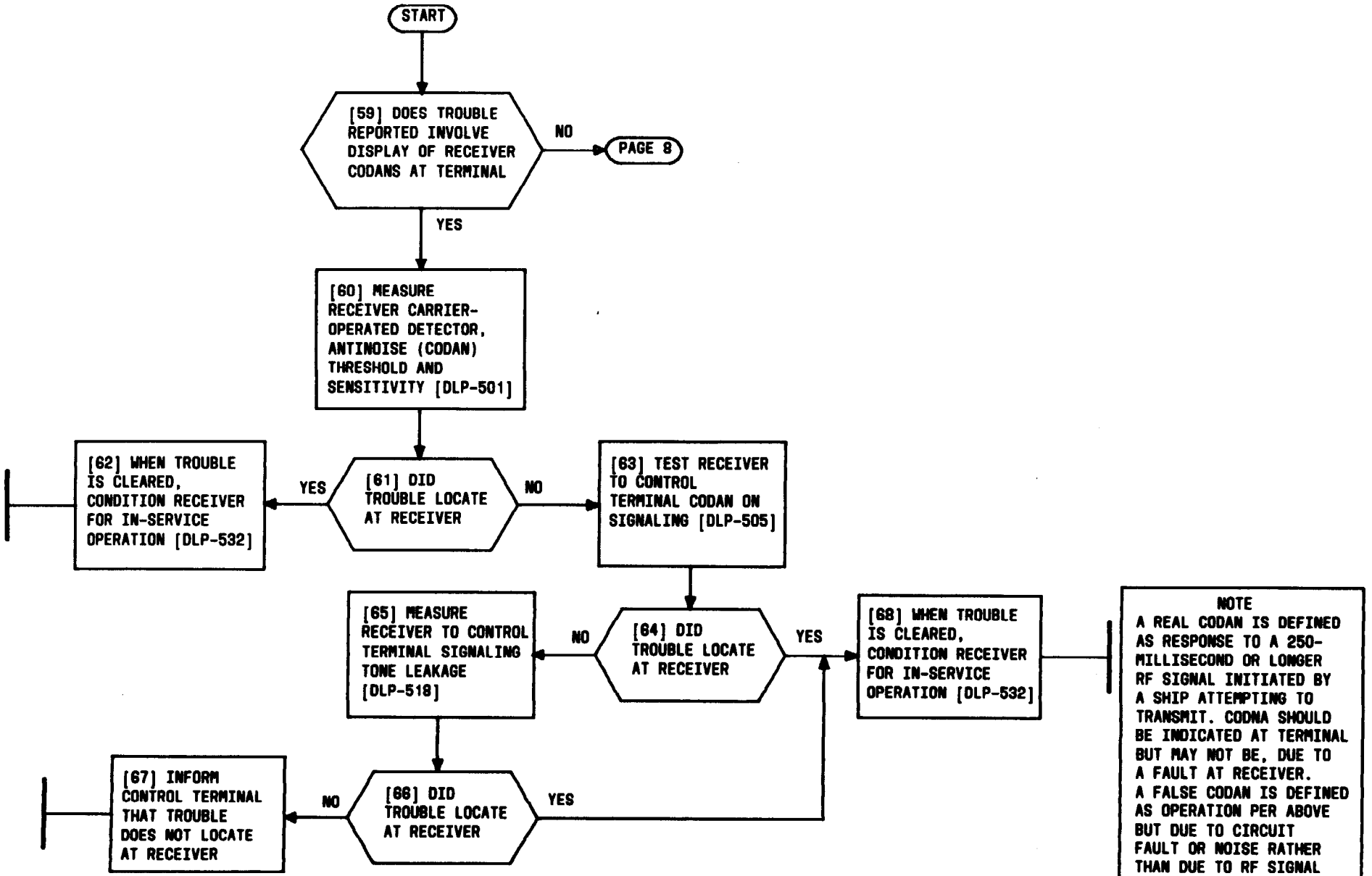
LOCATE RECEIVER FAULT FROM TROUBLE REPORT



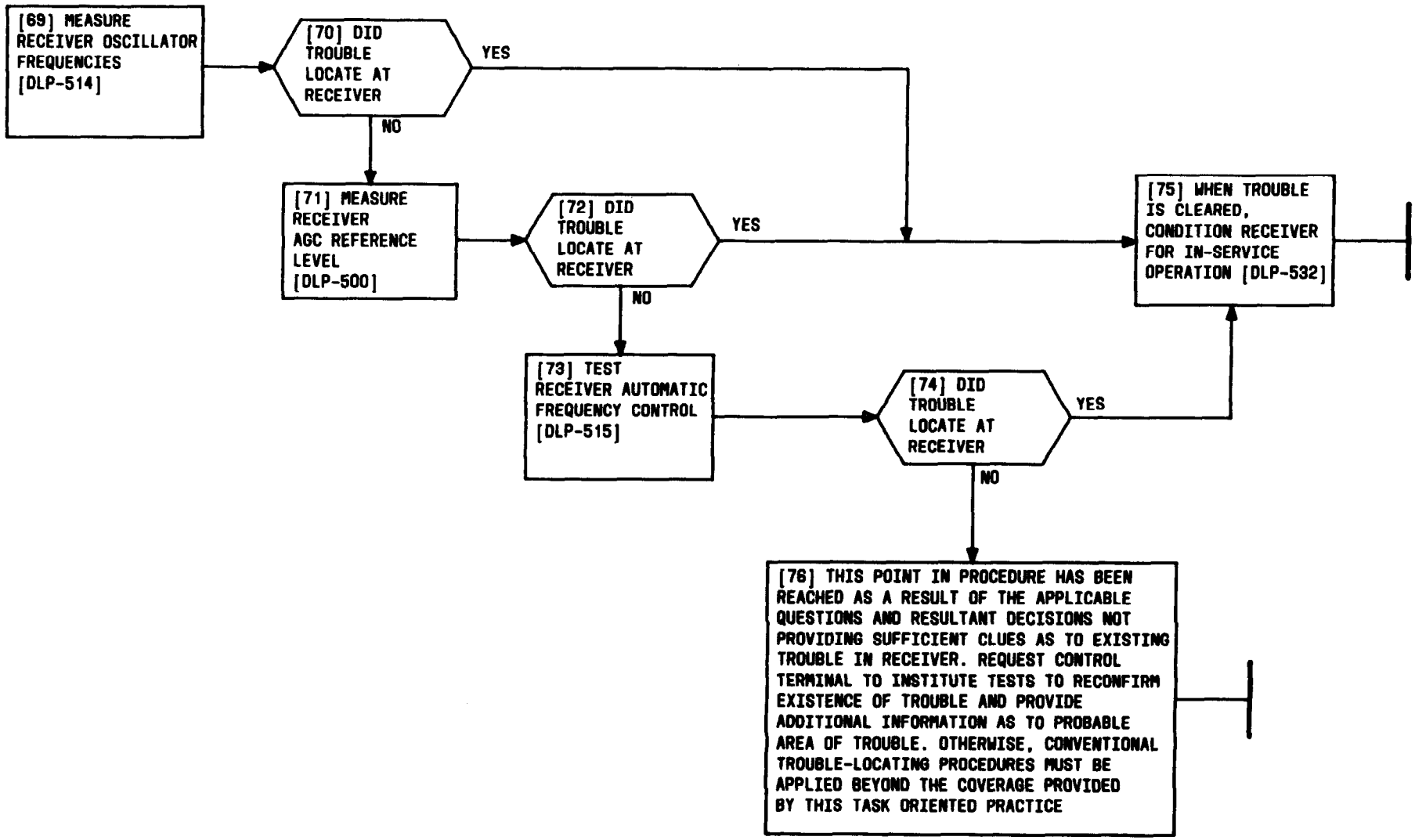
LOCATE RECEIVER FAULT FROM TROUBLE REPORT



LOCATE RECEIVER FAULT FROM TROUBLE REPORT



LOCATE RECEIVER FAULT FROM TROUBLE REPORT



LOCATE RECEIVER FAULT FROM TROUBLE REPORT

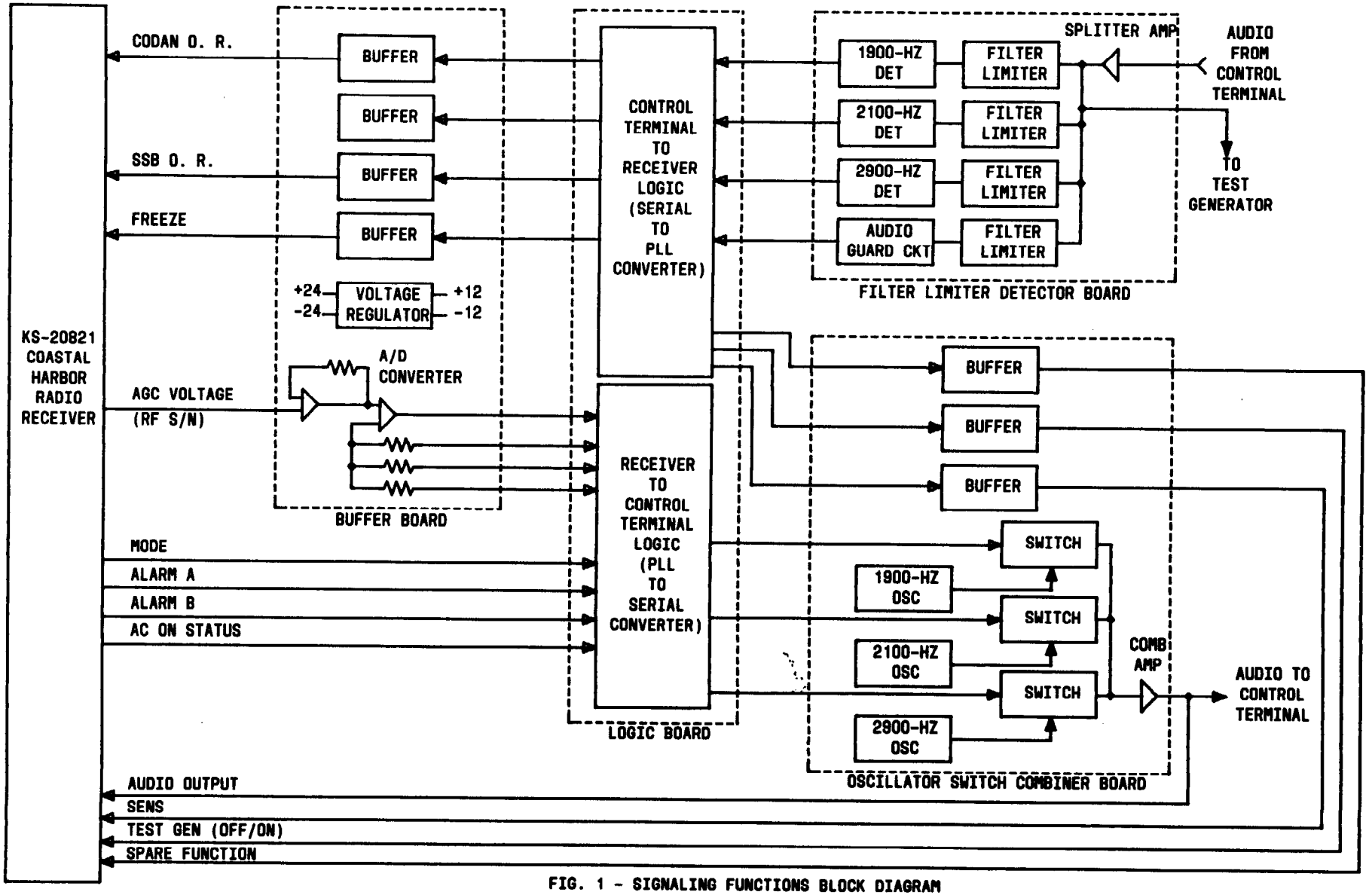


FIG. 1 - SIGNALING FUNCTIONS BLOCK DIAGRAM
(SD-2R-110-01)

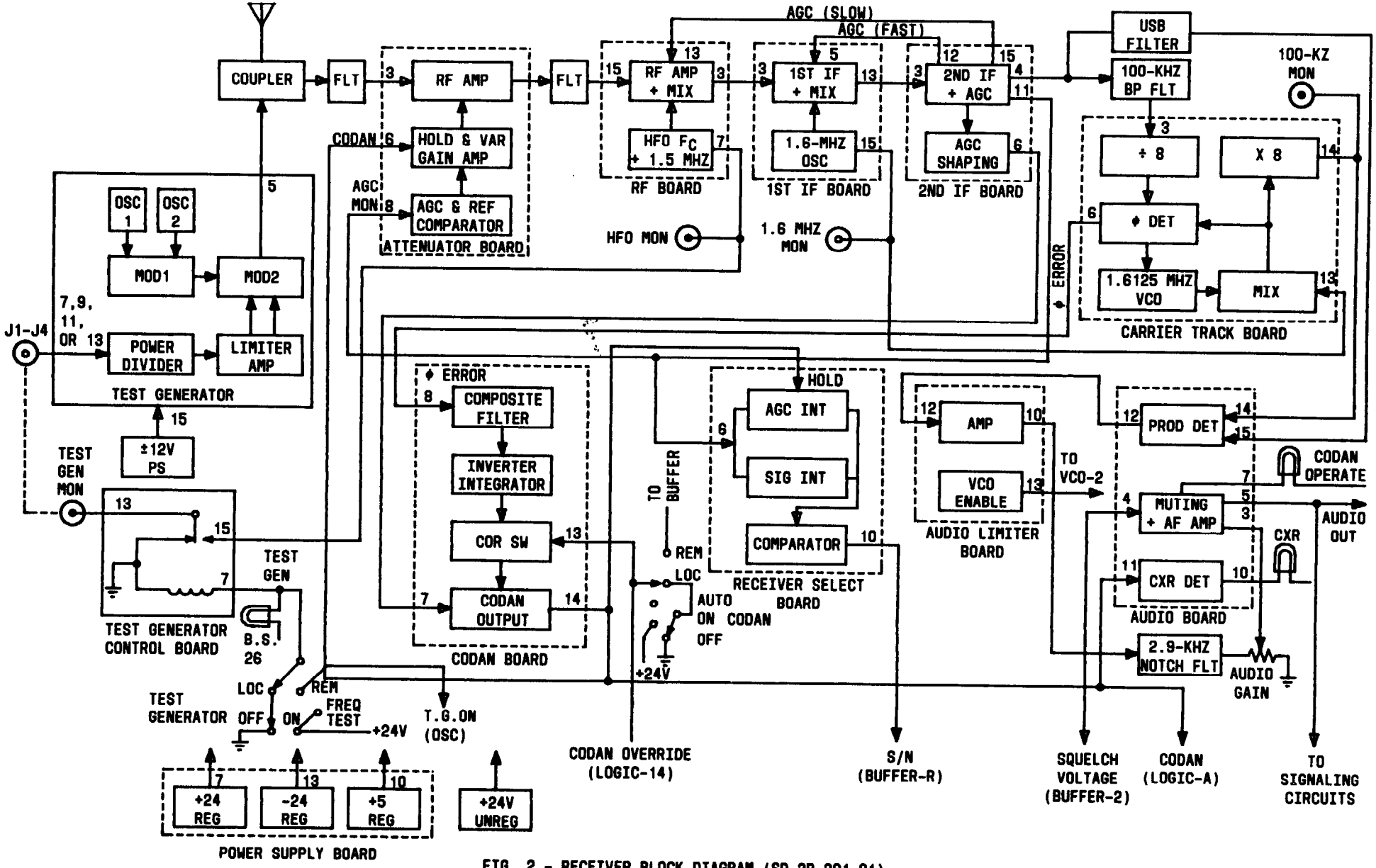


FIG. 2 - RECEIVER BLOCK DIAGRAM (SD-2R-201-01)

LOCATE RECEIVER FAULT FROM TROUBLE REPORT

CLEAR 2900-HZ CODAN ON TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), AND LOGIC (NO. 3) CIRCUIT BOARDS WITH SPARE BOARDS. RERUN TEST

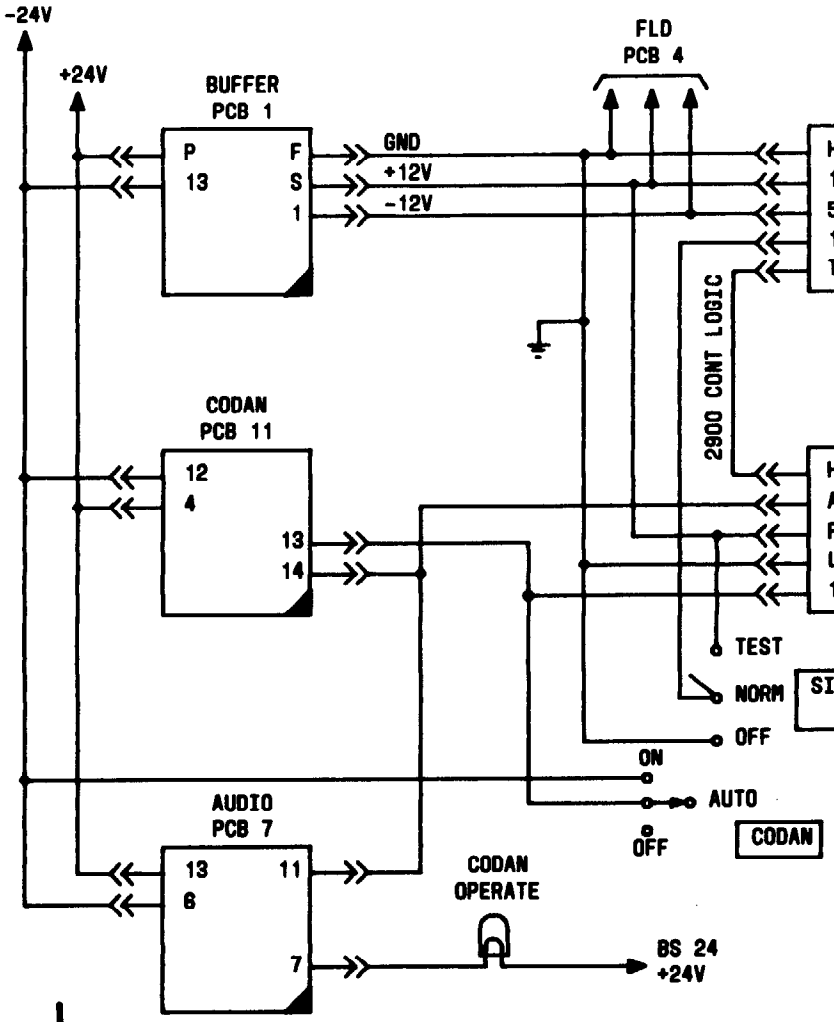
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE

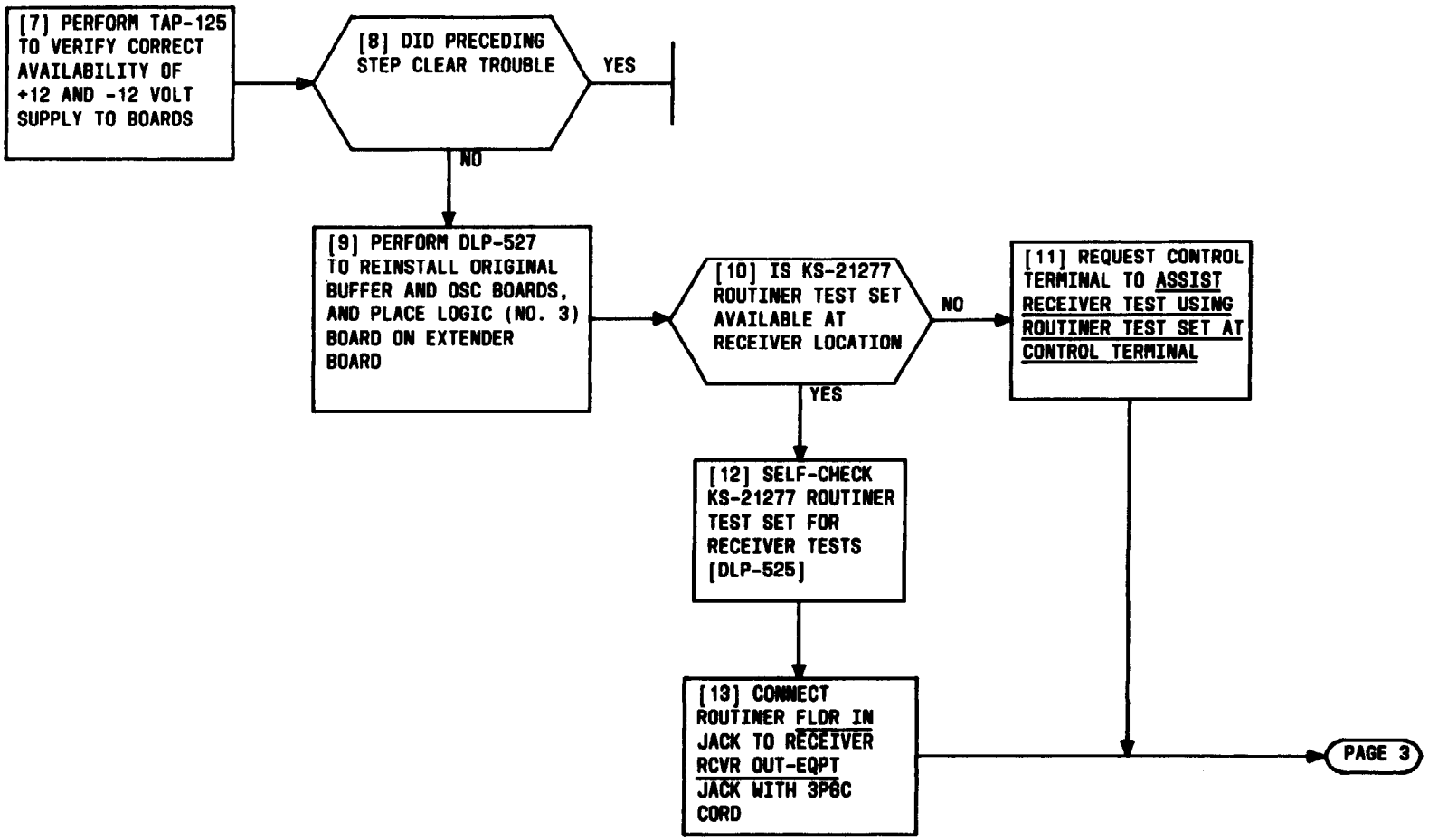


SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

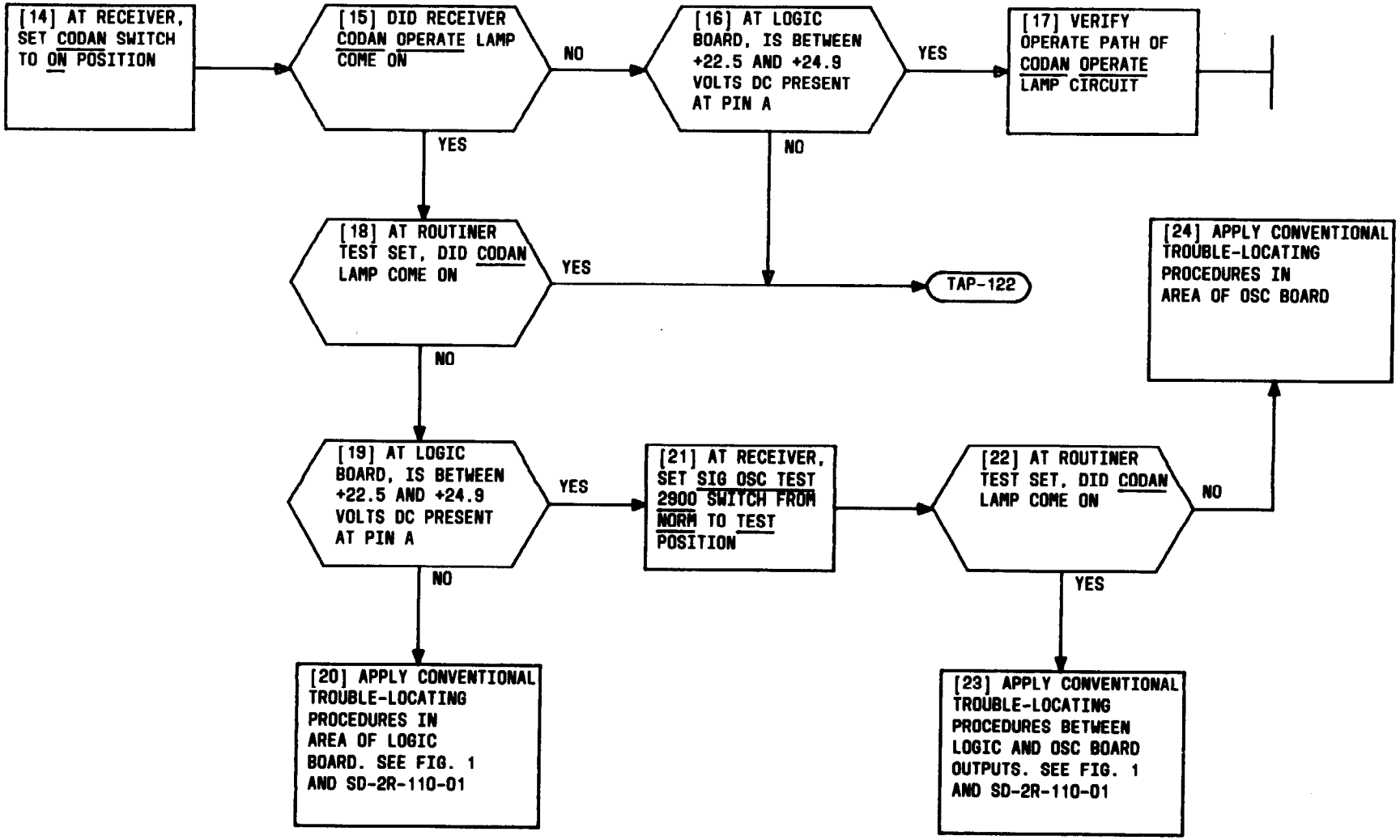
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS



CLEAR 2900-HZ CODAN ON TROUBLE



CLEAR 2900-HZ CODAN ON TROUBLE

PREVENTIVE AND CORRECTIVE MAINTENANCE

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY IS BASED UPON (A) PREVENTIVE MAINTENANCE AS REPRESENTED BY THE ROUTINE TASKS LISTED ON THE ROUTINE TASK LIST (RTL) AND (B) CORRECTIVE MAINTENANCE AS REPRESENTED BY THE TROUBLE ANALYSIS PROCEDURES (TAP) REFERENCED FROM ROUTINE TASKS AND THE TROUBLE INDICATOR LIST (TIL). THE MAINTENANCE COVERAGE, AS CONTAINED IN THE THREE TOP VOLUMES, IS STRUCTURED AND DESIGNED TO VERIFY OVERALL SYSTEM PERFORMANCE AND TO ISOLATE AND IDENTIFY TROUBLES IN THE CONTROL TERMINAL, SWITCHBOARD, SWITCHBOARD INTERFACE, RADIO RECEIVER, RADIO TRANSMITTER, AND TRANSMISSION FACILITY. A GENERAL DESCRIPTION OF THE STRUCTURE AND PHILOSOPHY OF USE FOR COASTAL HARBOR PREVENTIVE AND CORRECTIVE MAINTENANCE IS GIVEN BELOW

PREVENTIVE MAINTENANCE:

AS SHOWN IN FIG. 1 ROUTINE TASKS MAKE UP A PREVENTIVE MAINTENANCE PROGRAM DESIGNED TO VERIFY THE FUNCTIONAL CONDITION OF MAJOR CIRCUIT OPERATIONS NECESSARY TO PROPER PERFORMANCE OF SYSTEM DESIGN CAPABILITIES. CORRECT PERFORMANCE OF THE ROUTINE TASKS ON A REGULARLY SCHEDULED INTERVAL PROVIDES A HIGH DEGREE OF CONFIDENCE IN SYSTEM READINESS AND OPERATION. THE CONTROL TERMINAL IS THE CENTER OF MAINTENANCE ACTIVITY. CONTROL TERMINAL ROUTINE TASKS (VOLUME 1) ARE DESIGNED TO (A) TEST CONTROL TERMINAL FUNCTIONS ONLY, (B) TEST TERMINAL-TO-RECEIVER FUNCTIONS, AND (C) TEST TERMINAL-TO-TRANSMITTER FUNCTIONS. ROUTINE TASKS ON THE RECEIVER (VOLUME 2) AND TRANSMITTER (VOLUME 3) ARE STRUCTURED TO (A) TEST RECEIVER/TRANSMITTER FUNCTIONS AT THE RECEIVER/TRANSMITTER SITE WITH AND WITHOUT ASSISTANCE FROM THE CONTROL TERMINAL AND (B) TEST RECEIVER/TRANSMITTER-TO-CONTROL TERMINAL FUNCTIONS WITH ASSISTANCE AT CONTROL TERMINAL. MANY OF THE ROUTINE TASKS IN EACH OF THE THREE VOLUMES USE THE ROUTINER TEST SET TO VERIFY FUNCTIONAL OPERATIONS. PROCEDURES ARE GIVEN FOR USING THE ROUTINER AT CONTROL TERMINAL OR RECEIVER/TRANSMITTER SITE.

ALL ROUTINE TASKS PERFORMED AT THE CONTROL TERMINAL ARE DESIGNED FOR THE PUBLIC CORRESPONDENCE CHANNELS UNLESS SPECIFICALLY REFERRED TO WITHIN THE ROUTINE TITLE AS SAFETY AND CALLING. ROUTINE TASKS PERFORMED ON THE RECEIVERS AND TRANSMITTERS ASSOCIATED WITH THE SAFETY AND CALLING CHANNEL MUST BE COORDINATED IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES. THE PERFORMANCE OF ALL ROUTINE TASKS FOR COASTAL HARBOR RADIO IS

BASED ON THE FOLLOWING:

1. PERMISSION HAS BEEN OBTAINED TO USE CHANNEL AND RUN TEST IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES
2. NO ALARM CONDITIONS EXIST
3. ALL SYSTEM OPERATING CONTROLS ARE IN THEIR NORMAL POSITIONS

CORRECTIVE MAINTENANCE: WHEN A TROUBLE REPORT IS RECEIVED OR AN ALARM IS ACTIVATED, CORRECTIVE MAINTENANCE PROCEDURES (VOLUME 1) PROVIDE DIRECTION TO DETERMINE WHETHER THE TROUBLE IS VALID AND IF SO, WHETHER THE TROUBLE LOCATES IN CONTROL TERMINAL, RECEIVER, OR TRANSMITTER. TROUBLE ANALYSIS PROCEDURES (TAP) KEYED TO TROUBLE REPORTS AND ALARM INDICATIONS, AS REFERENCED FROM THE TROUBLE INDICATOR LIST (TIL), CONTAIN CORRECTIVE MAINTENANCE PROCEDURES [FIG. 2] TO VERIFY AND LOCATE TROUBLES AND CORRECT FAULTS. CORRECTIVE MAINTENANCE FOR FAULTS WHICH ARE IDENTIFIED DURING ROUTINE TASKS AT THE CONTROL TERMINAL, RECEIVER, OR TRANSMITTER IS PROVIDED EITHER ON THE ROUTINE TASK OR ON THE APPROPRIATE TAP.

IN GENERAL, TROUBLES WILL FIRST BE IDENTIFIED BY CONTROL TERMINAL PERSONNEL FROM ALARM INDICATIONS OR TROUBLE REPORTS. THE FIRST CORRECTIVE MAINTENANCE THEREFORE WILL BE PERFORMED AT THE CONTROL TERMINAL TO ISOLATE AND CORRECT THE TROUBLE OR, IF REQUIRED, REFERENCE RECEIVER AND TRANSMITTER PERSONNEL INTO THE SUSPECTED FAULT AREA FOR USING CORRECTIVE MAINTENANCE PROCEDURES WITHIN THE RECEIVER OR TRANSMITTER VOLUME. ALL TROUBLE ANALYSIS PROCEDURES ARE BASED ON THE FOLLOWING:

1. PERMISSION HAS BEEN OBTAINED TO USE CHANNEL AND RUN TEST IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES
2. ONLY ONE TROUBLE EXISTS AT A TIME
3. ALL SYSTEM OPERATING CONTROLS ARE IN THEIR NORMAL POSITIONS

TROUBLE ANALYSIS PROCEDURES ARE DESIGNED TO GUIDE THE USER BY THE MOST DIRECT MEANS AVAILABLE TO LOCATING AND CORRECTING FAULTS. TROUBLE CLEARING IS APPROACHED IN THE FOLLOWING MANNER:

FIRST: BY OBSERVING AVAILABLE CIRCUIT INDICATORS SUCH AS LEDS, METERS, AND ALARM LAMPS

SECOND: BY ESTABLISHING OR SIMULATING OPERATING CONDITIONS NECESSARY FOR CIRCUIT OBSERVATION AND MEASUREMENT

THIRD: BY USING CONVENTIONAL TROUBLE-CLEARING PROCEDURES SUCH AS CHECKING THE DC OPERATE PATH FOR CIRCUIT FUNCTIONS AND WIRING

ADMONISHMENT BLOCKS

COASTAL HARBOR TOP PROCEDURES CONTAIN, AS REQUIRED, THREE TYPES OF ADMONISHMENT BLOCKS, OR FLAGS, TO CALL ATTENTION TO PERSONAL DANGER (DANGER BLOCKS), POSSIBLE SERVICE INTERRUPTION (CAUTION BLOCKS), AND POSSIBLE EQUIPMENT DAMAGE (WARNING BLOCKS). THE USER IS REMINDED TO READ THE ADMONISHMENT BY HAVING ATTENTION CALLED TO THE ADMONISHMENT AT THE BEGINNING OF A STEP WHICH INVOLVES ANY OF THE ABOVE ADMONISHMENT CONDITIONS AS SHOWN IN THE EXAMPLES BELOW:

→ [48] SEE WARNING. REPLACE CIRCUIT BOARDS 121 AND 120, ONE AT A TIME, TO ISOLATE TROUBLE [TAD-120]

[1] SEE WARNING. LOCATE CIRCUIT BOARD OF INTEREST. SEE NOTE 1

AN EXAMPLE OF EACH TYPE OF ADMONISHMENT BLOCK FOUND IN THIS VOLUME IS PROVIDED BELOW FOR REVIEW

PERSONAL DANGER

DANGER
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS

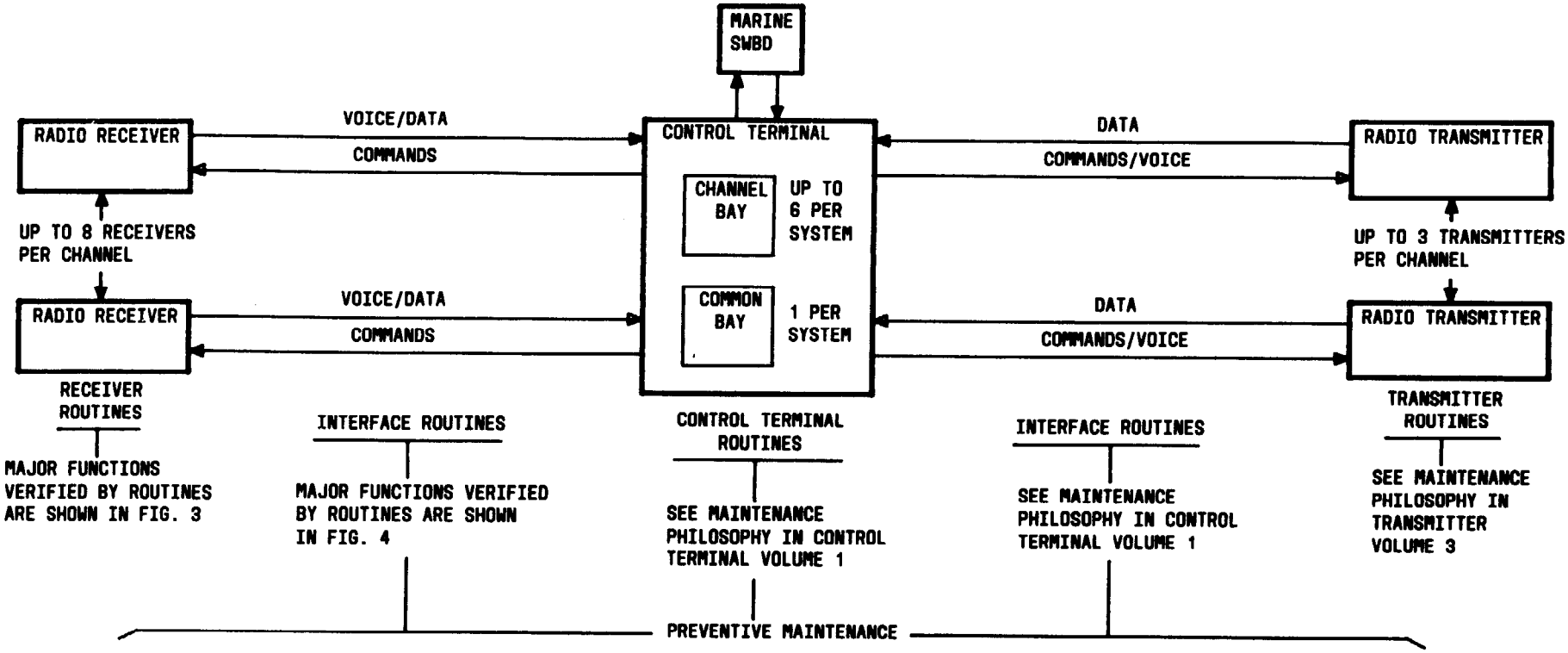
POSSIBLE EQUIPMENT DAMAGE

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

WARNING
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-548 TO PREVENT DAMAGE TO EQUIPMENT

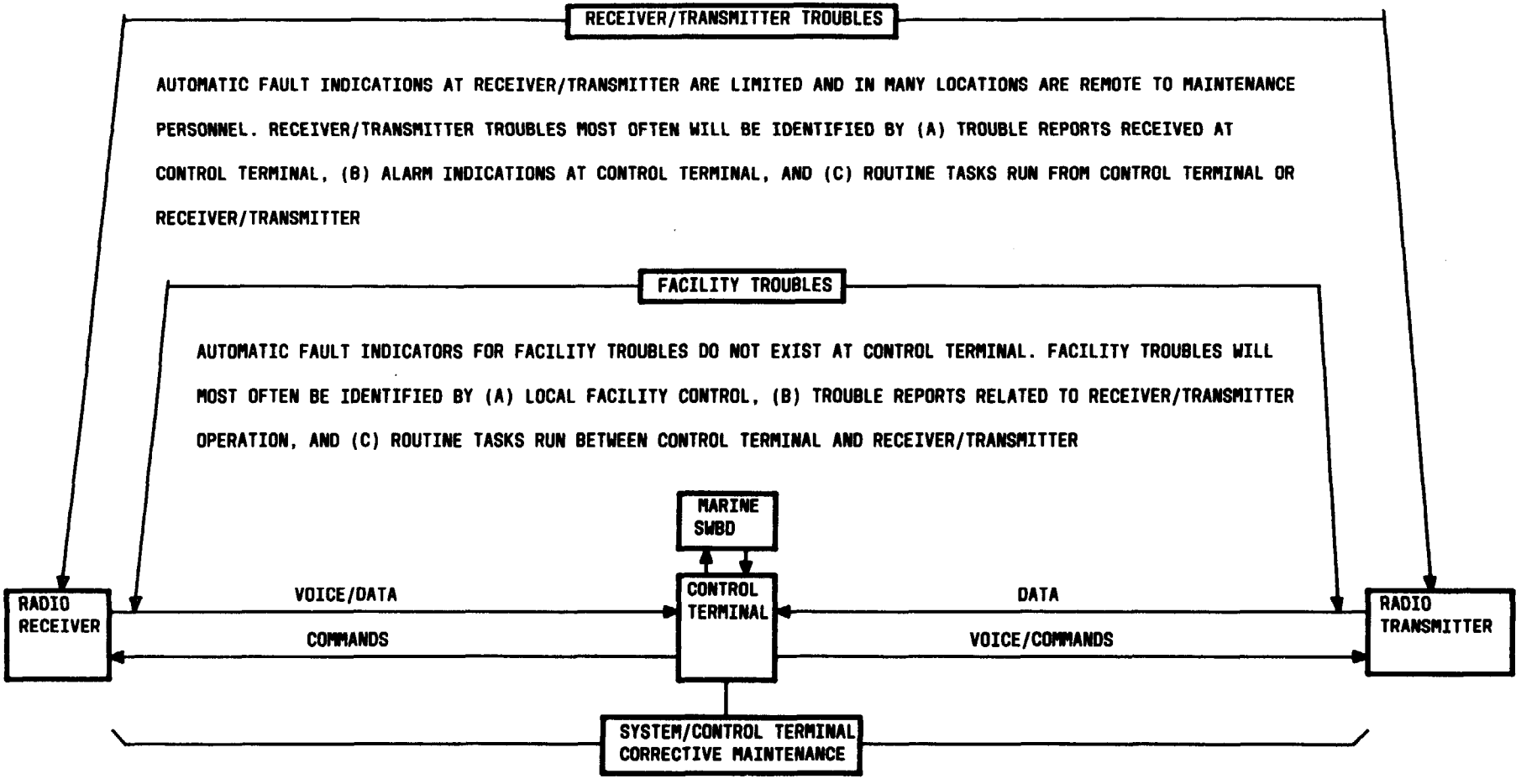
WARNINGS
1. WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO CIRCUIT BEING MEASURED, AS DAMAGE TO METER WILL RESULT
2. WHEN MAKING EITHER CURRENT OR VOLTAGE MEASUREMENTS, SET FUNCTION SWITCH TO PROPER RANGE BEFORE MAKING CONTACT WITH TEST PROBES TO CIRCUIT BEING MEASURED. IF THERE IS ANY DOUBT AS TO APPROXIMATE VALUE OF VOLTAGE OR CURRENT TO BE MEASURED, SET FUNCTION SWITCH TO HIGHEST VALUE FOR INITIAL TEST AND THEN DECREASE STEP-BY-STEP UNTIL PROPER RANGE IS REACHED

WARNINGS
1. WHEN REMOVING CIRCUIT BOARDS, MAKE SURE THAT EDGES OF BOARD ARE AIMED SO THEY COME THROUGH THE SWITCH ON THE SIDE OF BOARD CARRIER
2. SOME OF THE CIRCUIT BOARDS COULD BE DAMAGED BY STATIC DISCHARGE IF HANDLED IMPROPERLY. CARE SHOULD BE TAKEN NOT TO TOUCH ANY BARE SURFACE SUCH AS THE CONTACT POINTS. IF A CIRCUIT BOARD IS TO BE STORED, IT SHOULD BE PLACED IN A CONDUCTIVE MEDIUM SUCH AS ALUMINUM FOIL



ROUTINE TASKS ARE STRUCTURED TO BE PERFORMED PERIODICALLY ON A CHANNEL BASIS AND ARE DESIGNED TO (A) VERIFY CIRCUIT OPERATIONS UNIQUE TO THE CONTROL TERMINAL WITHOUT ASSISTANCE FROM RECEIVER OR TRANSMITTER PERSONNEL, (B) VERIFY CIRCUIT OPERATIONS WITHIN THE CONTROL TERMINAL ASSOCIATED WITH CIRCUIT OPERATIONS WITHIN THE RECEIVER WITH AND WITHOUT ASSISTANCE FROM RECEIVER PERSONNEL, AND (C) VERIFY CIRCUIT OPERATIONS WITHIN THE CONTROL TERMINAL ASSOCIATED WITH CIRCUIT OPERATIONS WITHIN THE TRANSMITTER WITH AND WITHOUT ASSISTANCE FROM TRANSMITTER PERSONNEL

FIG. 1 - PREVENTIVE MAINTENANCE



CORRECTIVE MAINTENANCE IS ACCOMPLISHED THROUGH TROUBLE ANALYSIS PROCEDURES WHICH MAKE USE OF MANUAL AND ROUTINER TEST SET PROCEDURES TO ISOLATE TROUBLES TO CONTROL TERMINAL, RADIO RECEIVER, OR TRANSMITTER AND LOCATE FAULTS DOWN TO THE REPLACEABLE CARD LEVEL

FIG. 2 - CORRECTIVE MAINTENANCE

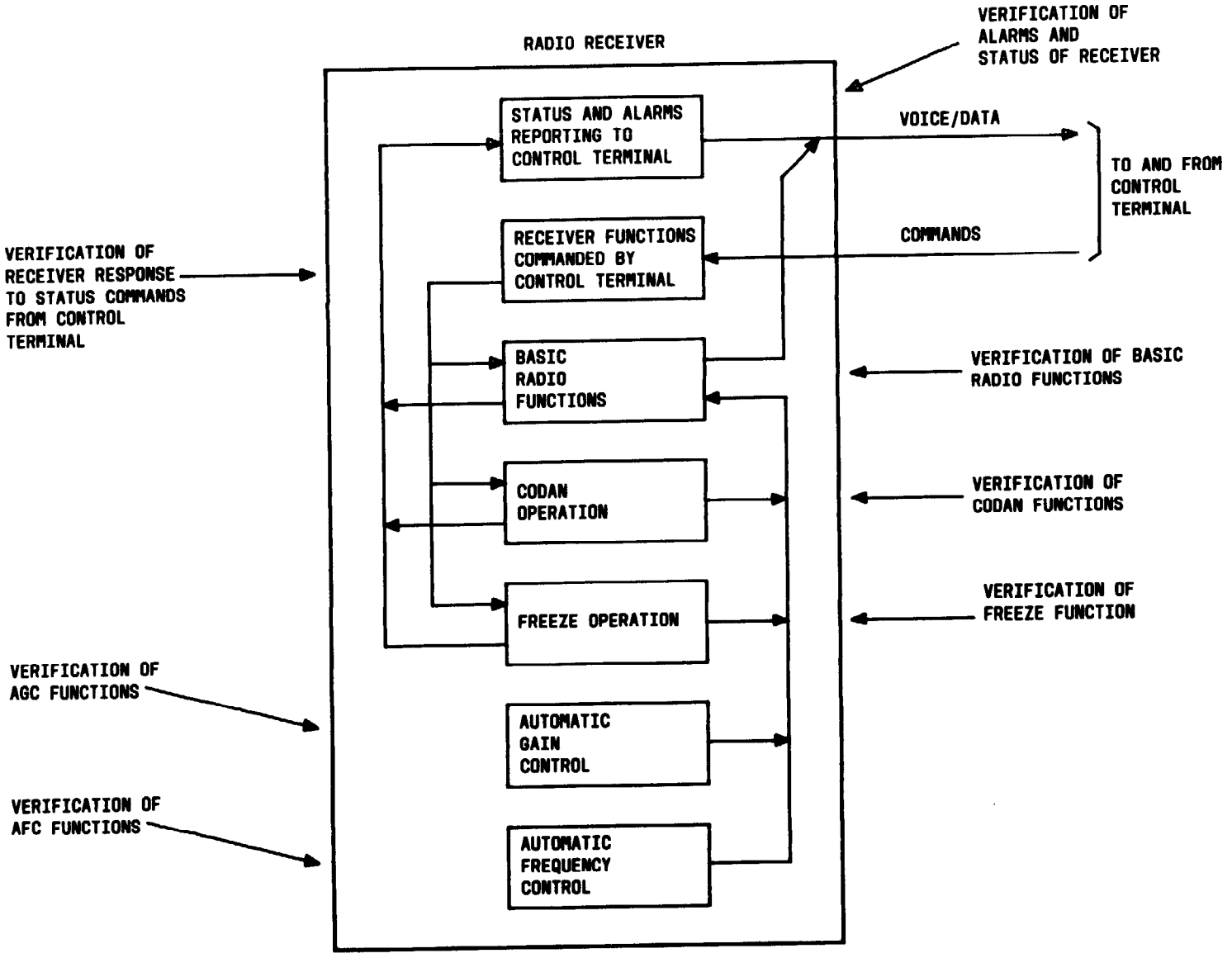


FIG. 3 - MAJOR FUNCTIONS VERIFIED BY RECEIVER ROUTINES

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY

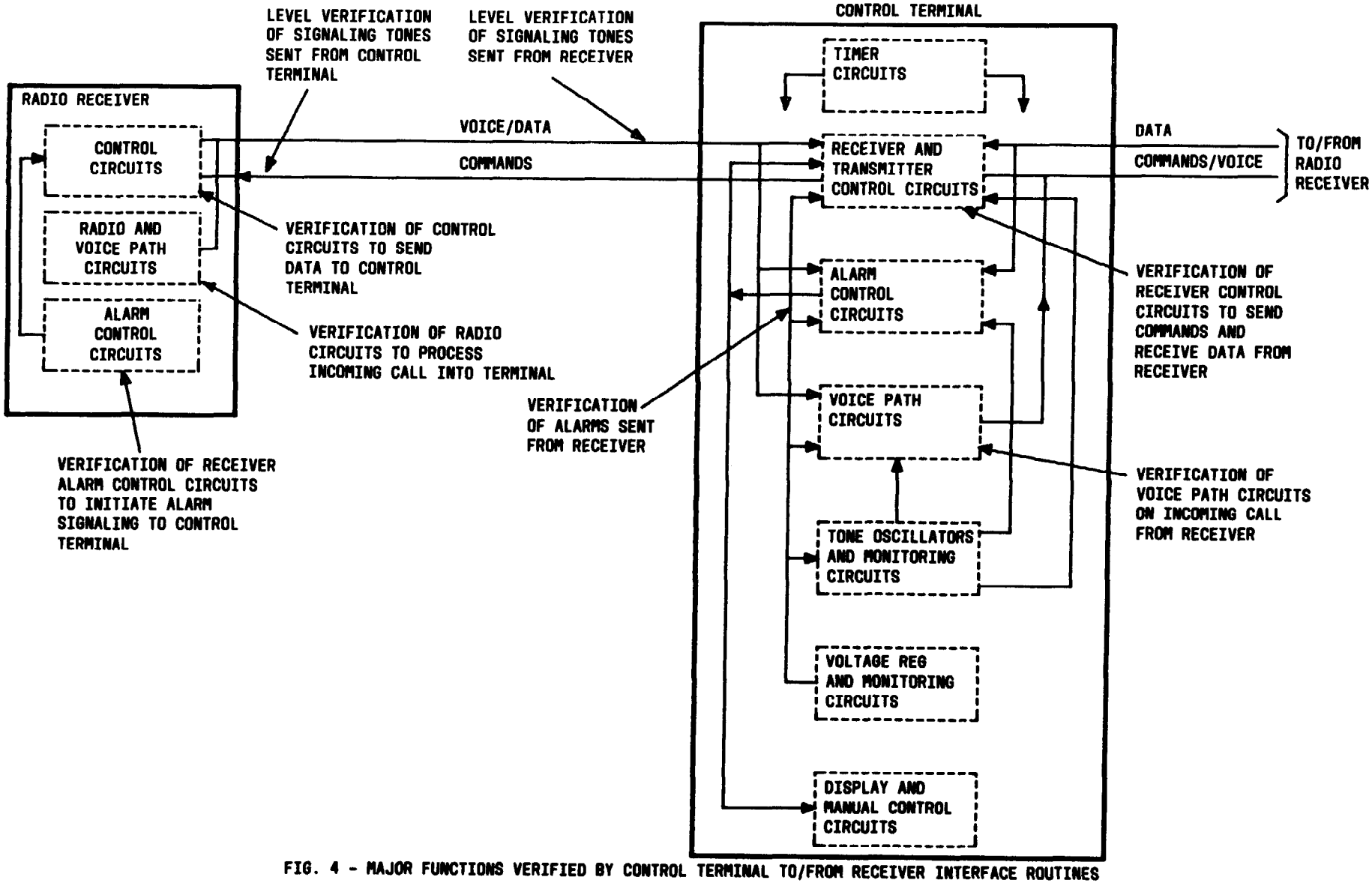


FIG. 4 - MAJOR FUNCTIONS VERIFIED BY CONTROL TERMINAL TO/FROM RECEIVER INTERFACE ROUTINES

CLEAR AC ON TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), AND LOGIC (NO. 3) CIRCUIT BOARDS WITH SPARE BOARDS

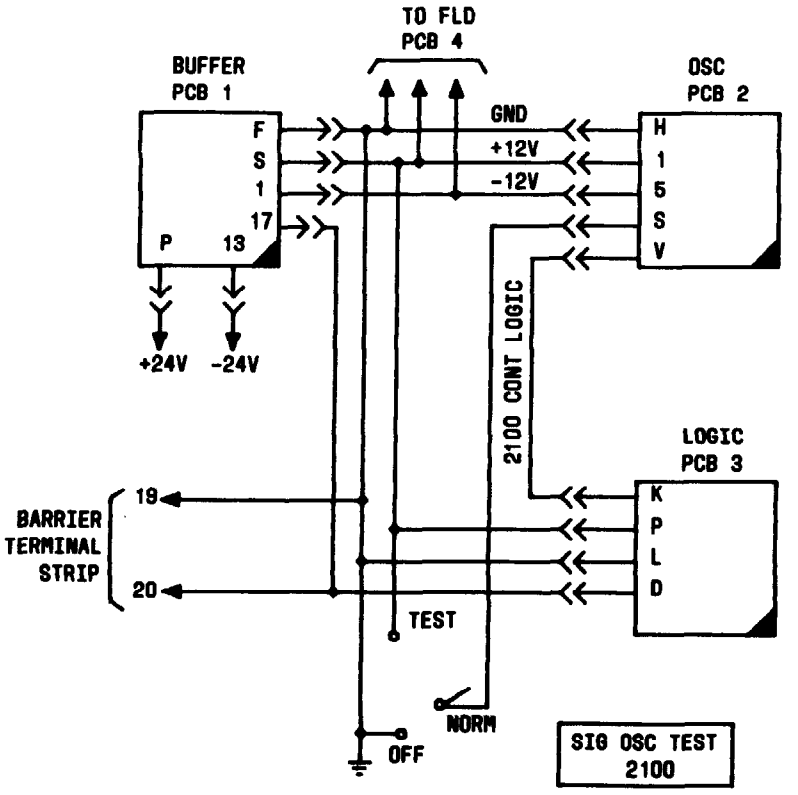
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE

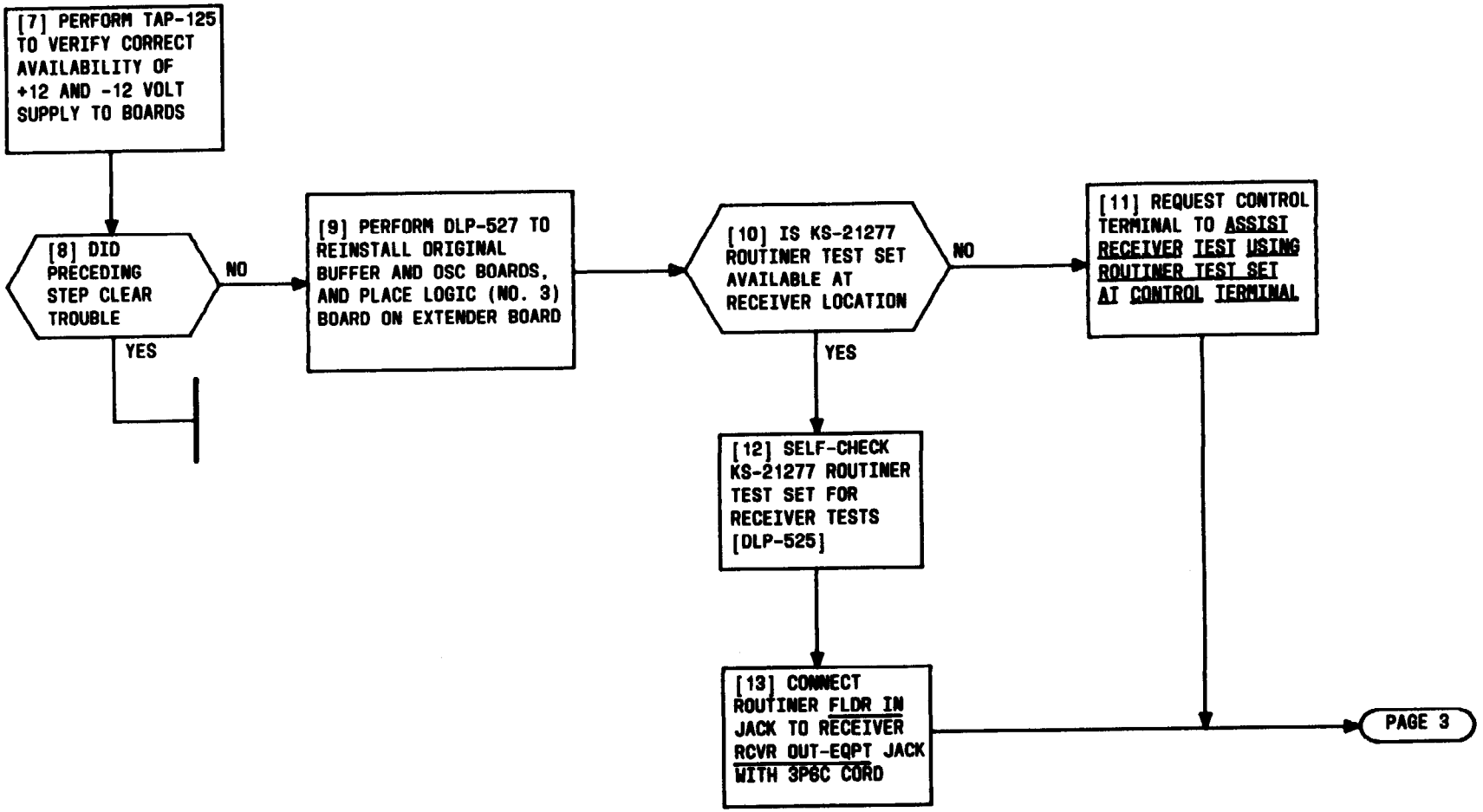


SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

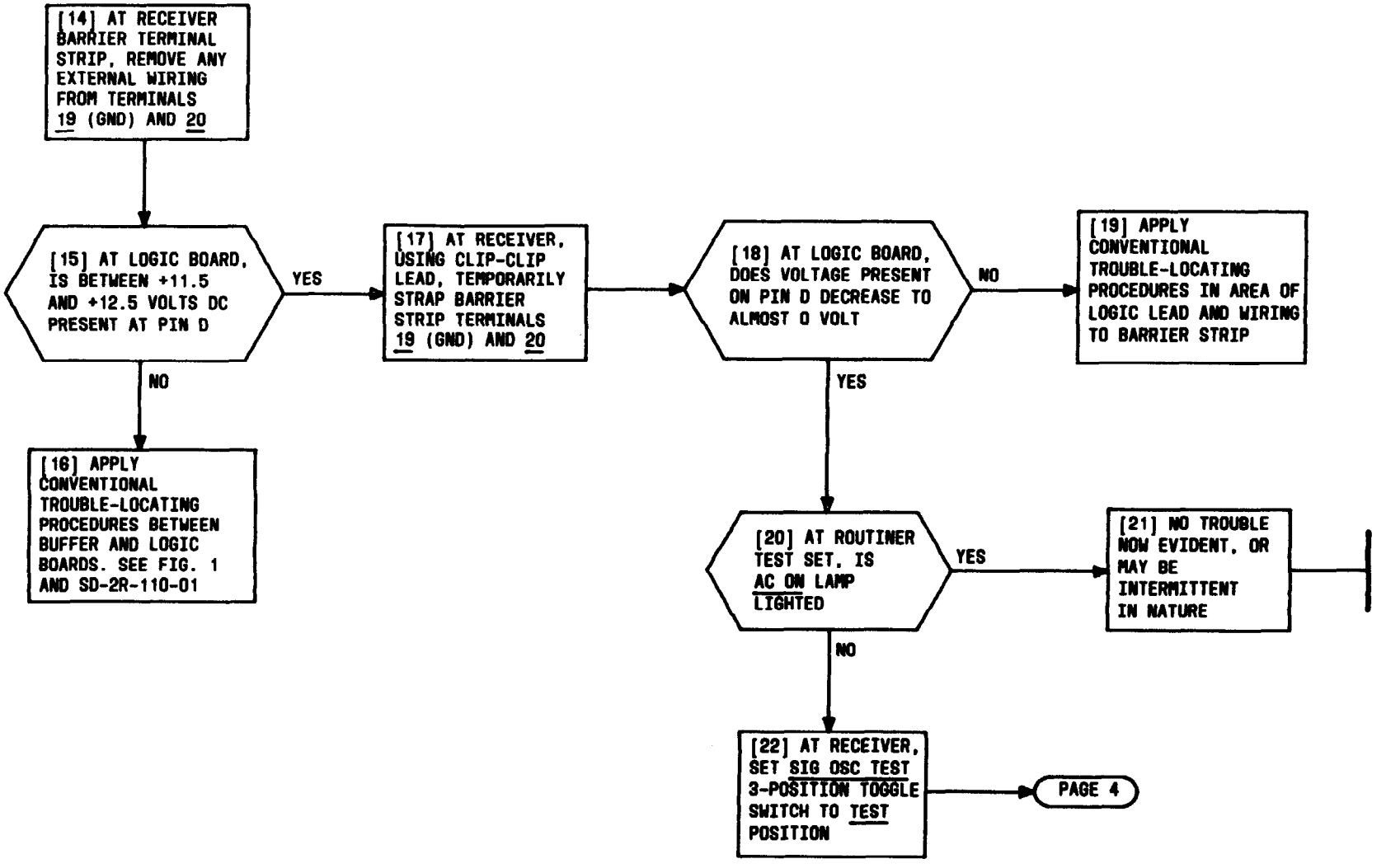
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

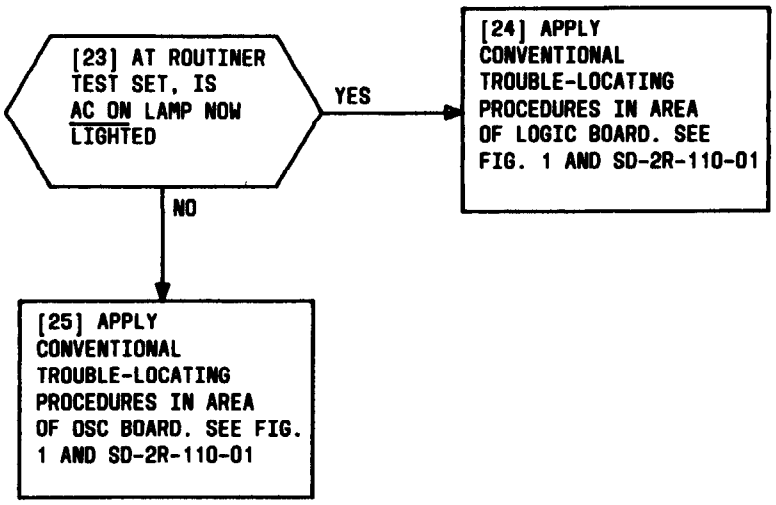
WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS



CLEAR AC ON TROUBLE



CLEAR AC ON TROUBLE



CLEAR AC ON TROUBLE

CLEAR ALARM TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), AND LOGIC (NO. 3) CIRCUIT BOARDS WITH SPARE BOARDS

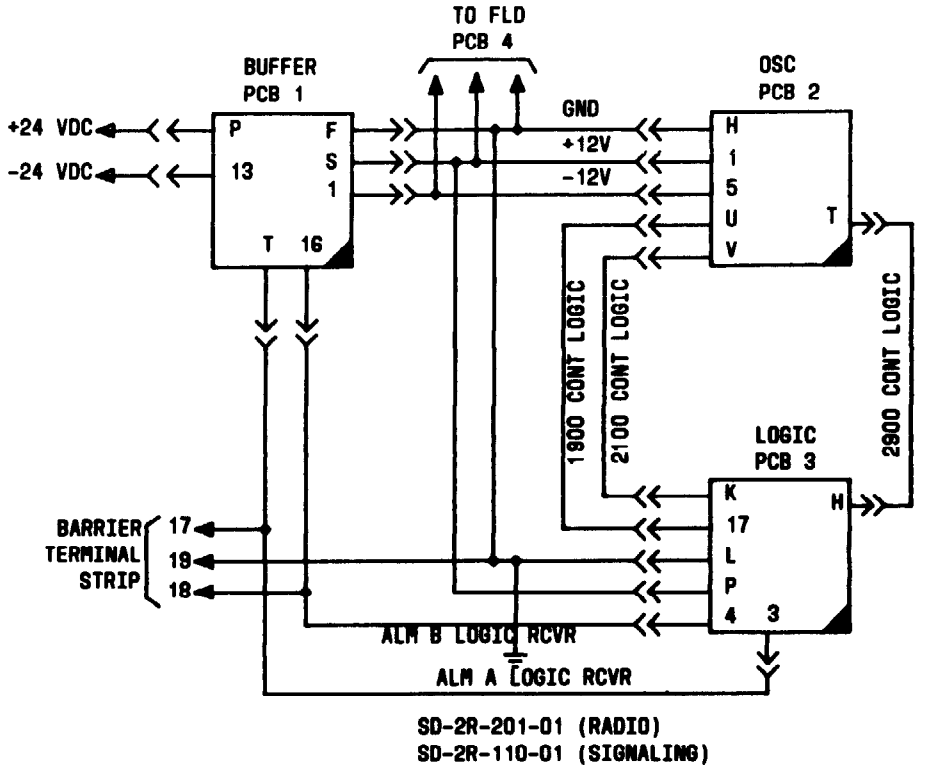
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE

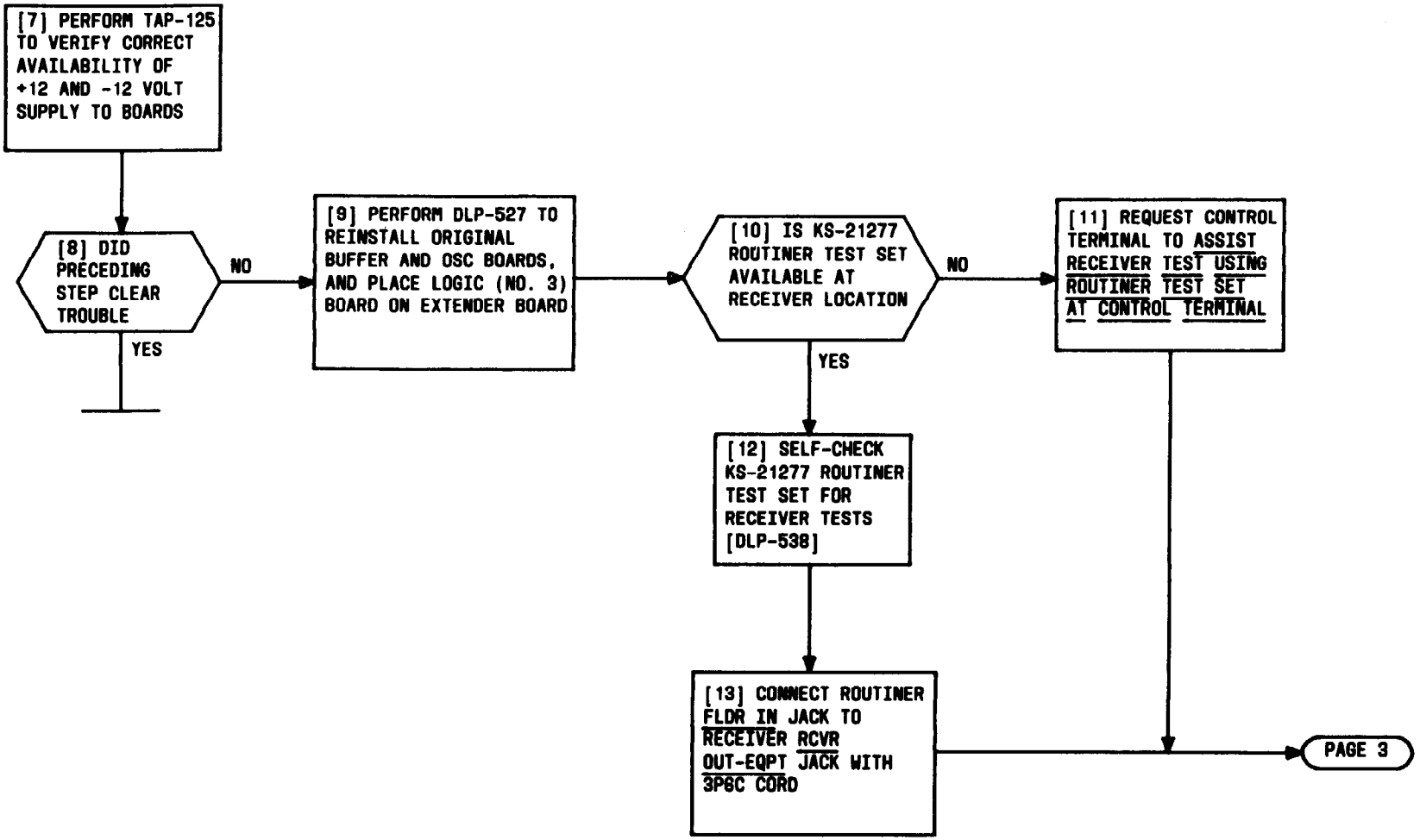


SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

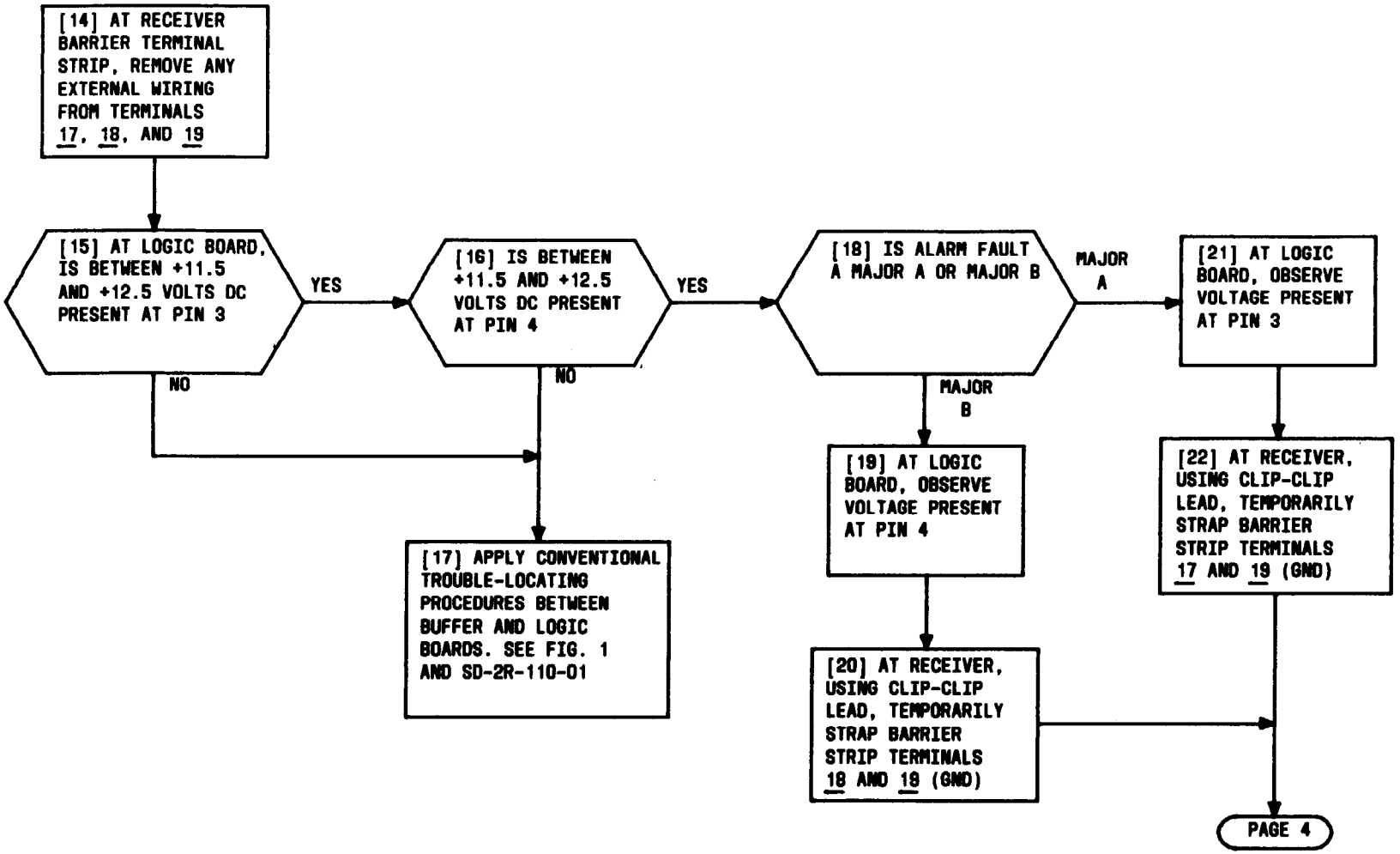
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

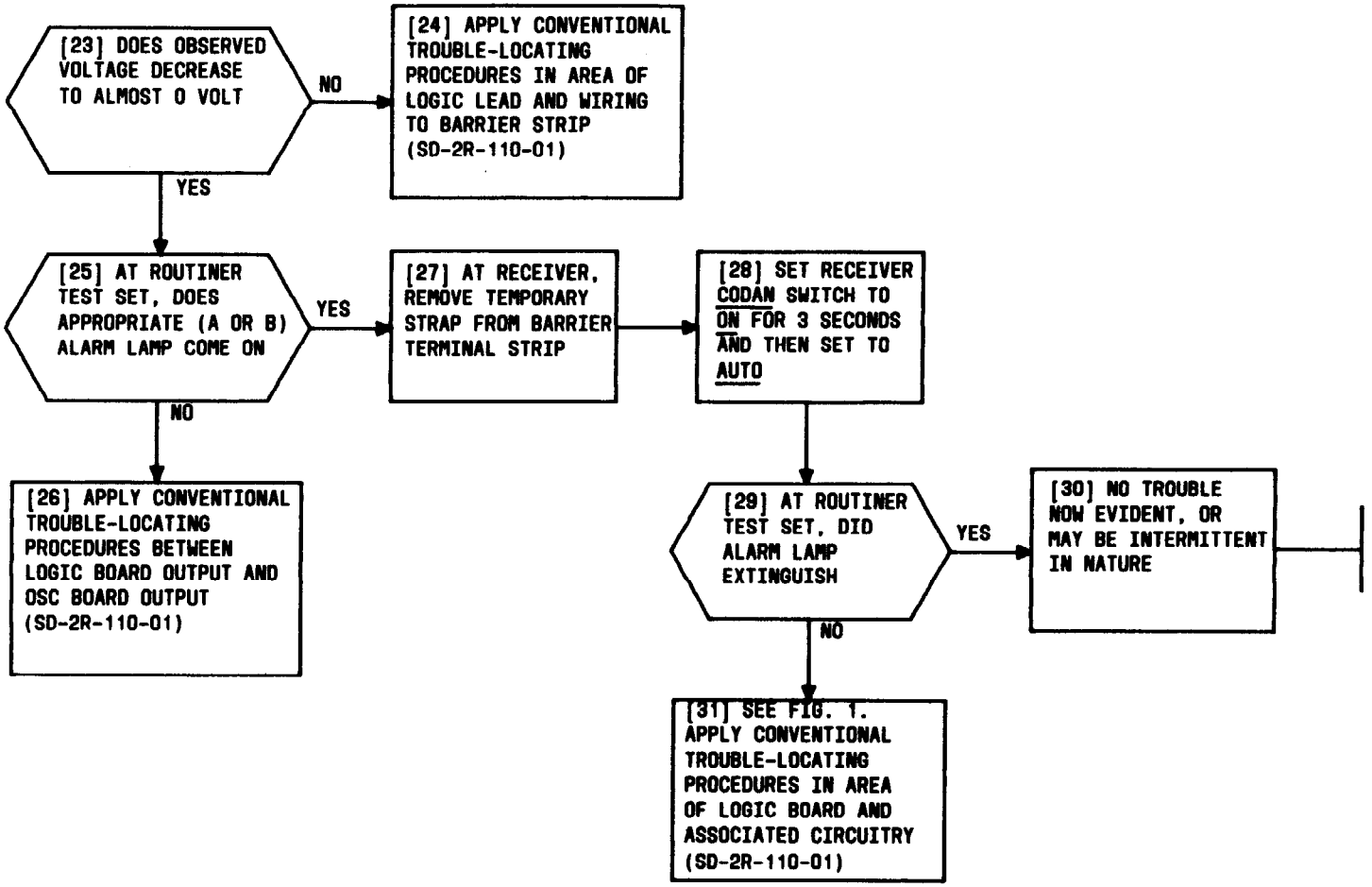
WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS



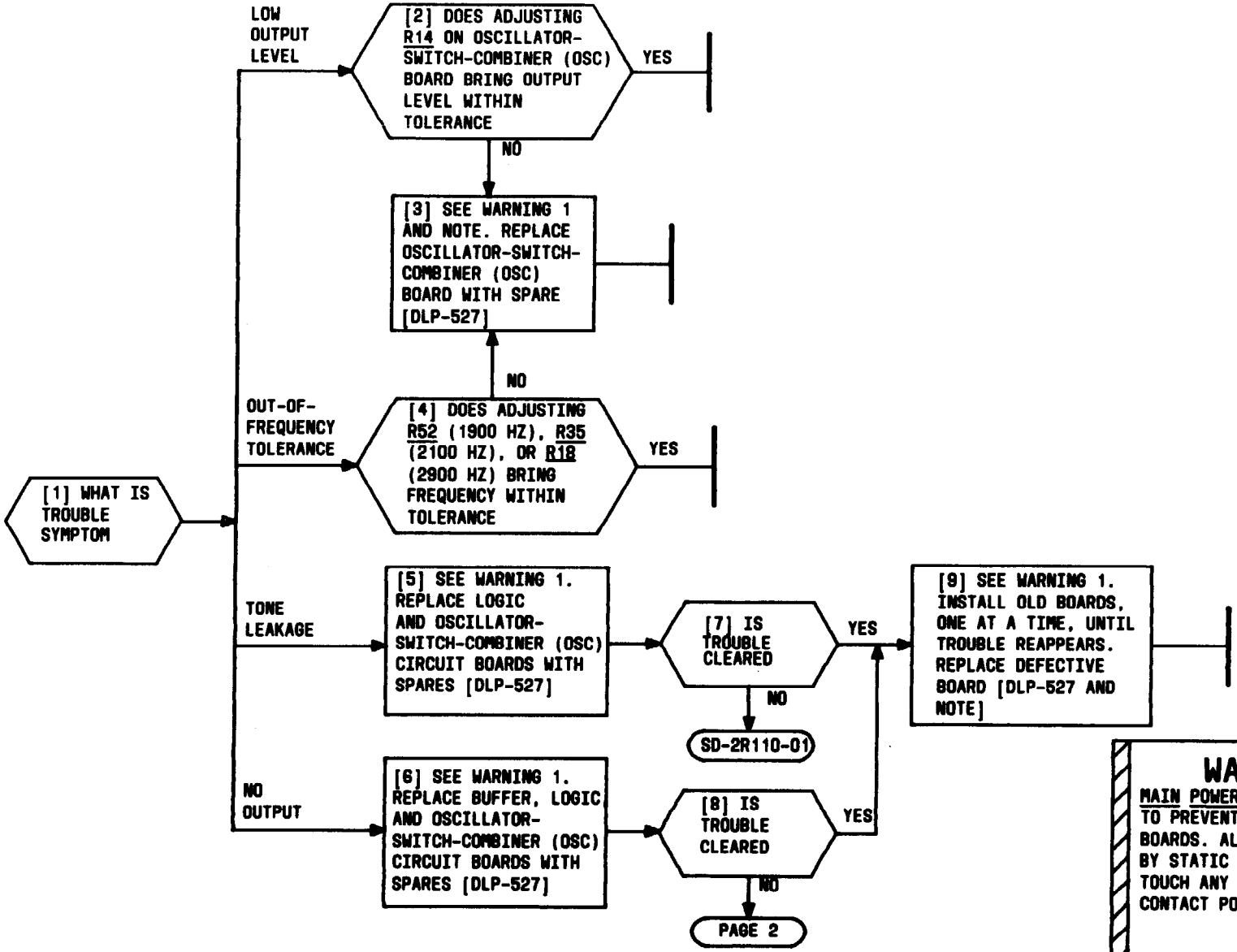
CLEAR ALARM TROUBLE



CLEAR ALARM TROUBLE



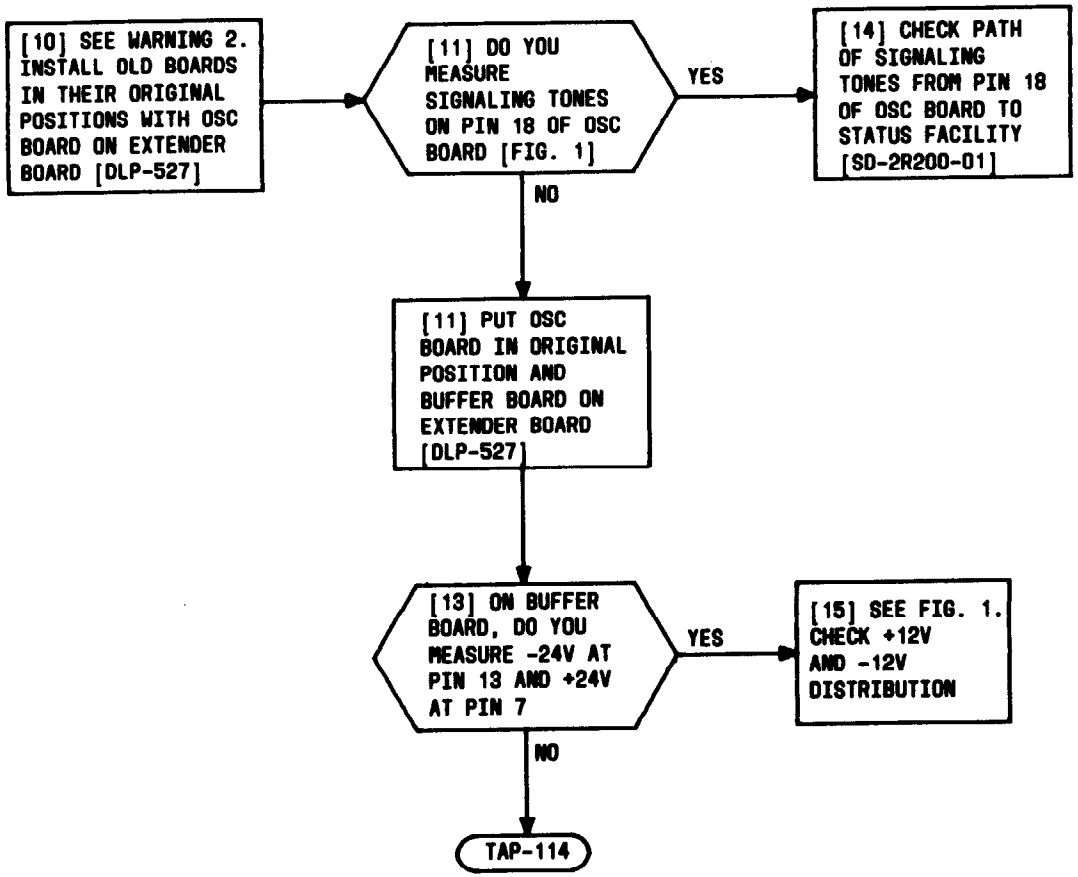
CLEAR MAJOR ALARM TROUBLE



WARNING 1

MAIN POWER SWITCH IS SET TO OFF TO PREVENT DAMAGE TO CIRCUIT BOARDS. ALSO, TO PREVENT DAMAGE BY STATIC ELECTRICITY, DO NOT TOUCH ANY BARE SURFACE SUCH AS CONTACT POINTS

CLEAR SIGNALING TONE TROUBLE



WARNING 2

MAIN POWER SWITCH IS SET TO OFF TO PREVENT DAMAGE TO CIRCUIT BOARDS. ALSO, TO PREVENT DAMAGE BY STATIC ELECTRICITY, DO NOT TOUCH ANY BARE SURFACE SUCH AS CONTACT POINTS

CLEAR SIGNALING TONE TROUBLE

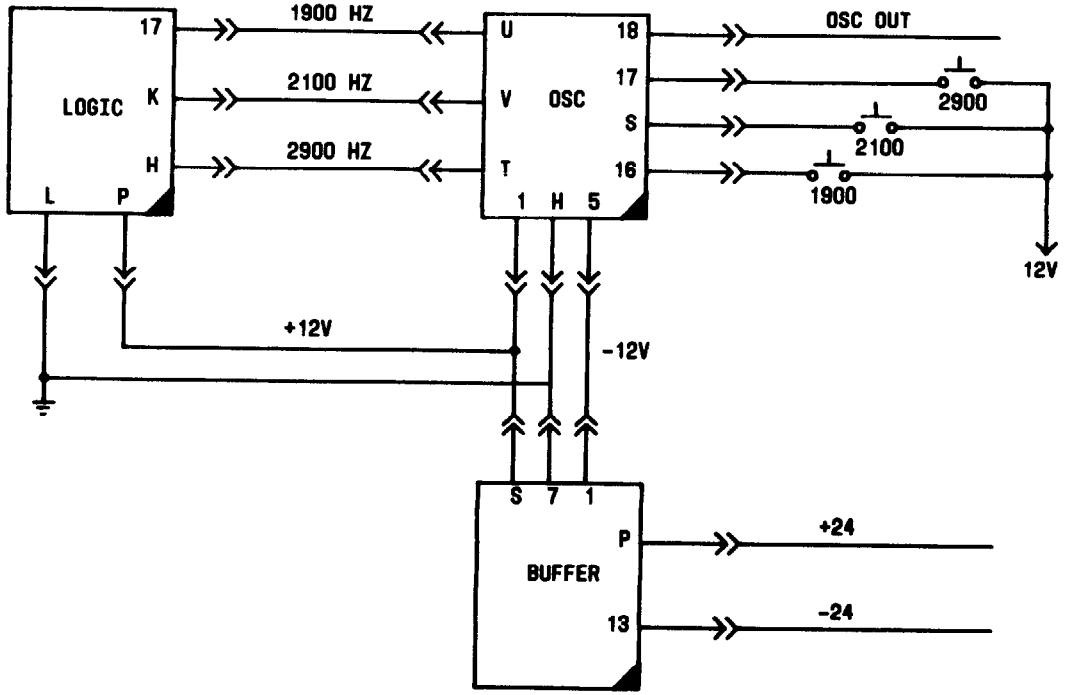


FIG. 1

CLEAR SIGNALING TONE TROUBLE

CLEAR TEST GENERATOR CONTROL TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] PERFORM DLP-540 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), LOGIC (NO. 3), AND FLD (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS

NOTE 1
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

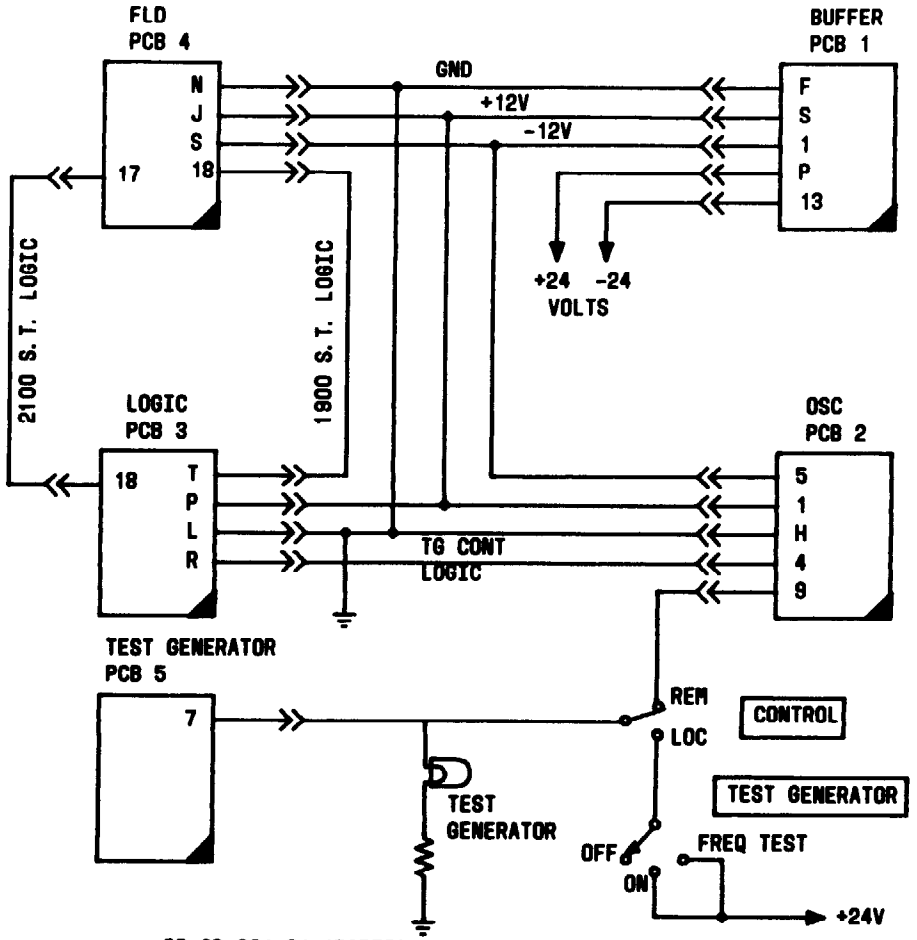
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF POSITION

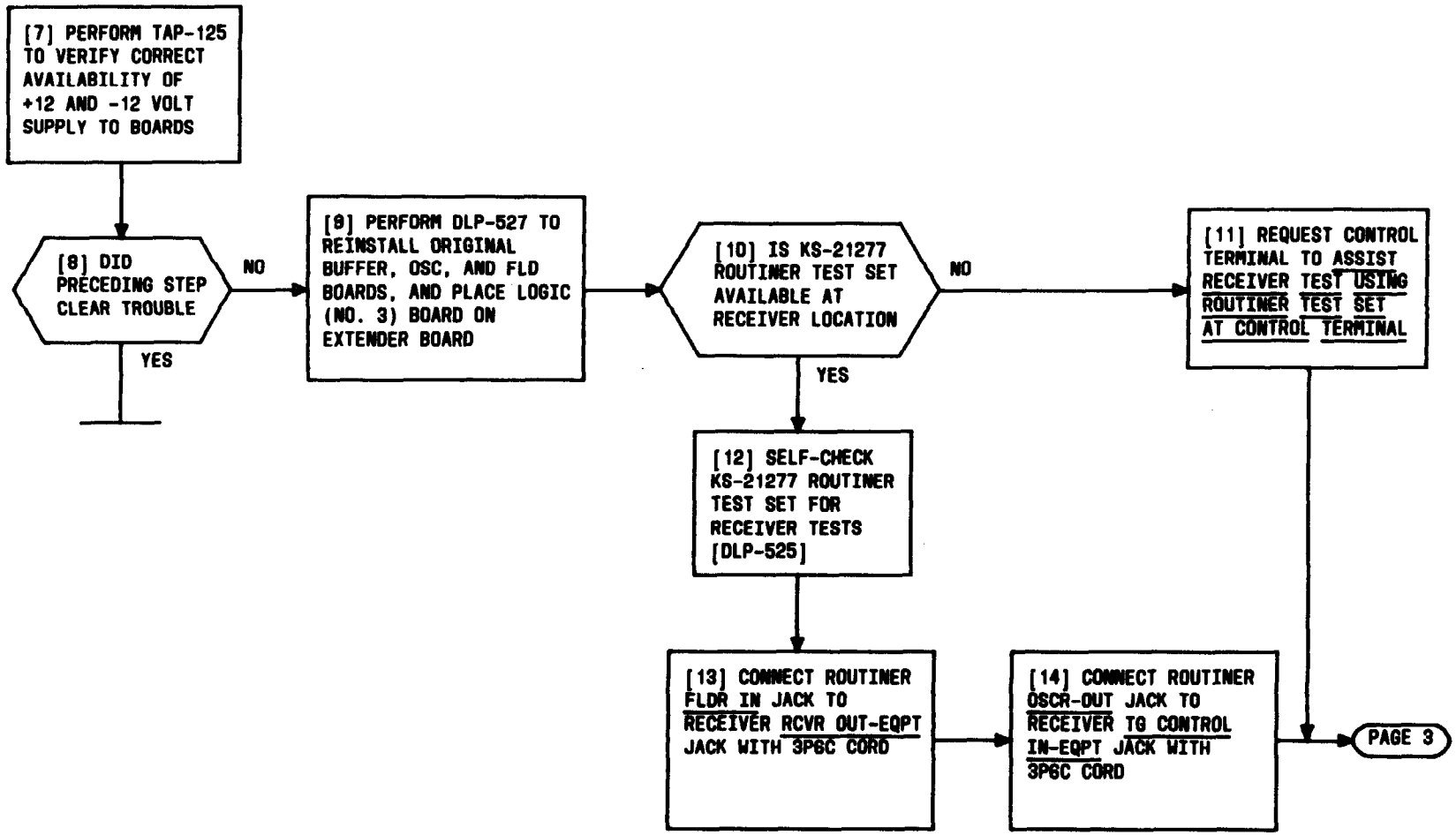
[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

FIG. 1

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS



CLEAR TEST GENERATOR CONTROL TROUBLE

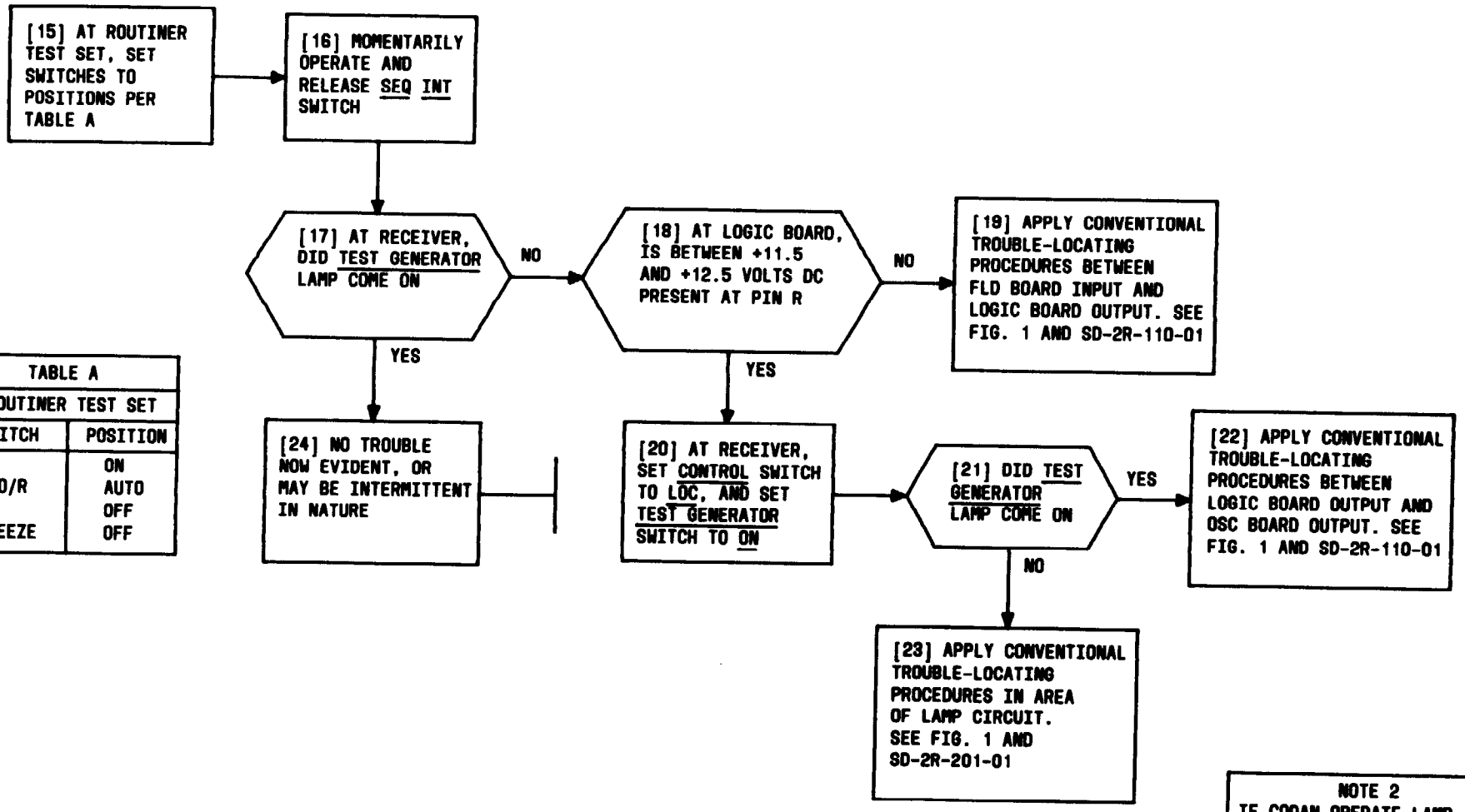


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	ON
C O/R	AUTO
SP	OFF
FREEZE	OFF

NOTE 2
IF CODAN OPERATE LAMP COMES ON AT RECEIVER, CODAN LAMP AT ROUTINER TEST SET SHOULD ALSO COME ON. IF NOT, THE RECEIVER LAMP CIRCUIT MAY BE AT FAULT

CLEAR TEST GENERATOR CONTROL TROUBLE

CLEAR SPARE FUNCTION TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] PERFORM DLP-527 TO REPLACE OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), LOGIC (NO. 3), AND FILTER-LIMITER-DETECTOR (FLD) (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS

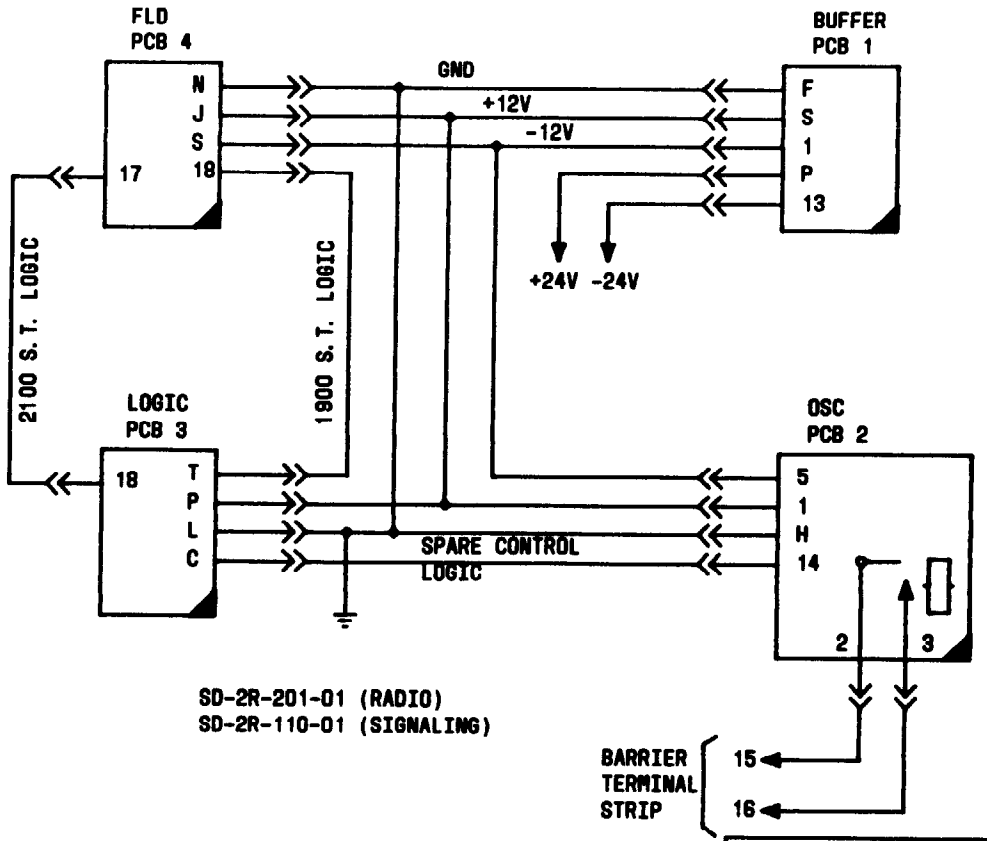
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

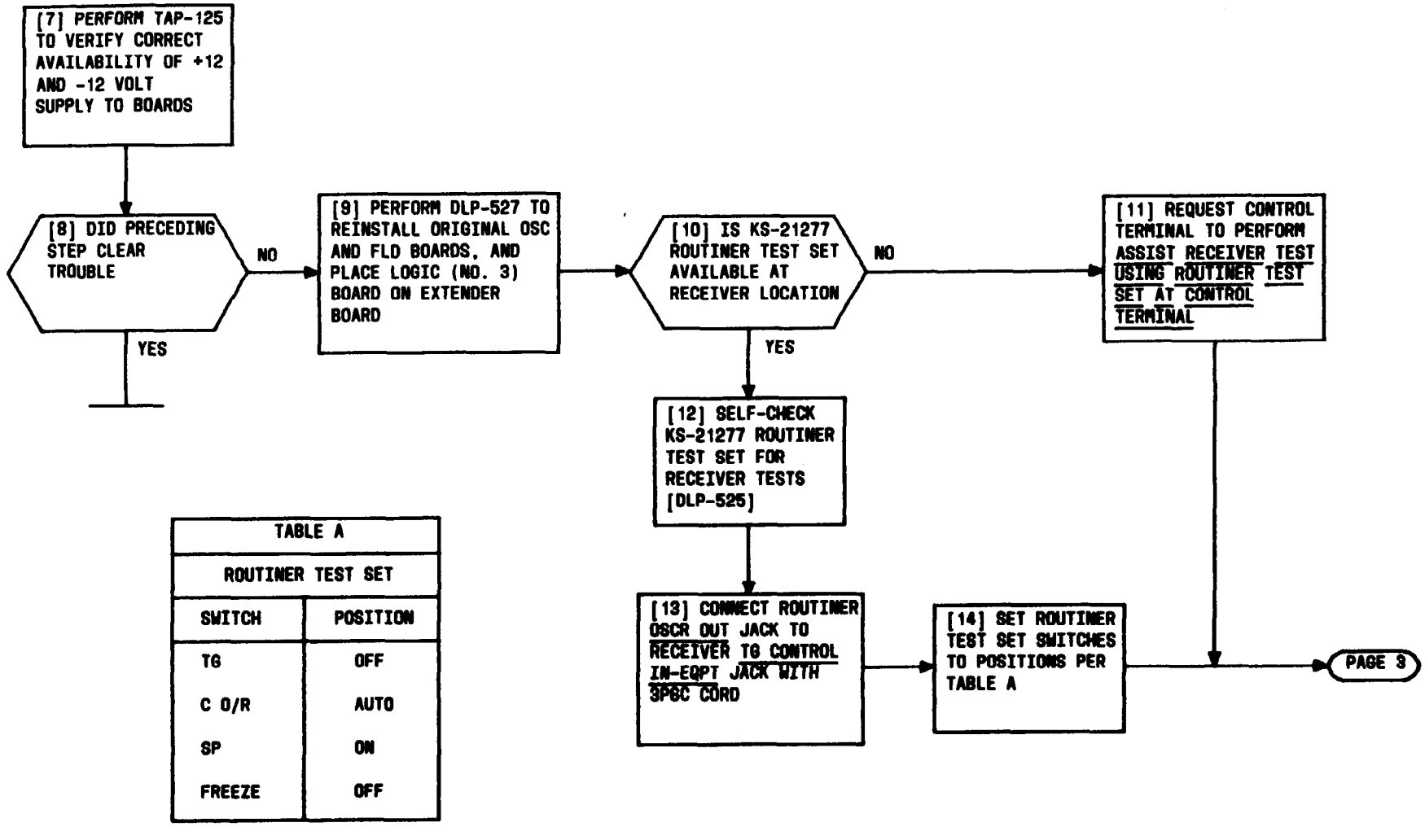
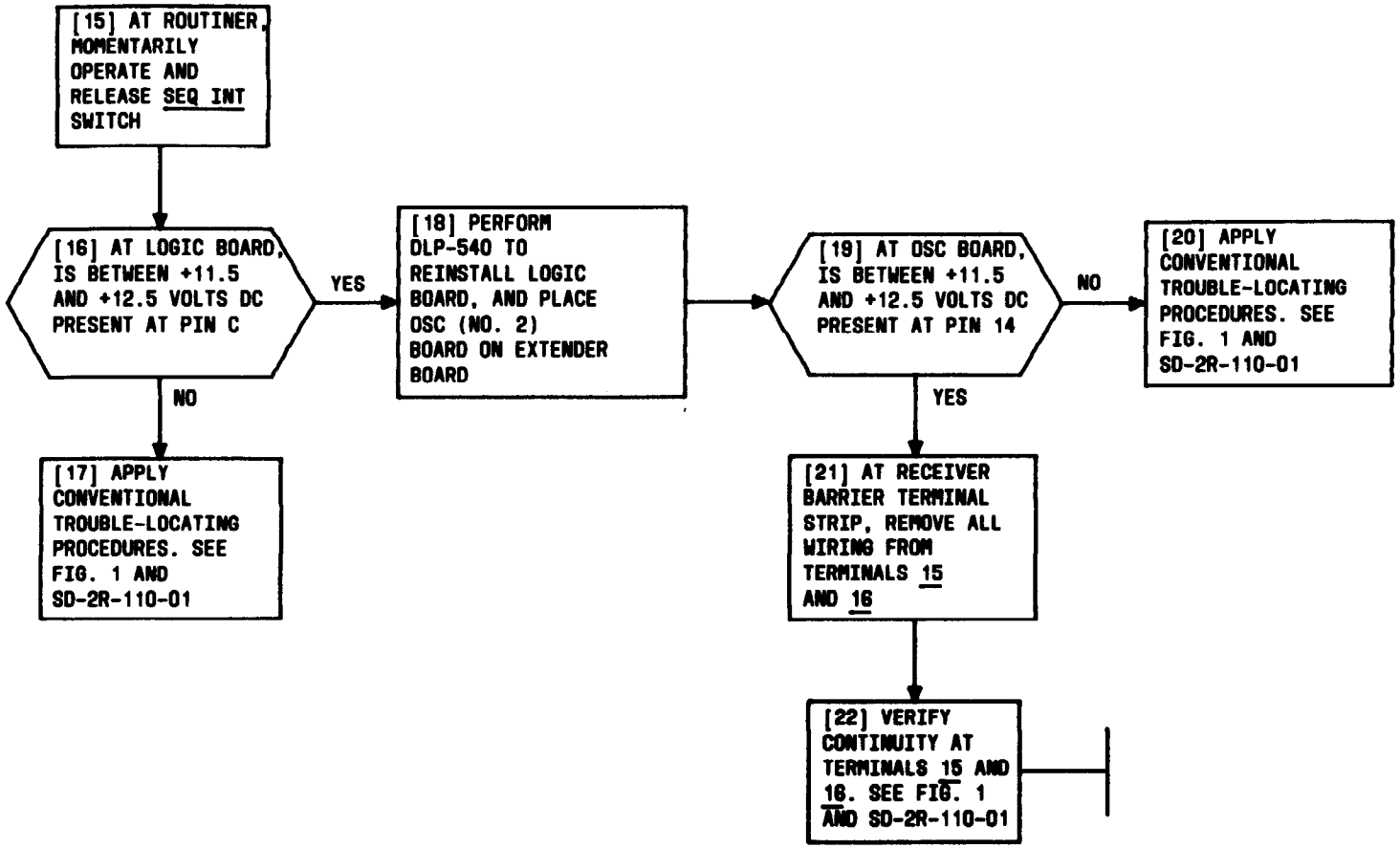


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	ON
FREEZE	OFF

CLEAR SPARE FUNCTION TROUBLE



CLEAR SPARE FUNCTION TROUBLE

CLEAR FREEZE COMMAND TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] SEE WARNING 1. PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), LOGIC (NO. 3), AND FILTER-LIMITER-DETECTOR (FLD) (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS. RERUN TEST

[4] IS TROUBLE CLEARED

NO

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON. RERUN TEST UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE

[7] PERFORM TAP-125 TO VERIFY CORRECT AVAILABILITY OF +12 AND -12 VOLT SUPPLY TO BOARDS

[8] DID PRECEDING STEP CLEAR TROUBLE

NO

PAGE 2

YES

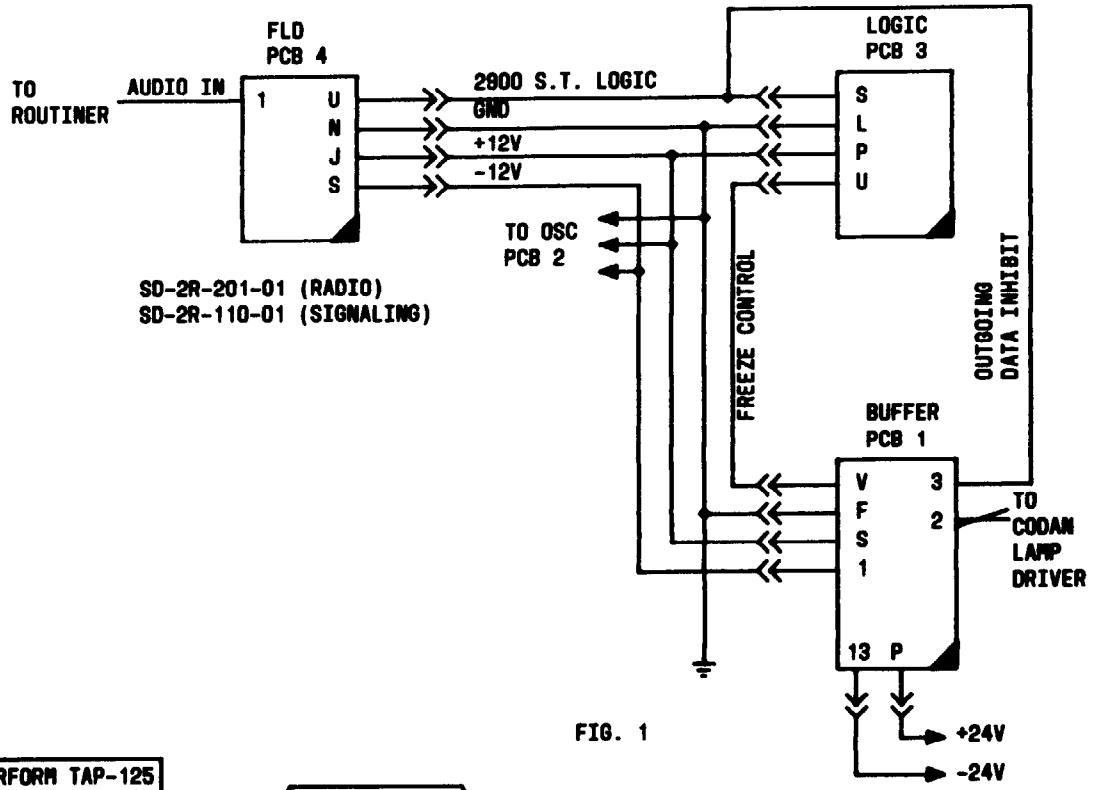


FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING 1
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

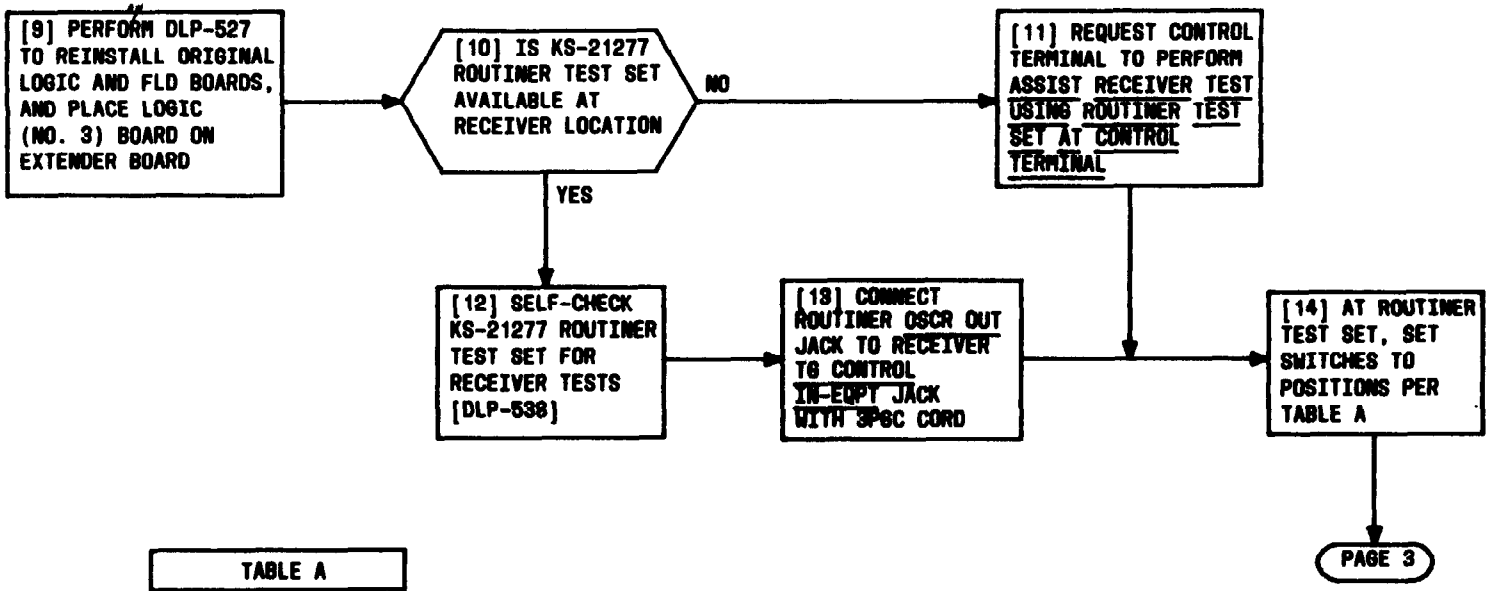
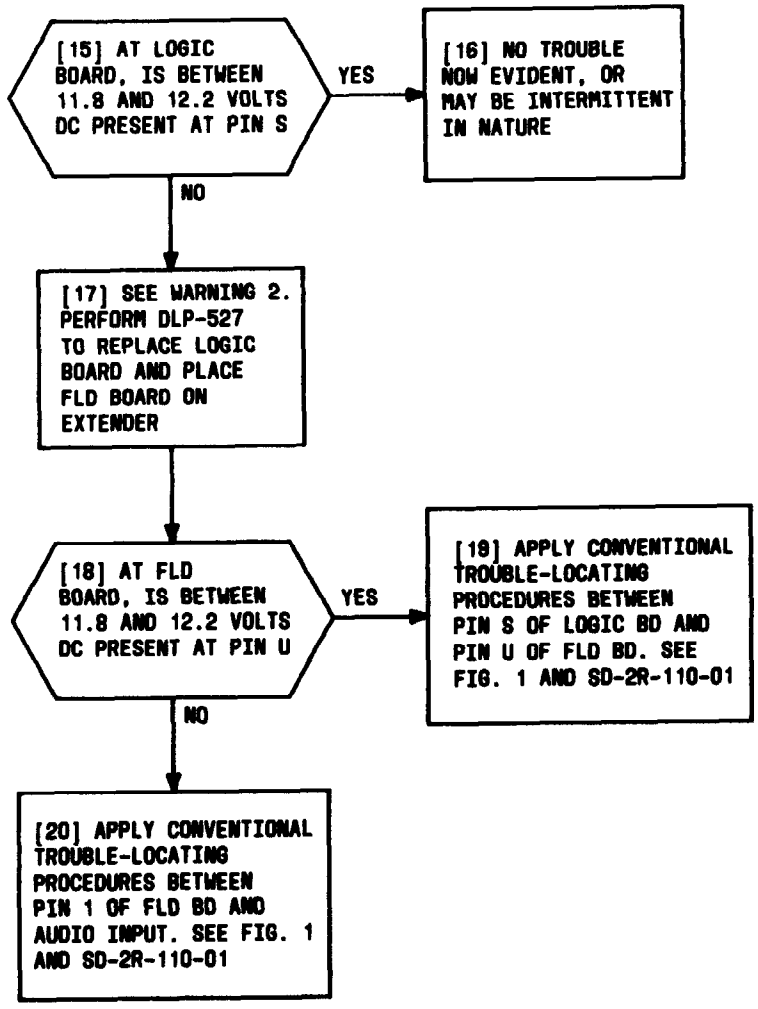


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	ON

CLEAR FREEZE COMMAND TROUBLE



CLEAR FREEZE COMMAND TROUBLE

CLEAR CODAN OVERRIDE TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), LOGIC (NO. 3), AND FLD (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS

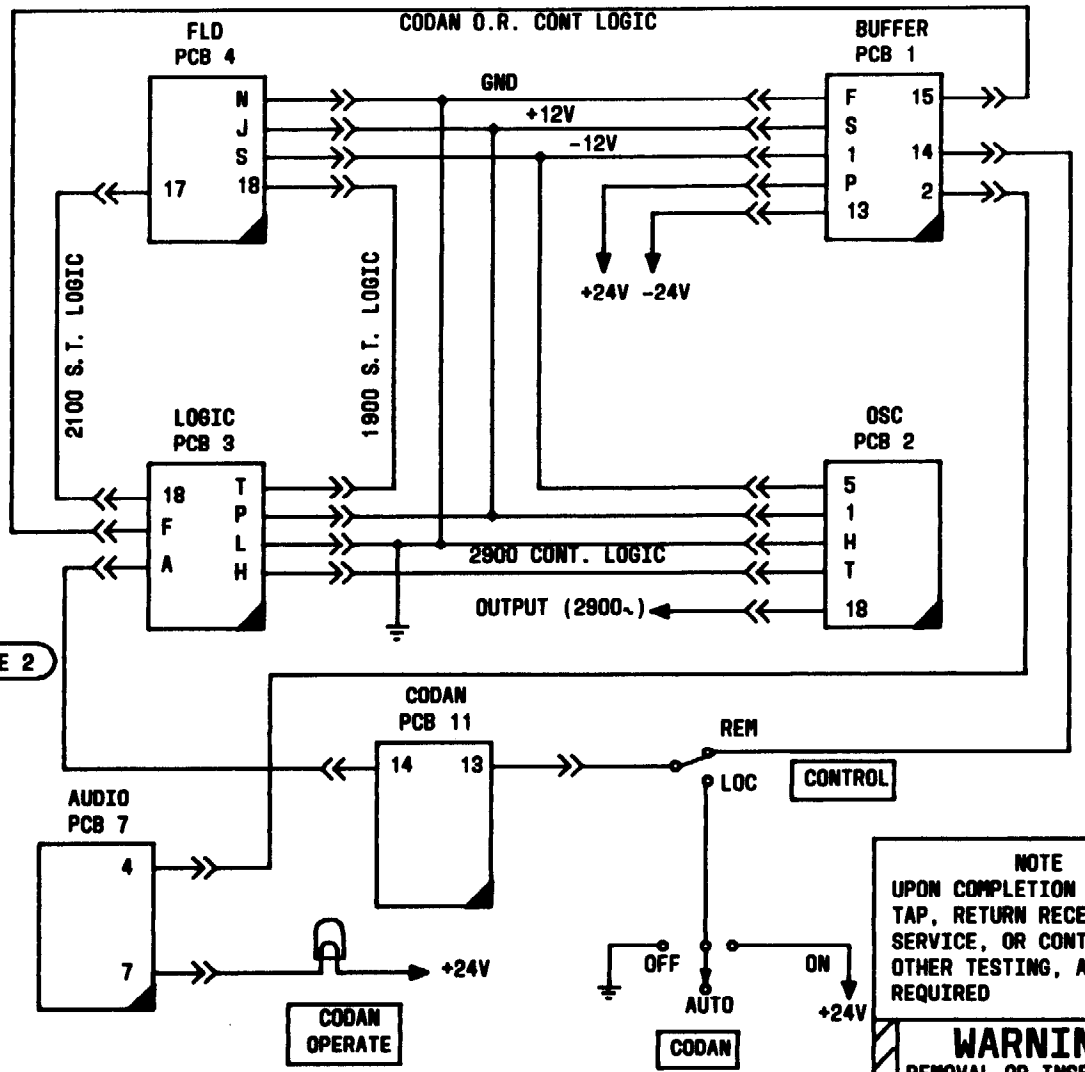
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE

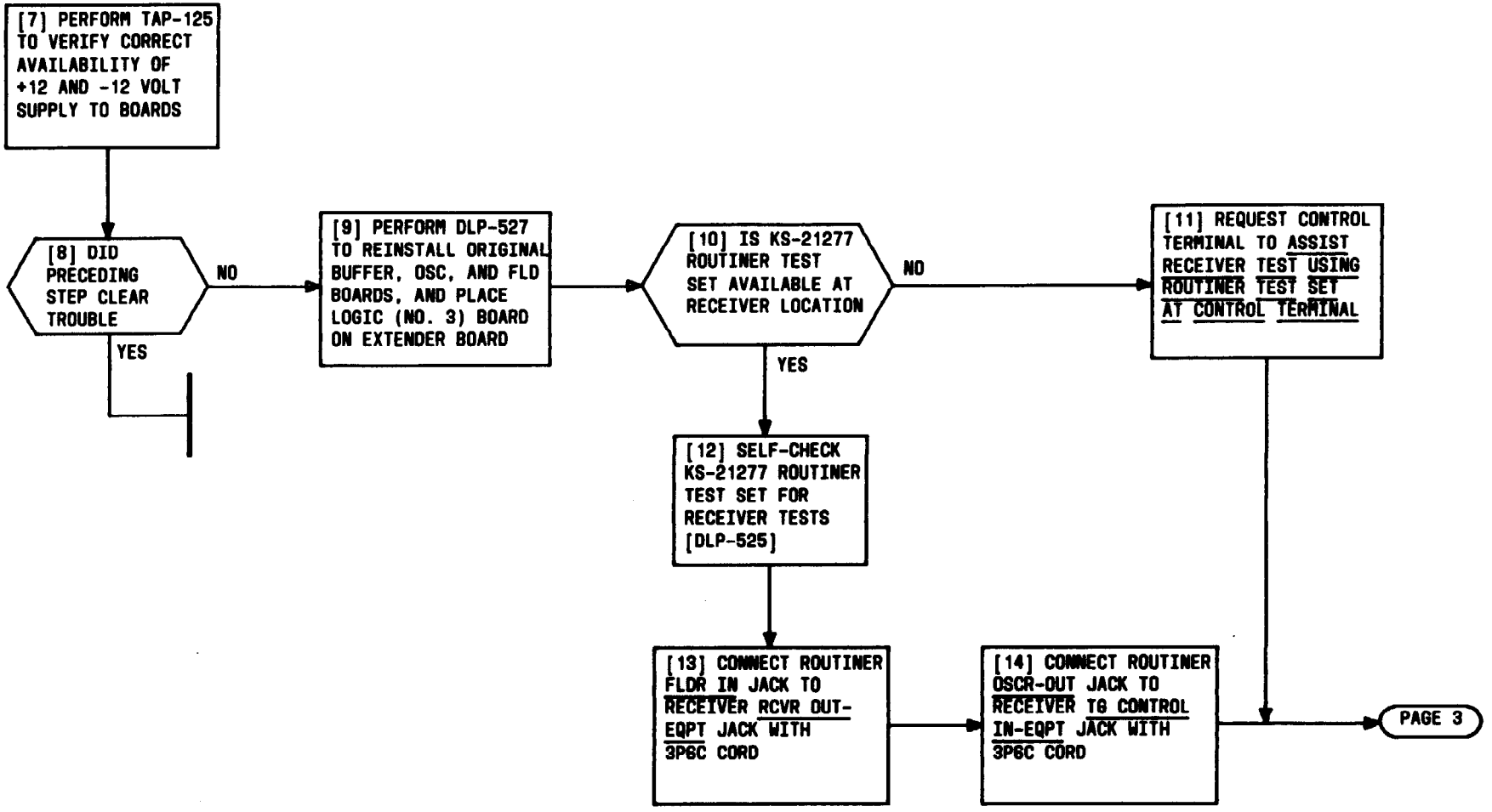


SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS



CLEAR CODAN OVERRIDE TROUBLE

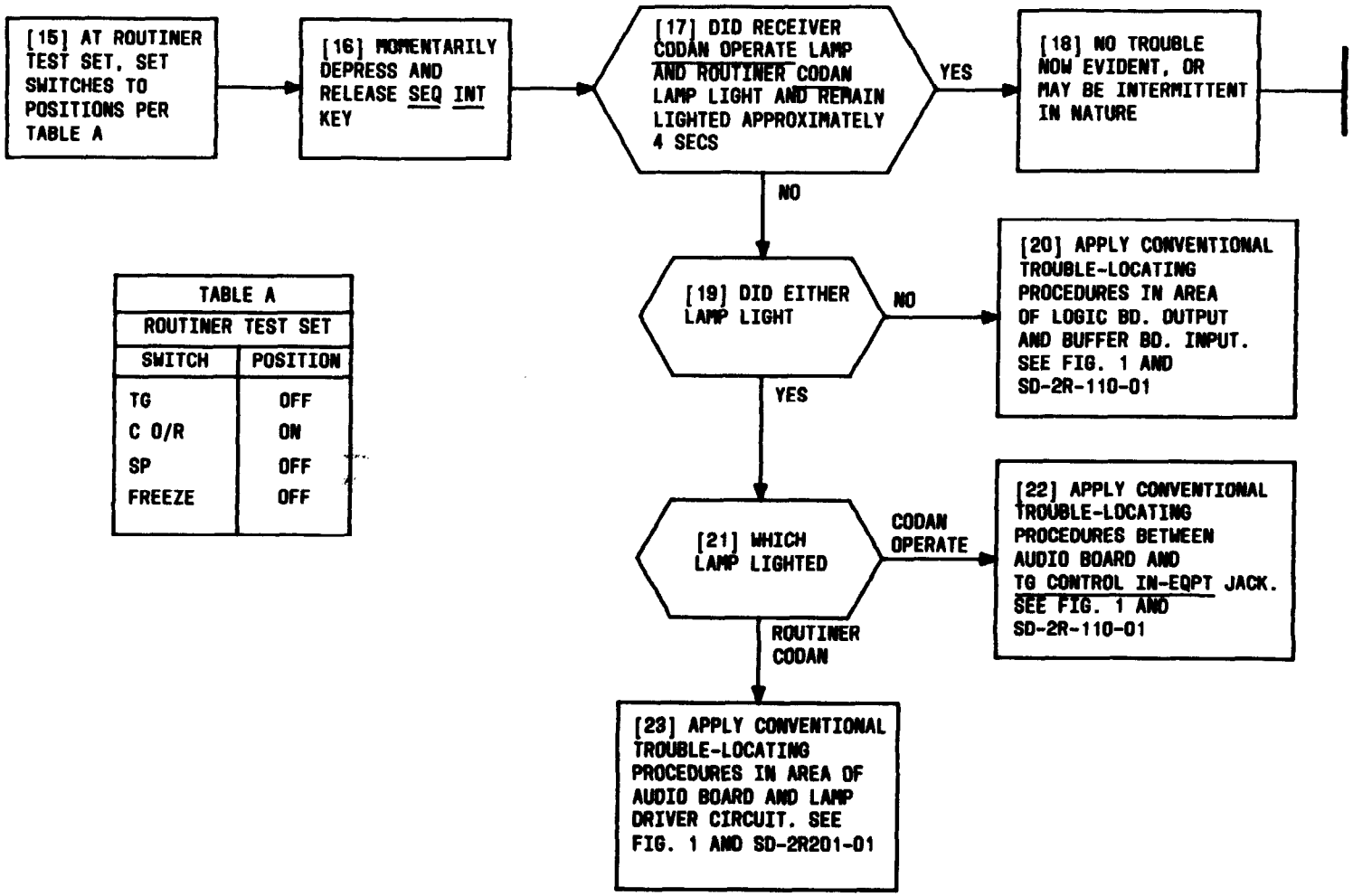


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	ON
SP	OFF
FREEZE	OFF

CLEAR CODAN OVERRIDE TROUBLE

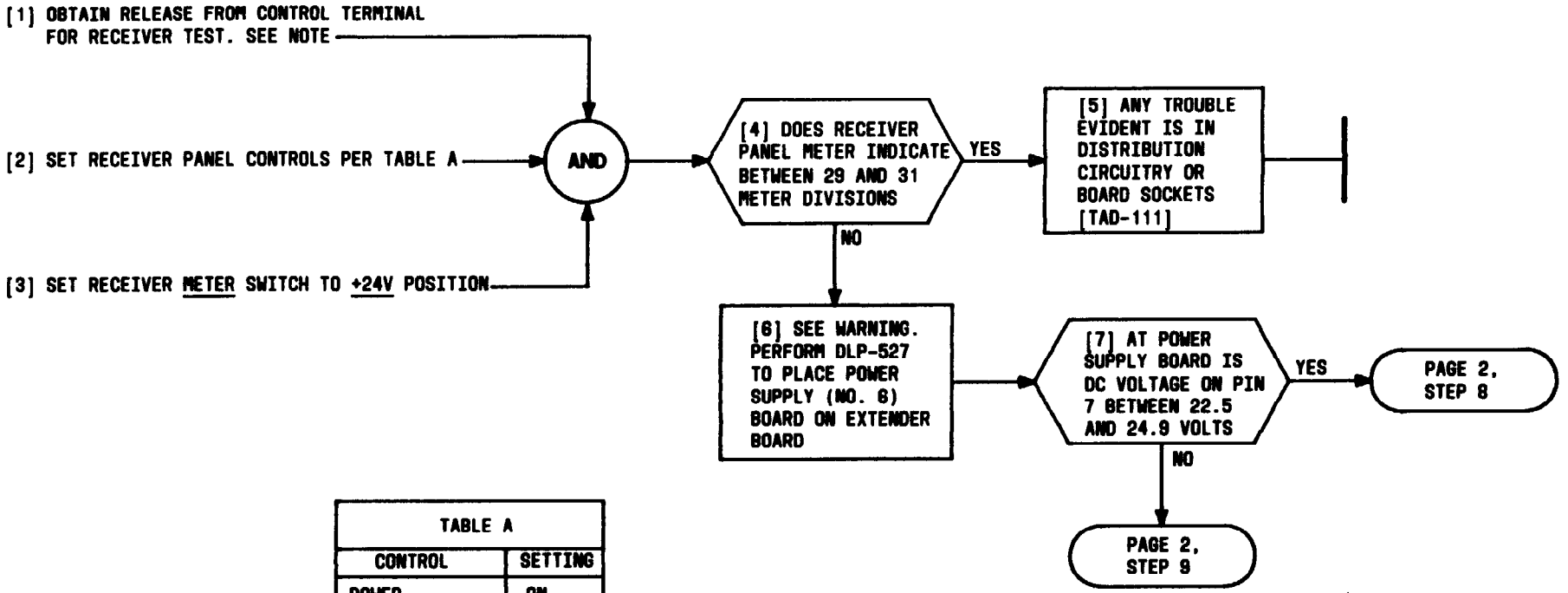


TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON
AGC/MANUAL	AGC

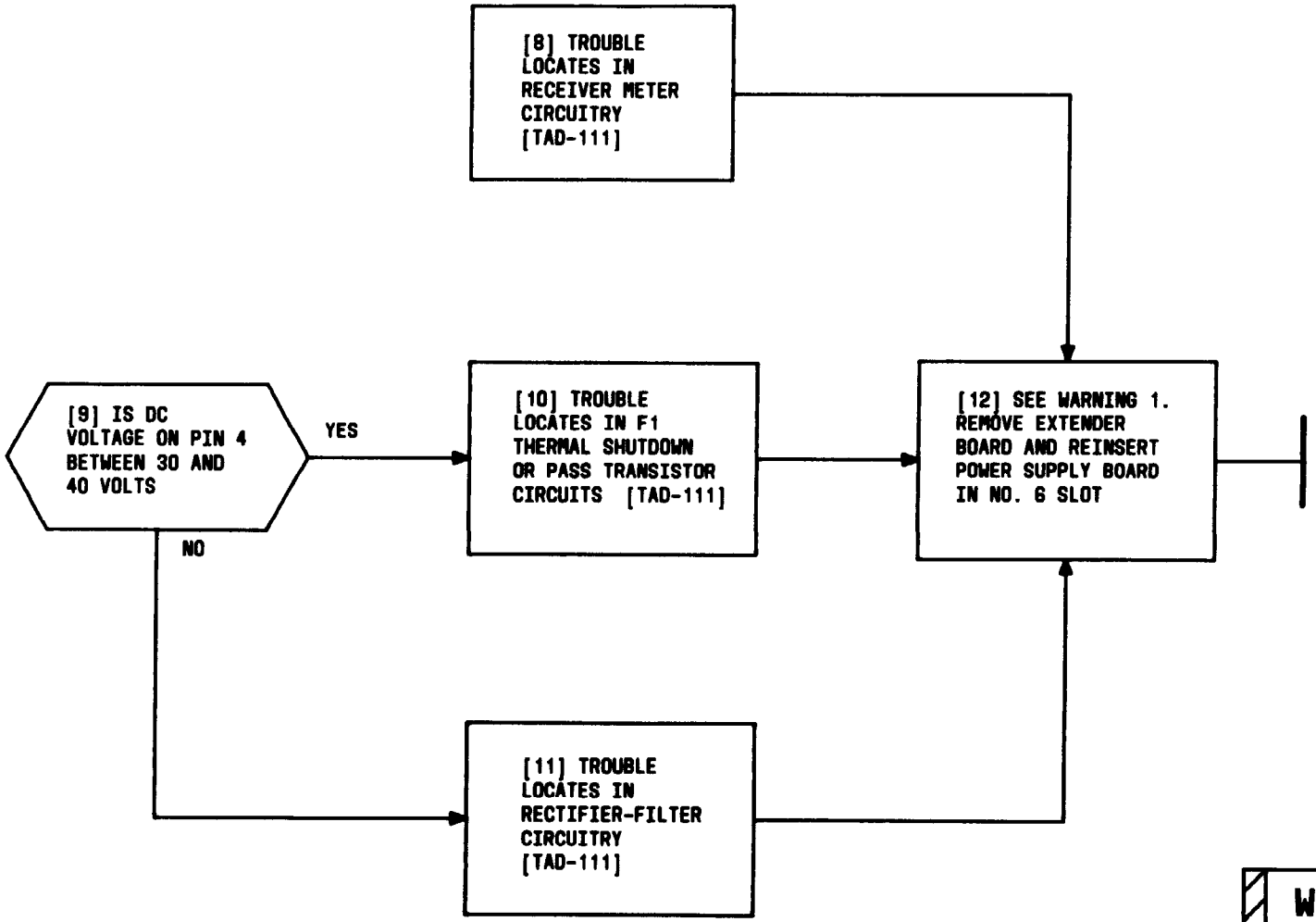
NOTE

UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR +24 VOLT REGULATED POWER SUPPLY TROUBLE



WARNING 1

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR +24 VOLT REGULATED POWER SUPPLY TROUBLE

NOTES:
1. ALL +24V LINES BYPASSED BY 0.1 µF 100V MYLAR CAPACITOR AT EACH CARD SOCKET. CAPACITORS ARE CC15-CC20
2. LIGHTNING PROTECTION - G.E. METAL OXIDE VARISTORS
3. CAPACITORS ARE LOCATED ON BACK OF BOARDS, SOLDERED DIRECTLY TO PINS

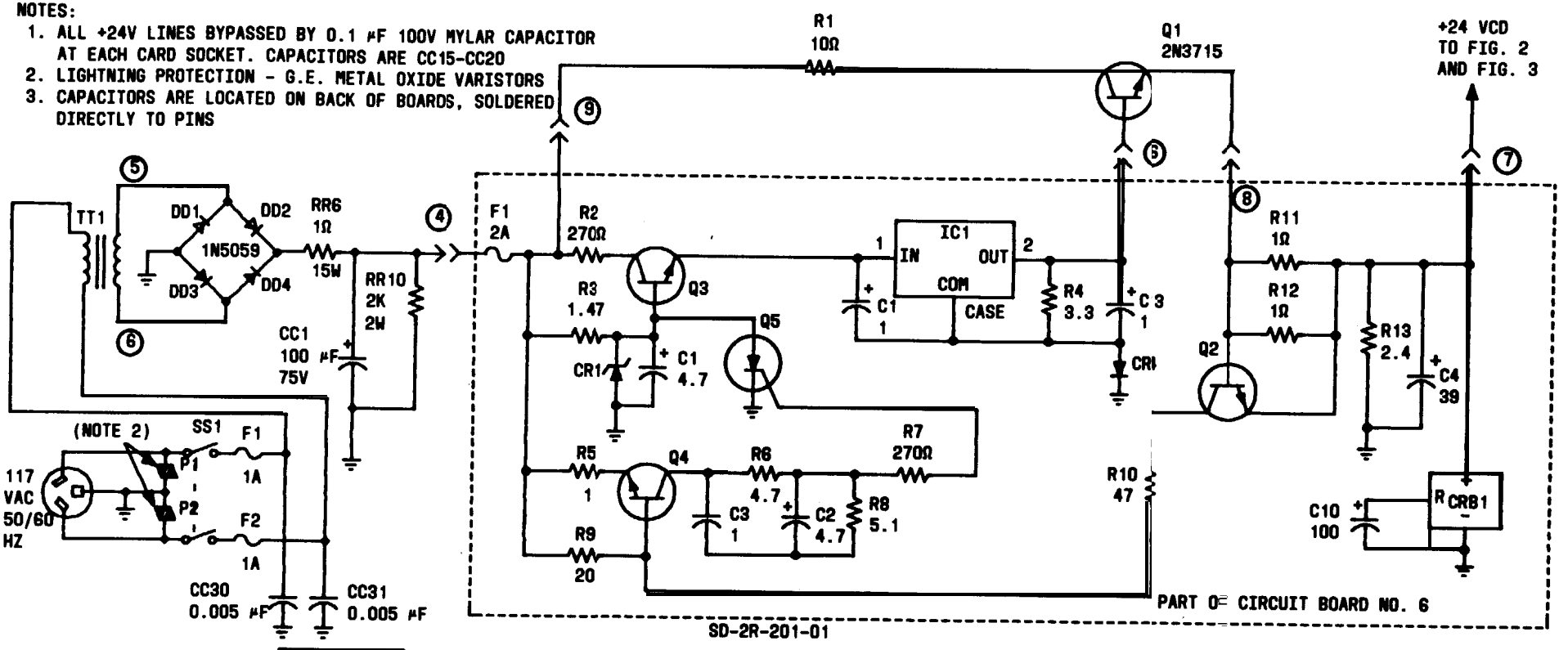


FIG. 1 - POWER SUPPLY

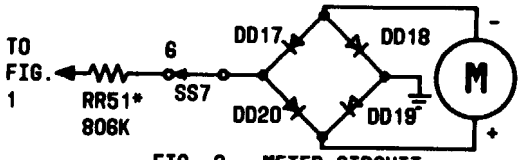


FIG. 3 - METER CIRCUIT

FIG. 2 - DISTRIBUTION

+24 VOLT REGULATED POWER SUPPLY CIRCUIT

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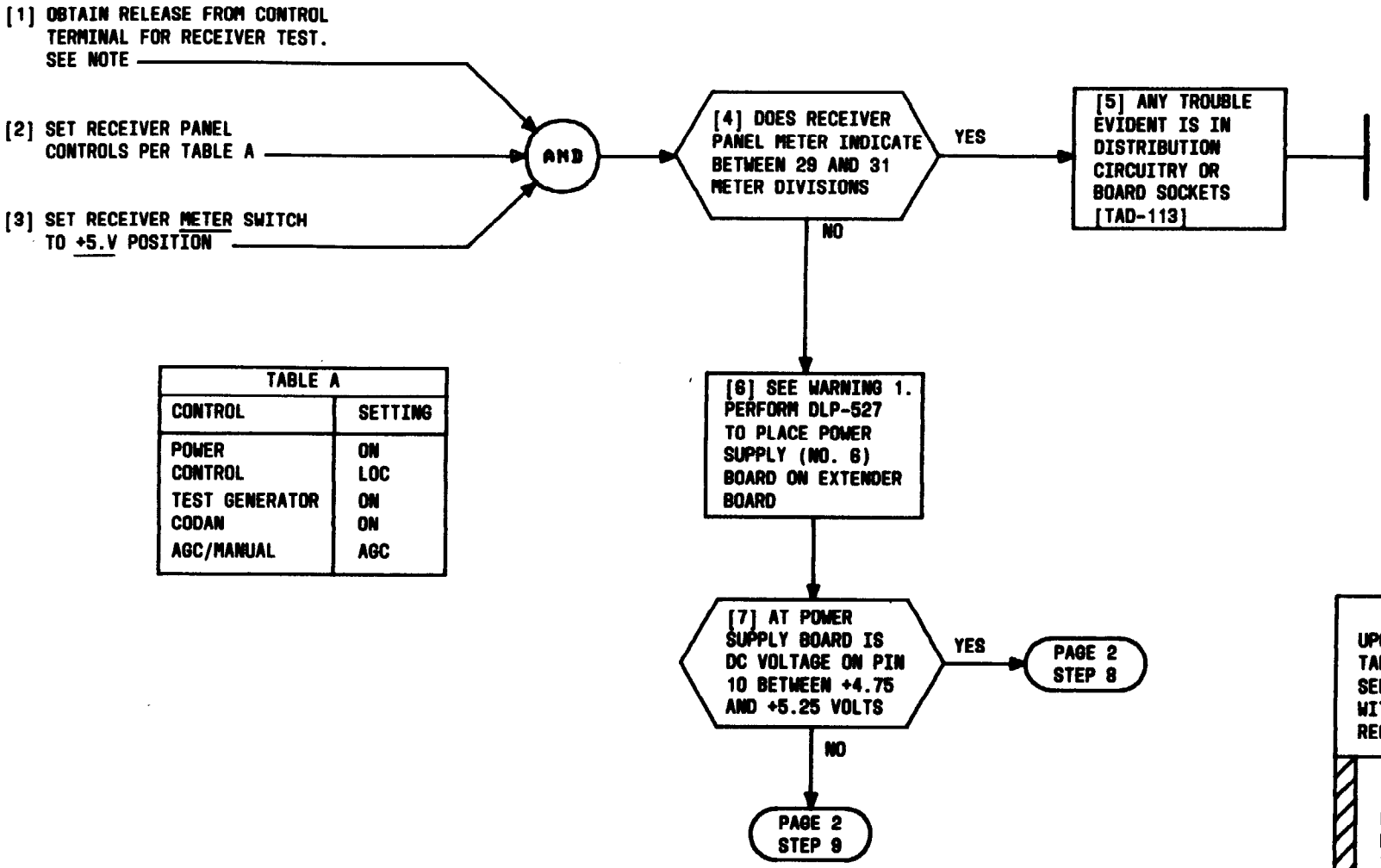


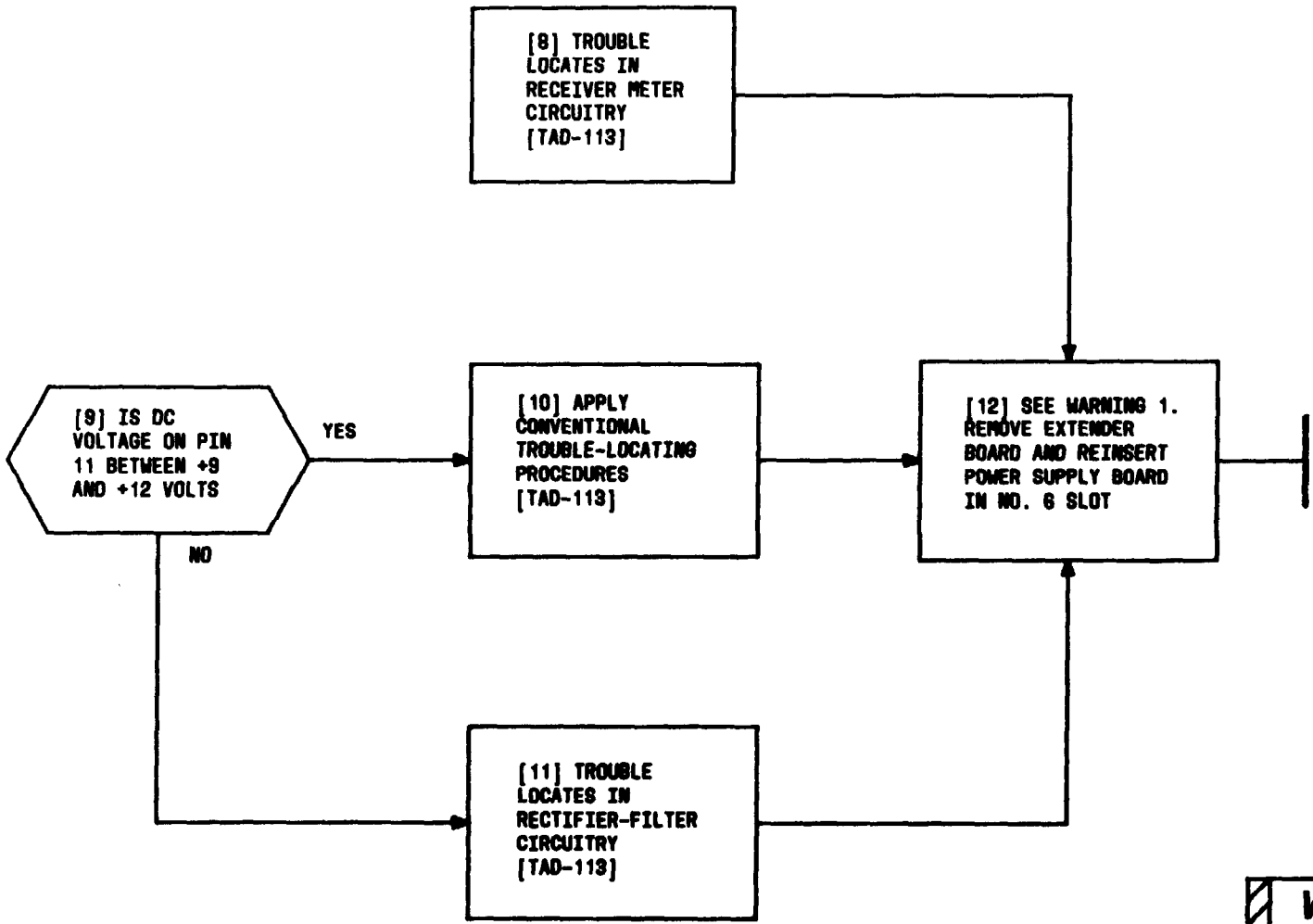
TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON
AGC/MANUAL	AGC

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING 1

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR +5 VOLT REGULATED POWER SUPPLY TROUBLE



WARNING 1

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR +5 VOLT REGULATED POWER SUPPLY TROUBLE

NOTE: LIGHTNING PROTECTION - G.E. METAL OXIDE VARISTORS
* FACTORY ADJUST

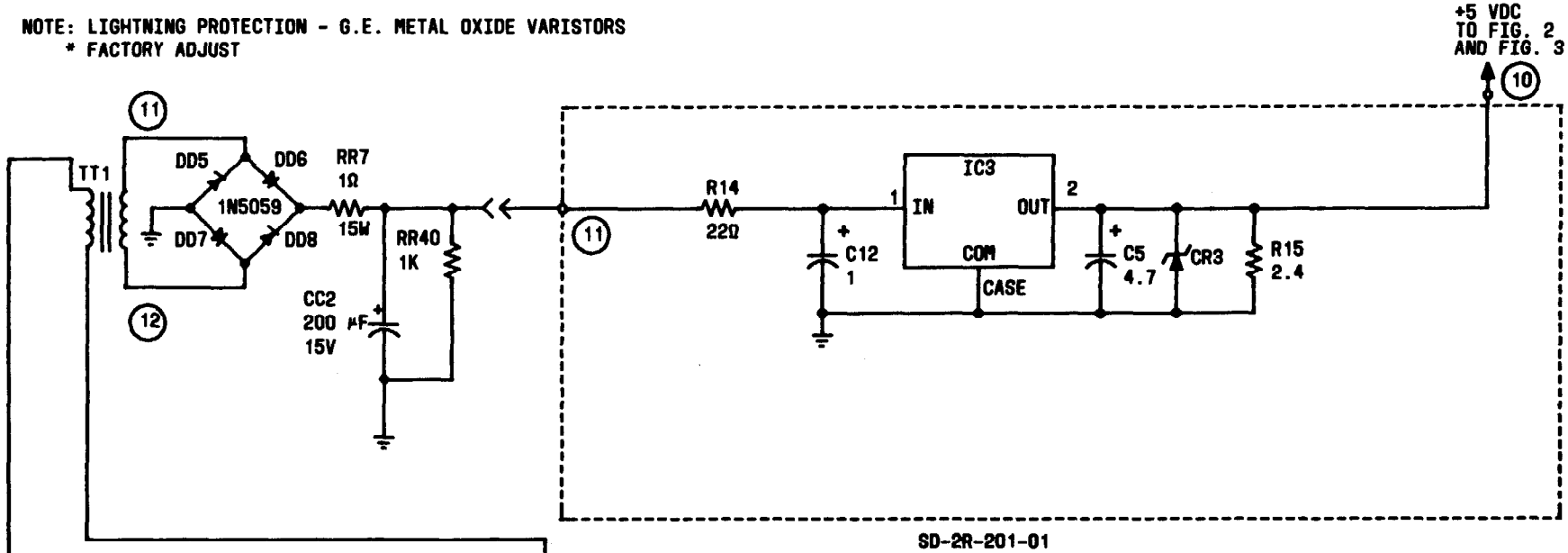
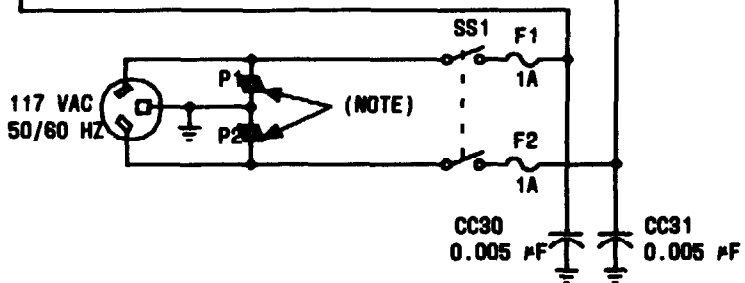


FIG. 1 - POWER SUPPLY



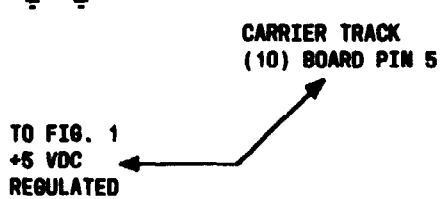


FIG. 2 - DISTRIBUTION

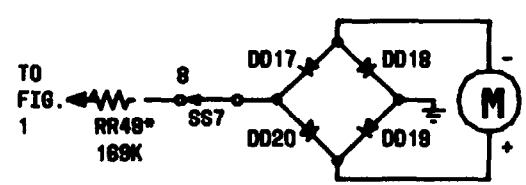


FIG. 3 - METER CIRCUIT

+5 VOLT REGULATED POWER SUPPLY CIRCUIT

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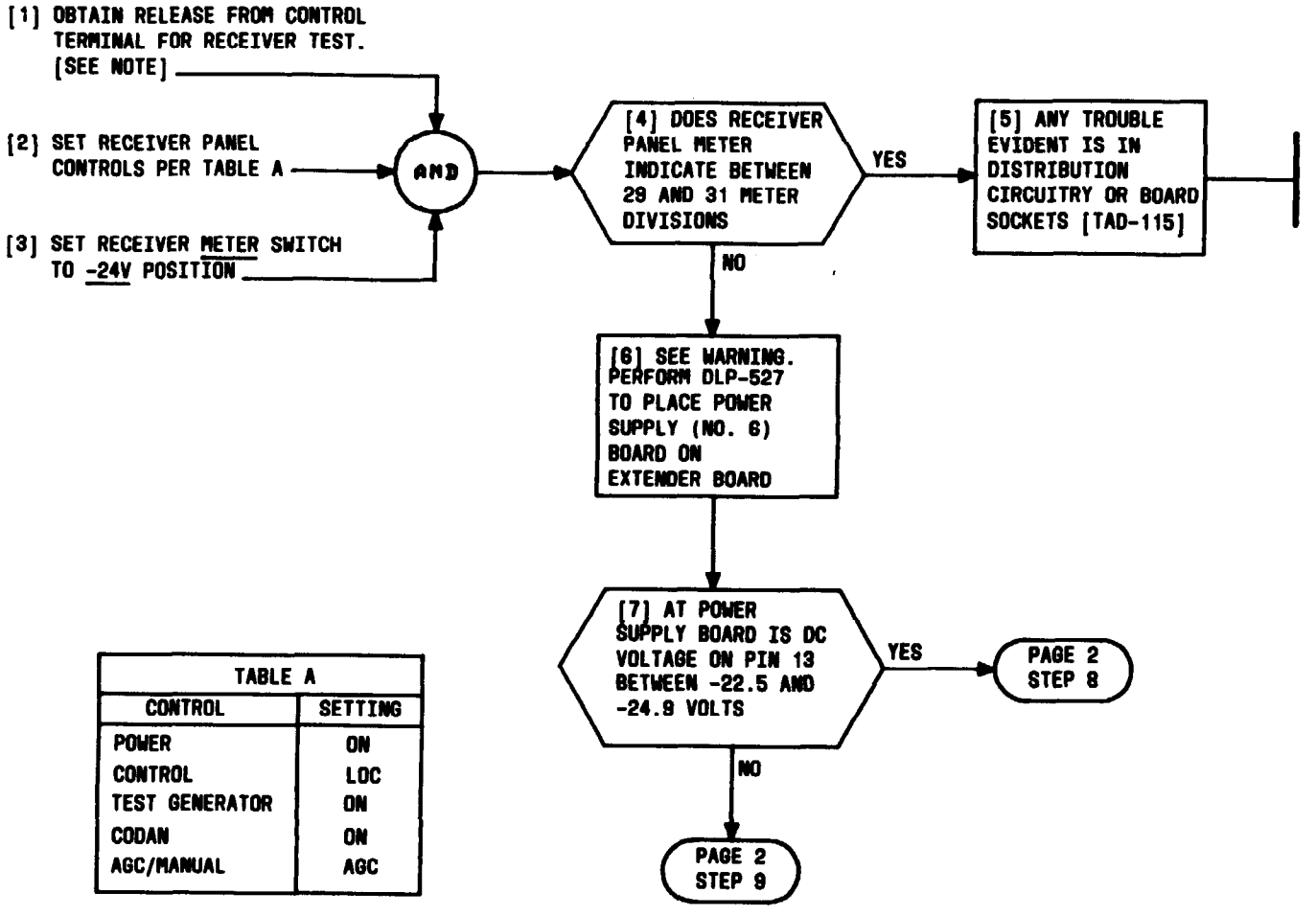
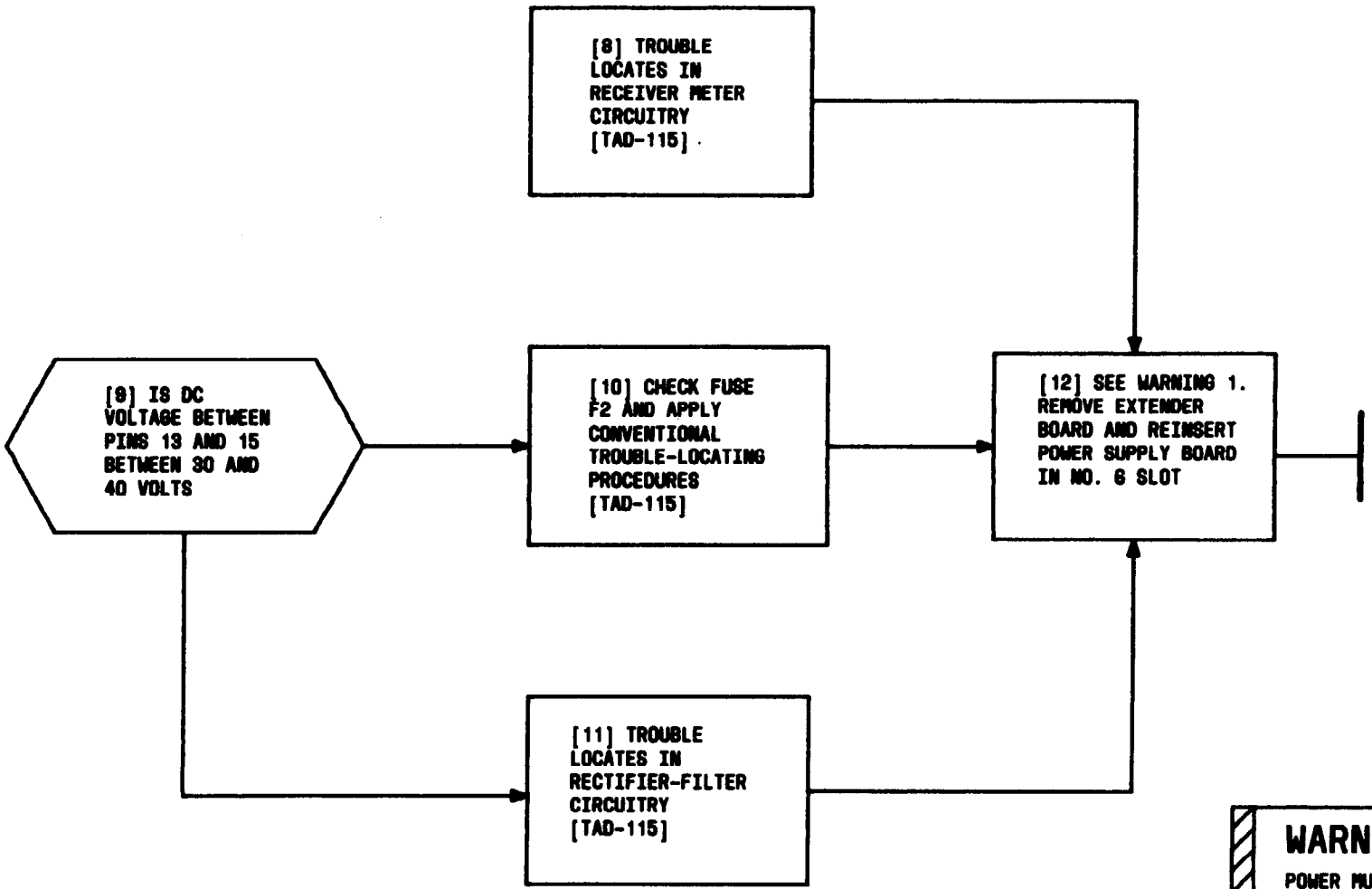


TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON
AGC/MANUAL	AGC

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR –24 VOLT REGULATED POWER SUPPLY TROUBLE



WARNING 1

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR –24 VOLT REGULATED POWER SUPPLY TROUBLE

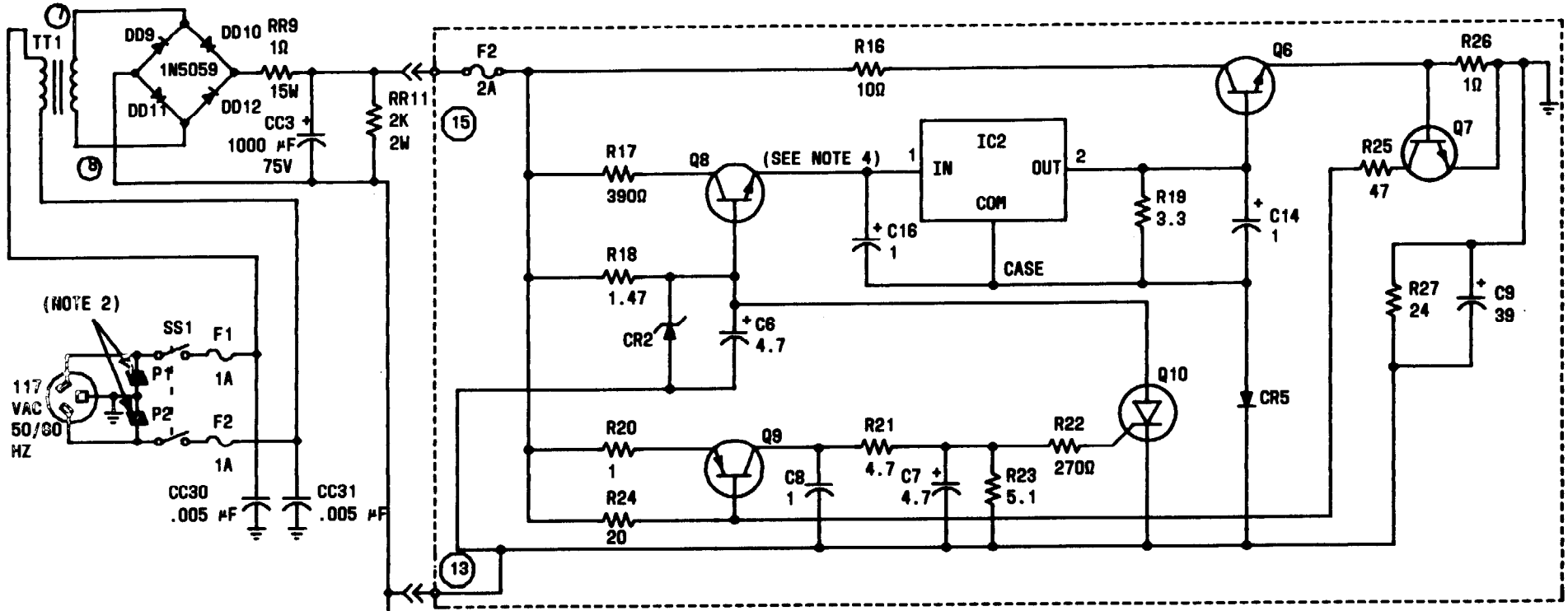


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FIG. 1 - POWER SUPPLY

NOTES:

1. ALL -24V LINES BYPASSED BY .1-µF 100V MYLAR CAPACITOR AT EACH CARD SOCKET. CAPACITORS ARE CC15-CC20
2. LIGHTNING PROTECTION - G.E. METAL OXIDE VARISTORS
3. CAPACITORS ARE LOCATED ON BACK OF BOARDS, SOLDERED DIRECTLY TO PINS
4. * FACTORY ADJUST

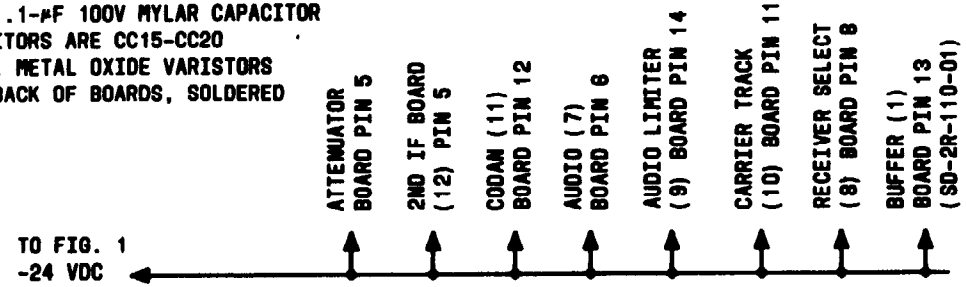

FIG. 2 - DISTRIBUTION

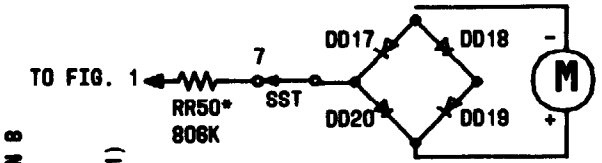

FIG. 3 - METER CIRCUIT

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-24 VOLT REGULATED POWER SUPPLY CIRCUIT

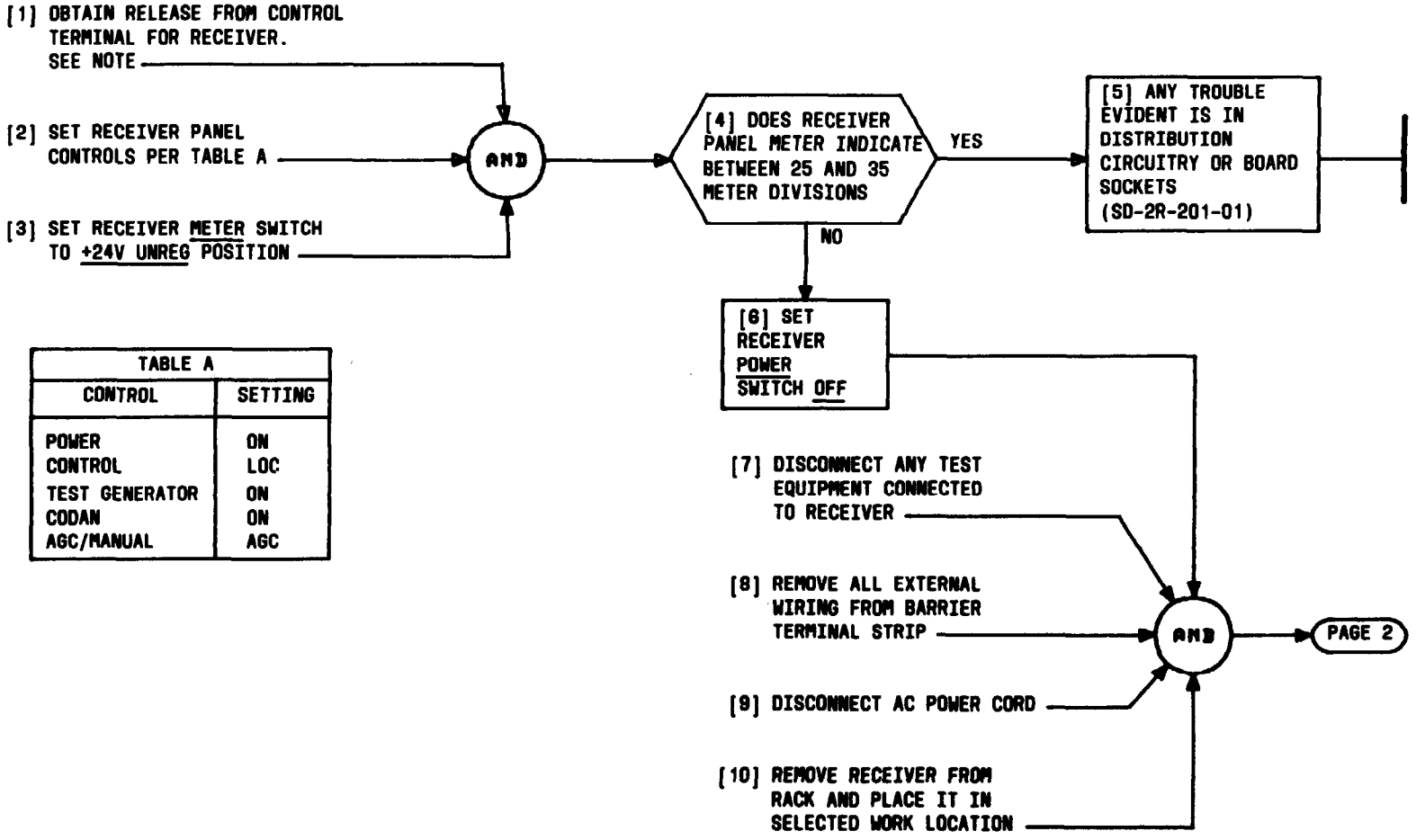
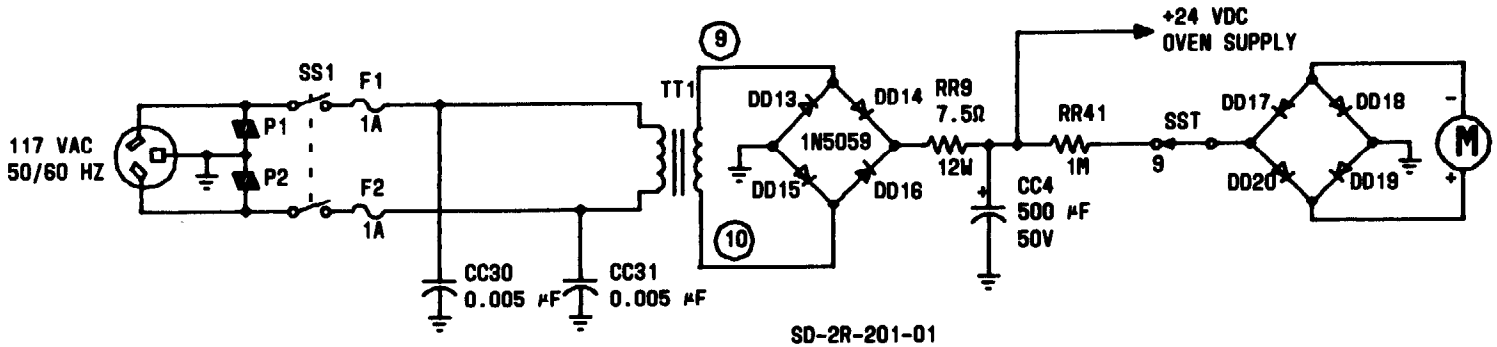


TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON
AGC/MANUAL	AGC

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

CLEAR +24 VOLT UNREGULATED POWER SUPPLY TROUBLE



SD-2R-201-01

FIG. 1 - POWER SUPPLY

[11] REMOVE RECEIVER TOP COVER BY REMOVING FOUR SCREWS ON EACH SIDE AND SLIDING COVER TO REAR

[12] PLACE RECEIVER IN POSITION SO THAT ABOVE CHASSIS COMPONENTS ARE ACCESSIBLE

[13] LOCATE JUNCTION POINT OF RESISTOR RR9 (7.5Ω, 12 WATT), CAPACITOR CC4 (500µF, 50V), LEAD TO RECEIVER METER CIRCUITRY AND LEAD TO VCO OVEN. SEE FIG. 1 AND SD-2R-201-01

[14] RECONNECT RECEIVER POWER CORD TO 117-VAC SOURCE

[15] SET RECEIVER POWER SWITCH ON

AND

[16] AT JUNCTION POINT LOCATED IN STEP 13, IS BETWEEN +23 AND +25 VOLTS DC PRESENT

YES

[17] TROUBLE LOCATES IN RECEIVER METER CIRCUITRY. SEE FIG. 1 AND SD-2R-201-01

NO

[18] TROUBLE LOCATES IN RECTIFIER-FILTER CIRCUITRY. SEE FIG. 1 AND SD-2R-201-01

CLEAR +24 VOLT UNREGULATED POWER SUPPLY TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] USING FREQUENCY COUNTER TERMINATED INTO 50 OHMS, MEASURE FREQUENCY AT PANEL BNC JACK MARKED HFO

[4] IS FREQUENCY INDICATED BETWEEN 1.499998 AND 1.500002 MHZ ABOVE ASSIGNED CHANNEL FREQUENCY

NO

YES

[5] NO TROUBLE NOW EVIDENT, OR MAY BE INTERMITTENT IN NATURE

[6] SET PANEL METER SWITCH TO +24V POSITION

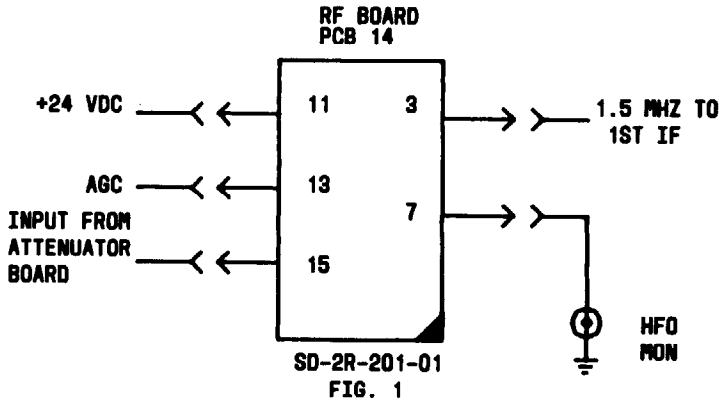
[7] DOES METER INDICATE BETWEEN ONE MARKED DIVISION ABOVE OR BELOW RED LINE MARK

YES

PAGE 2

NO

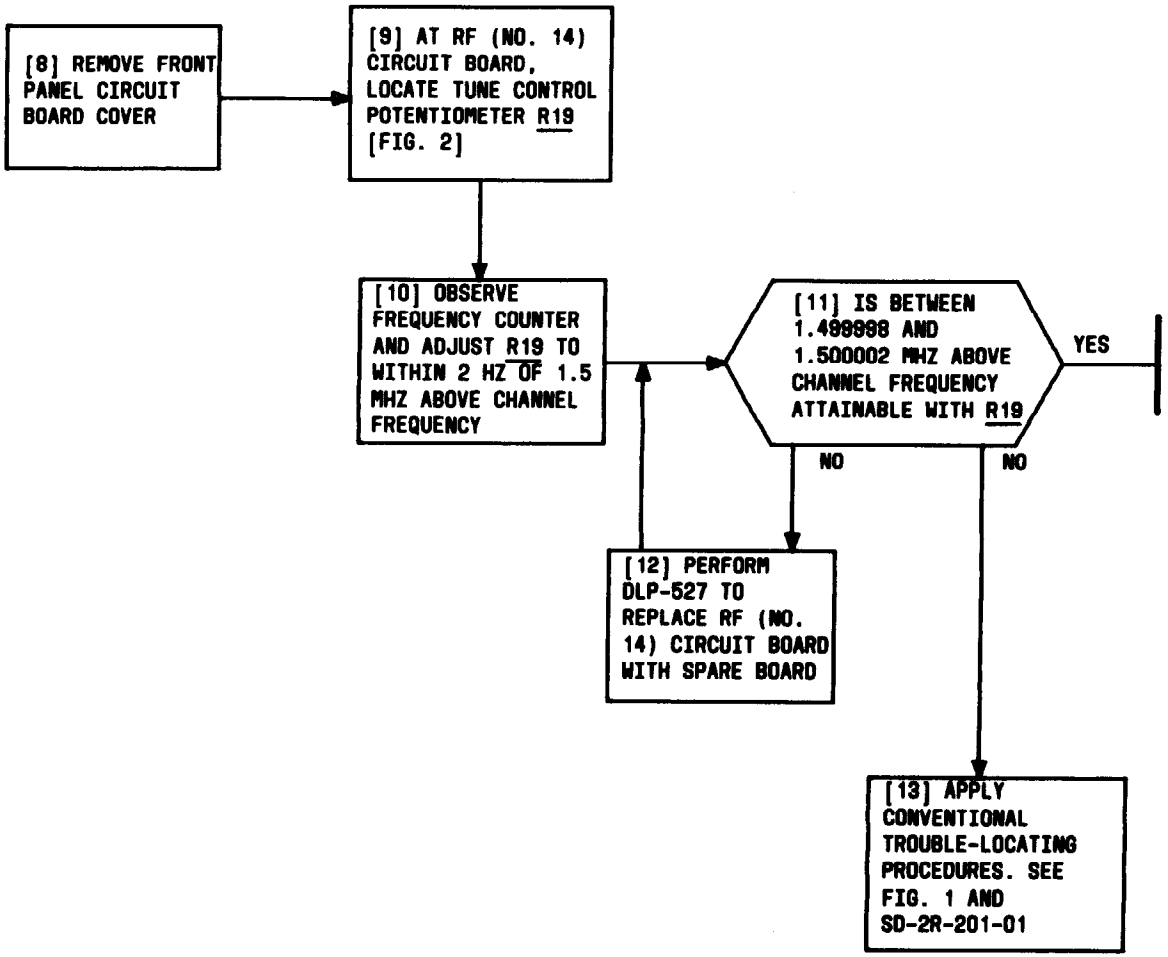
TAP-110



SD-2R-201-01
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE OR CONTINUE WITH OTHER TESTING, AS REQUIRED

CLEAR HIGH-FREQUENCY OSCILLATOR TROUBLE



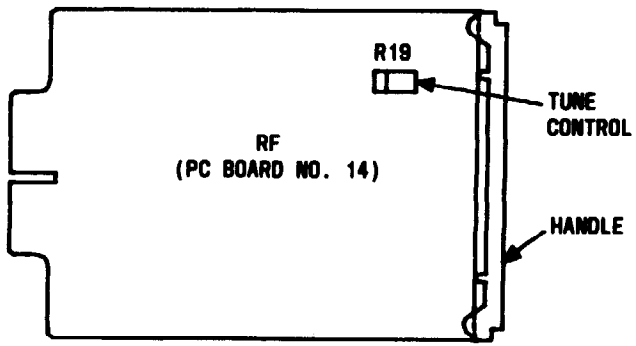


FIG. 2 - RF BOARD

CLEAR HIGH-FREQUENCY OSCILLATOR TROUBLE

CLEAR FIRST IF LOCAL (1.6 MHZ) OSCILLATOR TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] USING FREQUENCY COUNTER TERMINATED INTO 50 OHMS, MEASURE FREQUENCY AT PANEL BNC JACK MARKED 1.6 MHZ

[4] IS FREQUENCY INDICATED BETWEEN 1.599998 AND 1.600002 MHZ

NO

YES

[5] NO TROUBLE NOW EVIDENT, OR MAY BE INTERMITTENT IN NATURE

[6] SET PANEL METER SWITCH TO +24V POSITION

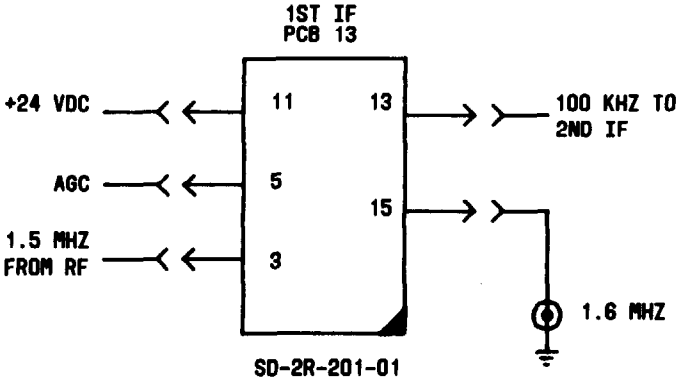
[7] DOES METER INDICATE BETWEEN ONE MARKED DIVISION ABOVE OR BELOW RED LINE MARK

YES

PAGE 2

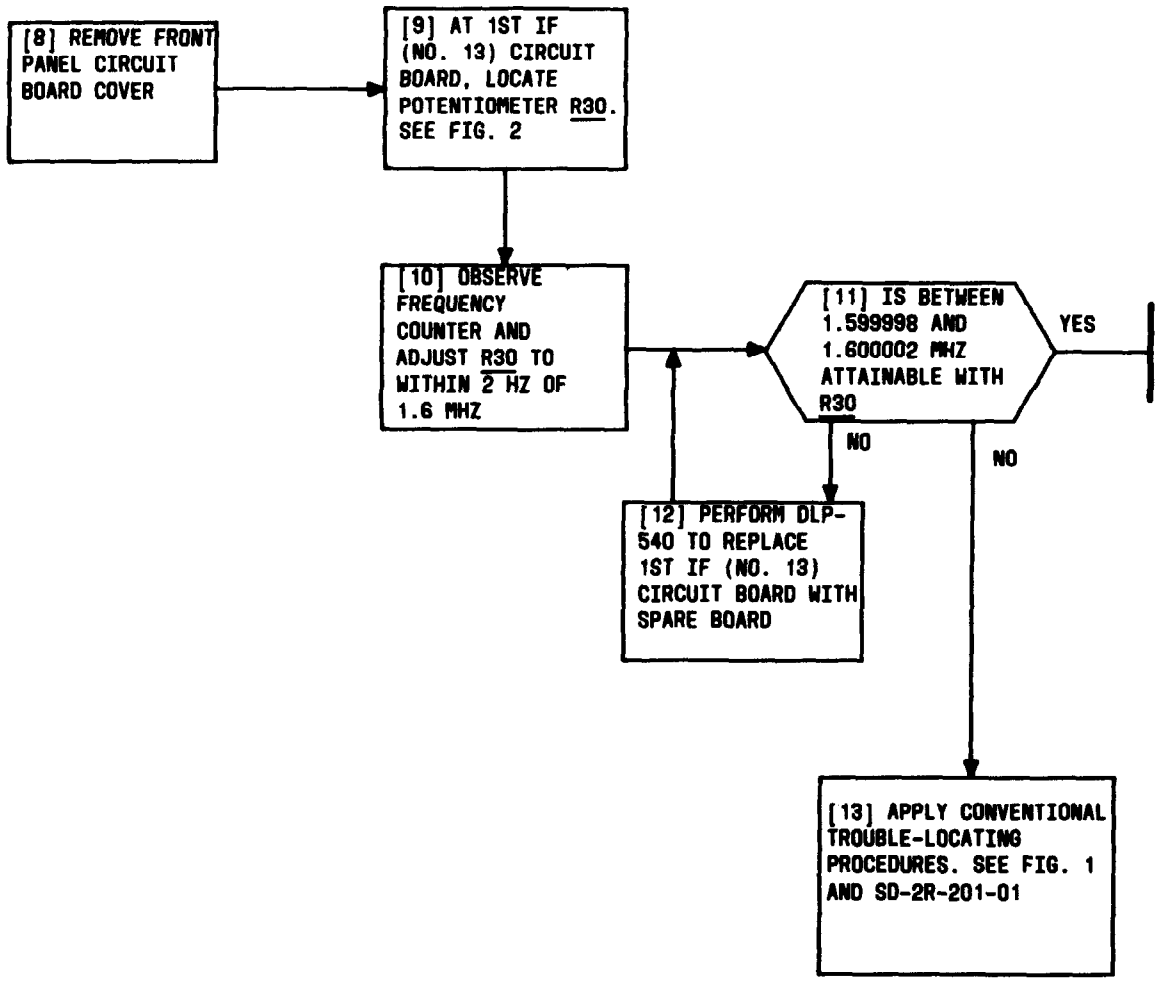
NO

TAP-110



SD-2R-201-01
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED



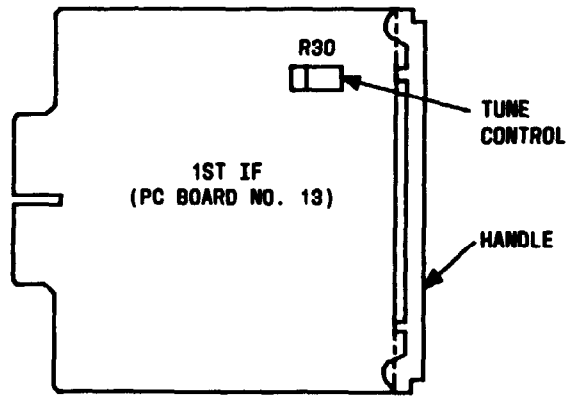


FIG. 2 - 1ST IF BOARD

CLEAR FIRST IF LOCAL (1.6 MHZ) OSCILLATOR TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION AND SET TEST GENERATOR SWITCH TO ON OR FREQ TEST POSITION

[3] USING FREQUENCY COUNTER TERMINATED INTO 50 OHMS, MEASURE FREQUENCY AT PANEL BNC JACK MARKED TEST GEN

[4] IS FREQUENCY INDICATED BETWEEN 1.499998 AND 1.500002 MHZ ABOVE ASSIGNED CHANNEL FREQUENCY

NO → [6] SET PANEL METER SWITCH TO +24V POSITION

[7] DOES METER INDICATE BETWEEN ONE MARKED DIVISION ABOVE OR BELOW RED LINE MARK

YES → PAGE 2

NO → TAP-110

YES → [5] NO TROUBLE NOW EVIDENT, OR MAY BE INTERMITTENT IN NATURE

TEST GENERATOR CONTROL BOARD

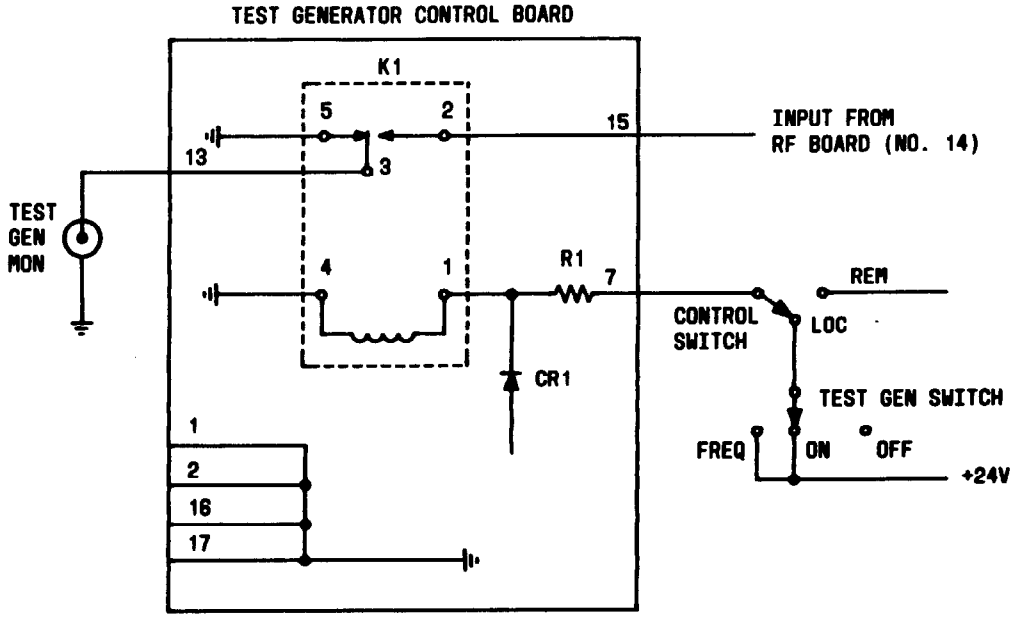
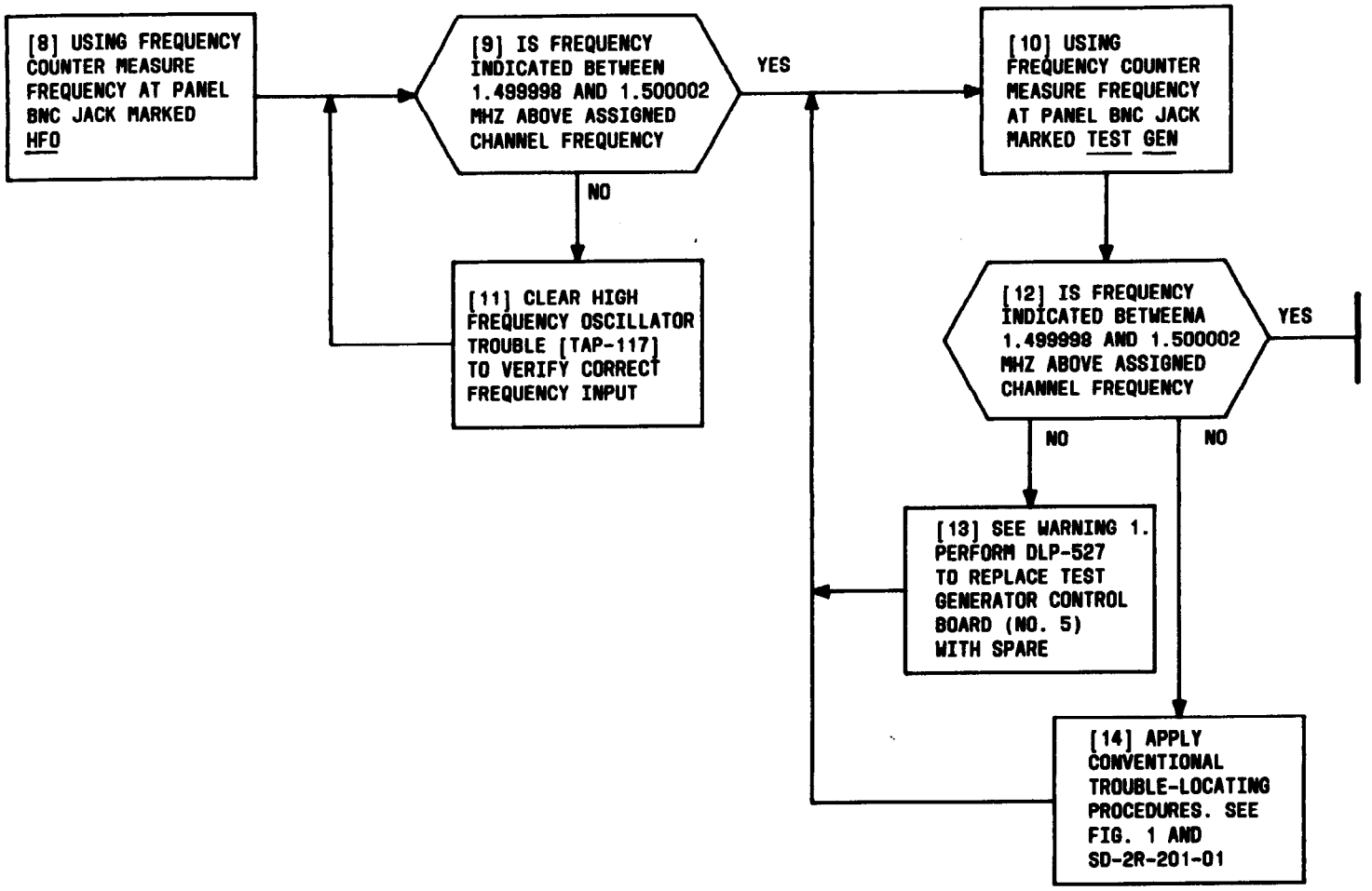


FIG. 1

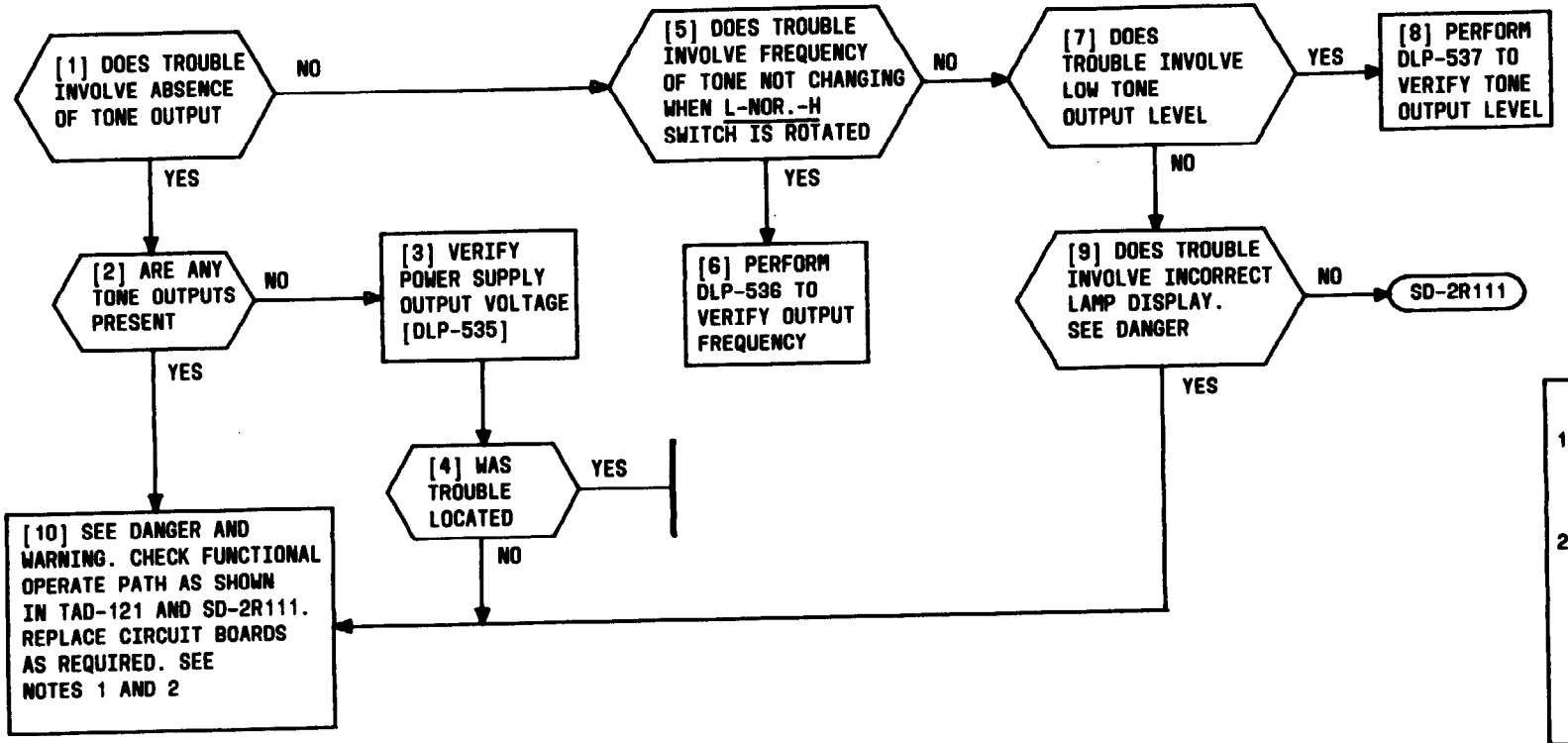
NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

CLEAR TEST GENERATOR FREQUENCY TROUBLE



WARNING 1
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

CLEAR TEST GENERATOR FREQUENCY TROUBLE



NOTES

1. PARTICULAR ATTENTION SHOULD BE GIVEN TO FAULTY AND INTERMITTENT SWITCH CONTACTS
2. WHEN OSCILLATOR POTENTIOMETER OR OSCILLATOR-SWITCH-COMBINER BOARDS ARE REPLACED, PERFORM DLP-536 AND DLP-537 TO VERIFY FREQUENCY AND LEVEL OUTPUTS

WARNING

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

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CLEAR ROUTINER TEST SET TROUBLES

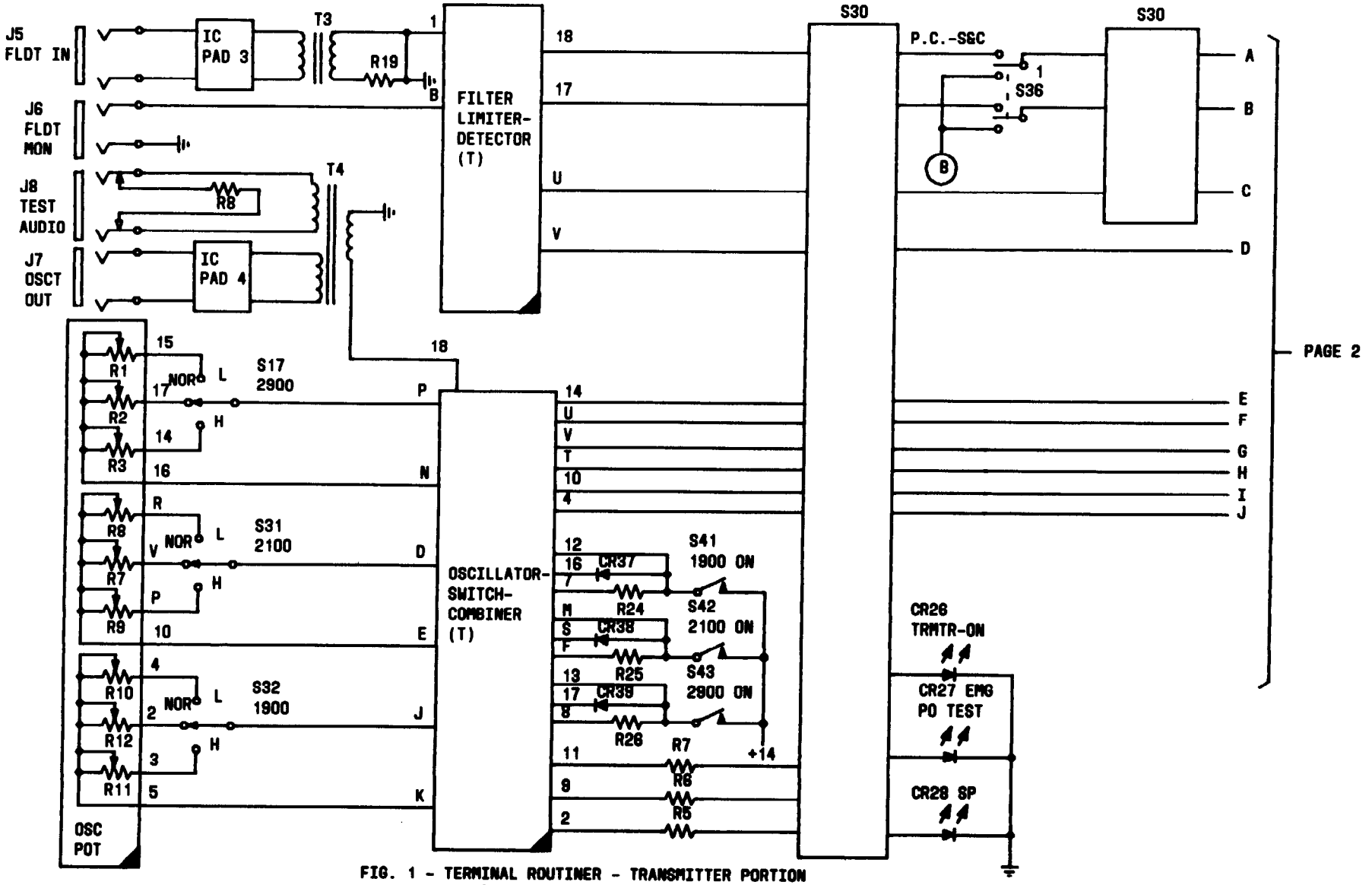

FIG. 1 - TERMINAL ROUTINER - TRANSMITTER PORTION
SD-2R111

ROUTINER TEST SET CIRCUITS

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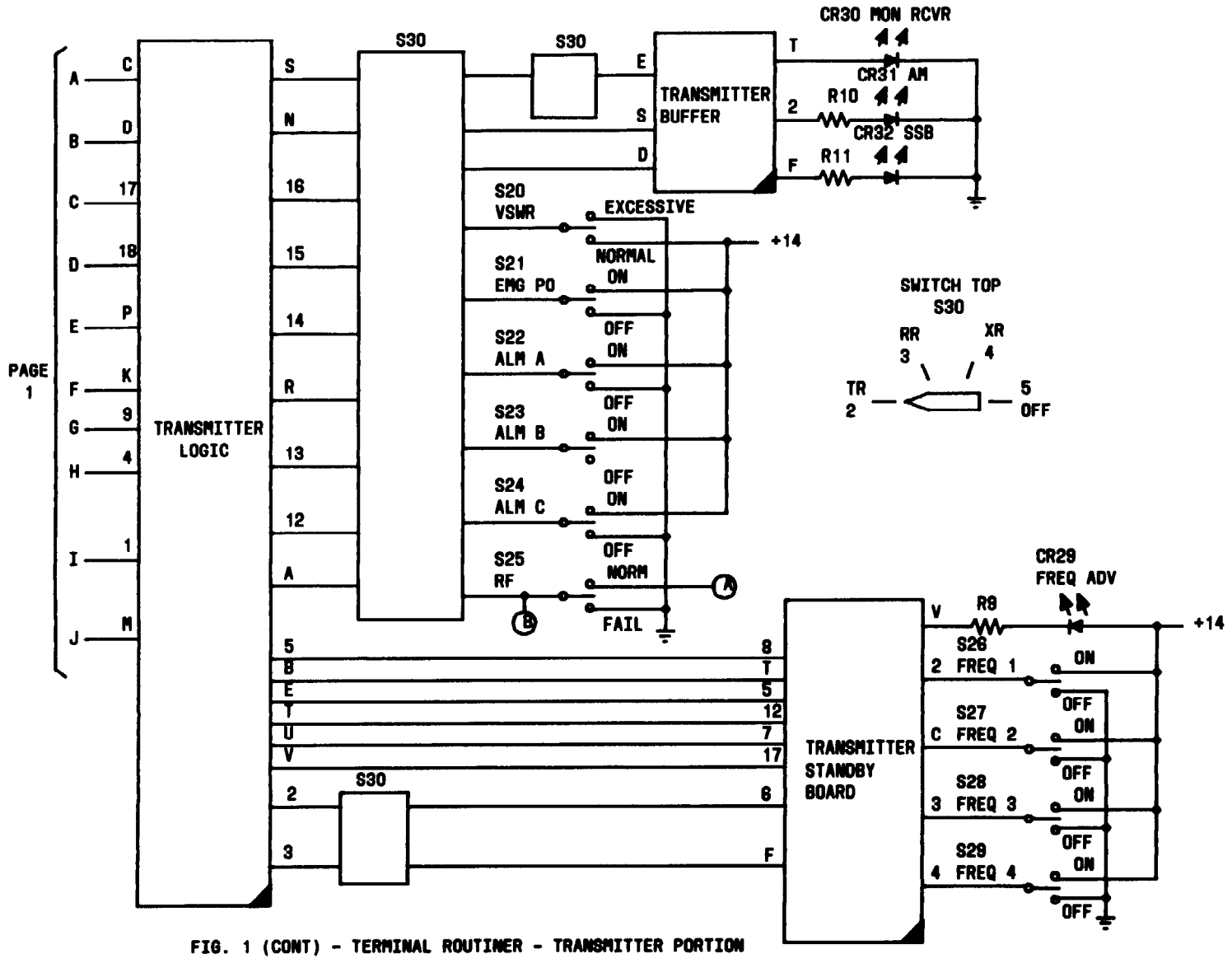

FIG. 1 (CONT) - TERMINAL ROUTINER - TRANSMITTER PORTION
SD-2R111

ROUTINER TEST SET CIRCUITS

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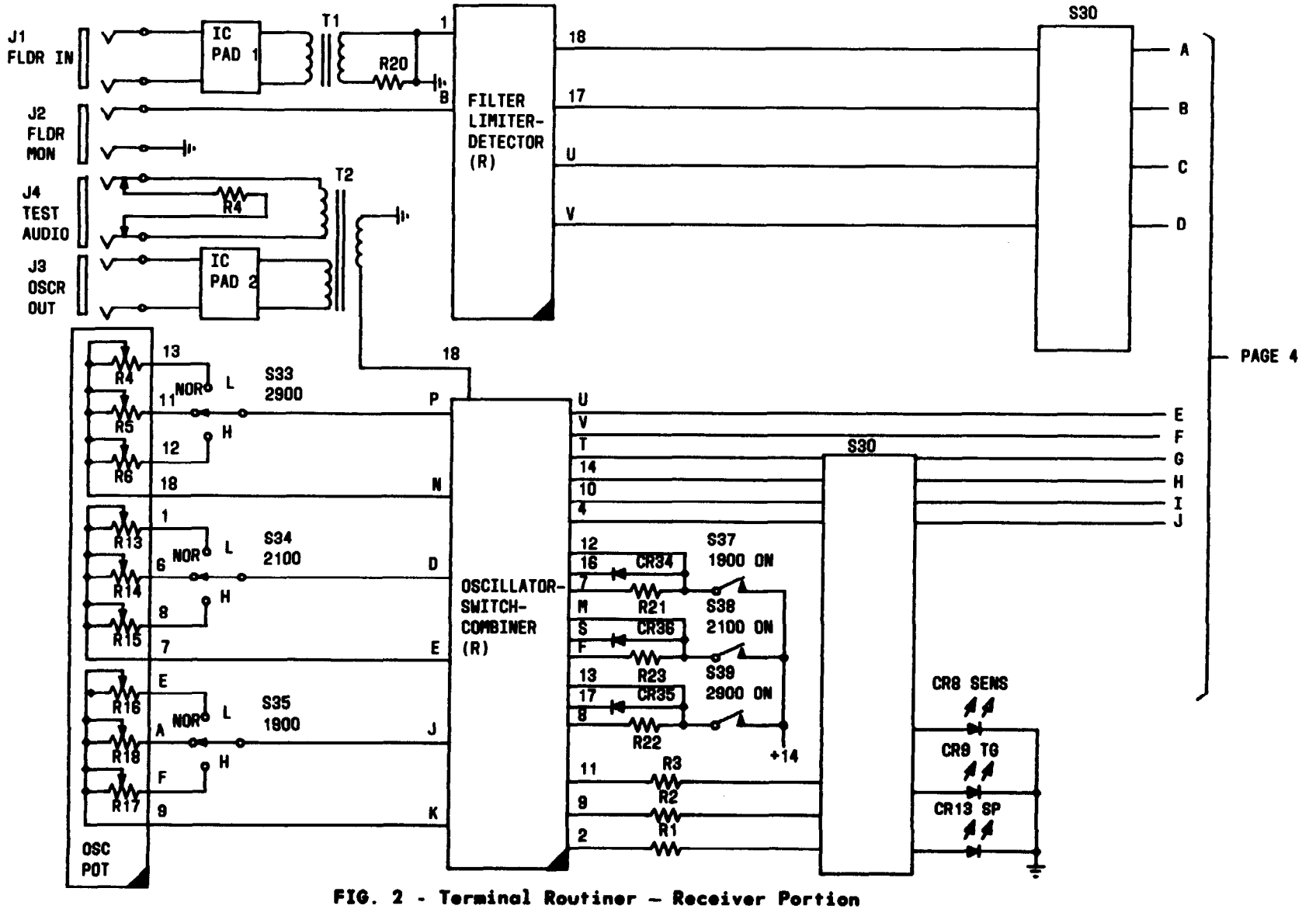

FIG. 2 - Terminal Routiner – Receiver Portion
SD-2R111

ROUTINER TEST SET CIRCUITS

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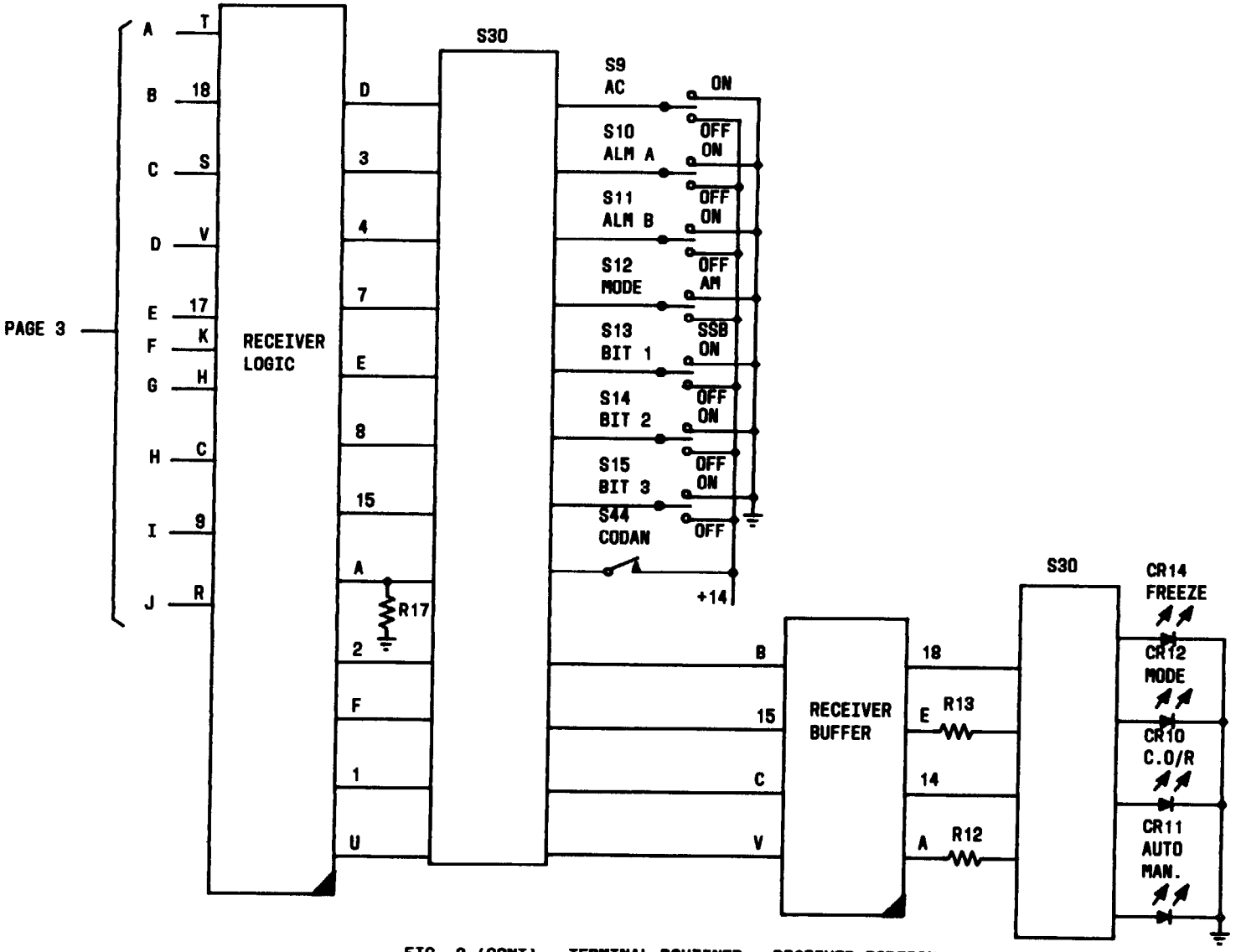

FIG. 2 (CONT) - TERMINAL ROUTINER - RECEIVER PORTION
SD-2R111

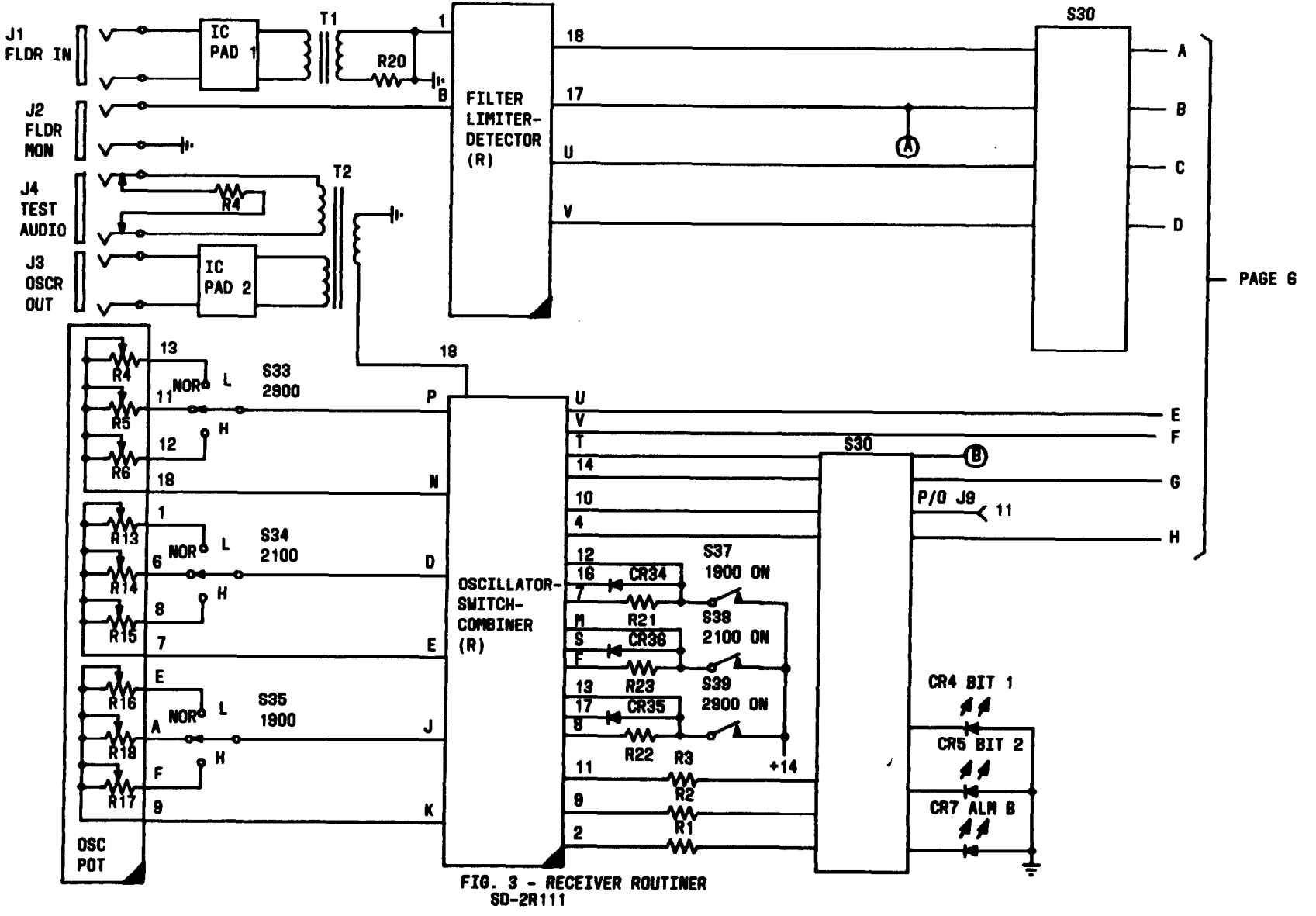

FIG. 3 - RECEIVER ROUTINER
SD-2R111

ROUTINER TEST SET CIRCUITS

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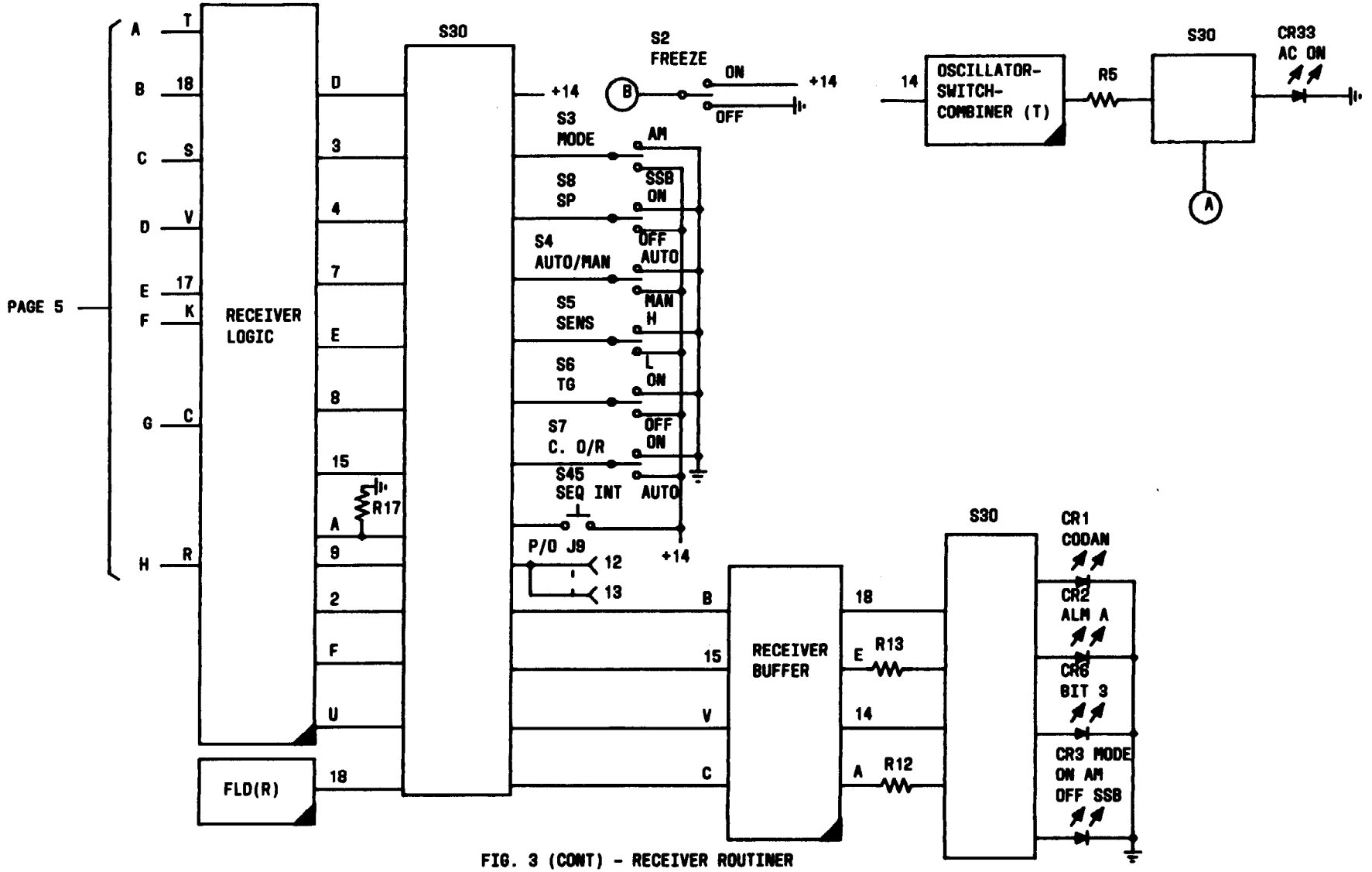

FIG. 3 (CONT) - RECEIVER ROUTINER
SD-2R111

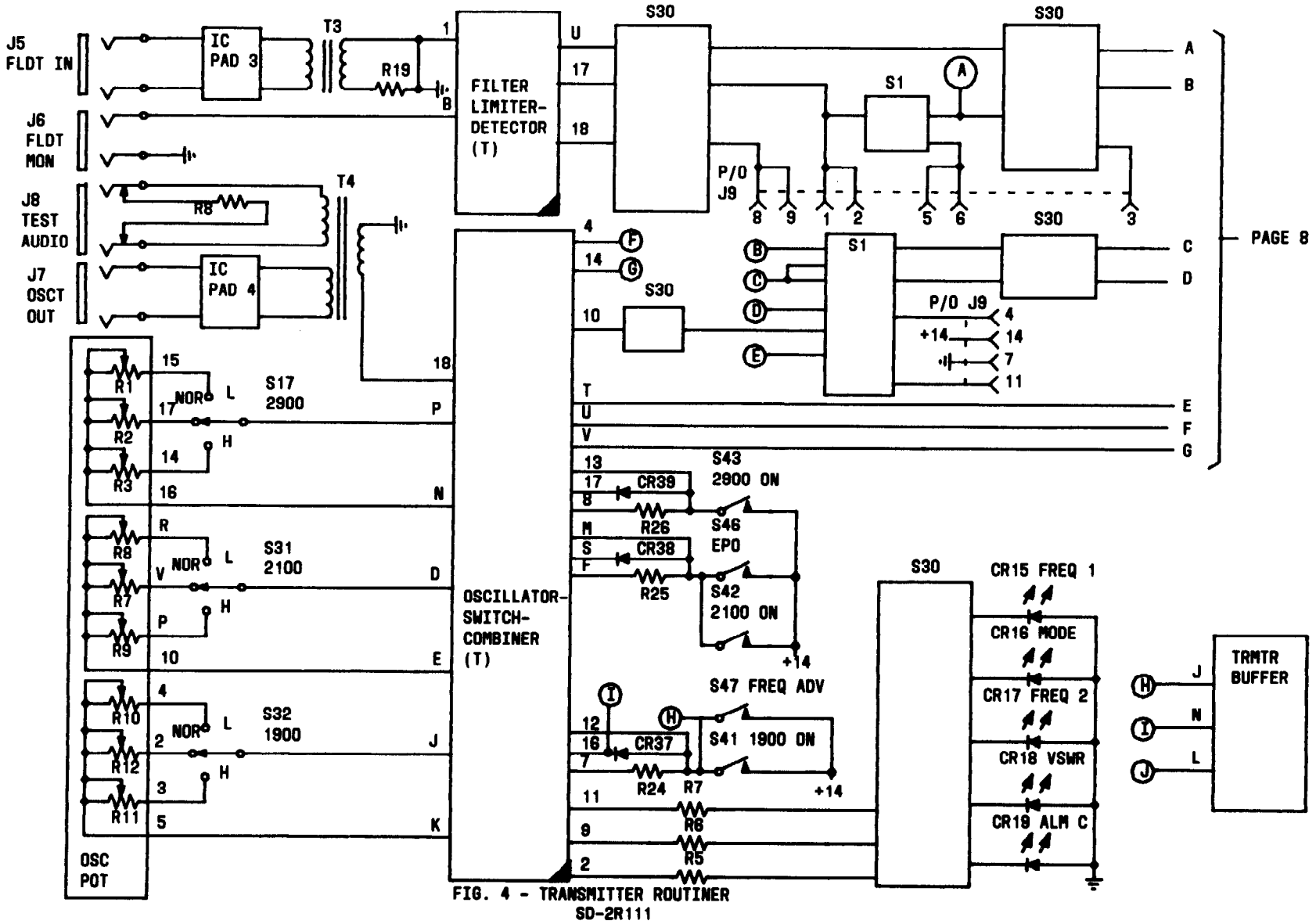

FIG. 4 - TRANSMITTER ROUTINER
SD-2R111

ROUTINER TEST SET CIRCUITS

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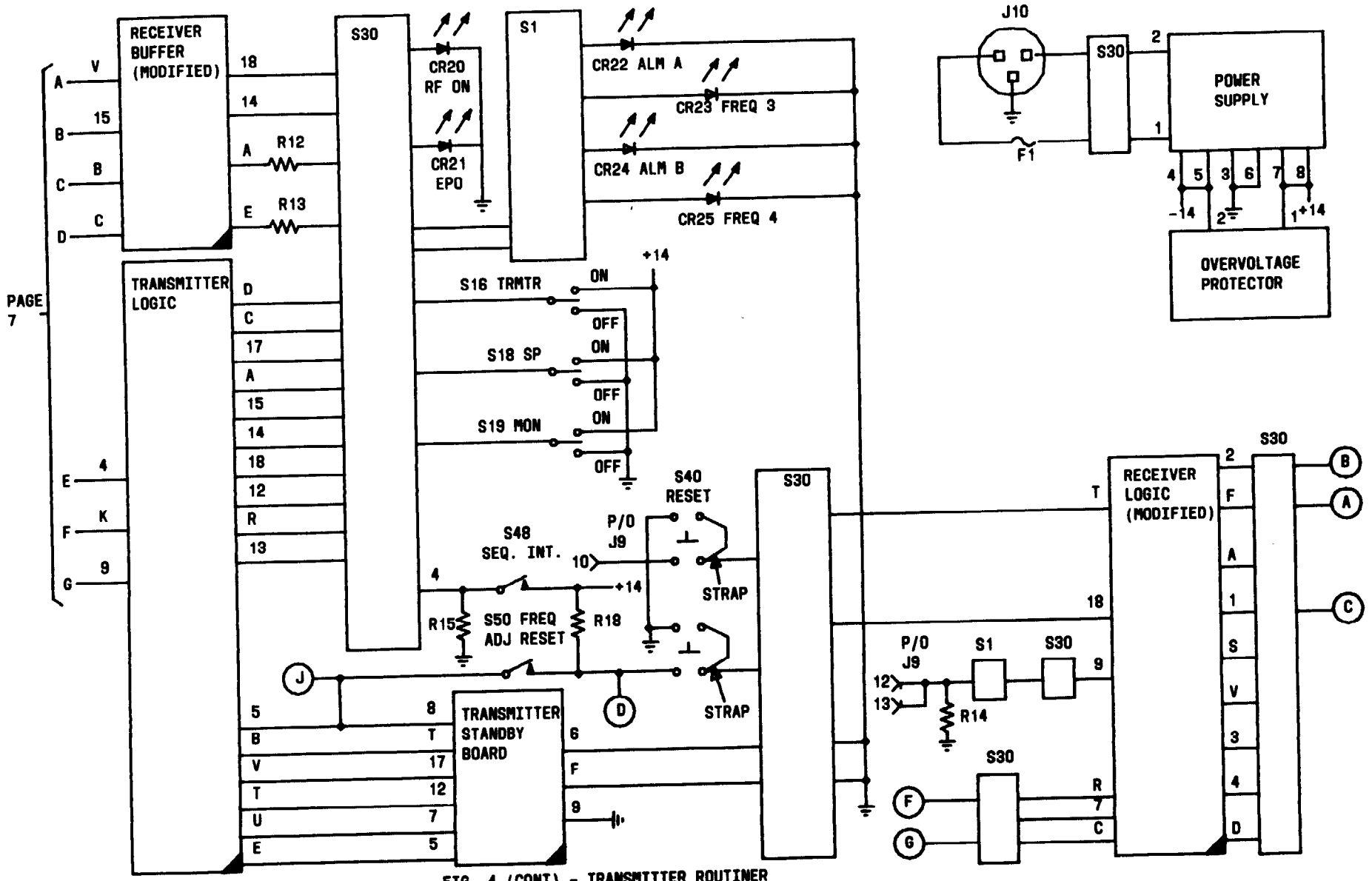

FIG. 4 (CONT) - TRANSMITTER ROUTINER
SD-2R111

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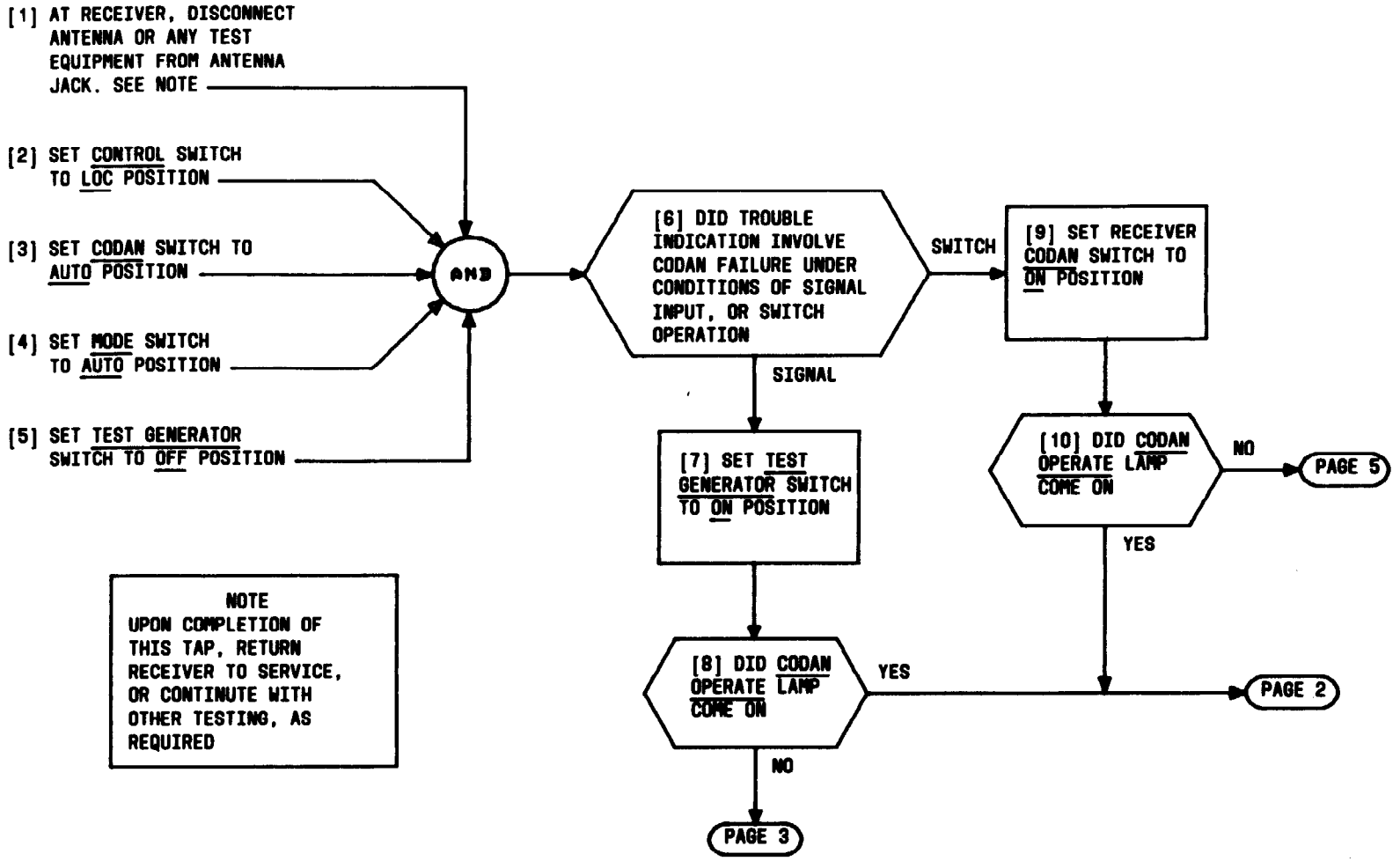
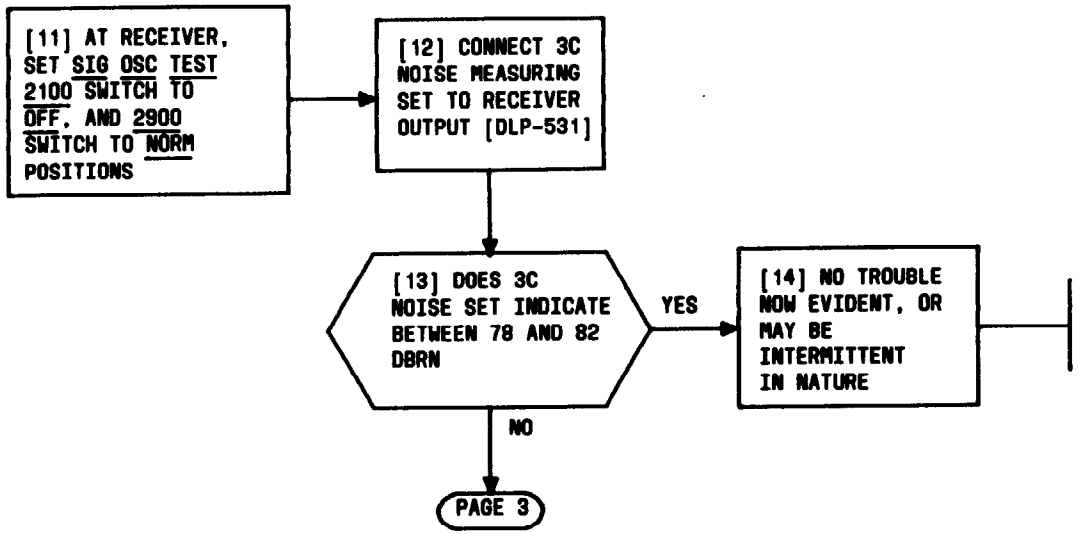
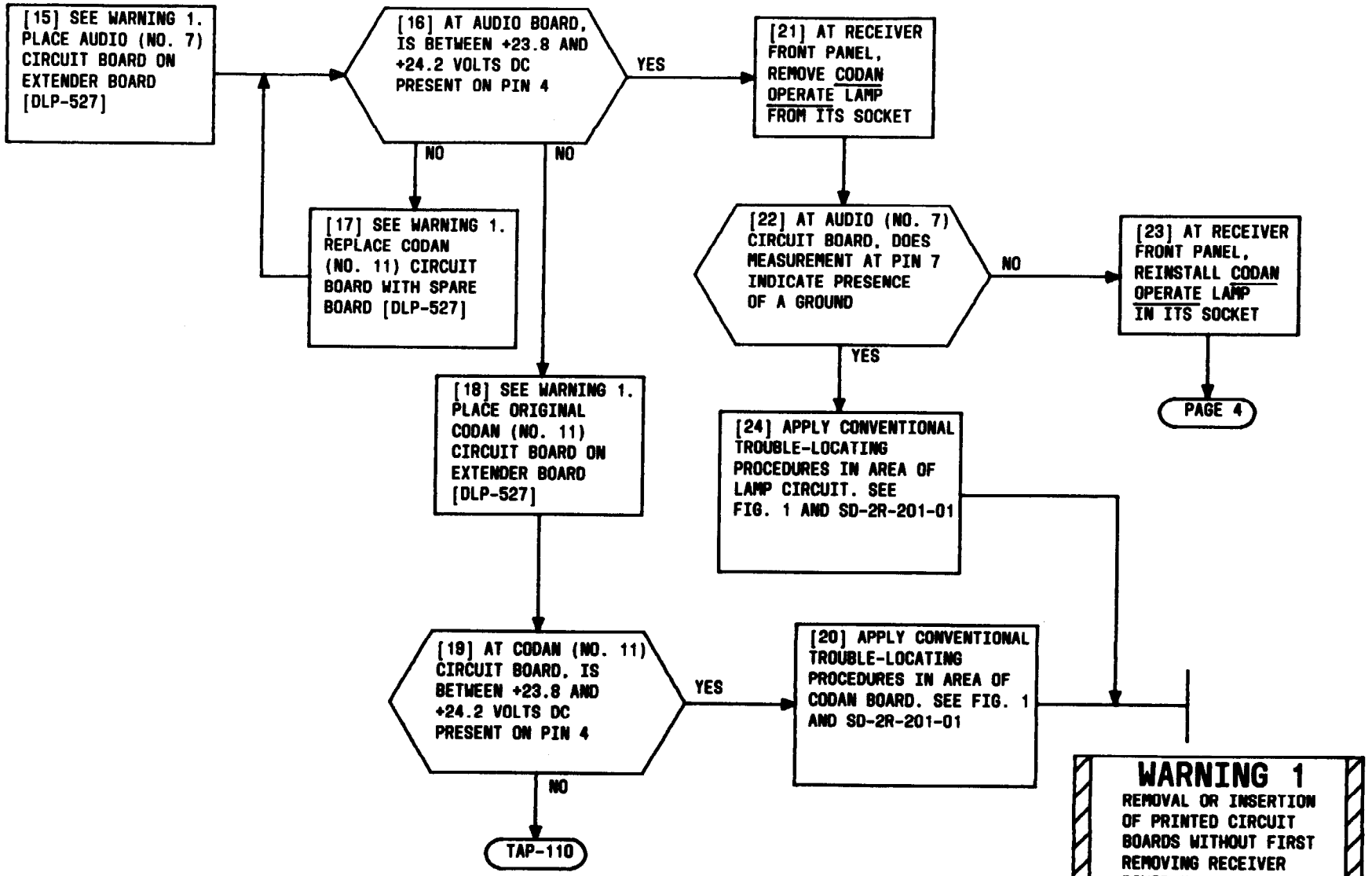
ROUTINER TEST SET CIRCUITS



CLEAR CODAN OPERATE TROUBLE



CLEAR CODAN OPERATE TROUBLE



CLEAR CODAN OPERATE TROUBLE

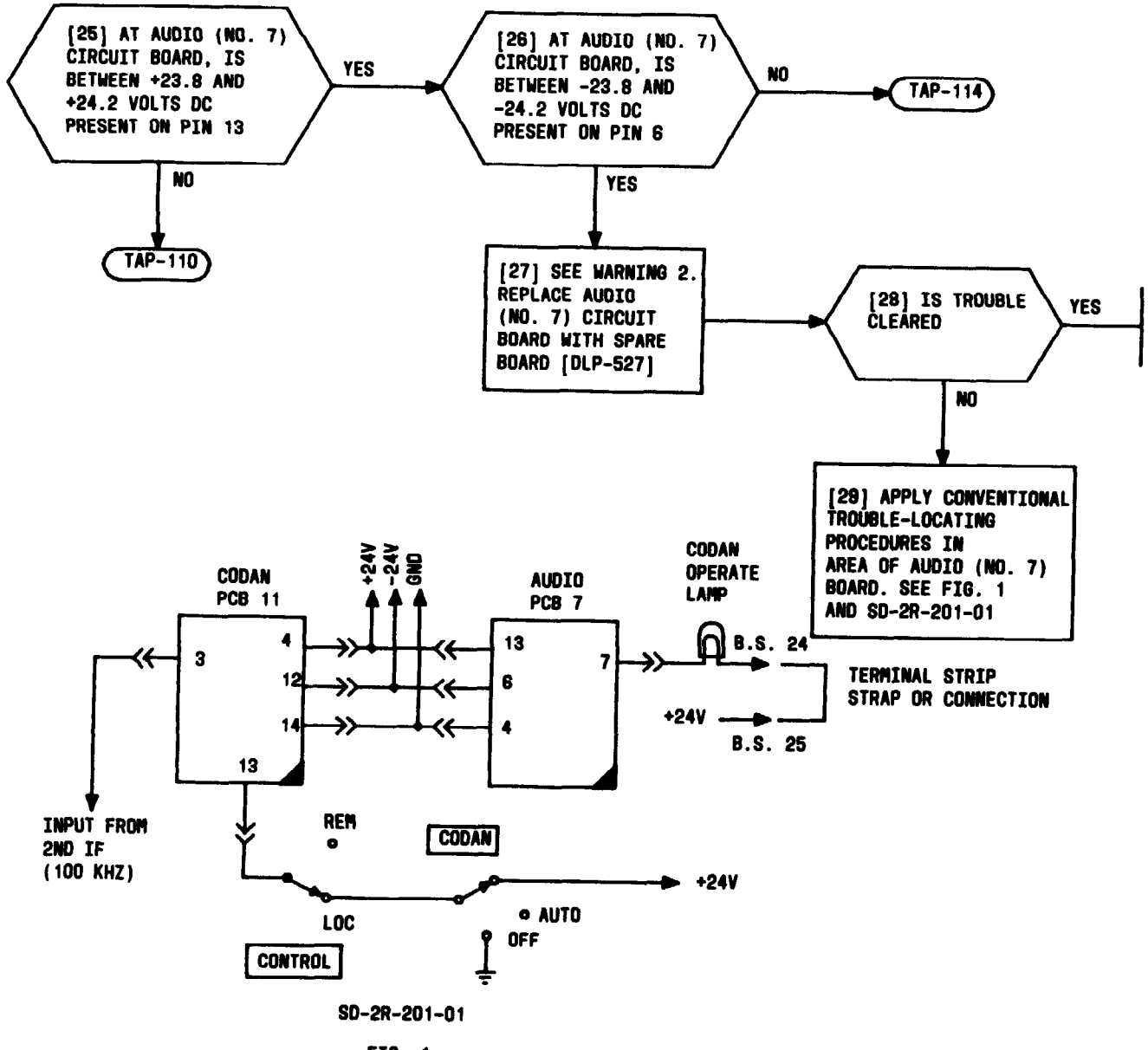


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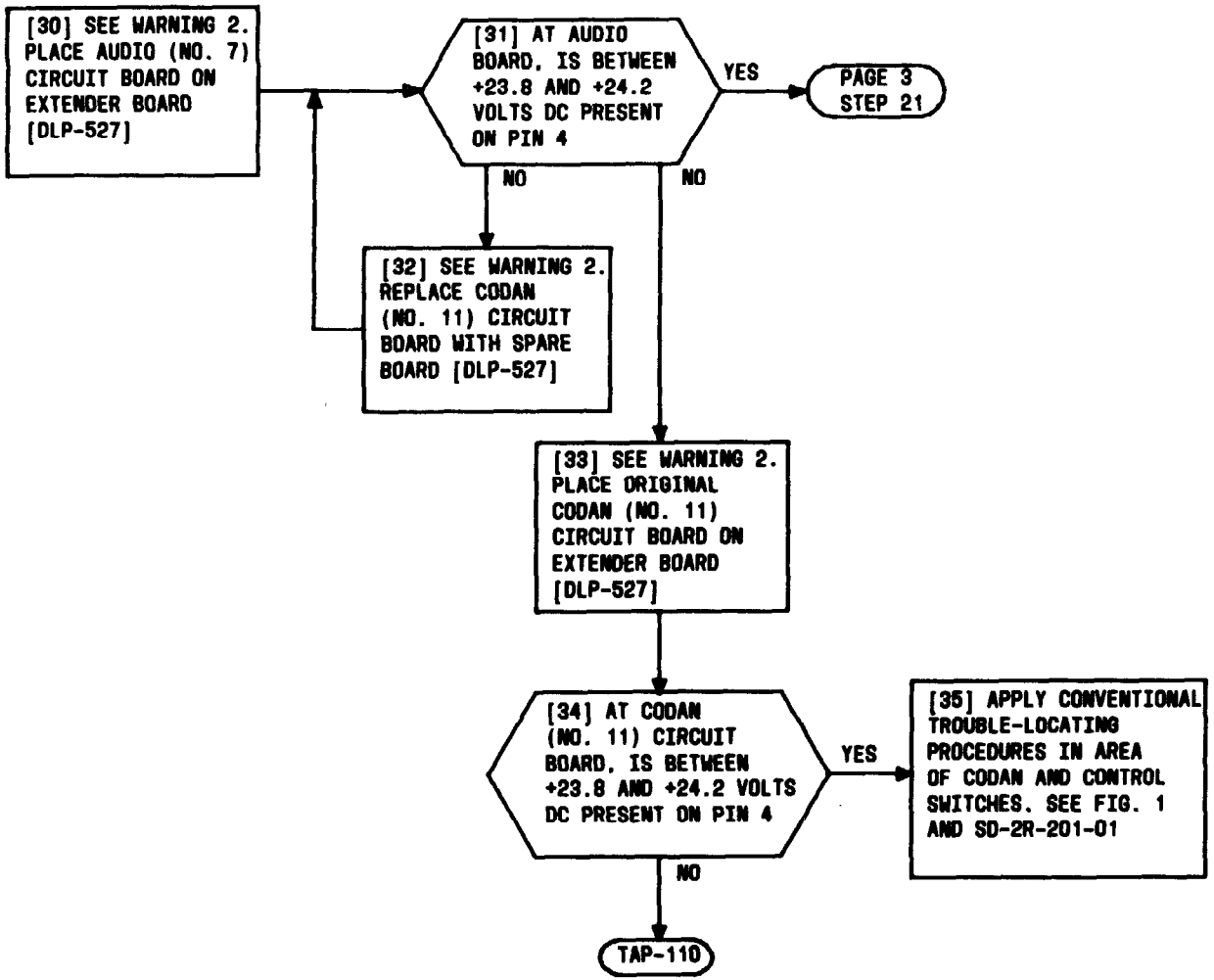
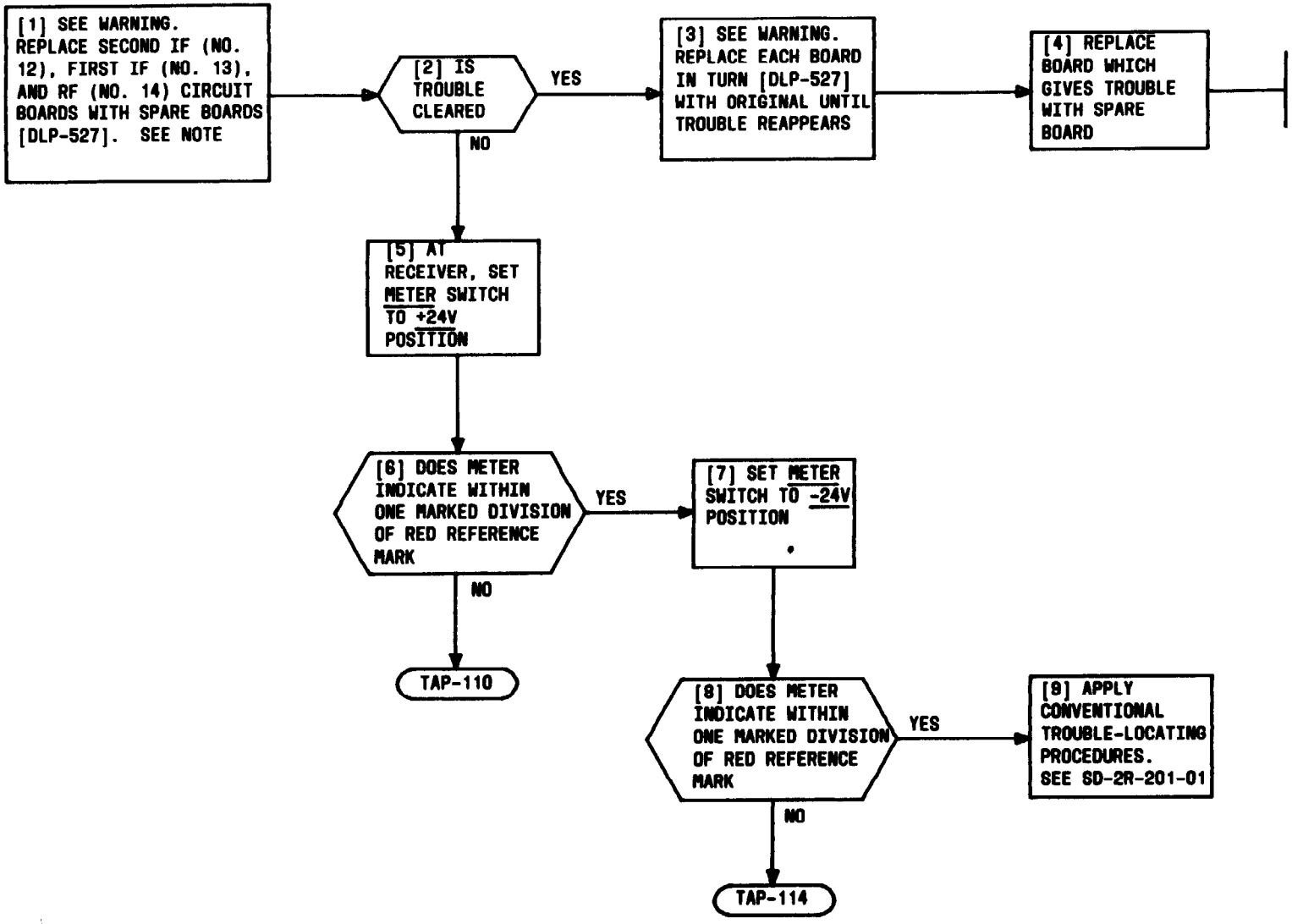
FIG. 1

CLEAR CODAN OPERATE TROUBLE



WARNING 2
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

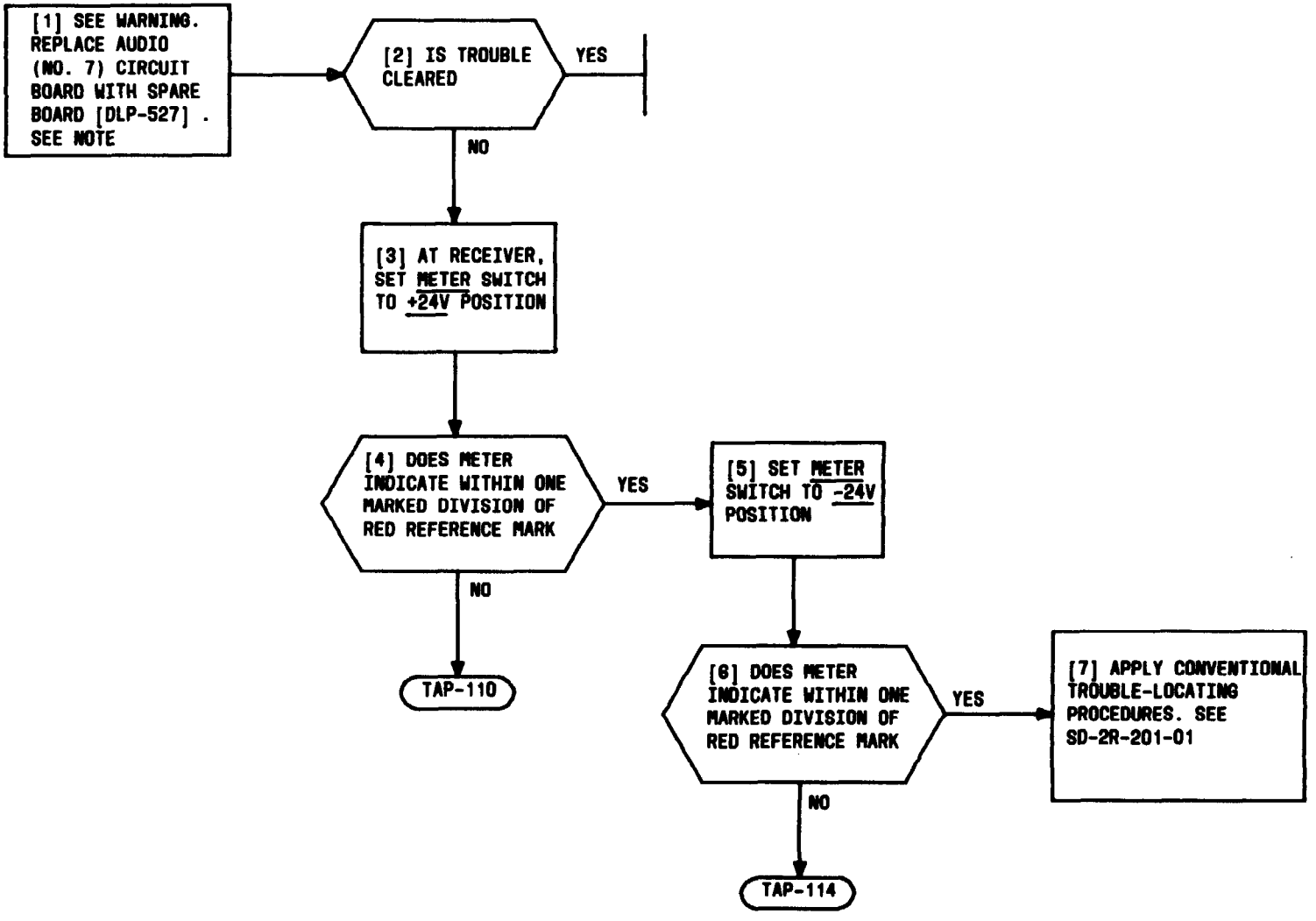
CLEAR CODAN OPERATE TROUBLE



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

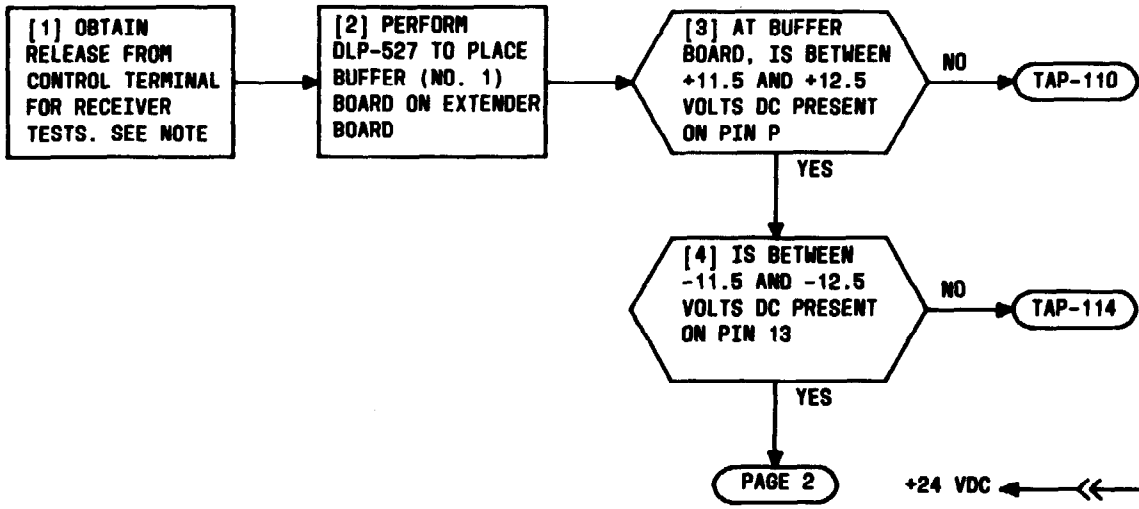
CLEAR AUTOMATIC GAIN CONTROL TROUBLE



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

CLEAR SSB AUDIO OUTPUT LEVEL TROUBLE



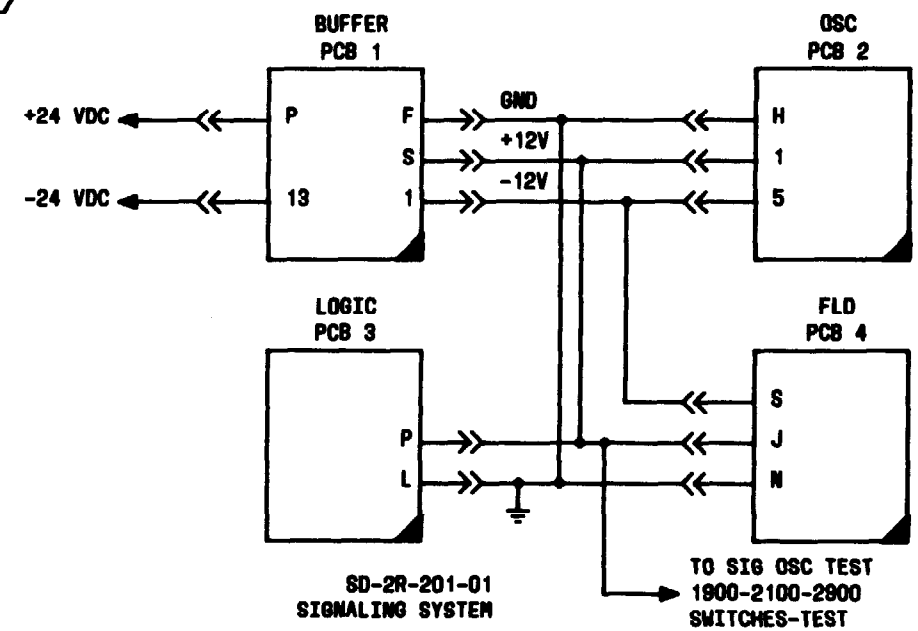


FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

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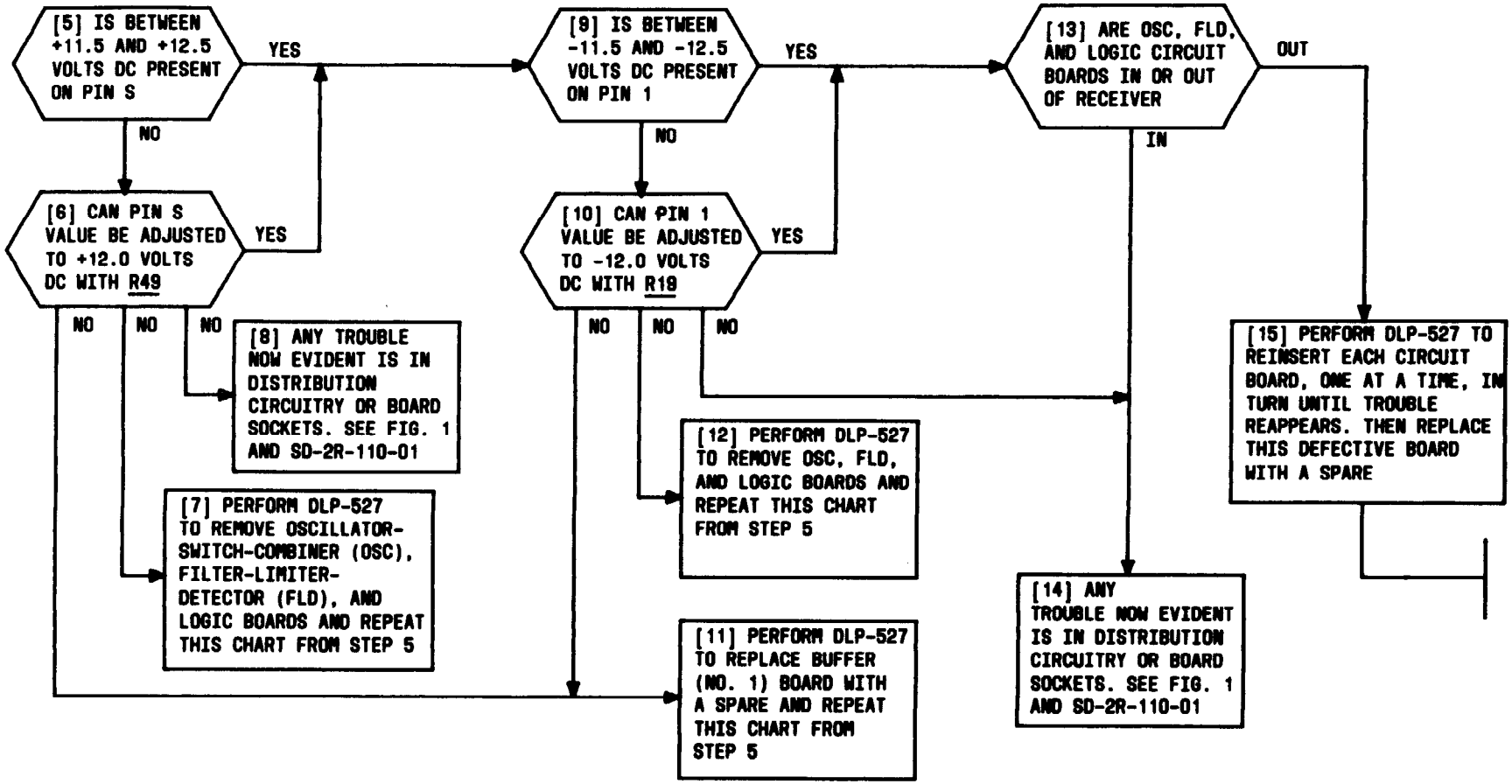
CLEAR +12 VOLT AND -12 VOLT POWER SUPPLY TROUBLE



CLEAR +12 VOLT AND -12 VOLT POWER SUPPLY TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] DISCONNECT ANY TEST EQUIPMENT PREVIOUSLY CONNECTED

ON RECEIVER:

[3] SET POWER-ON-OFF SWITCH TO OFF

[4] DISCONNECT ANTENNA INPUT

[5] DISCONNECT POWER CORD

[6] MARK OR LABEL AND THEN REMOVE EXTERNAL WIRING FROM BARRIER STRIP

AND

[7] REMOVE RECEIVER FROM RACK

[8] REMOVE RECEIVER TOP COVER BY REMOVING FOUR SCREWS ON EACH SIDE AND SLIDING COVER TO REAR

[9] RECONNECT POWER CORD TO RECEIVER

[10] GET TEST EQUIPMENT PER TABLE A

[11] CONDITION HP-3469 MULTIMETER TO READ DC VOLTS [DLP-529]

[12] CONNECT MULTIMETER LEADS TO ATTENUATOR BOARD PINS 8(-) AND GROUND(+)

AND

PAGE 2

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
NOISE MEASURING SET	WECO J94003C
T CONNECTOR	BNC UG274 B/U
ADAPTER BNC MALE	UG491 A/U
TELEPHONE PATCH CORD	3P6C
4 6- FOOT COAXIAL CABLES	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
DIGITAL MULTIMETER	HP-3469B

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

SET AGC REFERENCE LEVEL

[13] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[14] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[15] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D RF ATTENUATOR WITH RG 58/U CABLE

AND

PAGE 3

[16] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 CONTINUOUSLY VARIABLE ATTENUATOR WITH UG491 A/U BNC MALE ADAPTER

[17] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

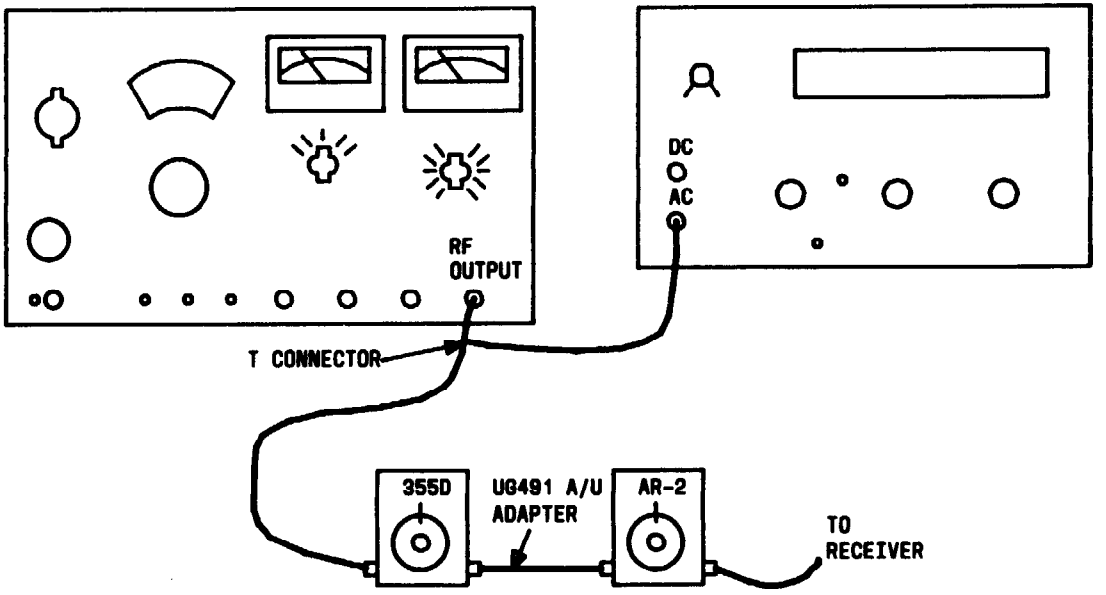
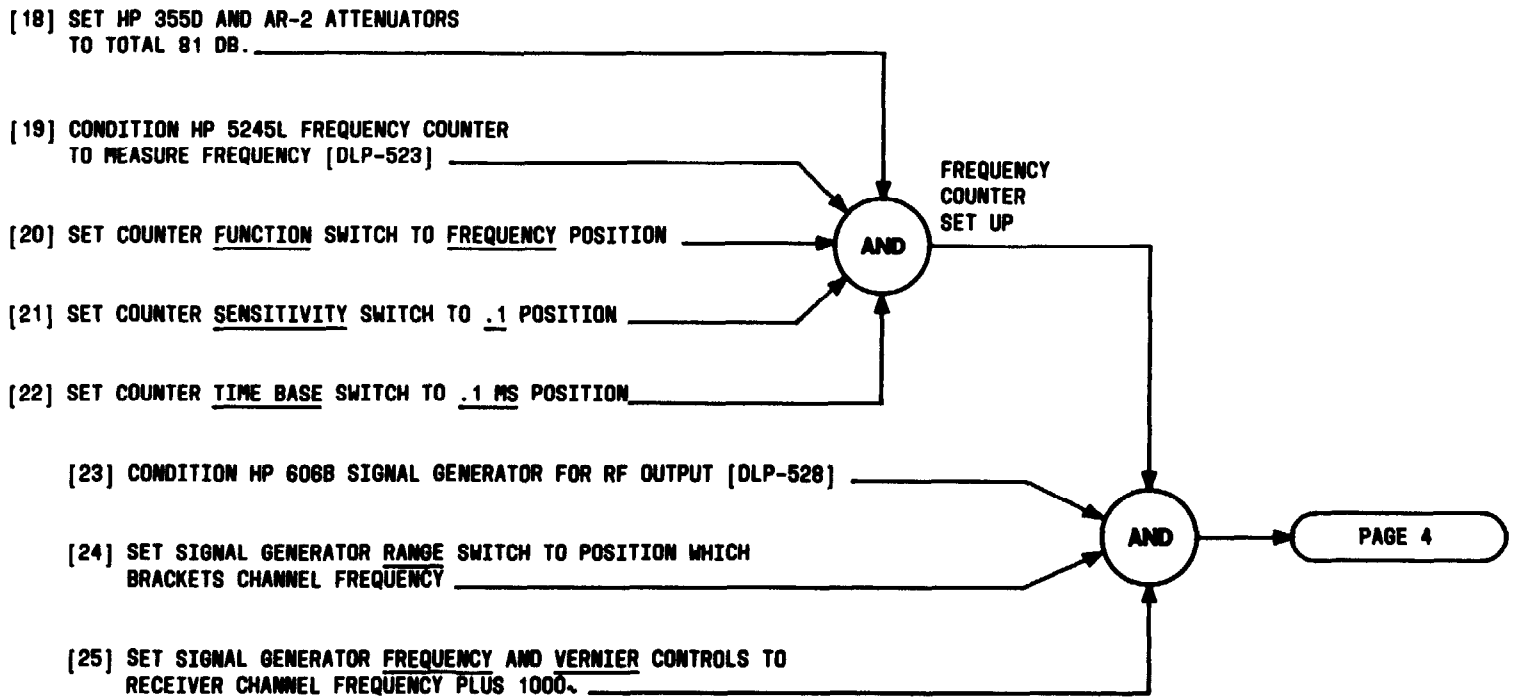
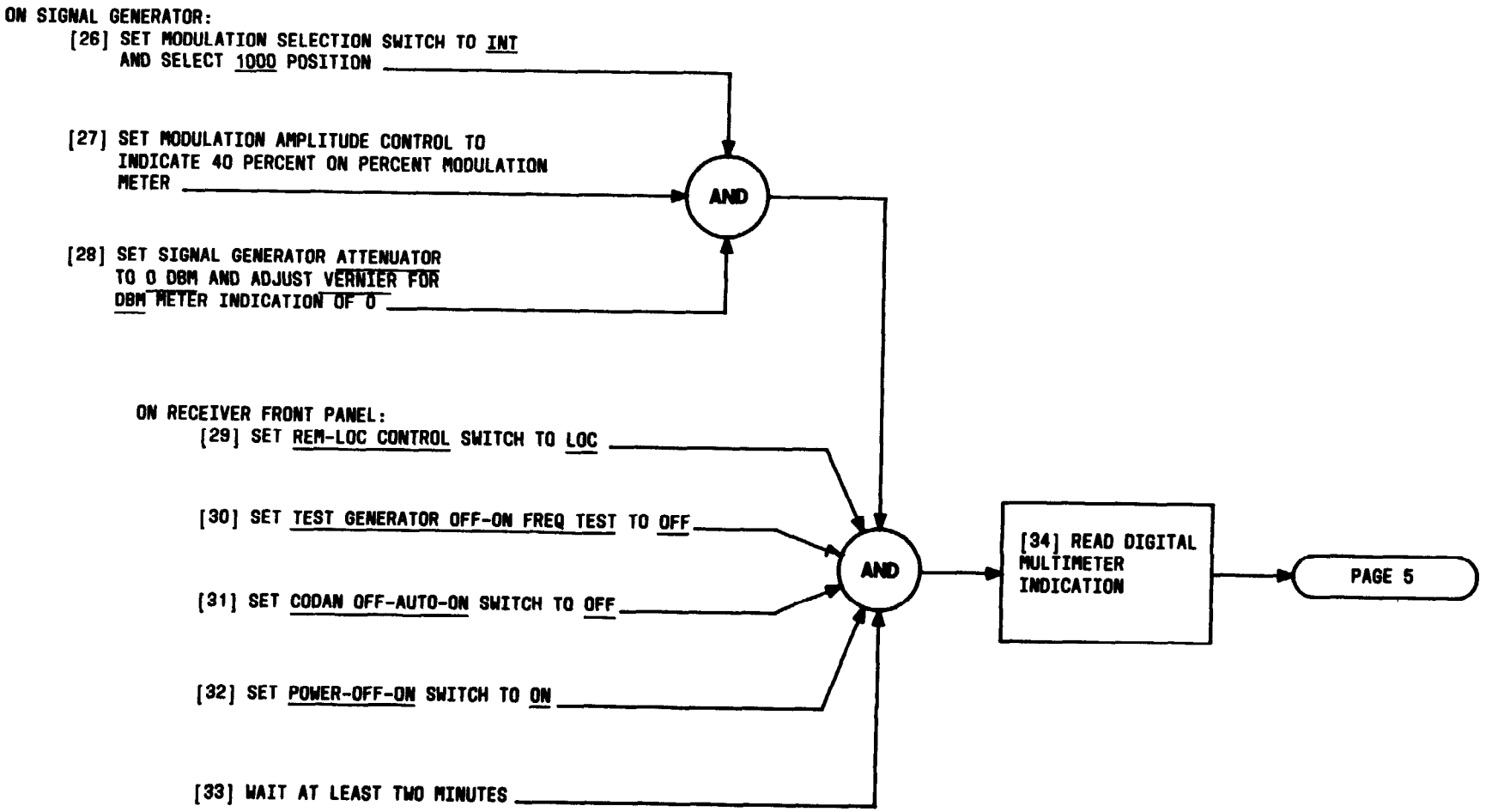


FIG. 1

SET AGC REFERENCE LEVEL



SET AGC REFERENCE LEVEL



SET AGC REFERENCE LEVEL

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[34] SET HP355C AND AR-2 ATTENUATORS TO 74 DB AND OBSERVE DVM

[35] DOES DIGITAL MULTIMETER INDICATE -8.5 TO -10.5V

YES

[38] SET HP355C AND AR-2 ATTENUATORS TO 107 DB

NO 1

NO 2

NO 3

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[36] ADJUST R5 ON ATTENUATOR BOARD FOR -8.5 TO -10.5V. SEE FIG. 2

[37] SEE WARNING 1. SET RECEIVER POWER-OFF-ON SWITCH TO OFF. REPLACE ATTENUATOR BOARD. RETURN TO STEP 32

[39] DOES DIGITAL MULTIMETER INDICATE -8.4 TO -10.4V

NO

[40] SEE WARNING 1. SET RECEIVER POWER-ON-OFF SWITCH TO OFF. REPLACE ATTENUATOR BOARD. SET POWER-ON-OFF TO ON

YES

[41] SET HP355C AND AR-2 ATTENUATORS TO 57 DB

[42] DOES DIGITAL MULTIMETER INDICATE -9.50 TO -9.6V

NO

[43] SEE WARNING 1. SET RECEIVER POWER-ON-OFF SWITCH TO OFF. REPLACE ATTENUATOR BOARD. SET POWER-ON-OFF TO ON

YES

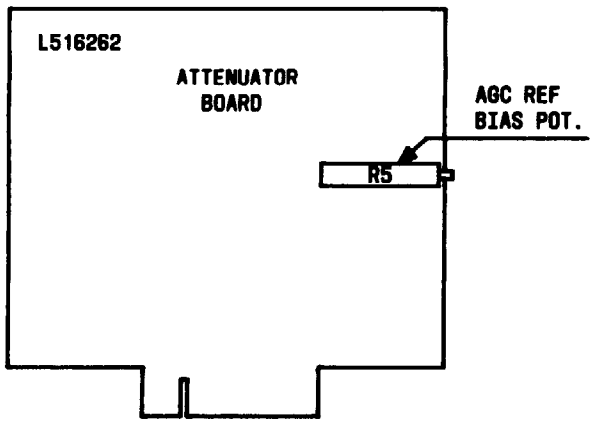


FIG. 2 - ATTENUATOR BOARD (CHASSIS MOUNTED)

[44] ON RECEIVER SET POWER-ON-OFF SWITCH TO OFF

[45] DISCONNECT RECEIVER POWER CORD

[46] DISCONNECT DIGITAL MULTIMETER LEADS FROM ATTENUATOR BOARD

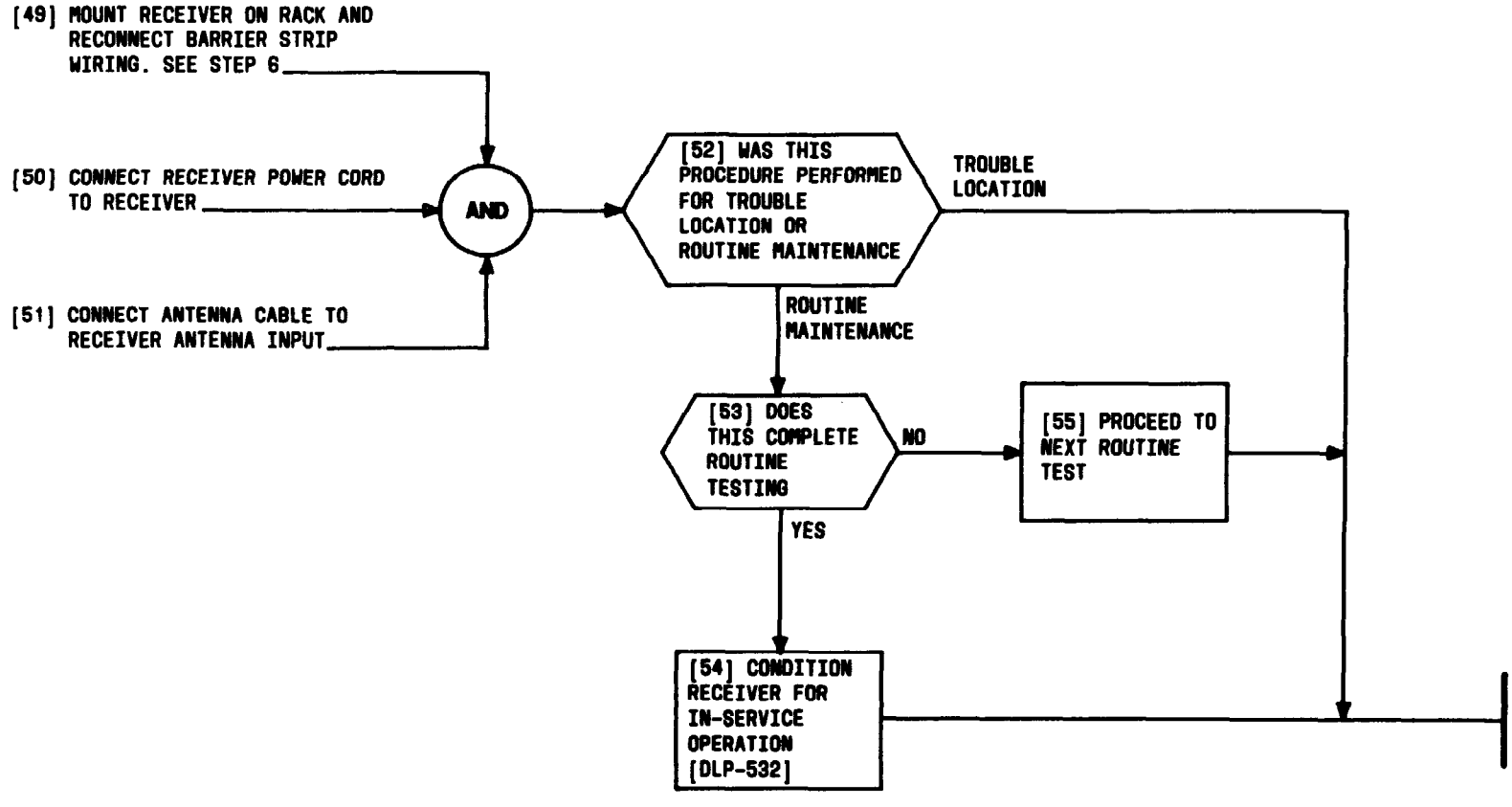
[47] DISCONNECT TEST EQUIPMENT

[48] REPLACE RECEIVER TOP COVER AND SECURE WITH SCREWS

AND

PAGE 6

SET AGC REFERENCE LEVEL



SET AGC REFERENCE LEVEL

[1] OBTAIN RELEASE FOOM CONTROL TERMINAL FOR RECEIVER TEST SEE NOTE 1

[2] SET RECEIVER PANEL CONTROLS FOR TABLE A

[3] REMOVE RECEIVER CIRCUIT BOARD COVER

[4] SEE WARNING 1. AT RECEIVER, PLACE BUFFER (NO. 1) CIRCUIT BOARD ON EXTENDER [DLP-527]

[5] GET TEST EQUIPMENT PER TABLE B

AND

TABLE A	
CONTROL	SETTING
POWER	OFF
CONTROL	LOC
TEST GENERATOR	OFF
CODAN	OFF

TABLE B	
EQUIPMENNT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
NOISE MEASURING SET	WECO J94003C
T CONNECTOR	BNC UG274, B/U
ADAPTER BNC MALE	UG491 A/U
TELEPHONE PATCH CORD	3P6C
4 6-FOOT COAXIAL CABLES	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
DIGITAL MULTIMETER	HP-3469B

[6] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[7] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[8] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 335D RF ATTENUATOR WITH RG 58/U CABLE

[9] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 ATTENUATOR WITH UG491 A/U BNC MALE ADAPTER

[10] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

[11] SET 355D AND AR-2 ATTENUATORS TO 70 DB

AND

PAGE 2

NOTE 1
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING 1
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

SET S/N THRESHOLD LEVEL

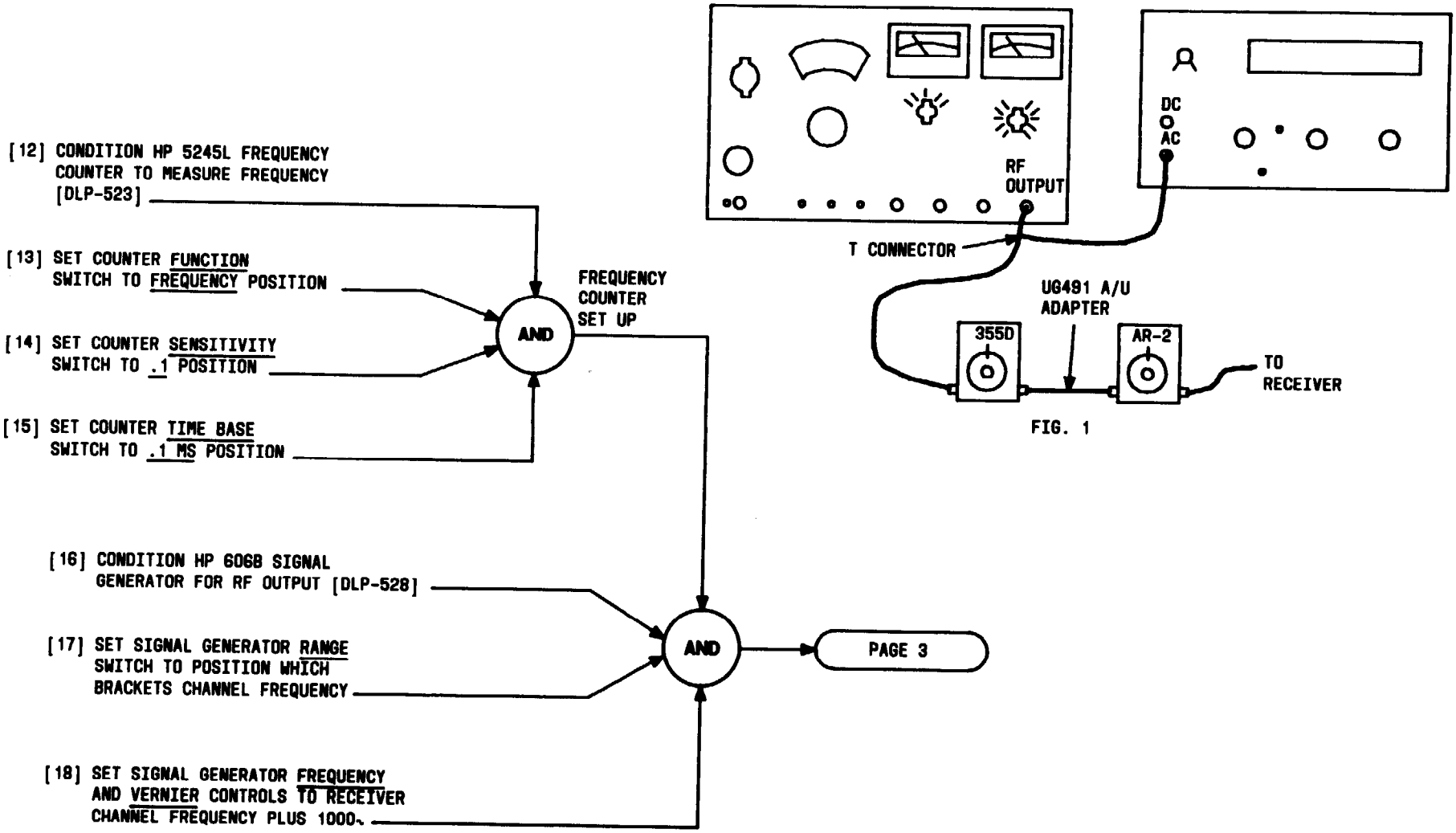


FIG. 1

SET S/N THRESHOLD LEVEL

ON SIGNAL GENERATOR

[19] USING ATTENUATOR SWITCH VERNIER CONTROL AND DBM METER INDICATION SET SIGNAL GENERATOR OUTPUT LEVEL TO 0 DBM

[20] SET MODULATION SELECTOR SWITCH TO INT. AND SELECT 1000 POSITION

[21] SET MODULATION AMPLITUDE CONTROL TO INDICATE 40 PERCENT ON PERCENT MODULATION METER

[22] DISCONNECT RECEIVER ANTENNA INPUT CABLE

[23] CONNECT SIGNAL GENERATOR OUTPUT (THRU 355D ATTENUATOR AND AR-2) TO RECEIVER ANTENNA INPUT JACK

AND

[24] CONDITION HP-3469 DVM TO READ DC VOLTS (DLP-529)

[25] CONNECT DVM LEADS TO RECEIVER SELECT BOARD (#8) TEST POINT (+) AND GROUND (-) SEE FIG. 2

[26] AT RECEIVER, SET POWER-ON-OFF SWITCH TO ON

[27] WAIT TWO (2) MINUTES THEN AT RECEIVER SET CODAN OFF-AUTO-ON SWITCH TO ON

[28] SET EXTERNAL ATTENUATORS TO 57 DB

AND

PAGE 4

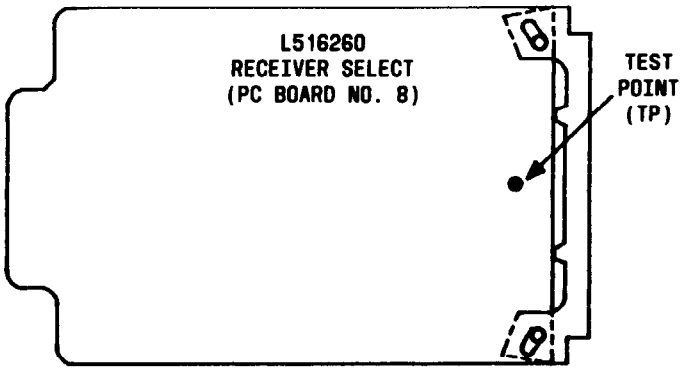
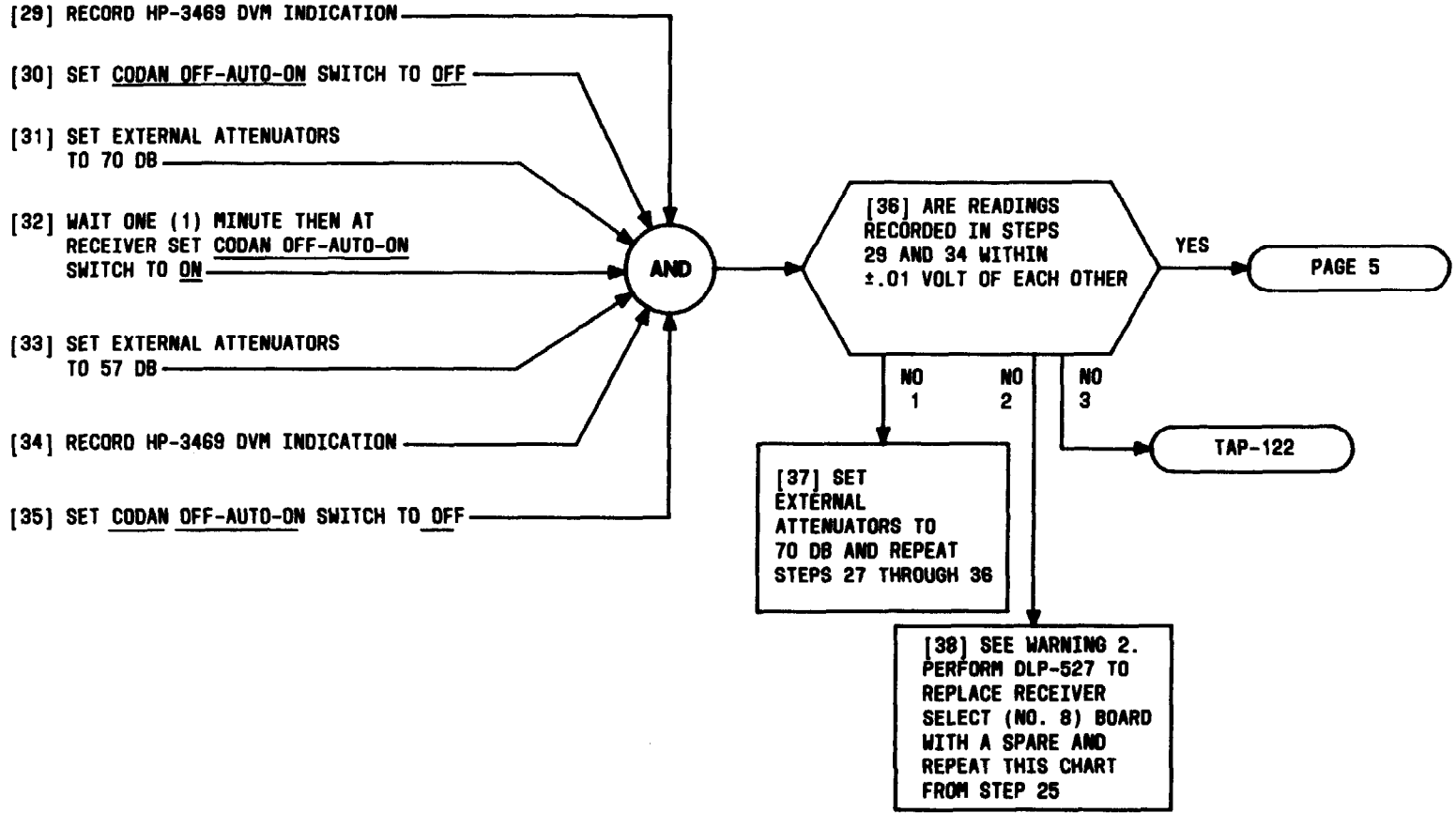


FIG. 2 - RECEIVER SELECT BOARD

SET S/N THRESHOLD LEVEL



WARNING 2

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

SET S/N THRESHOLD LEVEL

[39] SET CODAN OFF-AUTO-ON SWITCH TO OFF POSITION

[40] DISCONNECT HP-3469 FROM RECEIVER SELECT BOARD (NO. 8)

[41] CONNECT HP03469 TO RECEIVER BUFFER BOARD (NO. 1) TEST POINT (+) AND GROUND (-) SEE FIG. 3

[42] ADJUST R17 FOR INDICATION OBTAINED IN STEP 29

AND

[43] DID ADJUSTMENT RANGE OF R17 ALLOW A MATCH WITH INDICATION RECORDED IN STEP 29

YES

NO

NO

TAP-122

[44] SEE WARNING 2. PERFORM DLP-527 TO REPLACE (NO. 1) BOARD WITH A SPARE AND REPEAT THIS CHART FROM STEP 41

[45] PLACE A JUMPER BETWEEN BARRIER STRIP TERMINALS 29 AND 30 ON REAR OF RECEIVER. SEE FIG. 4

[46] OBSERVE DVM AND ADJUST R37 ON BUFFER CIRCUIT BOARD FOR AN INDICATION OF BETWEEN 2.9 AND 3.1 VOLTS

[47] WAS R37 ADJUSTMENT ATTAINABLE

YES

PAGE 6

NO

NO

TAP-122

[48] SEE WARNING 2. PERFORM DLP-527 TO REPLACE BUFFER (NO. 1) BOARD WITH A SPARE

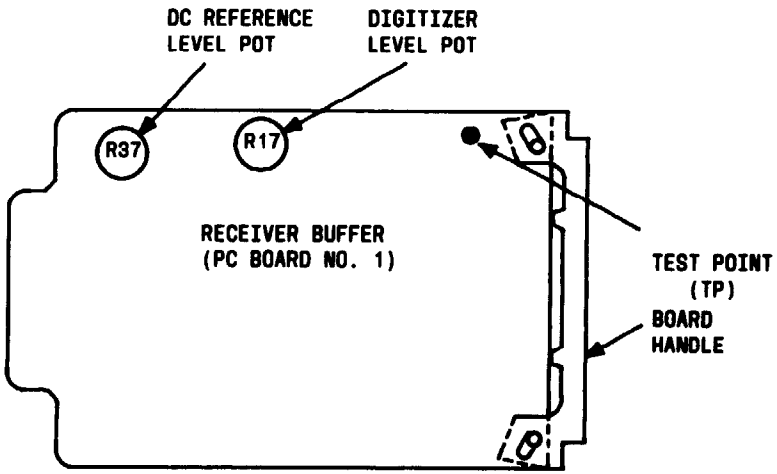


FIG. 3 - RECEIVER BUFFER BOARD

SET S/N THRESHOLD LEVEL

[49] OBSERVE DVM REMOVE JUMPER FROM BARRIER STRIP TERMINALS 29 AND 30

[50] IS DVM INDICATION THE SAME AS THAT RECORDED IN STEP 29

YES

NO

NO

TAP-122

[51] SEE WARNING 3. PERFORM DLP-527 TO REPLACE BUFFER (NO. 1) BOARD WITH A SPARE

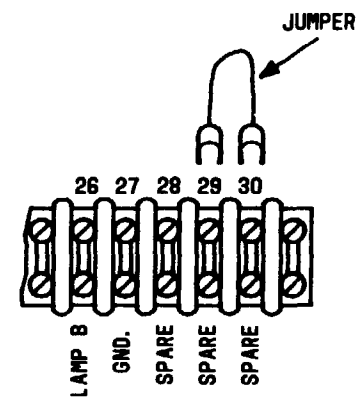


FIG. 4 - BARRIER STRIP

[52] AT RECEIVER, SET POWER-ON-OFF SWITCH TO OFF

[53] DISCONNECT DVM LEADS FROM BUFFER CIRCUIT BOARD

[54] SEE WARNING 3. REMOVE EXTENDER BOARD AND REINSTALL BUFFER (NO. 1) CIRCUIT BOARD [DLP-527]

[55] DISCONNECT AR-2 ATTENUATOR OUTPUT FROM RECEIVER AND RECONNECT ANTENNA INPUT CABLE TO RECEIVER

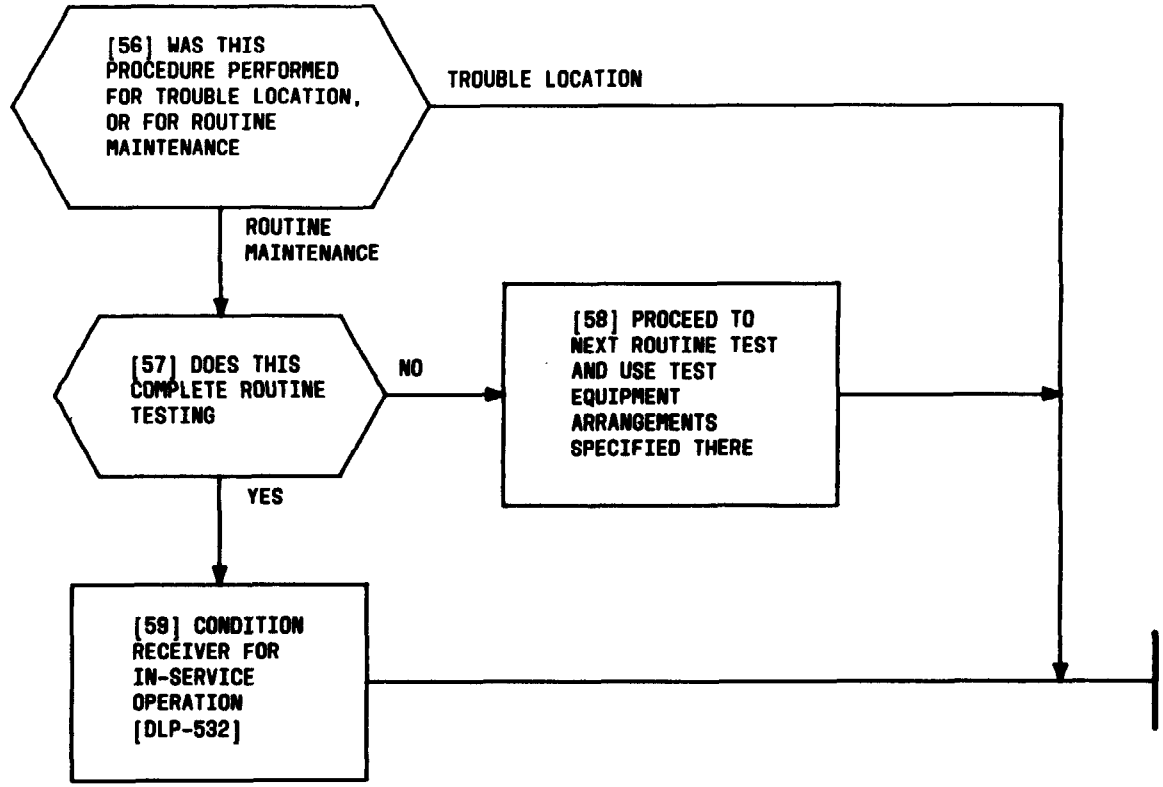
AND

PAGE 7

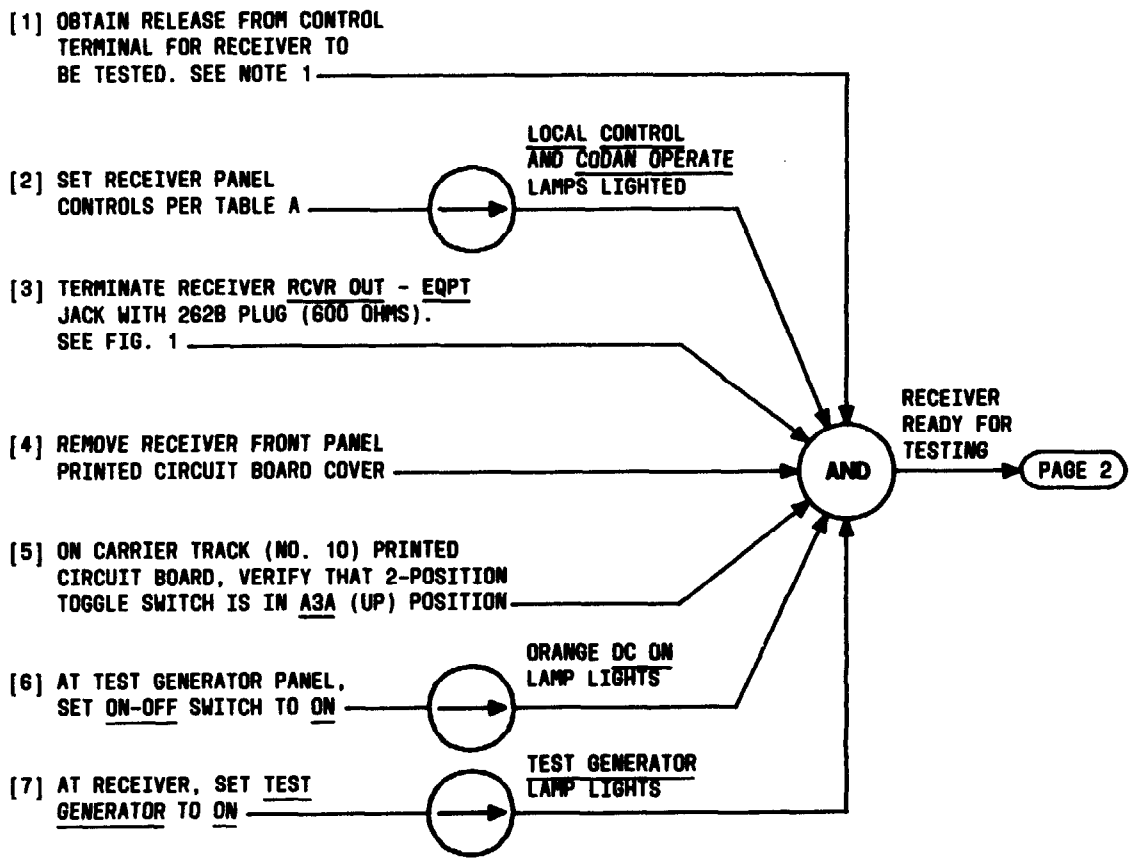
WARNING 3

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

SET S/N THRESHOLD LEVEL



SET S/N THRESHOLD LEVEL



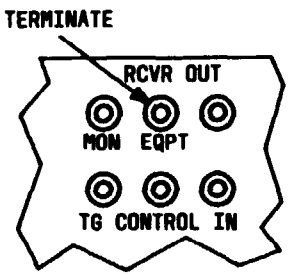
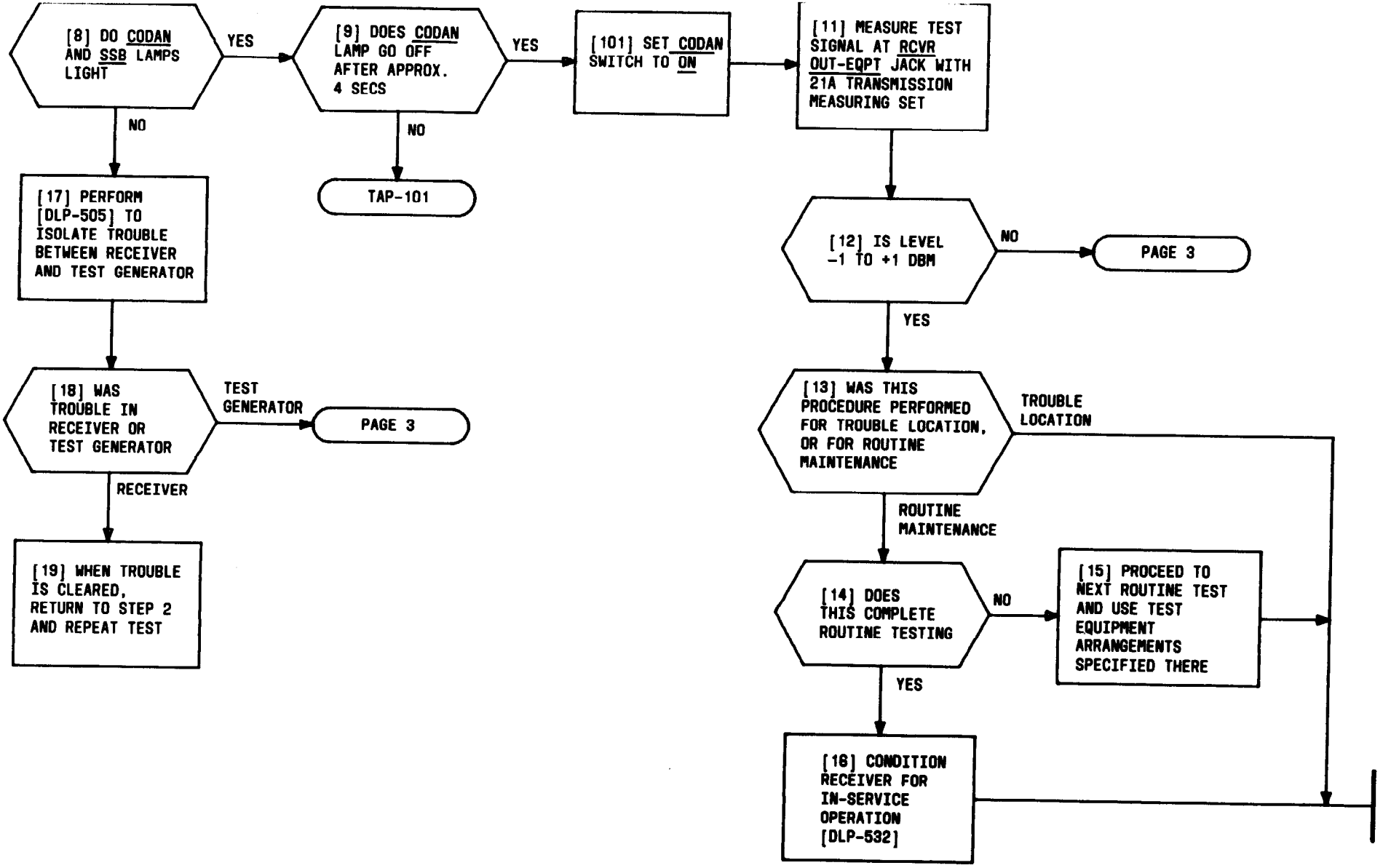


FIG. 1

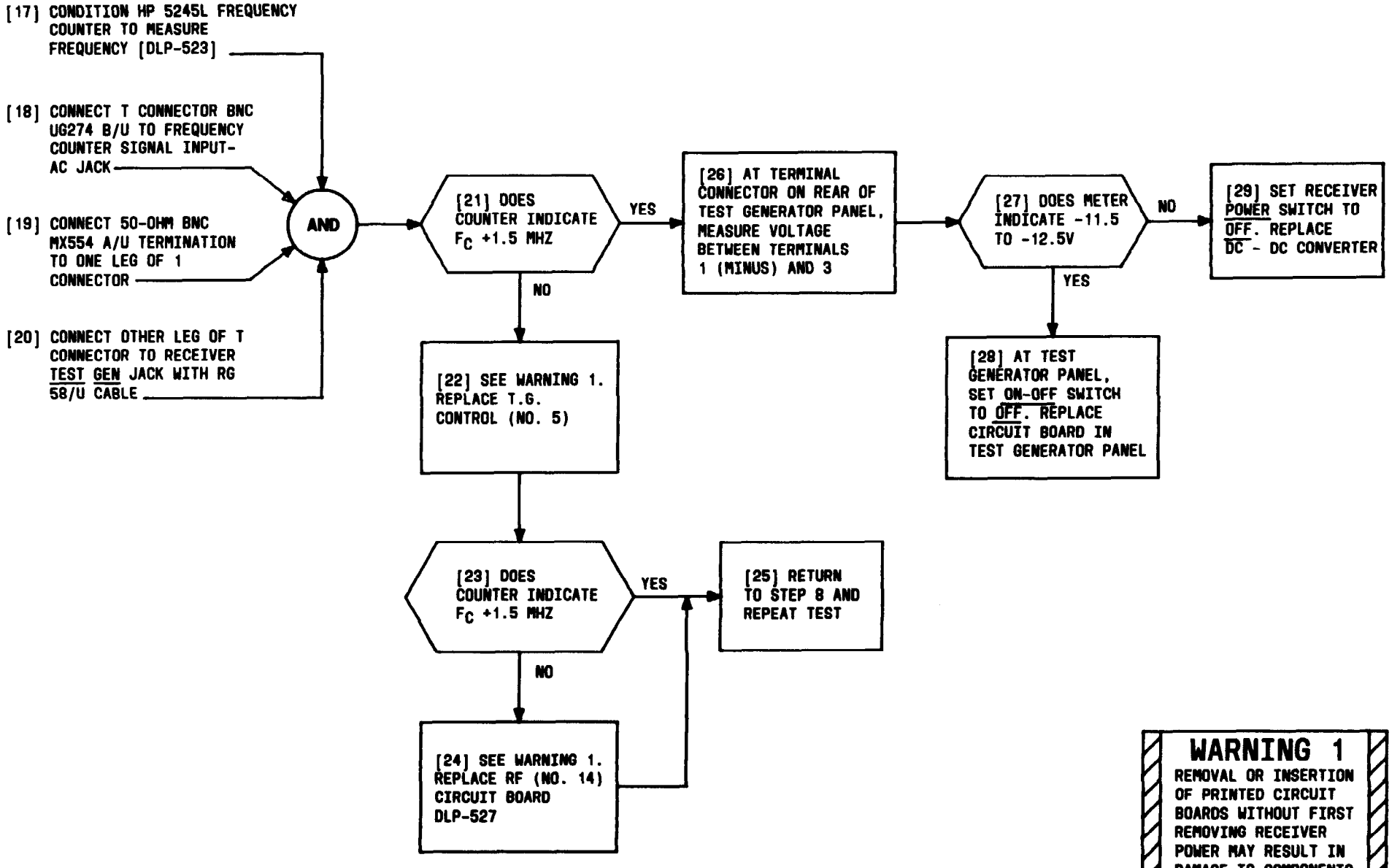
TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	OFF
CODAN	AUTO
METER MODE	IF OUT
SIG OSC TEST	
2100 TEST/NORM/OFF	OFF
2900 TEST/NORM/OFF	OFF

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL



MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL



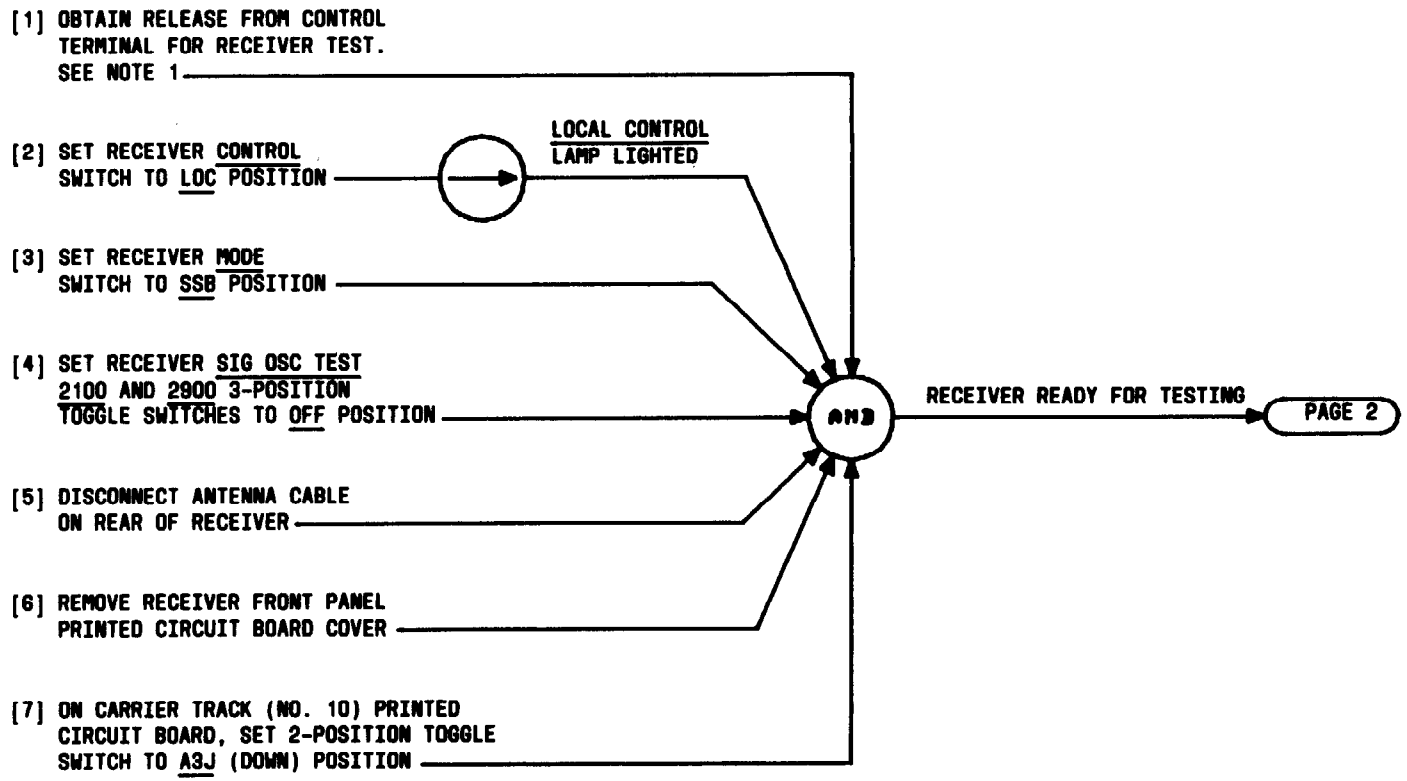
WARNING 1

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL

SUMMARY

USING RF SIGNAL GENERATOR, SET FREQUENCY (CW) TO WITHIN 25 HZ OF 1000 HZ ABOVE CHANNEL FREQUENCY AND SET OUTPUT LEVEL TO 100,000 μv. APPLY RF SIGNAL TO RECEIVER INPUT WITHOUT ATTENUATION. MODULATE RECEIVER AT TG CONTROL IN - EQPT JACK WITH AUDIO OSCILLATOR FREQUENCY SET BETWEEN 990 AND 1010 HZ AT A LEVEL OF BETWEEN 73 AND 75 DBRN. MEASURE WITH 3C NOISE SET, AUDIO OUTPUT OF RECEIVER IN SSB MODE FOR REQUIREMENT BETWEEN 88 AND 92 DBRN



NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

[8] GET TEST EQUIPMENT PER TABLE A

[9] CONNECT BNC UG274 B/U T CONNECTOR TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[10] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[11] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF RF CONTROL UNIT WITH RG 58/U CABLE

[12] CONNECT OUTPUT OF RF CONTROL UNIT TO RECEIVER ANTENNA INPUT WITH RG 58/U CABLE

[13] SET RF CONTROL UNIT SWITCH TO OFF POSITION

AND

PAGE 3

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
AUDIO OSCILLATOR	HP 200CD
NOISE MEASURING SET	WECO J94003C
RF CONTROL UNIT	TELCO FURNISHED
TELEPHONE CORD	3P6C
ADAPTER	HP 1250-2277
COAX T CONNECTOR	BNC UG274 B/U
3 6-FOOT LONG COAX CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
ADAPTER CABLE	TWISTED PAIR WITH 310 PLUG AND DUAL BANANA PLUGS

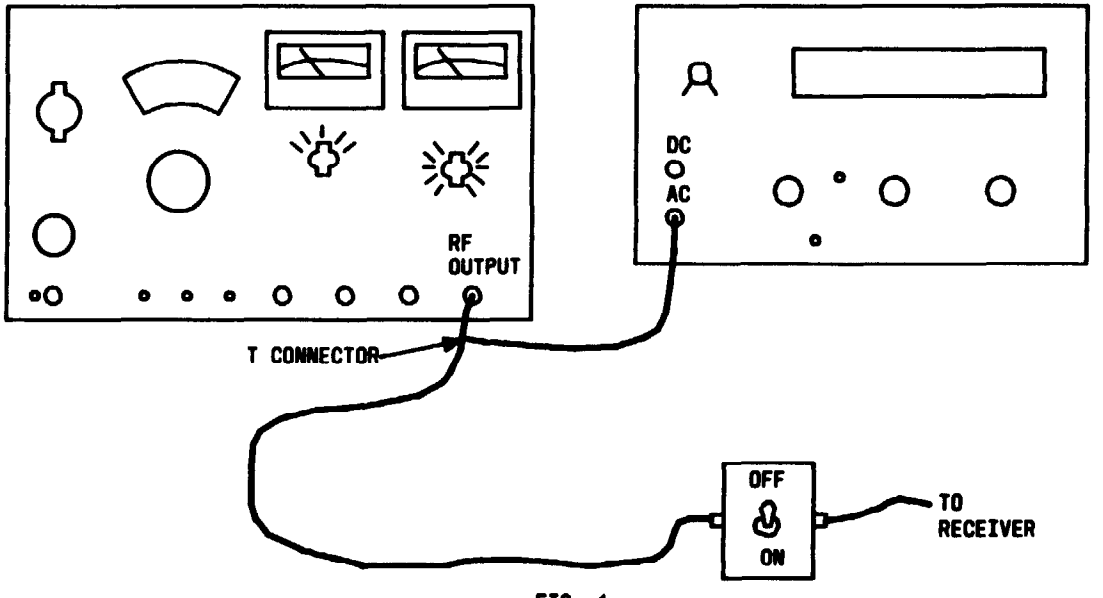
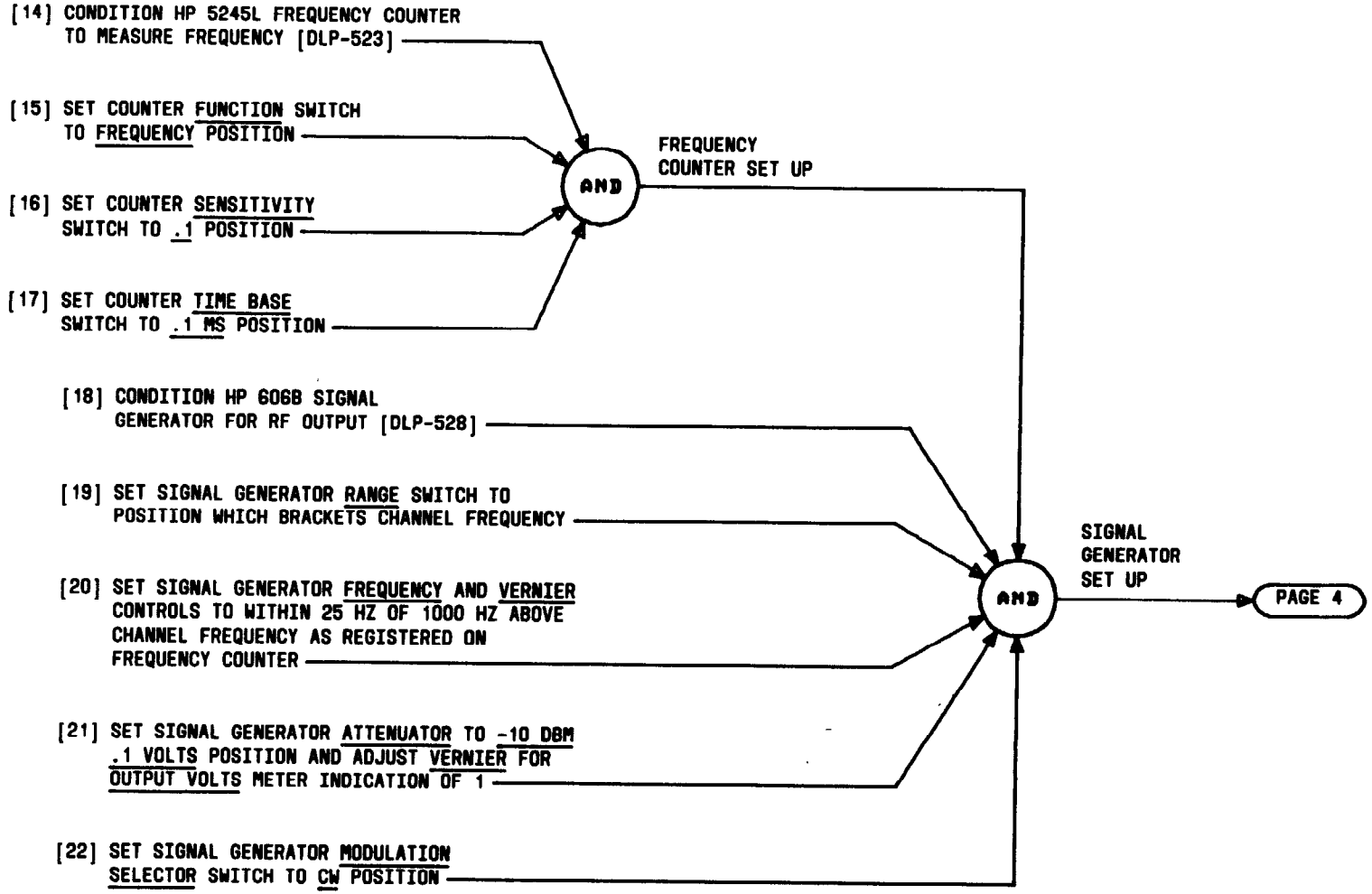
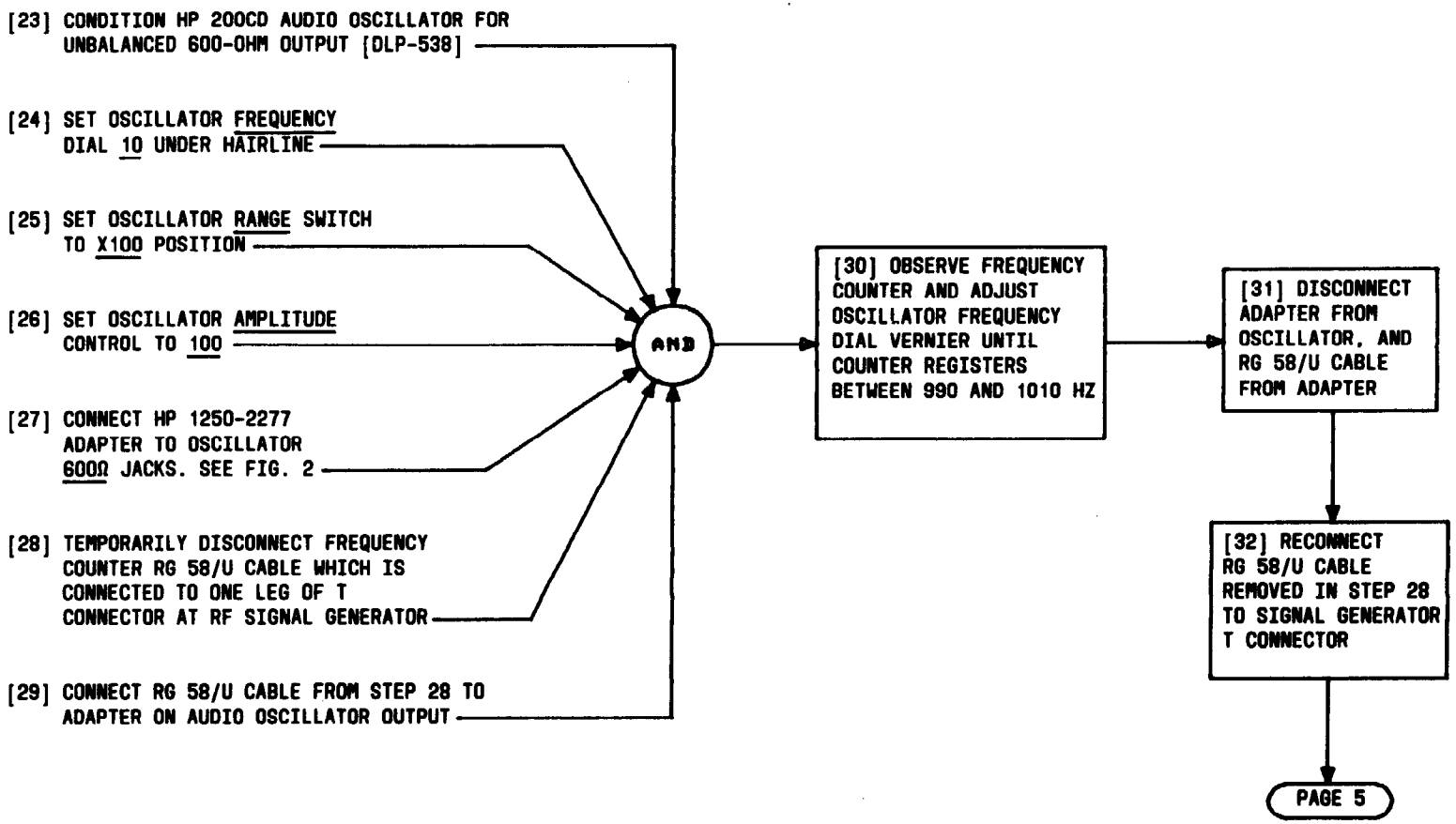


FIG. 1

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

[33] CONDITION 3C NOISE MEASURING SET [DLP-526]

[34] SET 3C SET FUNCTION SWITCH TO NM 600/900 POSITION

[35] SET 3C SET DBRN SWITCH TO 70

[36] SET 3C SET FILTER TO 3 KC FLAT WTG

AND

[37] CHANGE AUDIO OSCILLATOR OUTPUT TO BALANCED 600Ω BY REMOVING STRAP ON OUTPUT TERMINALS

[38] CONNECT OSCILLATOR 600Ω JACKS TO 5A ATTENUATOR IN BINDING POSTS WITH TWISTED PAIR ADAPTER CORD. SEE FIG. 3

[39] SET 5A ATTENUATOR KEYS FOR MAXIMUM ATTENUATION (81 DB)

[40] CONNECT 5A ATTENUATOR OUT BINDING POSTS TO 3C SET IN-310 JACK WITH SWITCHBOARD ADAPTER CORD

[41] OBSERVE 3C SET METER INDICATION AND REMOVE ATTENUATION FROM 5A ATTENUATOR IN 1-DB STEPS UNTIL INDICATION OF BETWEEN 73 AND 75 DBRN IS OBTAINED

AND

PAGE 7

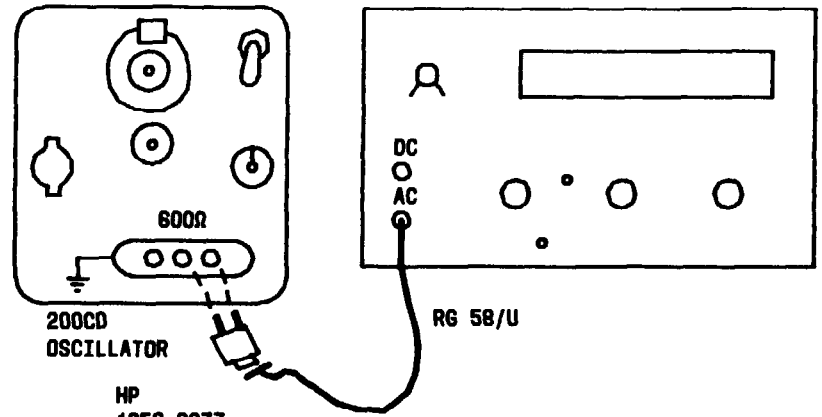


FIG. 2

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

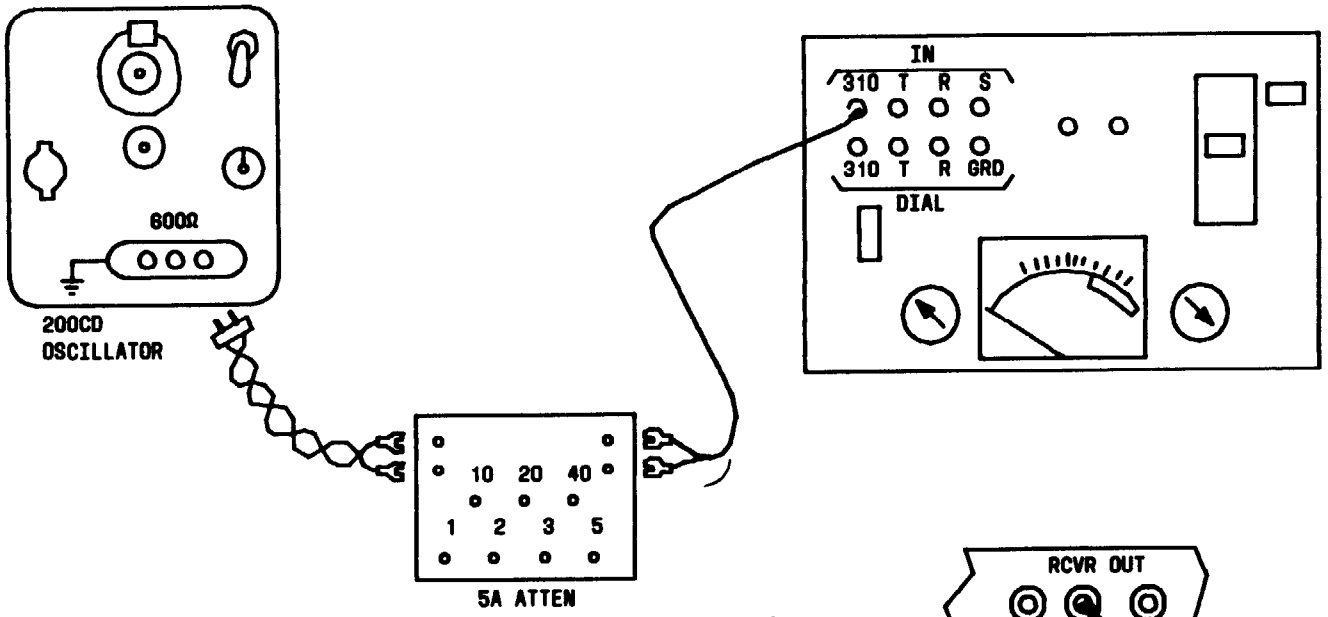


FIG. 3

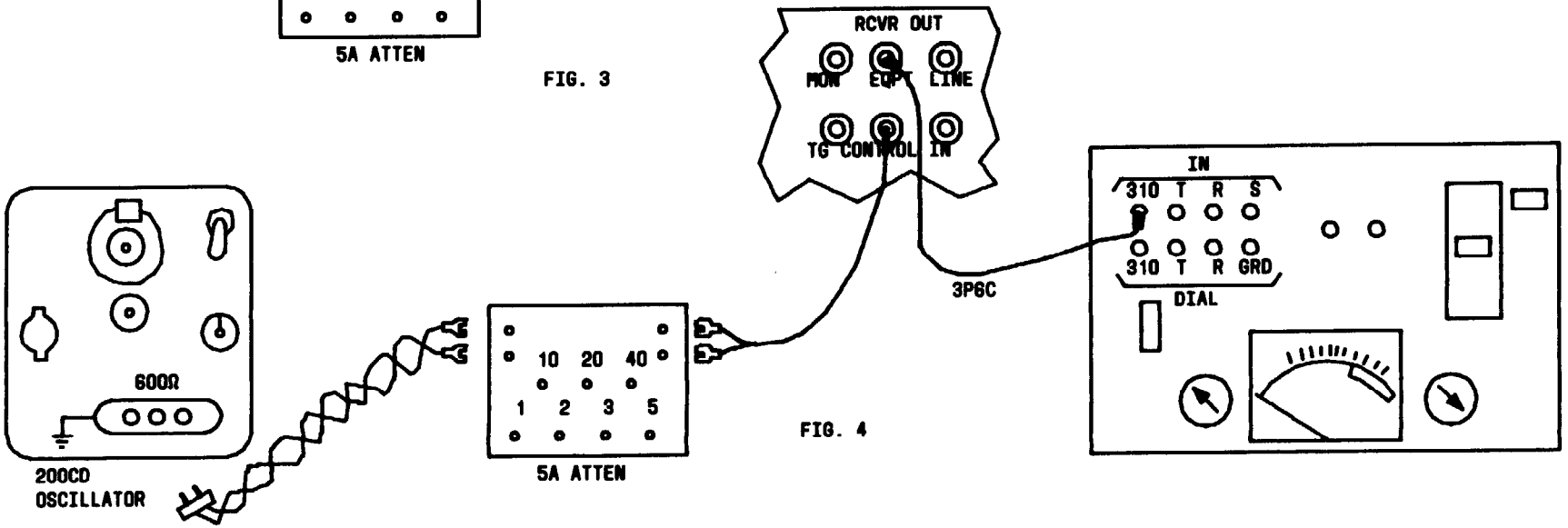
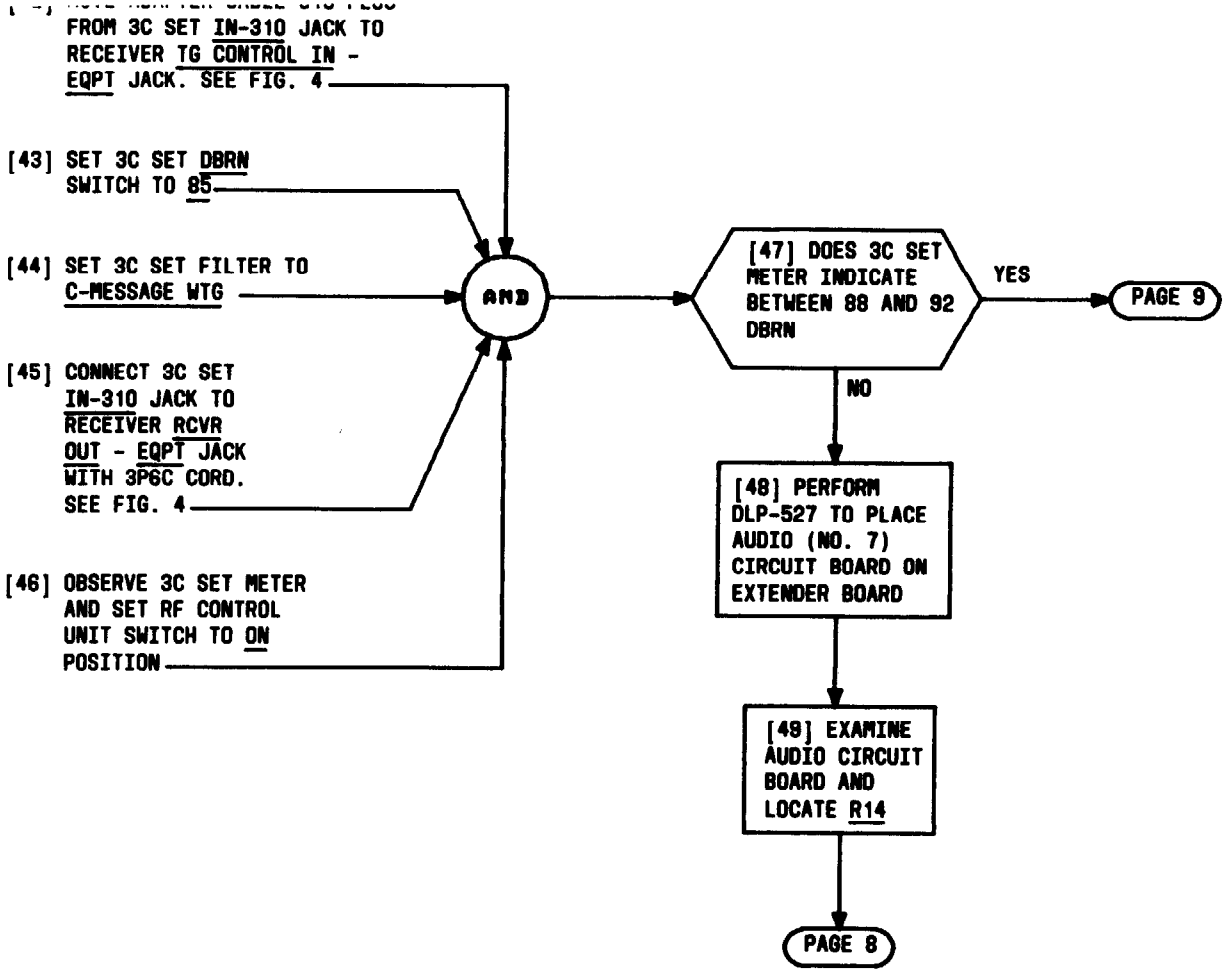
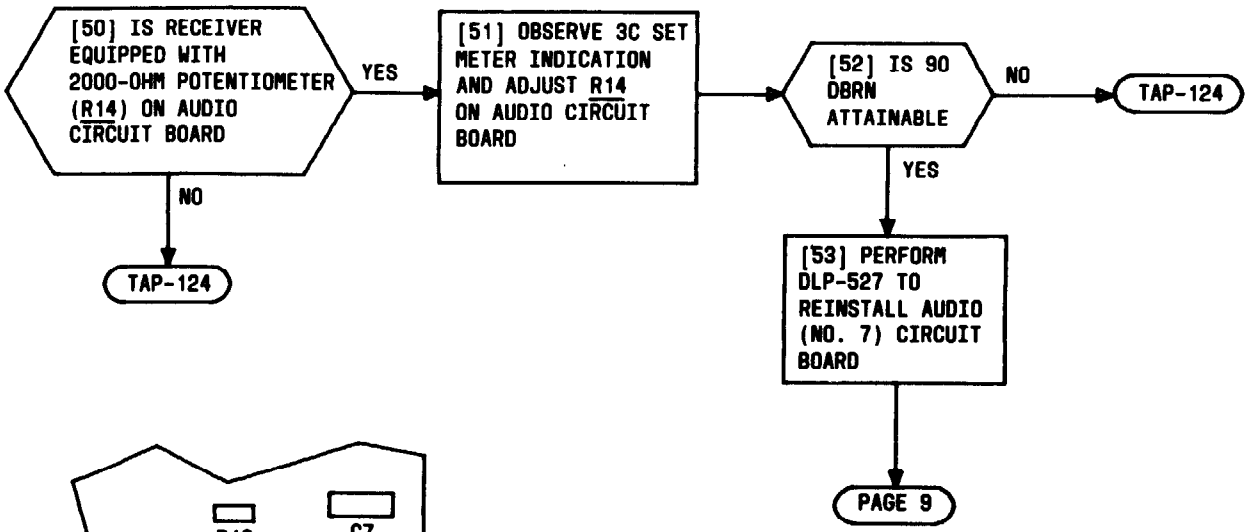


FIG. 4

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL



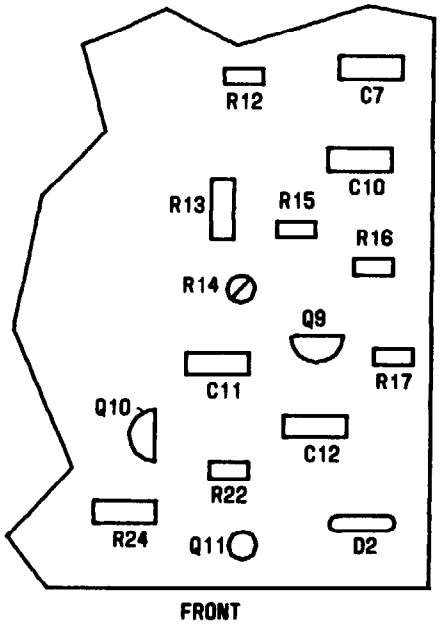
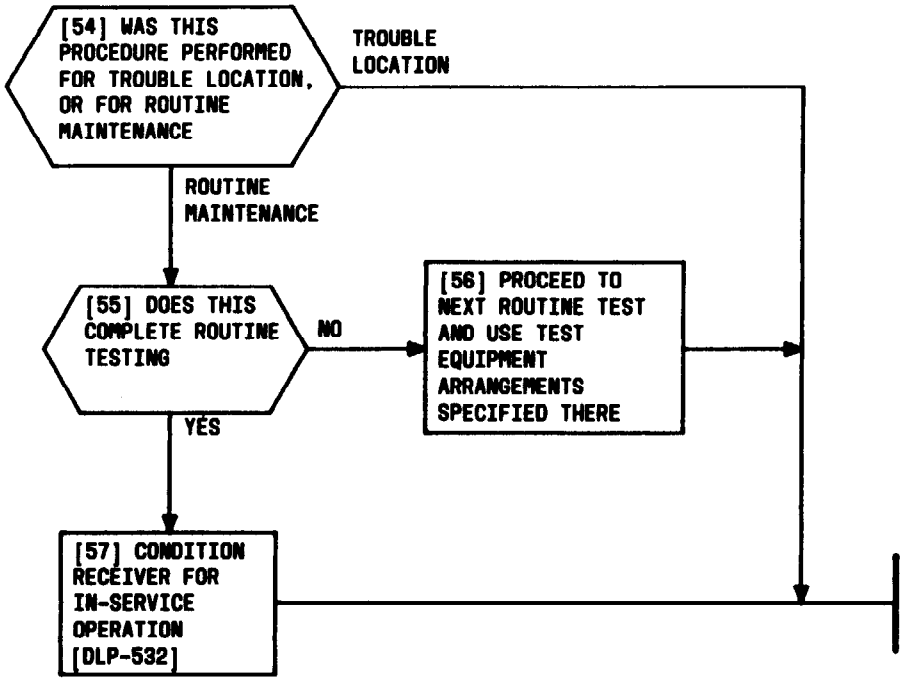


FIG. 5 - PORTION OF AUDIO BOARD

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

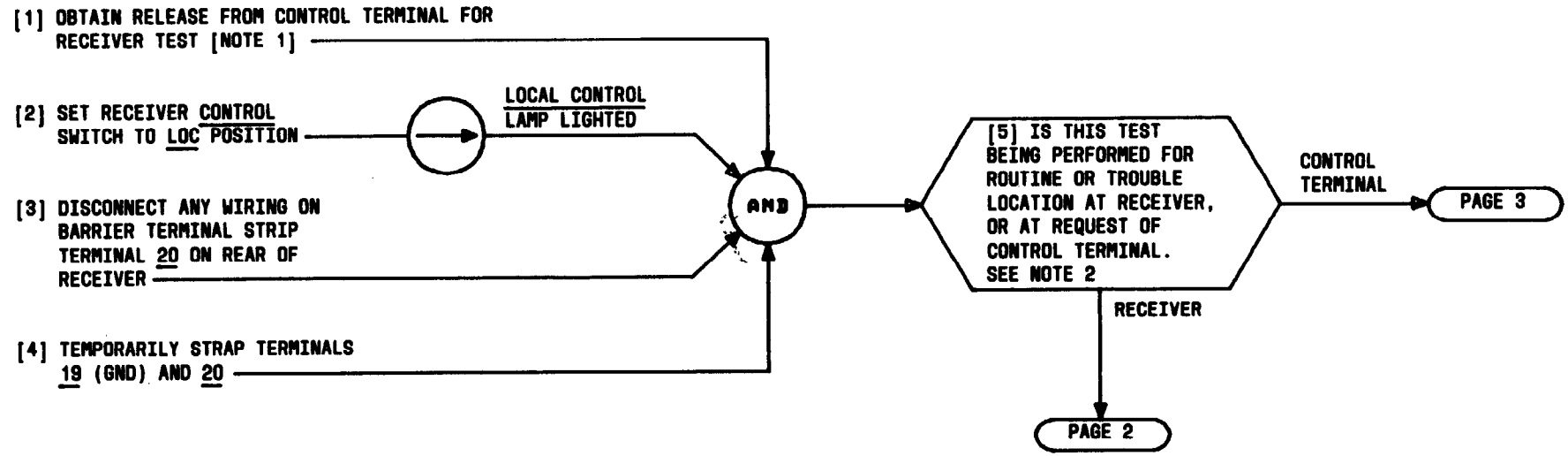
MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

SUMMARY

USING KS-21277 ROUTINER TEST SET, VERIFY OPERATION OF AC ON SIGNALING FUNCTION BY STRAPPING (TEMPORARILY) TERMINALS 19 (GND) AND 20 ON BARRIER TERMINAL STRIP ON RECEIVER REAR AND BY OBSERVING LAMP INDICATIONS ON ROUTINER TEST SET



NOTES

1. FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS INSTALLER FOR CORRECTIONS
2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

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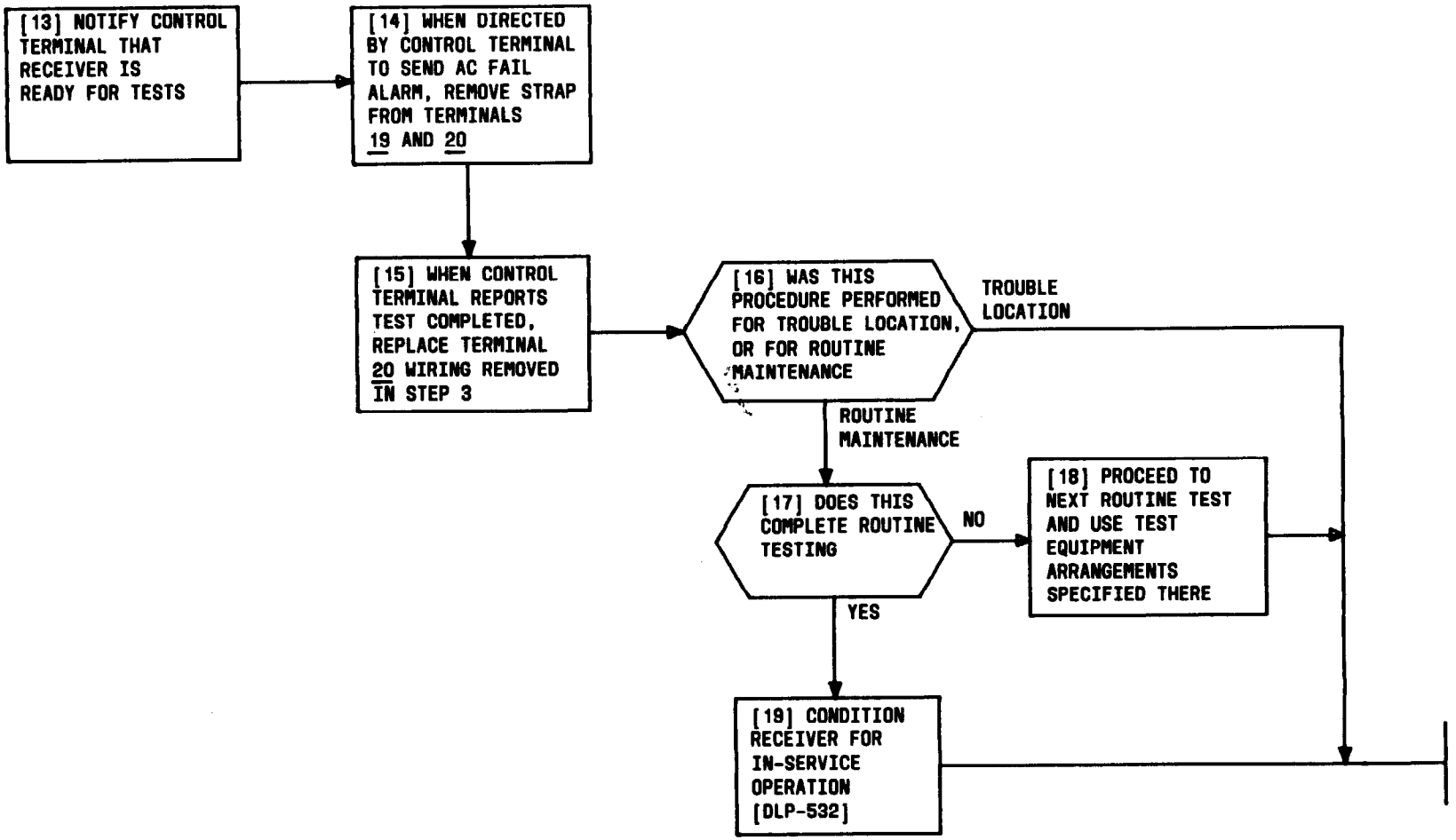
TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING



TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING

SUMMARY

USING KS-21277 ROUTINER TEST SET, VERIFY OPERATION OF RECEIVER CODAN.

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

AND

RECEIVER READY FOR TESTING

[3] DISCONNECT ANTENNA CABLE ON REAR OF RECEIVER

[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT BNC UG274 B/U T CONNECTOR TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[6] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT AC JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE

[8] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH BNC UG491 A/U ADAPTER

AND

PAGE 2

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
ADAPTER BNC MALE	UG491 A/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U
T CONNECTOR	BNC UG274 B/U
ROUTINER TEST SET	KS-21277
TELEPHONE CORD	3P6C

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

TEST RECEIVER CODAN

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET HP355D AND AR-2 ATTENUATORS TO 100 DB

AND

TEST EQUIPMENT CONNECTED

[11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

AND

FREQUENCY COUNTER SET UP

PAGE 3

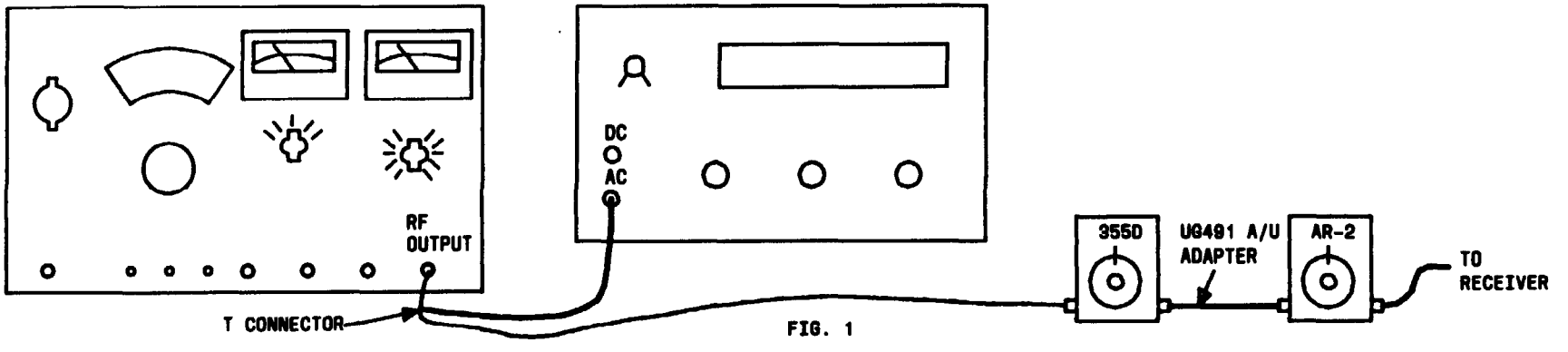


FIG. 1

TEST RECEIVER CODAN

[15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000

[18] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[19] SET MODULATION SELECTOR SWITCH TO CW. SELECT 1000 POSITION

[20] SET MODULATION AMPLITUDE CONTROL TO INDICATE 40 PERCENT ON PERCENT MODULATION METER

AND

SIGNAL GENERATOR SET UP

[21] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL. SEE NOTE 2

CONTROL TERMINAL → PAGE 4 STEP 29

RECEIVER

[22] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[23] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD. SEE FIG.2

[24] OBSERVE LAMP DISPLAYS ON RECEIVER AND ROUTINER AND SET SIGNAL GENERATOR MODULATION SELECTOR CONTROL SWITCH TO INT

AND

ROUTINER CONNECTED → PAGE 4

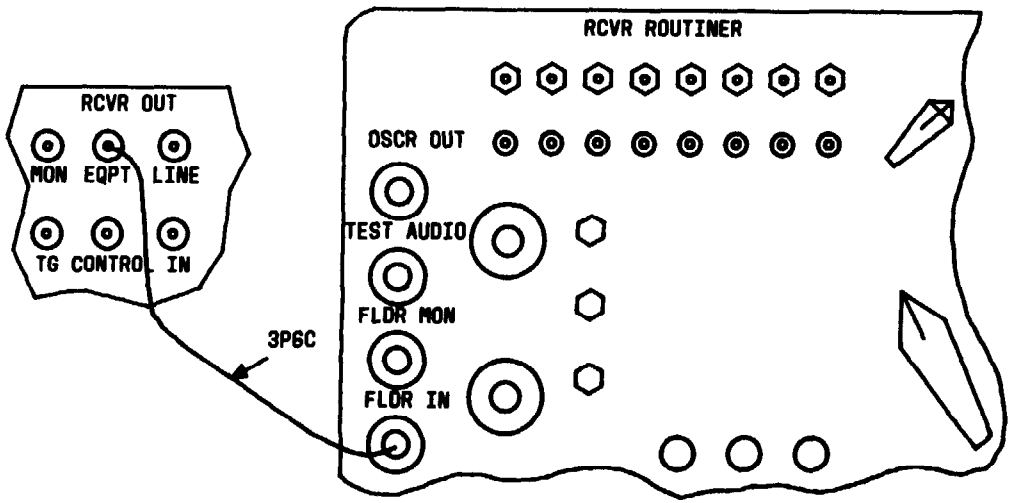
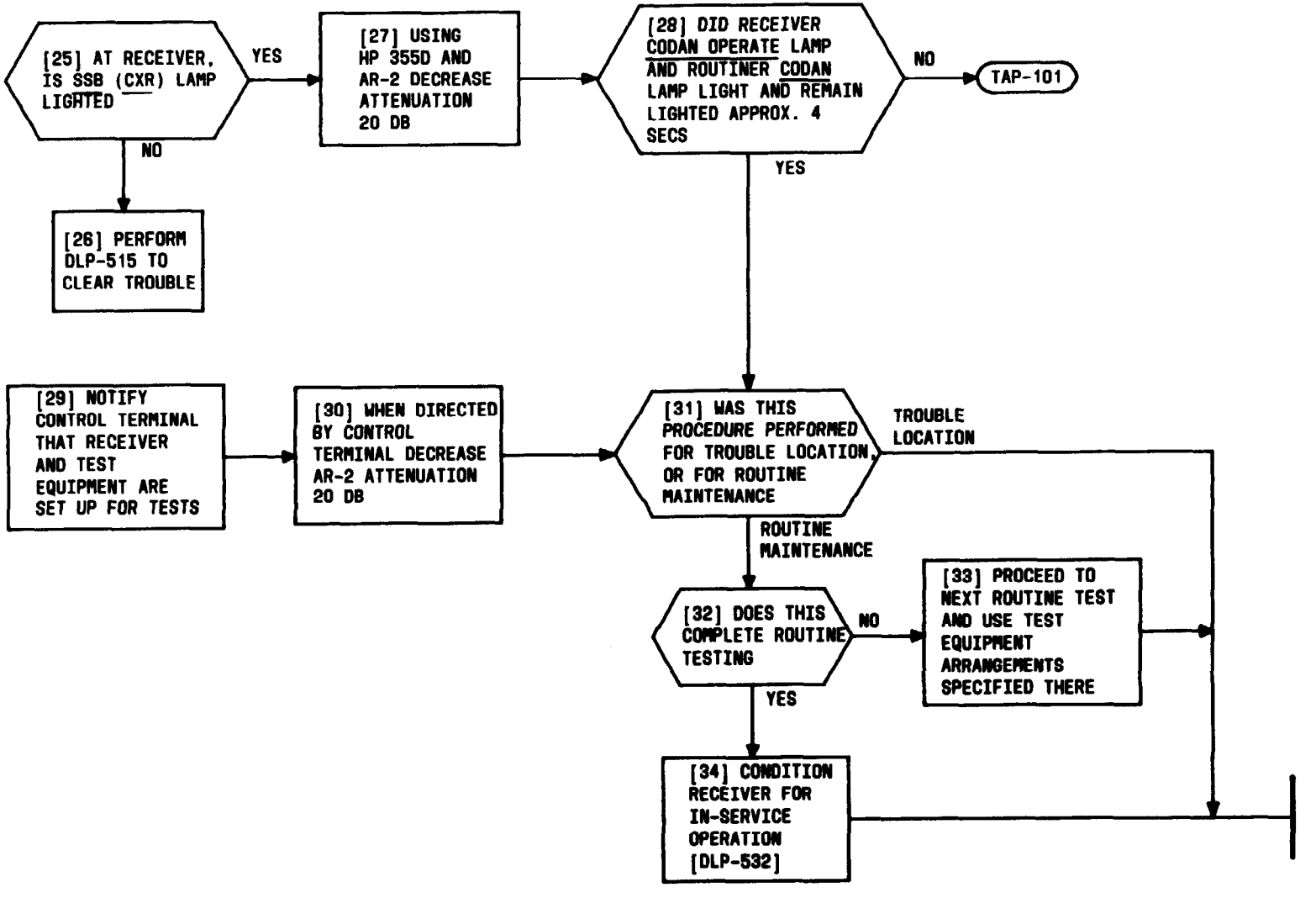


FIG. 2

NOTE 2
IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

TEST RECEIVER CODAN



TEST RECEIVER CODAN

SUMMARY

USING KS-21277 ROUTINER TEST SET, VERIFY THAT A MAJOR A ALARM WILL BE ENCODED TO CONTROL TERMINAL UPON APPLICATION OF A STRAP SIMULATING THE EXTERNAL DEVICE BETWEEN BARRIER TERMINAL STRIP TERMINALS 17 AND 19 (GND)

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

[3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 17

AND

[4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL → PAGE 3

RECEIVER → [5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

AND

ROUTINER CONNECTED → PAGE 2

[6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

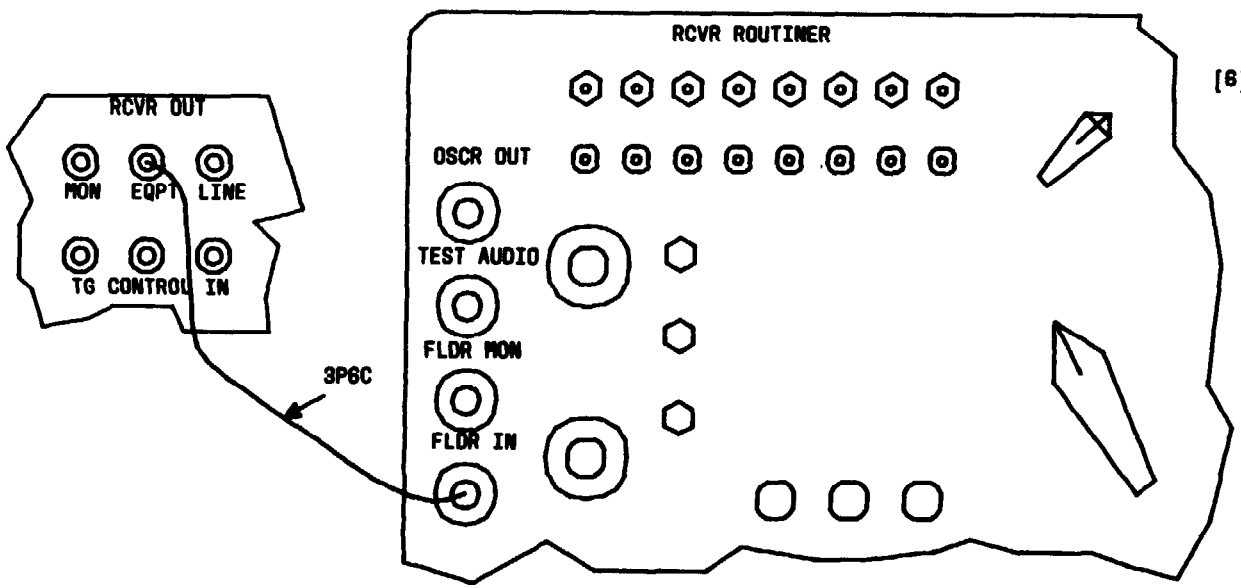
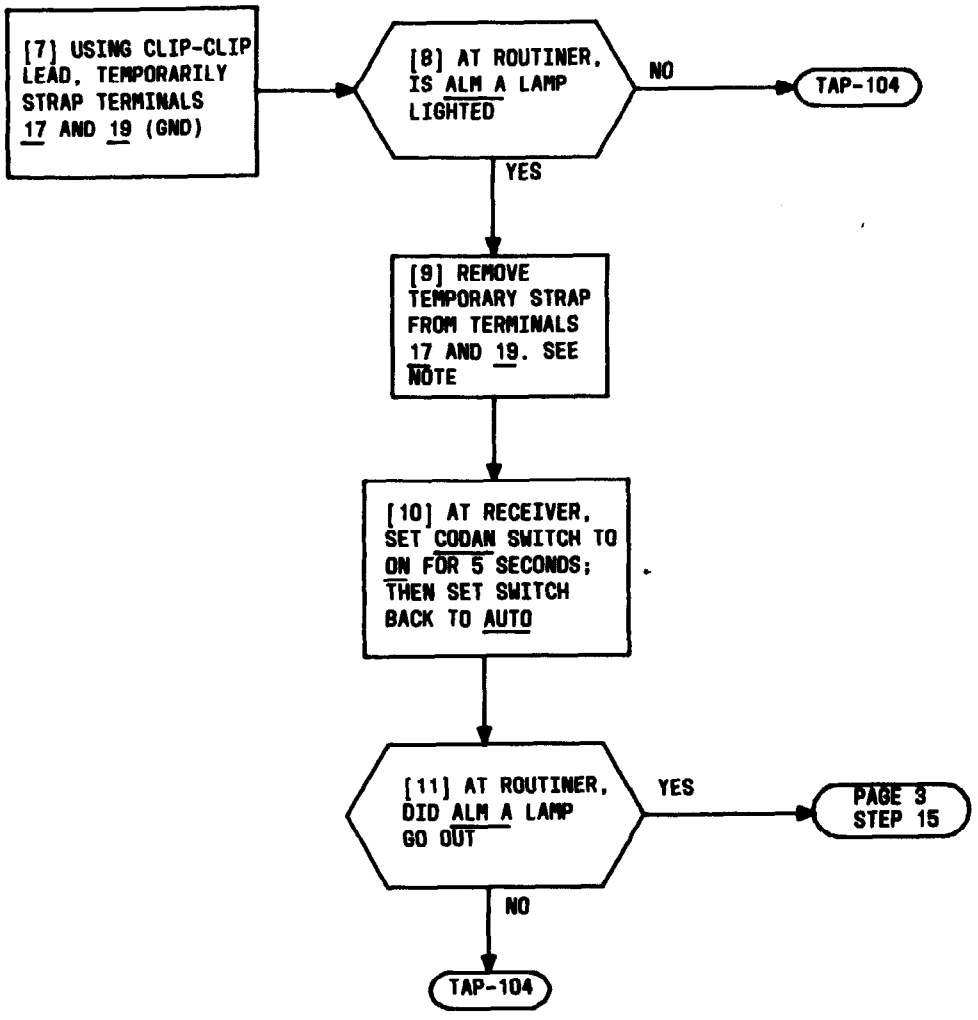


FIG. 1

NOTES

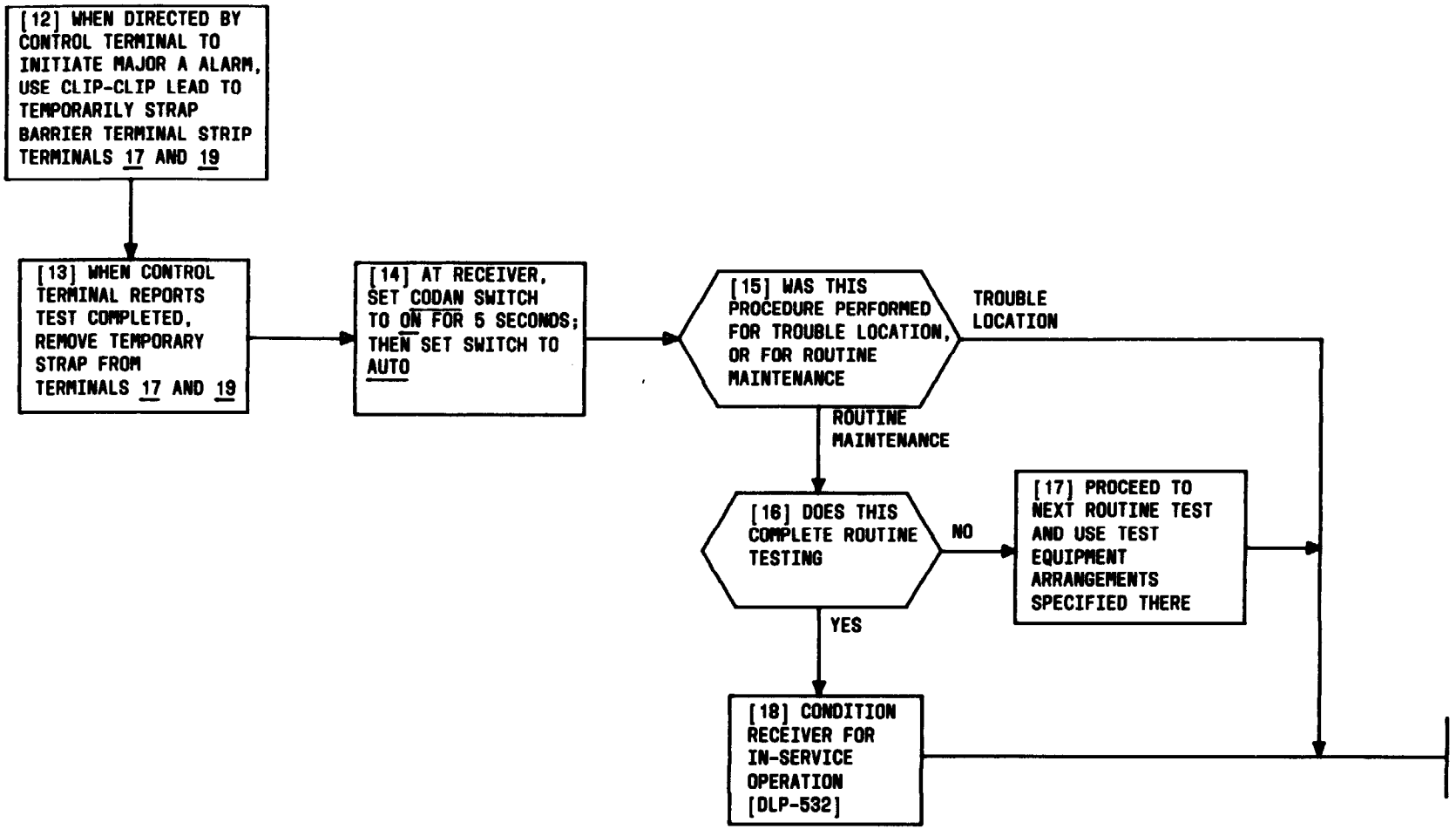
1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING



NOTE
ALM A LAMP MAY GO OUT WHEN STRAP IS REMOVED

TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING

SUMMARY

USING KS-21277 ROUTINER TEST SET, AND A STRAP BETWEEN BARRIER TERMINAL STRIP TERMINALS 17 AND 19 (GND) SIMULATING THE EXTERNAL DEVICE, VERIFY THAT A MINOR A ALARM WILL BE ENCODED TO CONTROL TERMINAL FOLLOWING A CODAN OPERATION

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

[3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 17

AND

[4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL → PAGE 4

RECEIVER → [5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

AND

ROUTINER CONNECTED → PAGE 2

[6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

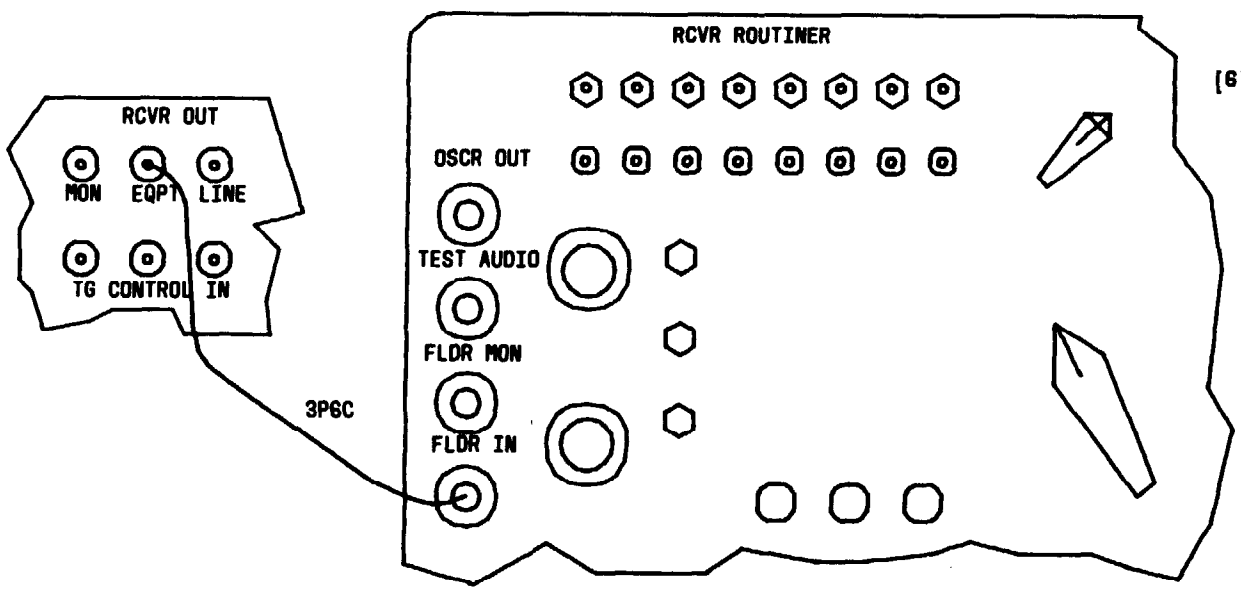
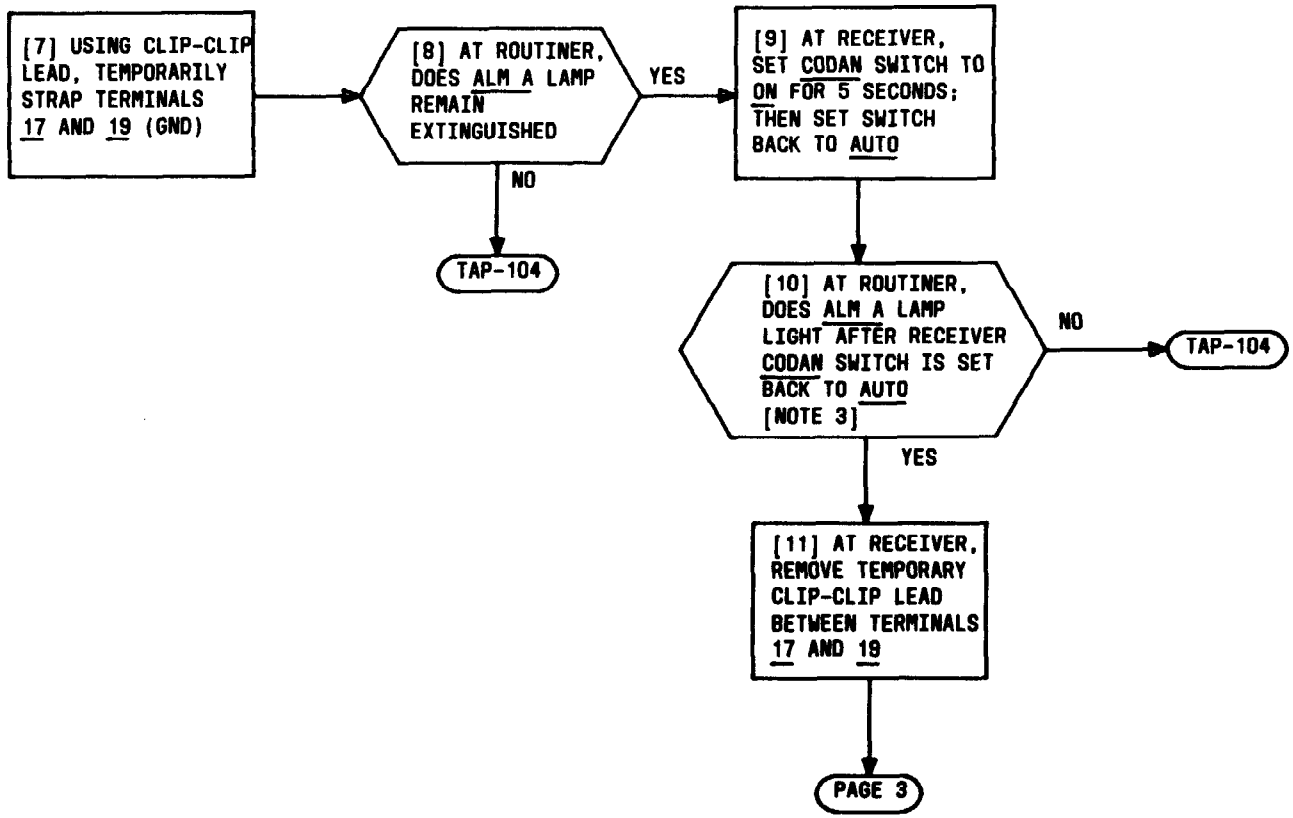


FIG. 1

NOTES

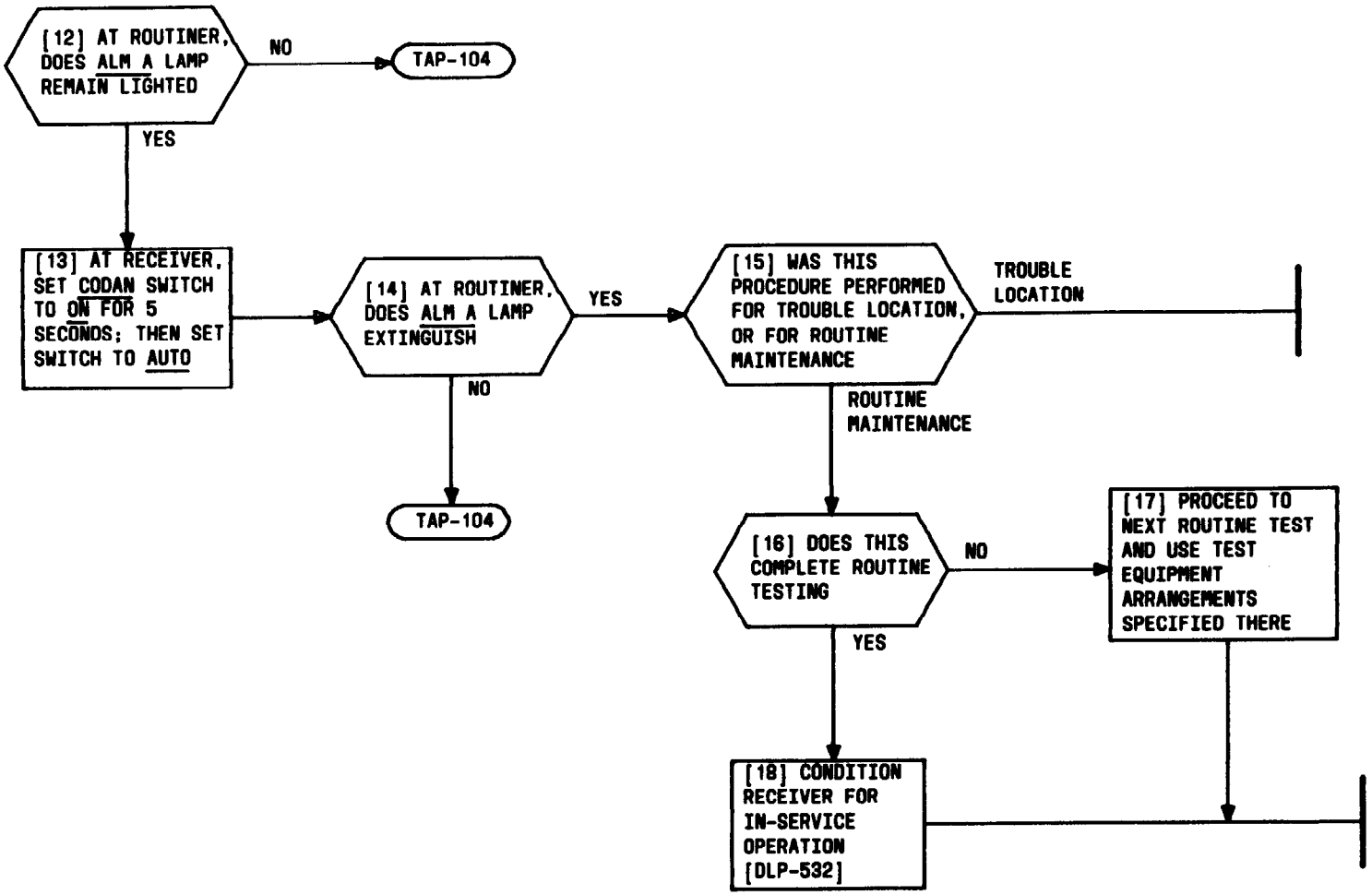
1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING

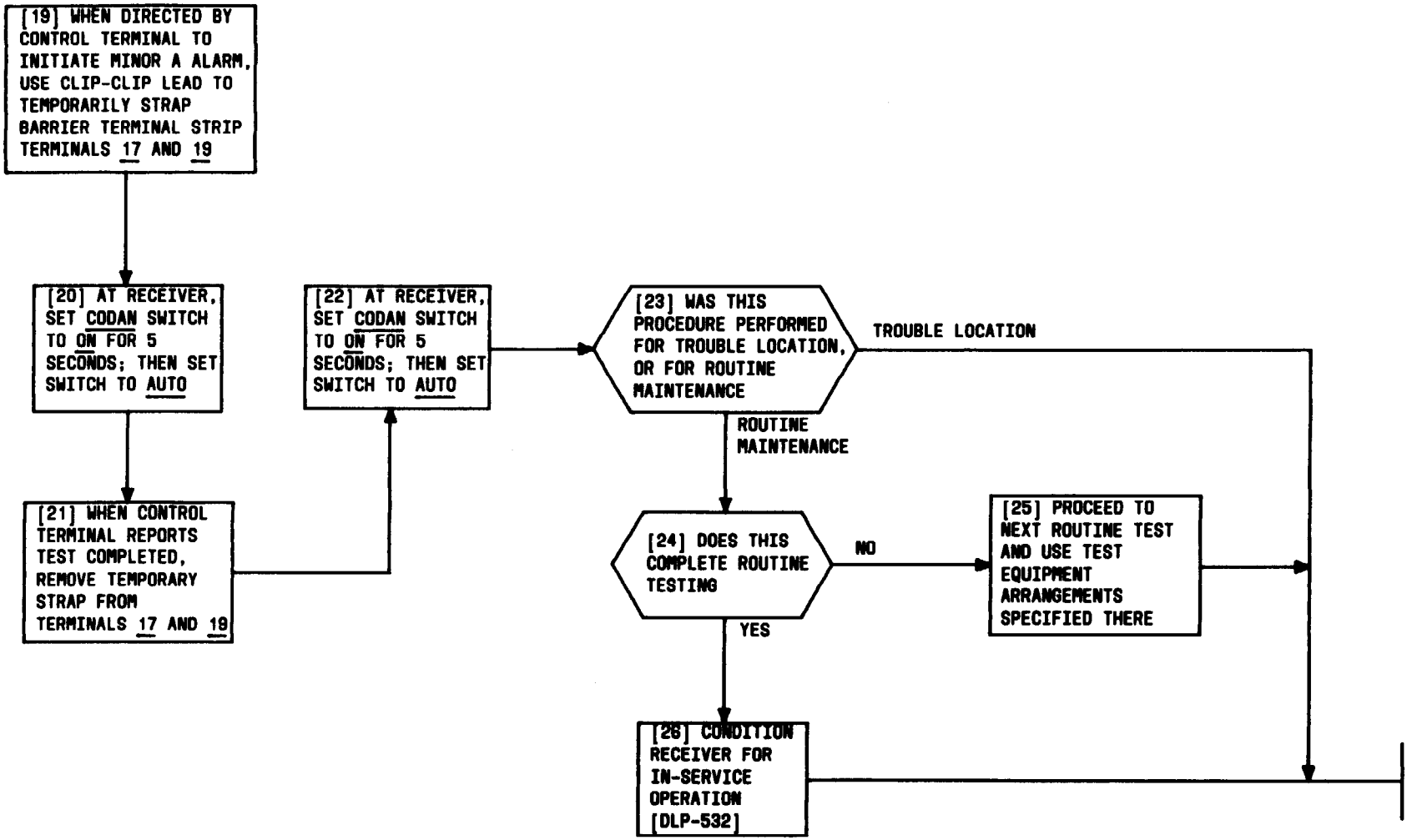


NOTE 3
SEQUENCE OF LAMP OPERATION IS: RECEIVER CODAN SWITCH TO ON RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS LIGHTING. RECEIVER CODAN SWITCH BACK TO AUTO RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS EXTINGUISHING AND ROUTINER ALM A LAMP LIGHTING

TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING

SUMMARY

USING KS-21277 ROUTINER TEST SET, VERIFY THAT A MAJOR B ALARM WILL BE ENCODED TO CONTROL TERMINAL UPON APPLICATION OF A STRAP SIMULATING THE EXTERNAL DEVICE BETWEEN BARRIER TERMINAL STRIP TERMINALS 18 AND 19 (GND)

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

[3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 18

AND

[4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL → PAGE 3

RECEIVER

[5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

AND

ROUTINER CONNECTED

[6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

→ PAGE 2

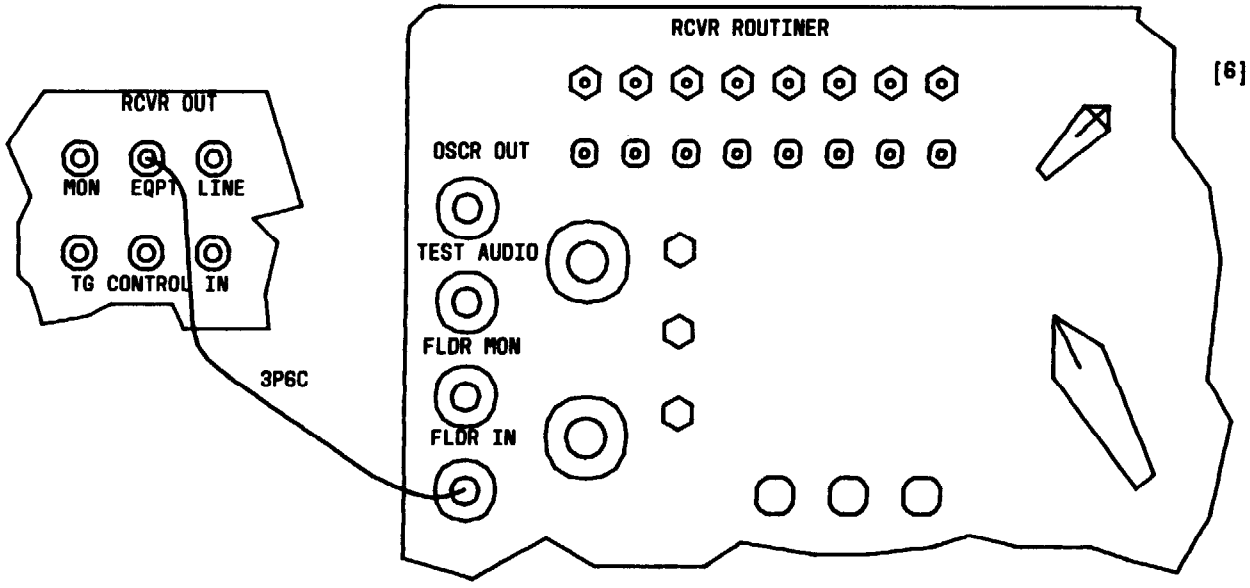


FIG. 1

NOTES

1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

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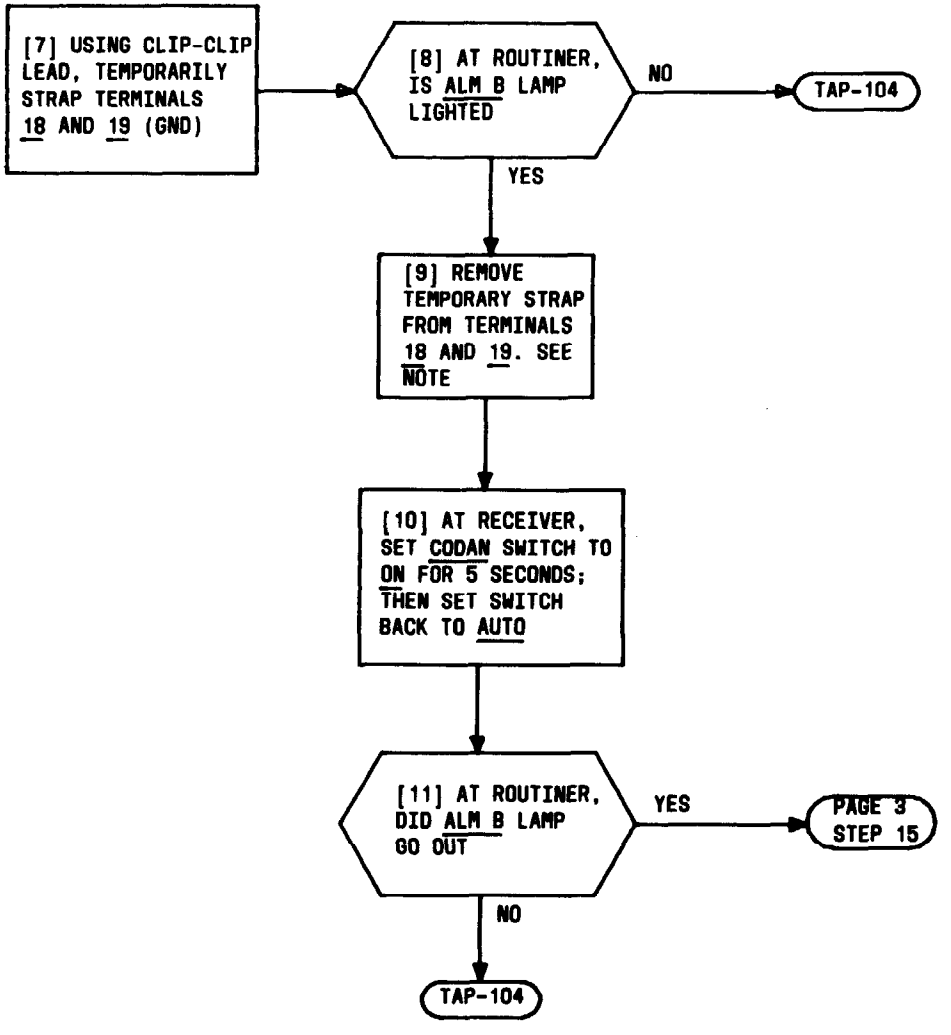
TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING

NOTE ALM B LAMP MAY GO OUT WHEN STRAP IS REMOVED	
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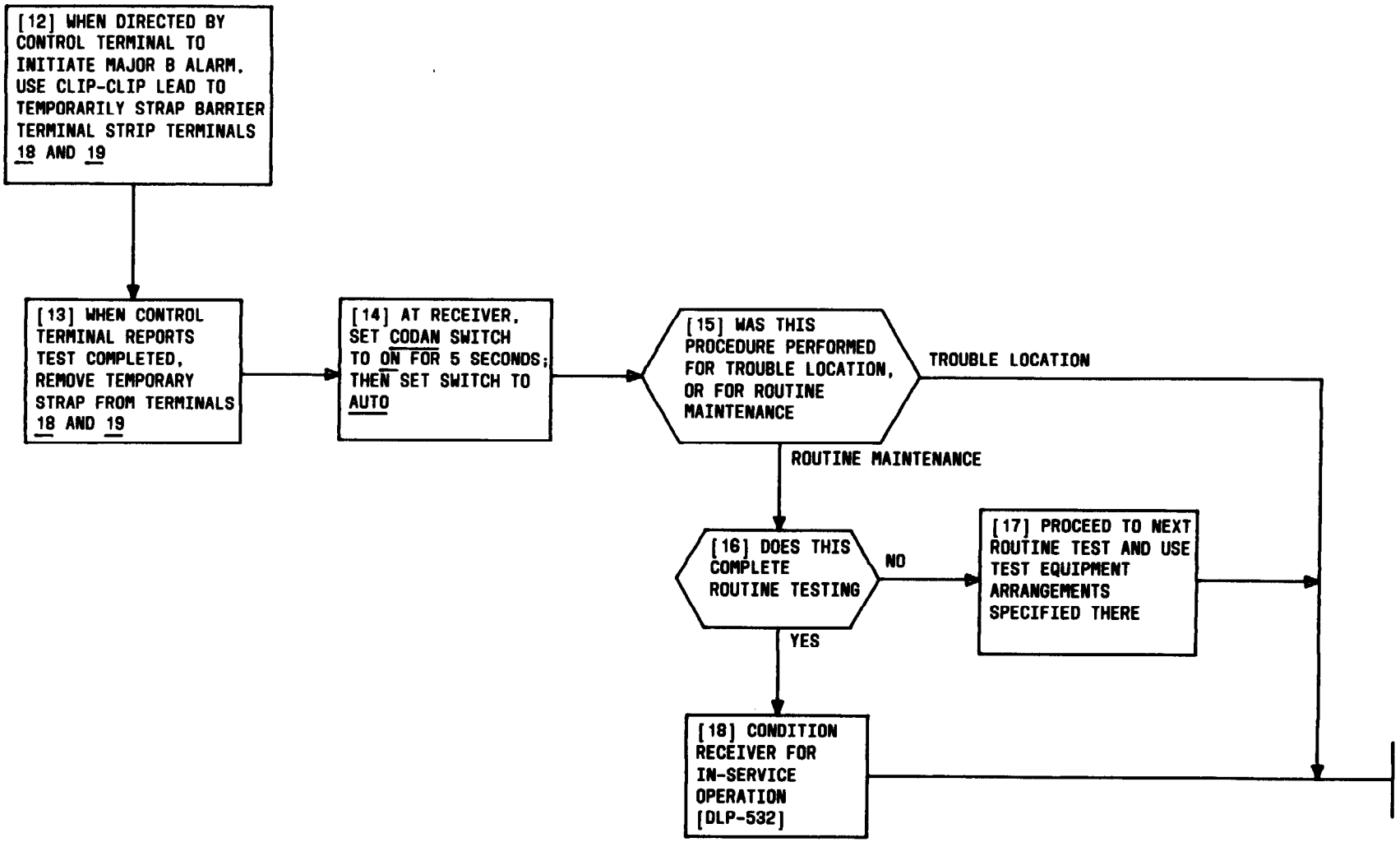


TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING

SUMMARY

USING KS-21277 ROUTINER TEST SET, AND A STRAP BETWEEN BARRIER TERMINAL STRIP TERMINALS 18 AND 19 (GND) SIMULATING THE EXTERNAL DEVICE, VERIFY THAT A MINOR B ALARM WILL BE ENCODED TO CONTROL TERMINAL FOLLOWING A CODAN OPERATION

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

[3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 18

AND

[4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL → PAGE 4

RECEIVER → [5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

AND → ROUTINER CONNECTED → PAGE 2

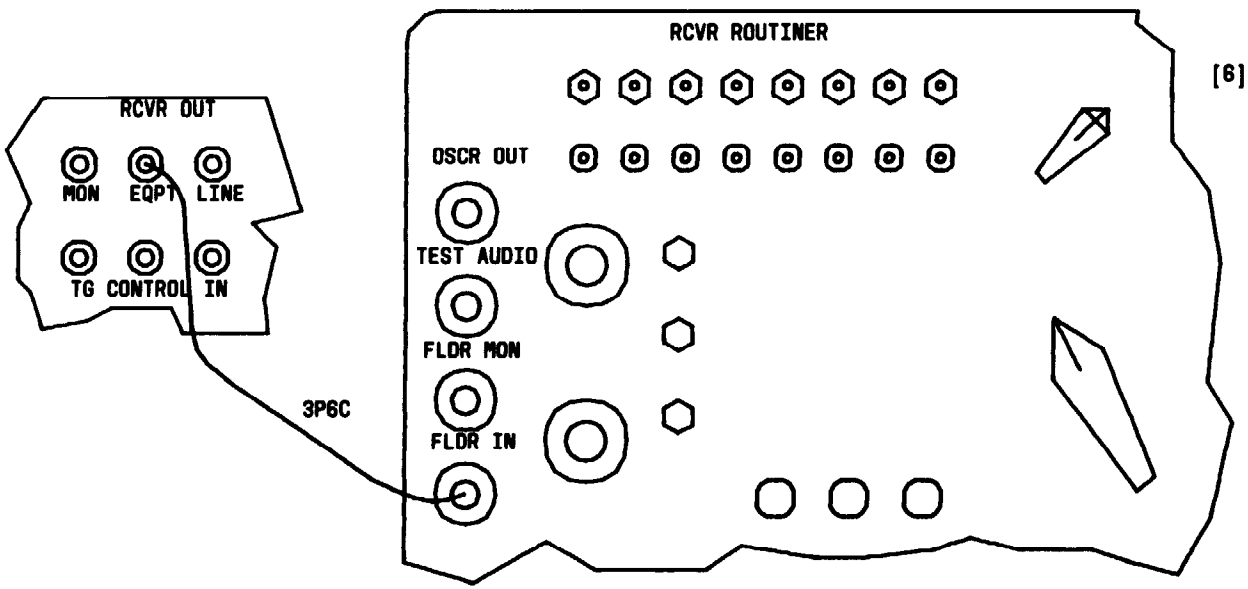
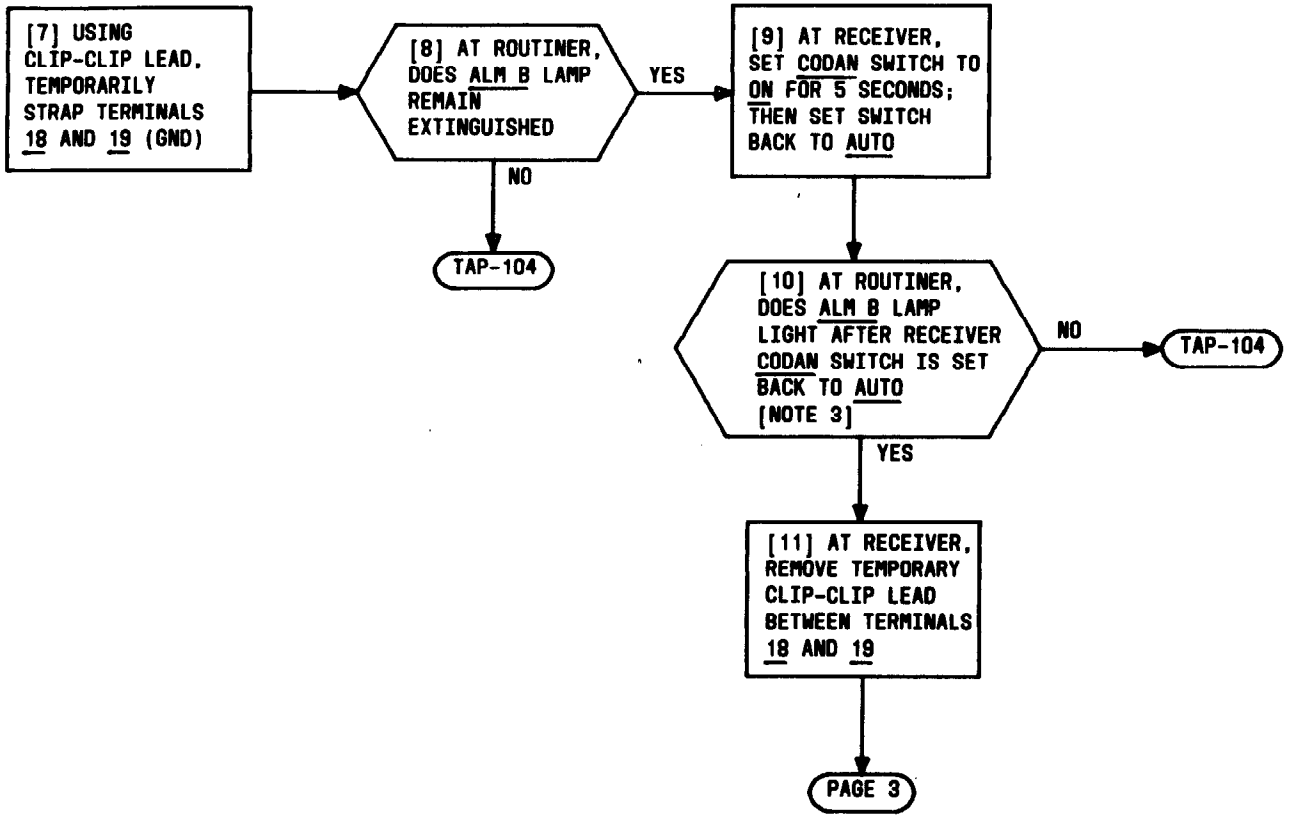


FIG. 1

NOTES

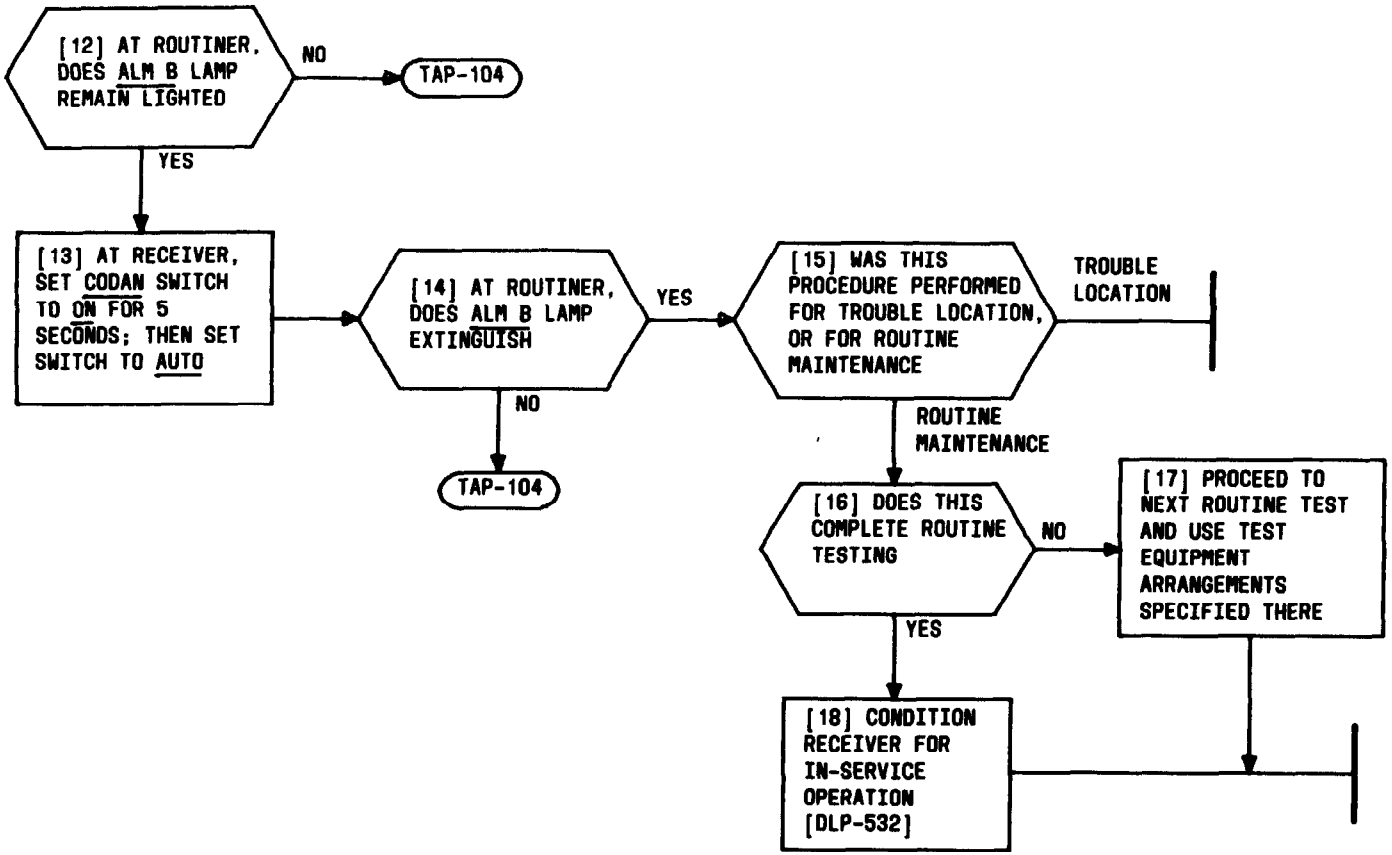
1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING

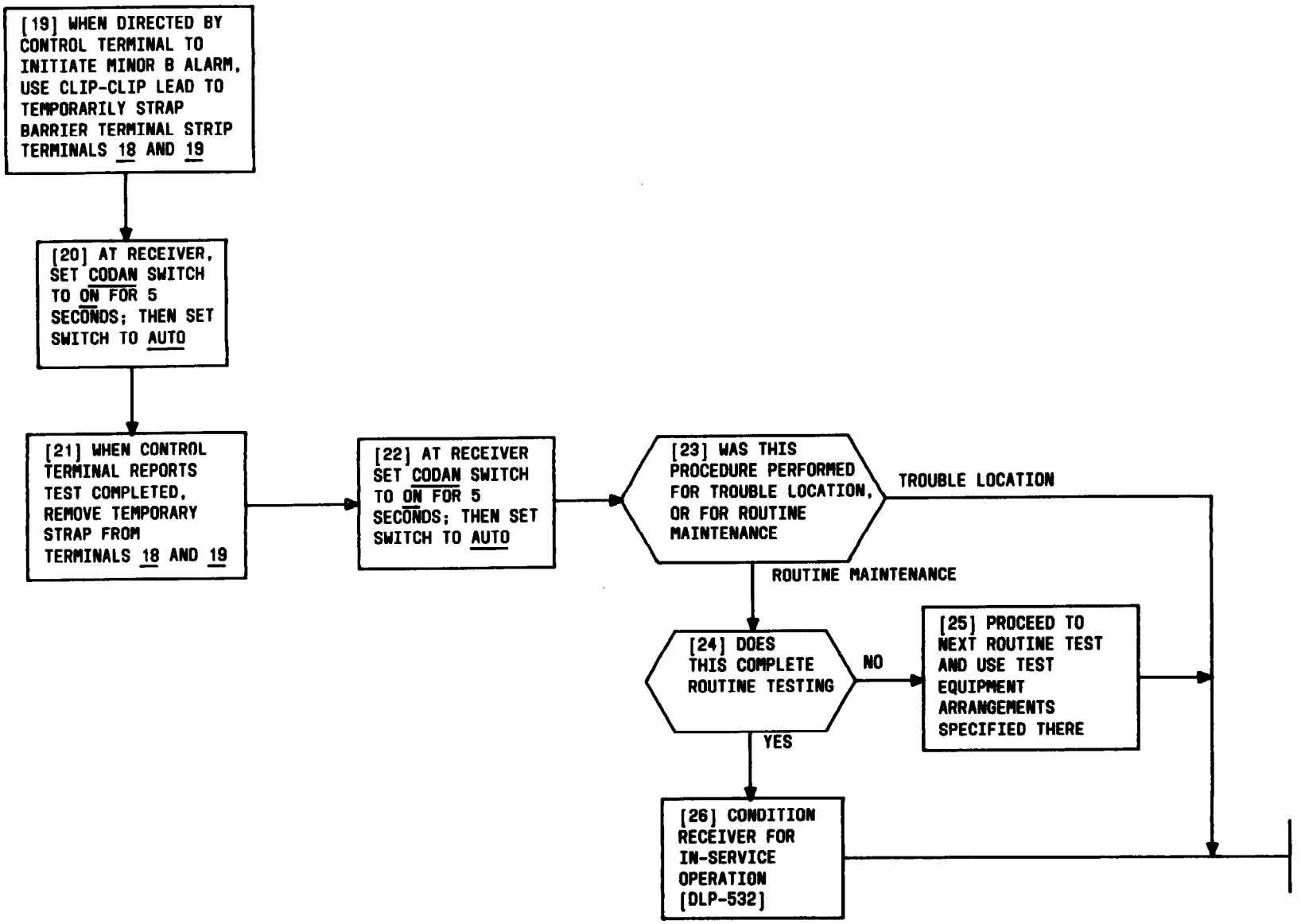


NOTE 3
SEQUENCE OF LAMP OPERATION IS: RECEIVER CODAN SWITCH TO ON RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS LIGHTING, RECEIVER CODAN SWITCH BACK TO AUTO RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS EXTINGUISHING AND ROUTINER ALM B LAMP LIGHTING

TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING

SUMMARY

USING KS-21277 ROUTINER TEST SET TO INITIATE DATA TRAINS TO RECEIVER, VERIFY RECEIVER RESPONSES TO COMMANDS FOR TEST GENERATOR AND CODAN OVERRIDE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] VERIFY THAT RECEIVER CONTROL SWITCH IS SET TO REM POSITION

AND

[3] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL → PAGE 5 STEP 21

RECEIVER

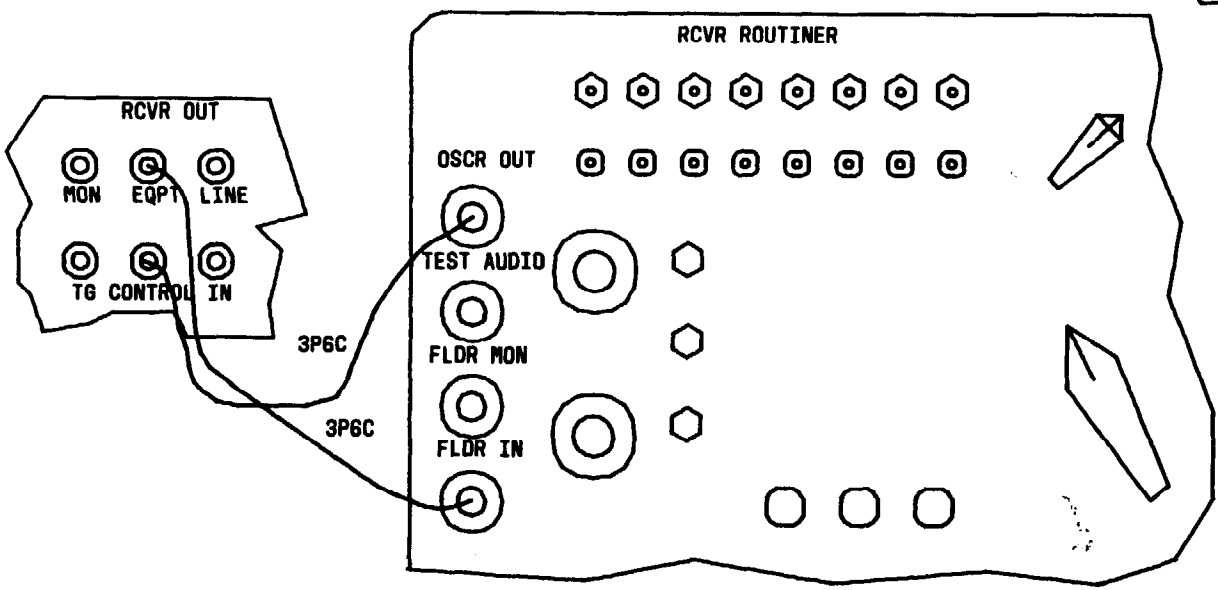


FIG. 1

[4] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[5] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

[6] CONNECT ROUTINER OSCR OUT JACK TO RECEIVER TG CONTROL IN - EQPT JACK WITH 3P6C CORD

AND

ROUTINER CONNECTED → PAGE 2

NOTES

1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

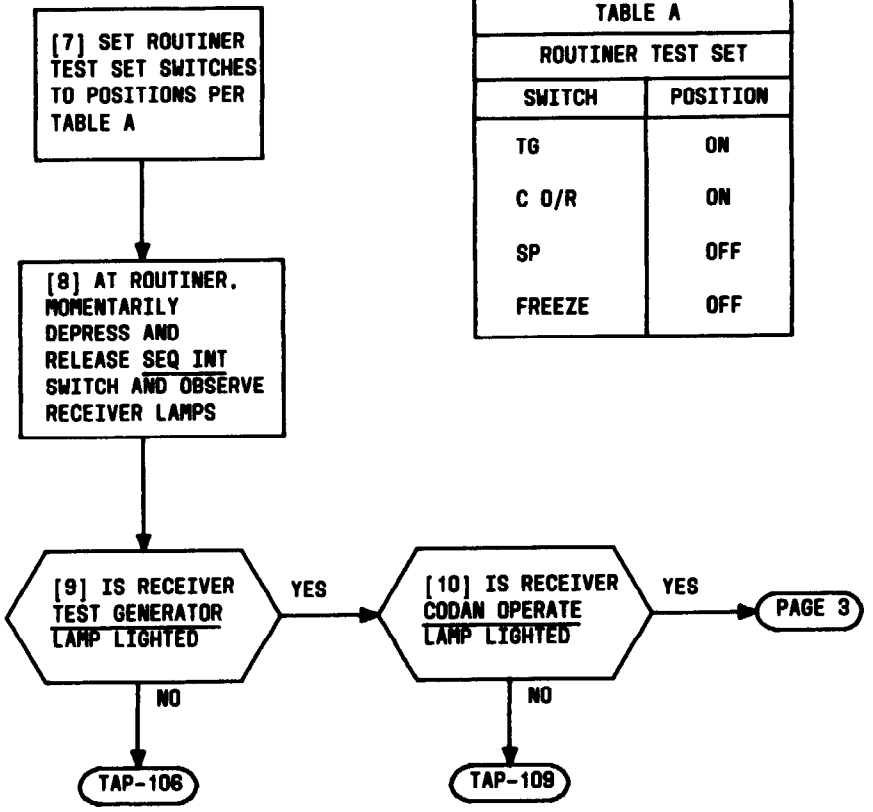


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	ON
C O/R	ON
SP	OFF
FREEZE	OFF

TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

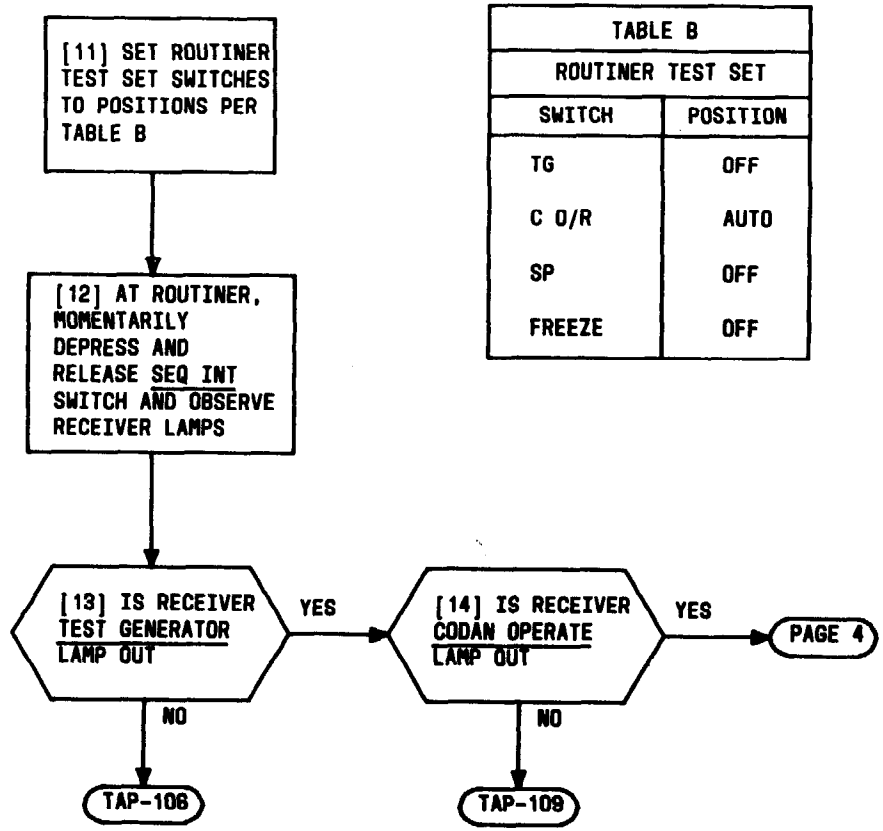


TABLE B	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	OFF

TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

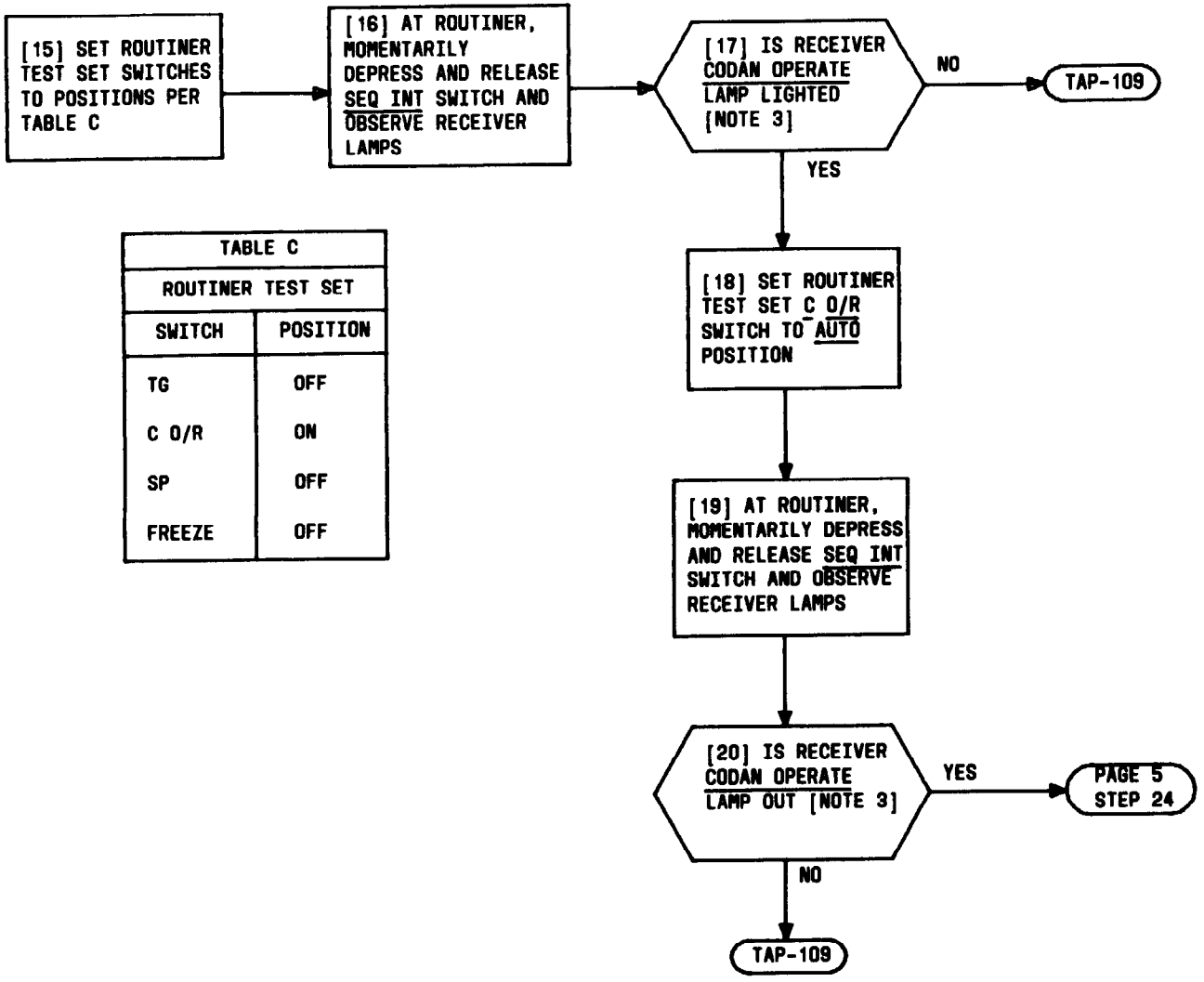


TABLE C	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	ON
SP	OFF
FREEZE	OFF

TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

NOTE 3 IGNORE LIGHTED SSB LAMP	
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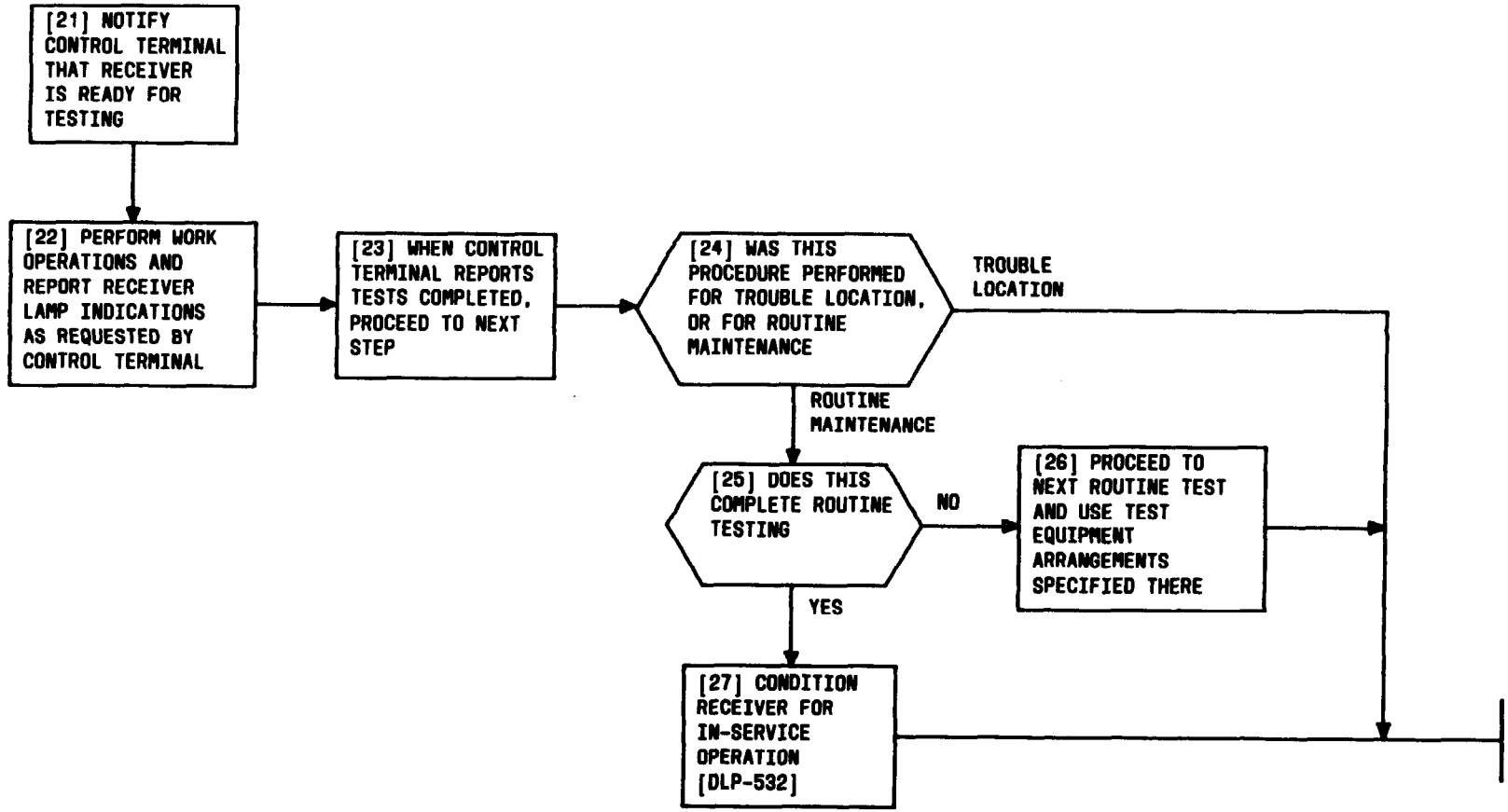


TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

SUMMARY

USING KS-21277 ROUTINER TEST SET TO INITIATE A DATA TRAIN TO RECEIVER, VERIFY RESPONSE OF SPARE FUNCTION RELAY CLOSURE INTERNAL TO RECEIVER

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] VERIFY THAT RECEIVER CONTROL SWITCH IS SET TO REM POSITION

AND

[3] IS AN EXTERNAL DEVICE CONNECTED TO BARRIER TERMINAL STRIP TERMINALS 15 AND 16

NO

[4] CONDITION KS-14510 METER (VOM) FOR CONTINUITY MEASUREMENTS [DLP-524]

YES

[5] CONNECT OHMMETER TEST LEADS BETWEEN BARRIER STRIP TERMINALS 15 AND 16 [NOTE 2]

PAGE 2

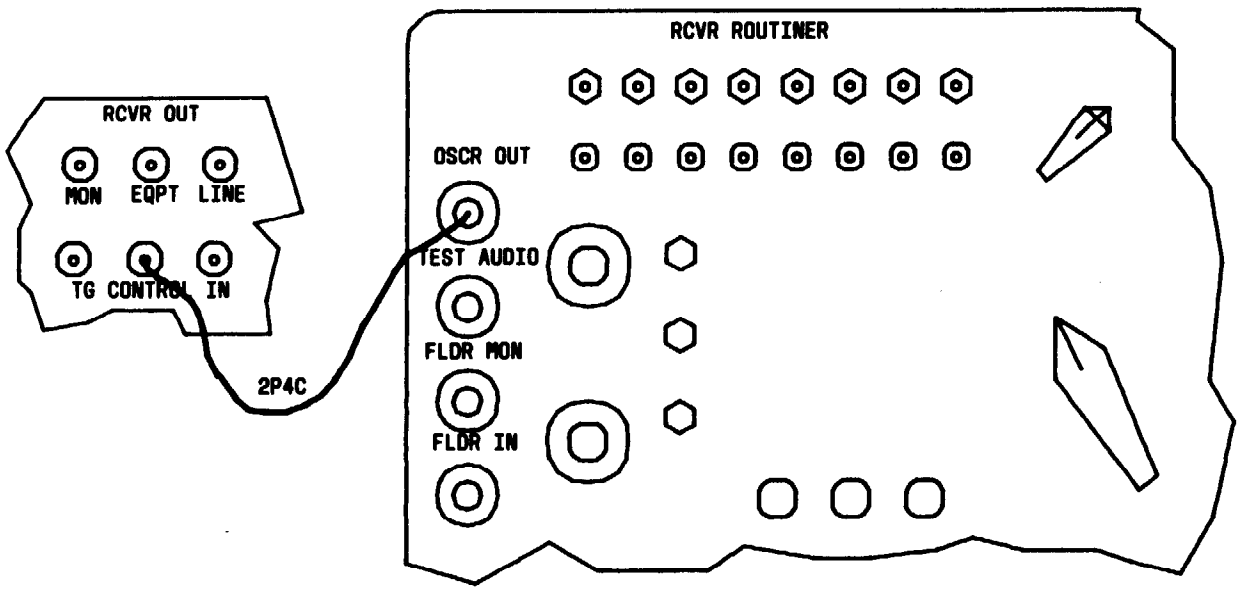


FIG. 1

NOTES

1. FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. REFERENCE IN THIS PROCEDURE TO EXTERNAL DEVICE REFERS TO EITHER OHMMETER OR ANY PREEXISTING DEVICE

TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL

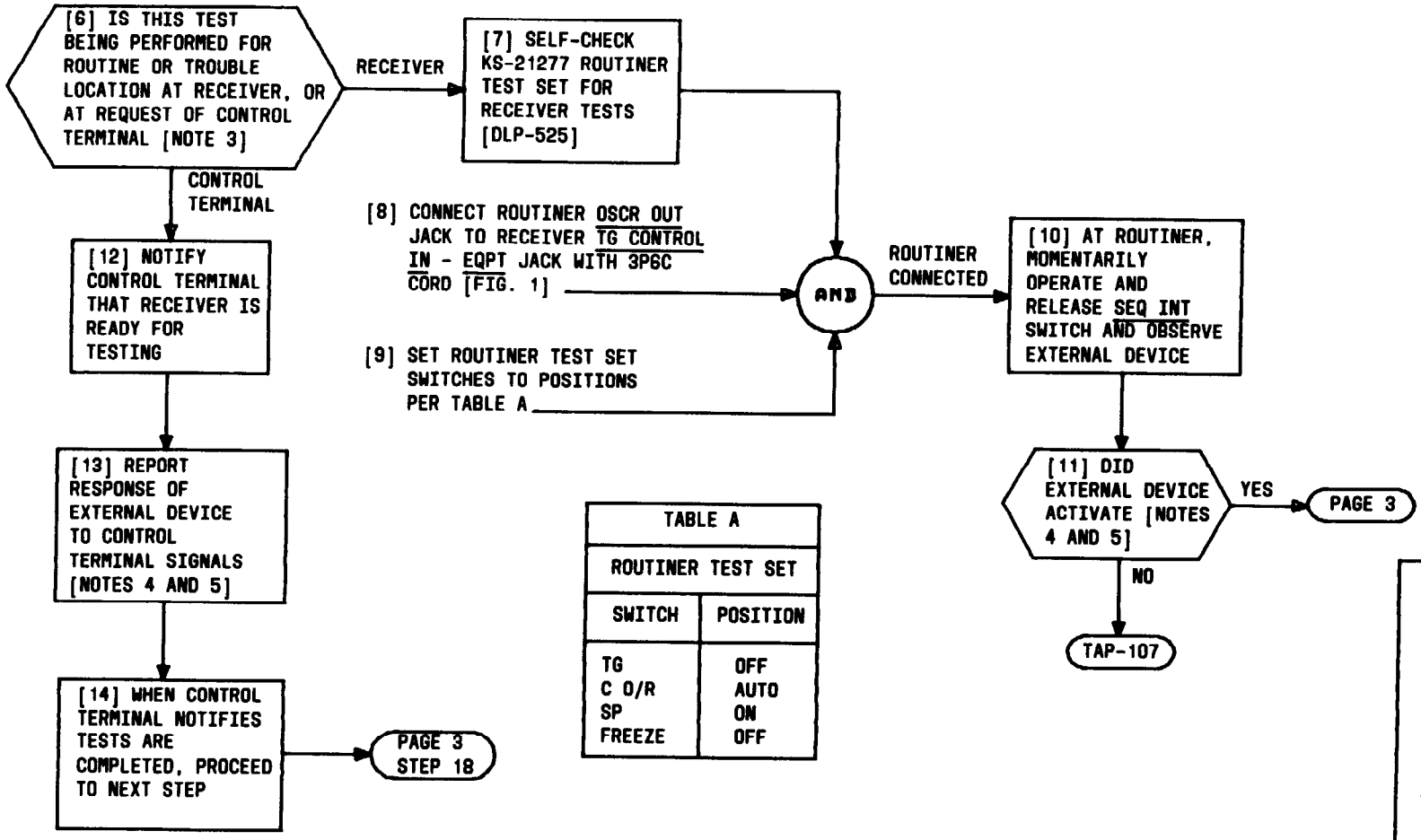
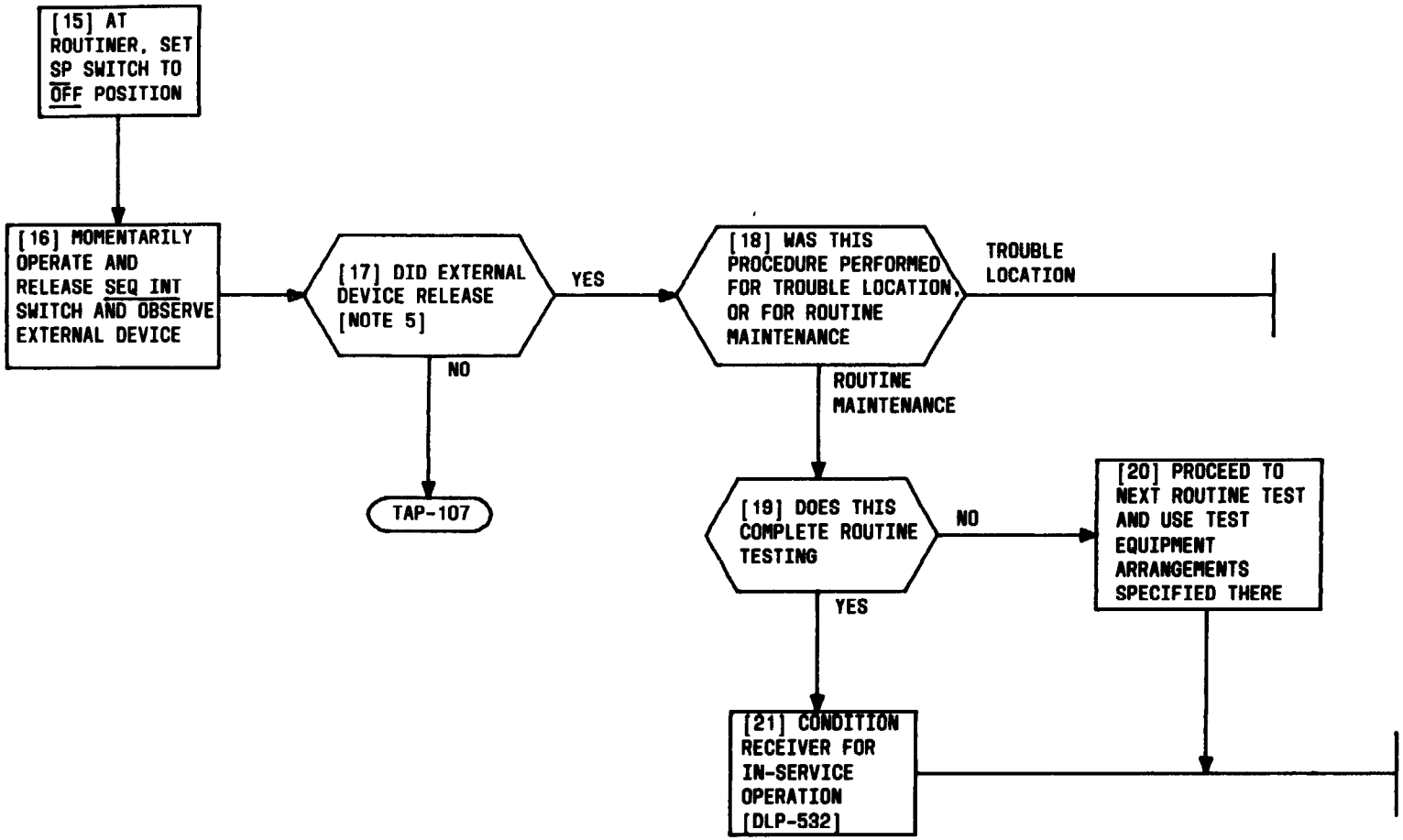


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	ON
FREEZE	OFF

NOTES

3. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL
4. FOR PURPOSES OF THIS TEST, ALL RECEIVER AND ROUTINER INDICATIONS (LAMPS) MAY BE IGNORED
5. IF EXTERNAL DEVICE IS AN OHMMETER, ACTIVATION SHOULD RESULT IN AN INDICATION OF 0 OHM. RELEASE SHOULD RESULT IN AN INDICATION OF INFINITE OHMS

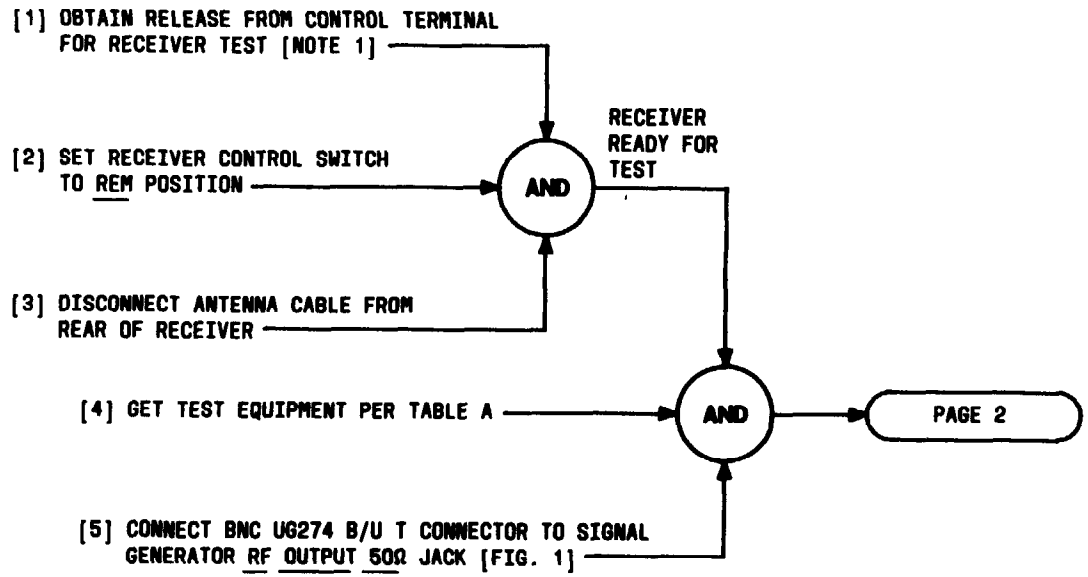
TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL



TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL

SUMMARY

USING KS-21277 ROUTINER TEST SET TO INITIATE DATA TO RECEIVER, WITH AN AMPLITUDE-MODULATED SIGNAL INPUT TO RECEIVER, VERIFY RECEIVER RESPONSE TO FREEZE COMMAND.



NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

TEST RECEIVER RESPONSE TO FREEZE COMMAND

[6] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE

[8] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH BNC UG491 A/U ADAPTER

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR UNIT TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET AR-2 AND 355D ATTENUATORS TO 100 DB

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
VARIABLE RF ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
ROUTINER TEST SET	KS-21277
2 TELEPHONE CORDS	3P6C

TEST RECEIVER RESPONSE TO FREEZE COMMAND

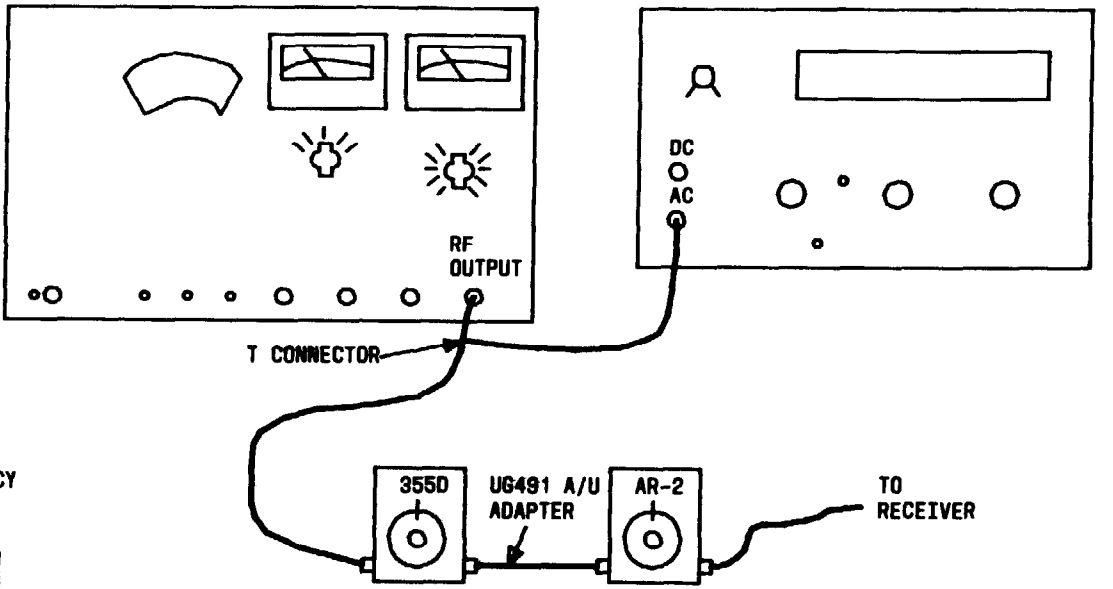


FIG. 1

[11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

AND → FREQUENCY COUNTER SET UP

[15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000 ~

[18] SET SIGNAL GENERATOR ATTENUATOR TO ODBM POSITION AND ADJUST VERNIER FOR OUTPUT LEVEL OF 0

[19] SET SIGNAL GENERATOR MODULATION SELECTOR SWITCH TO CW, SELECT 1000~ POSITION, AND ADJUST MODULATION AMPLITUDE CONTROL FOR PERCENT MODULATION METER INDICATION OF 40

AND → SIGNAL GENERATOR SET UP → PAGE 4

TEST RECEIVER RESPONSE TO FREEZE COMMAND

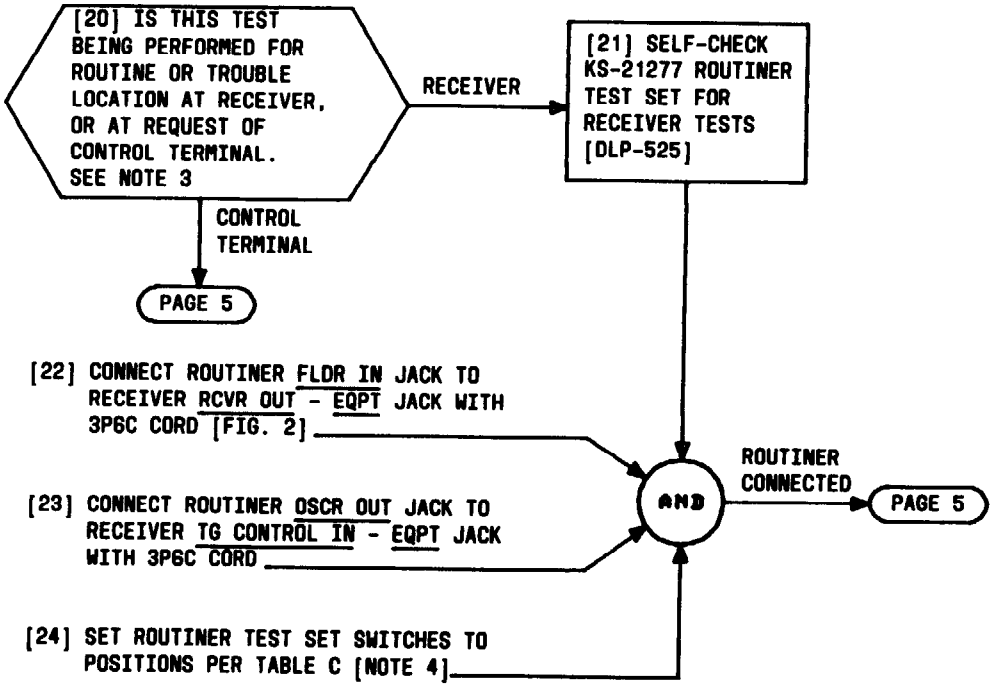
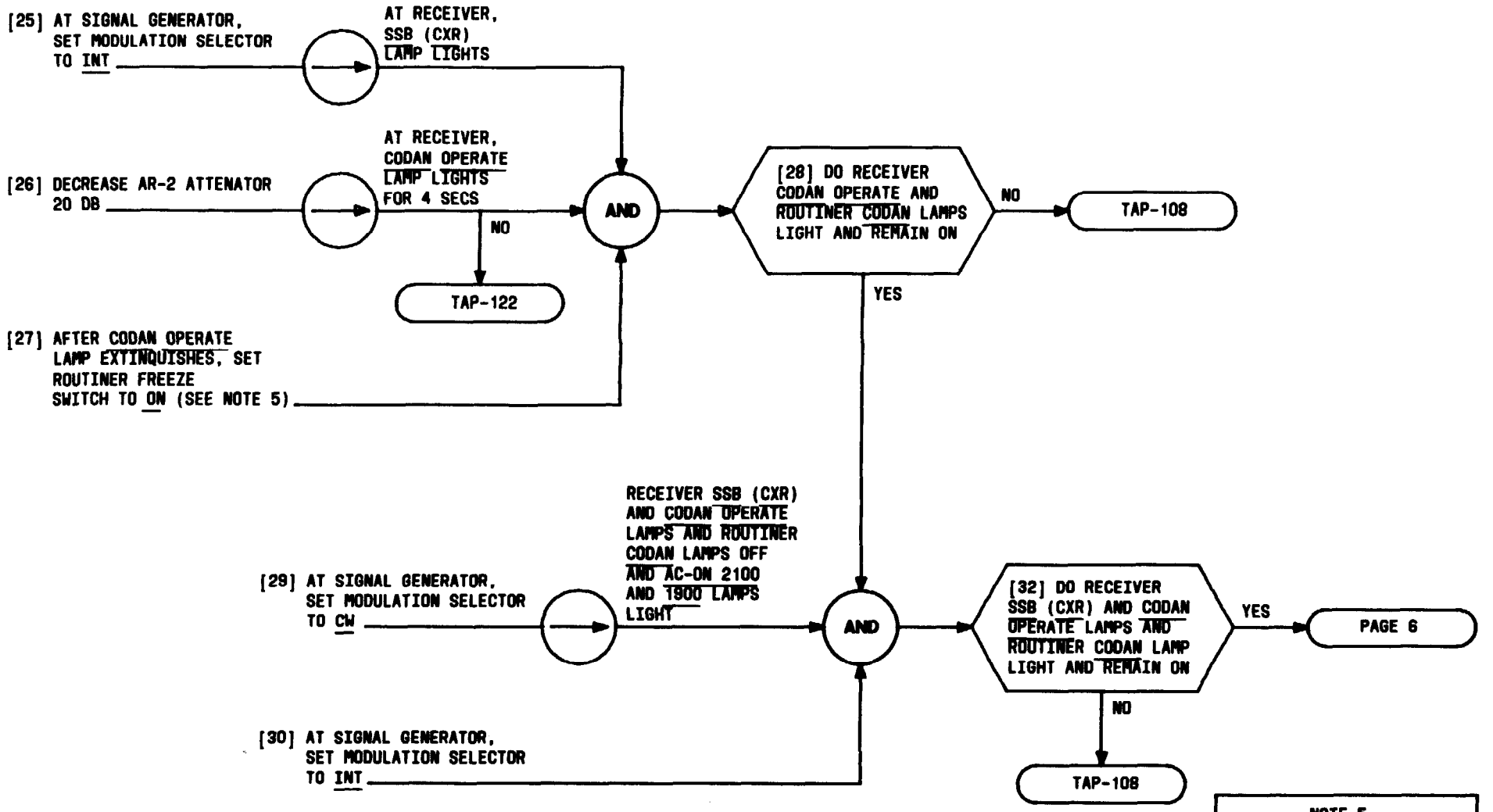


TABLE C	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	OFF

NOTES

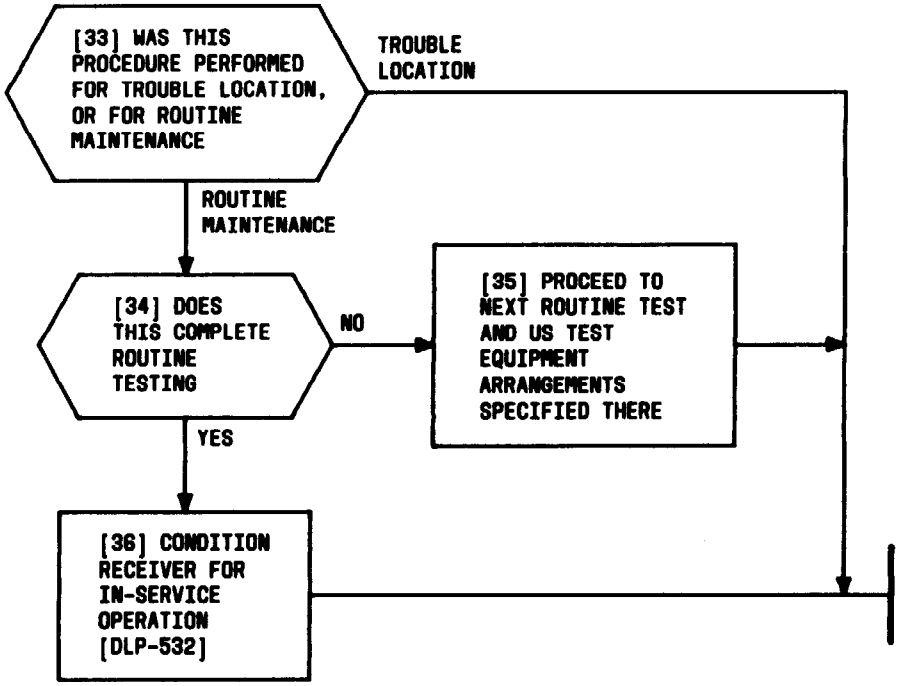
3. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL
4. FOR PURPOSES OF THIS TEST, ALL LAMP INDICATIONS ON ROUTINER TEST SET MAY BE IGNORED

TEST RECEIVER RESPONSE TO FREEZE COMMAND



NOTE 5
IF ROUTINER IS AT CONTROL TERMINAL, REQUEST CONTROL TERMINAL TO PERFORM ROUTINER ACTIONS WHEN REQUIRED

TEST RECEIVER RESPONSE TO FREEZE COMMAND



TEST RECEIVER RESPONSE TO FREEZE COMMAND

SUMMARY

USING RECEIVER PANEL METER, MEASURE INTERNAL RECEIVER POWER SUPPLY VOLTAGES AT BETWEEN 28 AND 30 DIVISIONS (REGULATED) AND 25 AND 35 (UNREGULATED)

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TO BE TESTED [NOTE 1]

[2] SET RECEIVER PANEL CONTROLS PER TABLE A

SEE NOTE 2

[3] SET RECEIVER METER SWITCH TO +24V POSITION [FIG. 1]

AND

[4] DOES METER INDICATE BETWEEN 28 AND 32 DIVISIONS

YES

[6] SET METER SWITCH TO -24V POSITION

NO

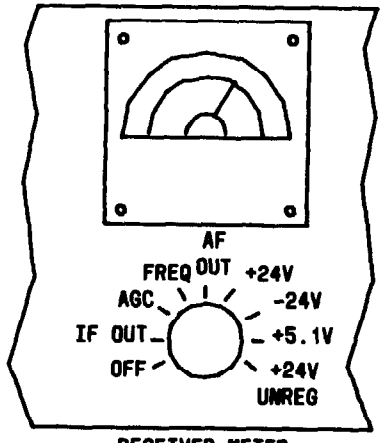
NO

TAP-110

PAGE 2

[5] SEE WARNING. REPLACE POWER SUPPLY BOARD NO. 6 WITH SPARE [DLP-527]

TABLE A	
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON



RECEIVER METER

FIG. 1

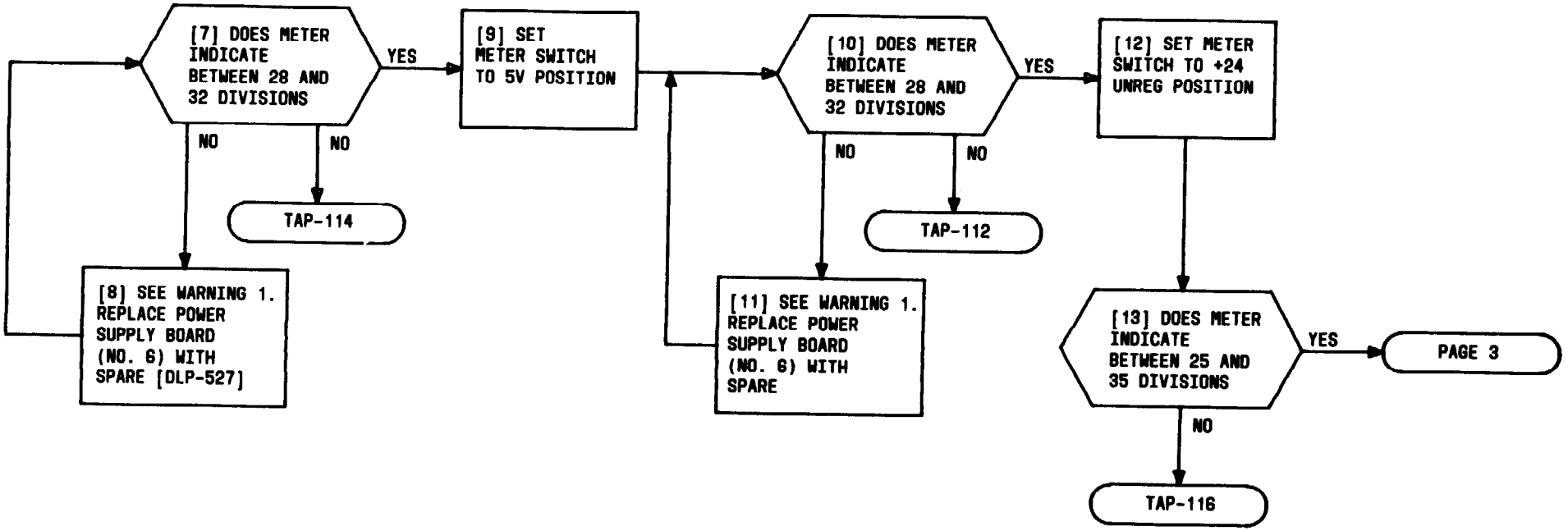
NOTES

1. FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTIVE ACTION
2. THE FOLLOWING PANEL LAMPS WILL BE LIGHTED:
   LOCAL CONTROL
   TEST GENERATOR
   CODAN OPERATE

WARNING

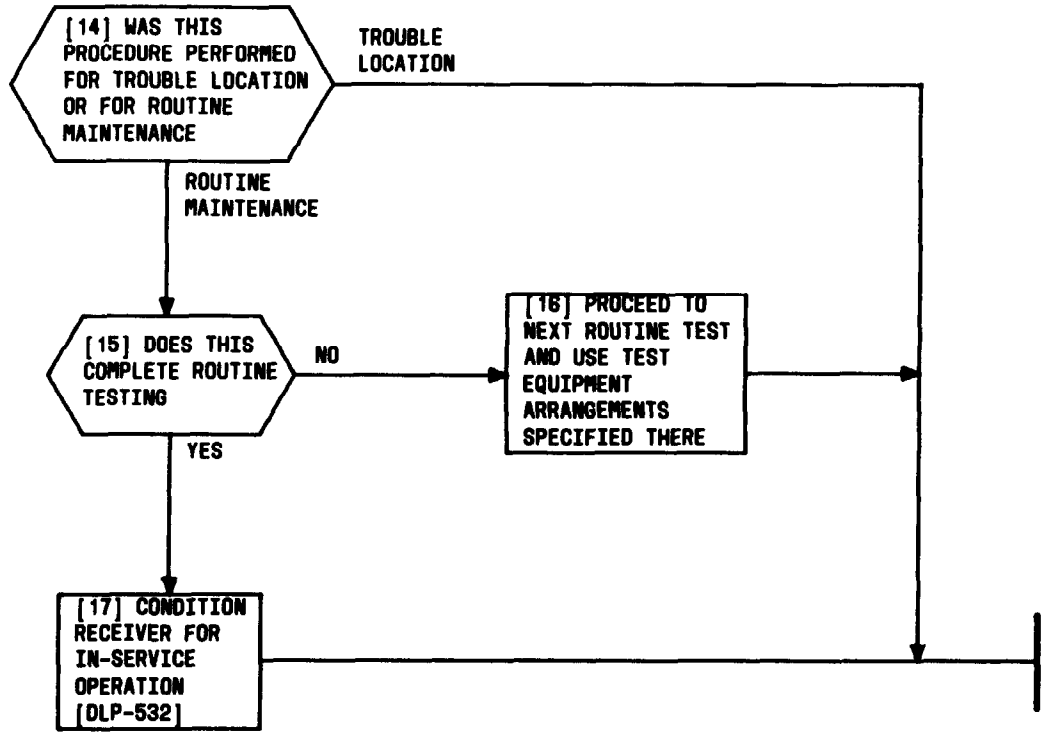
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

MEASURE RECEIVER POWER SUPPLY VOLTAGES



WARNING 1
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

MEASURE RECEIVER POWER SUPPLY VOLTAGES



MEASURE RECEIVER POWER SUPPLY VOLTAGES

MEASURE RECEIVER OSCILLATOR FREQUENCIES

SUMMARY

USING FREQUENCY COUNTER, MEASURE RECEIVER HIGH-FREQUENCY OSCILLATOR AT WITHIN 2 HZ OF 1.5 MHZ ABOVE CHANNEL FREQUENCY. MEASURE SECOND LOCAL OSCILLATOR AT WITHIN 2 HZ OF 1.6 MHZ. MEASURE TEST GENERATOR AT WITHIN 2 HZ OF 1.5 MHZ ABOVE CHANNEL FREQUENCY

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER POWER SWITCH TO ON POSITION

[3] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL LAMP LIGHTED

AND

[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT T CONNECTOR BNC UG274 B/U TO FREQUENCY COUNTER SIGNAL INPUT-AC JACK [FIG. 1]

[6] CONNECT 50-OHM BNC MX554 A/U TERMINATION TO ONE LEG OF T CONNECTOR

[7] CONNECT OTHER LEG OF T CONNECTOR TO RECEIVER HFO JACK WITH RG 58/U CABLE

AND

PAGE 2

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
TERMINATION, 600 OHM	WECO 262B PLUG
FREQUENCY COUNTER	HP 5245L
T CONNECTOR	BNC UG274
6-FOOT LENGTH OF COAX CONNECTING CABLE	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
TERMINATION, 50 OHM	BNC MX554 A/U

NOTE 1

FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

[8] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[9] SET COUNTER FUNCTION SWITCH TO FREQUENCY

[10] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[11] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

AND

[12] FIVE (5) MINUTES OR MORE AFTER RECEIVER POWER-ON OBSERVE INDICATED FREQUENCY

[13] DOES COUNTER INDICATE BETWEEN 1.499998 AND 1.500002 MHZ ABOVE ASSIGNED CHANNEL FREQUENCY

NO → TAP-117

YES

[14] MOVE TEST CORD FROM HFO JACK TO 1.6 MHZ JACK AND OBSERVE INDICATED FREQUENCY

[15] DOES COUNTER REGISTER BETWEEN 1.599998 AND 1.600002 MHZ

YES → PAGE 3

NO → TAP-118

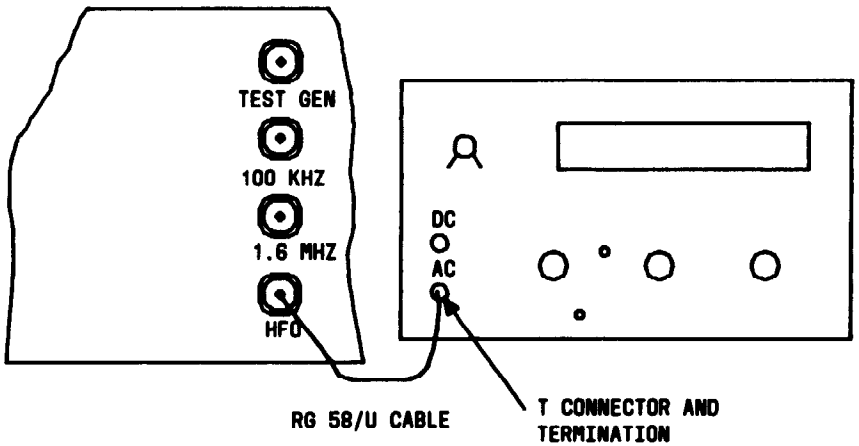
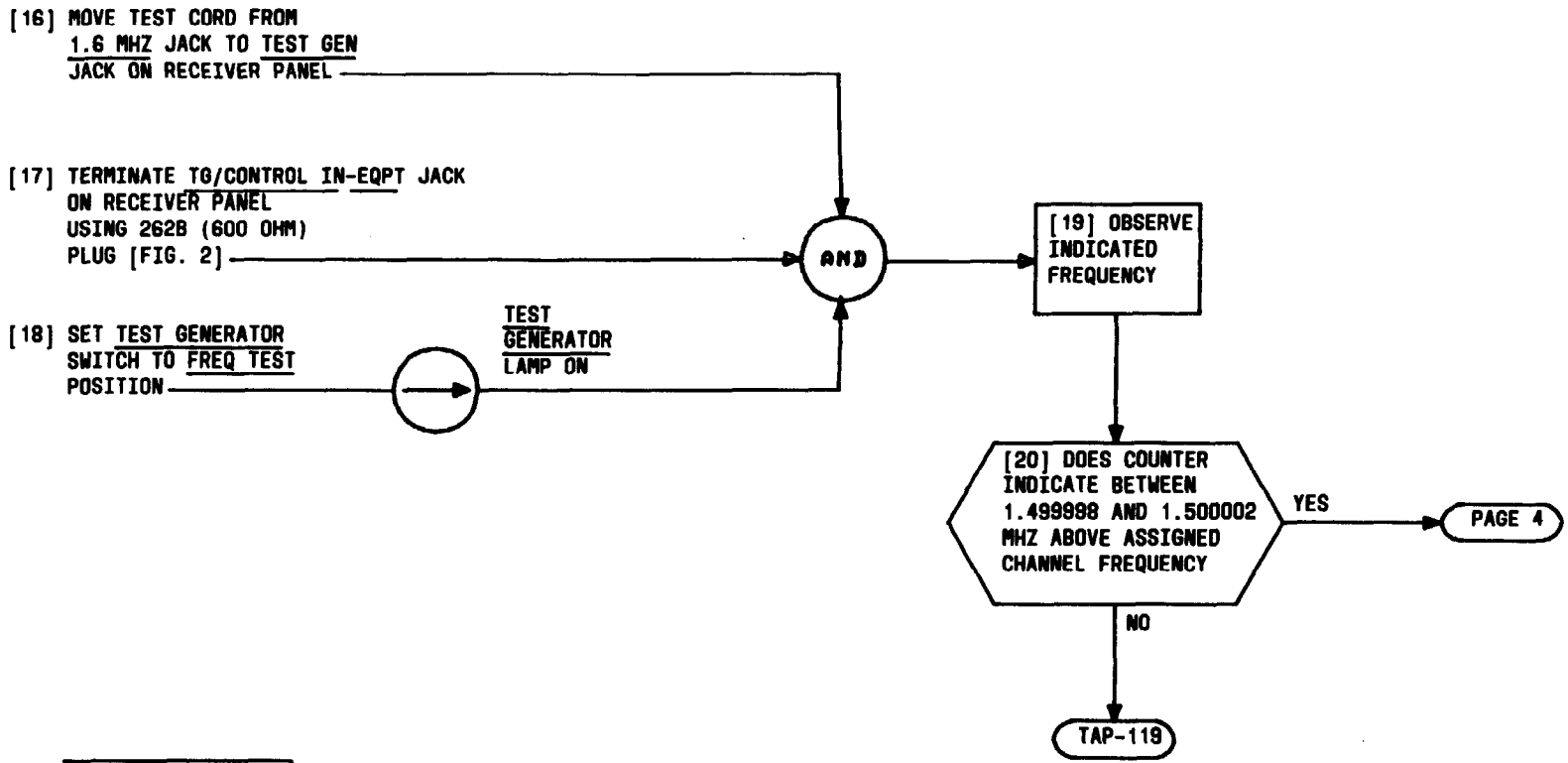


FIG. 1

MEASURE RECEIVER OSCILLATOR FREQUENCIES



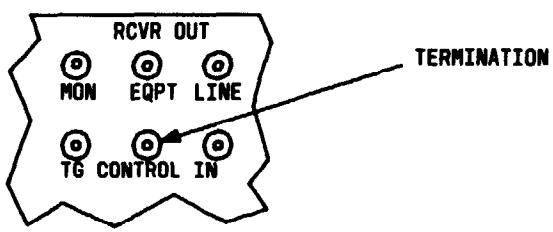
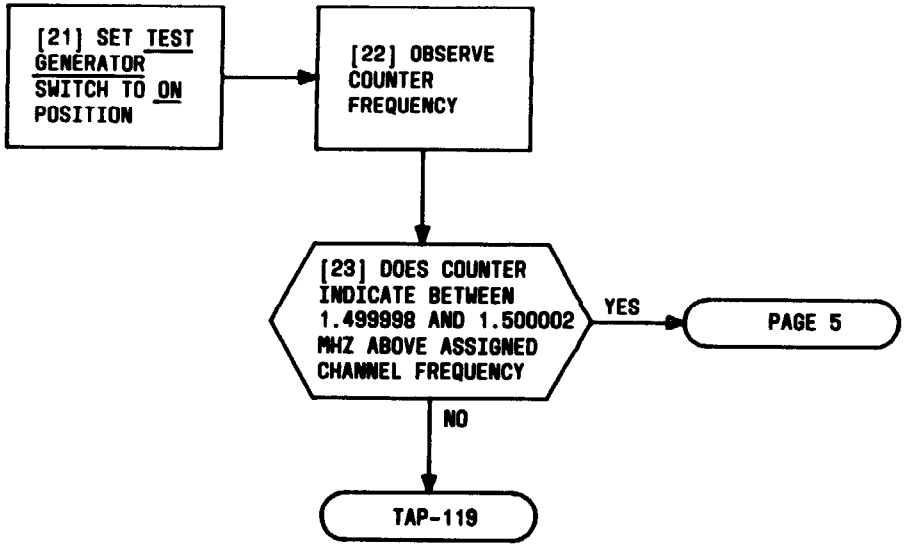
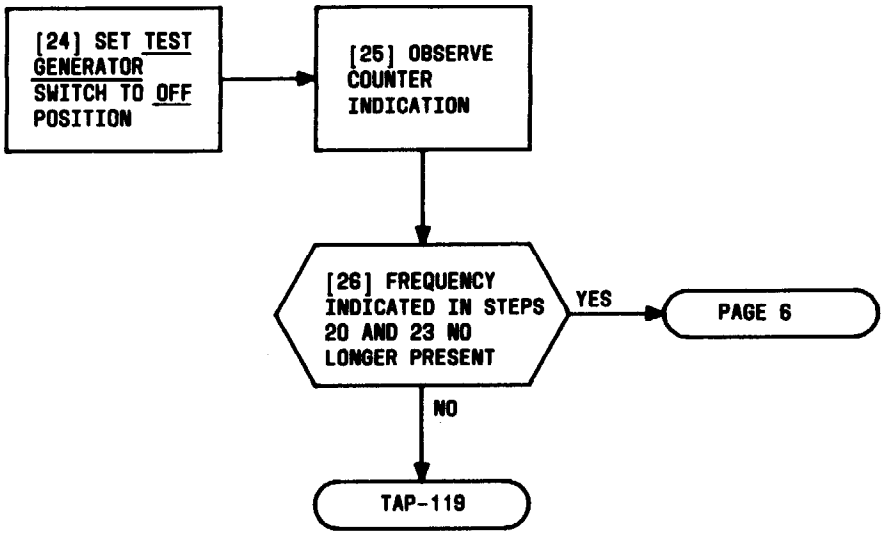


FIG. 2

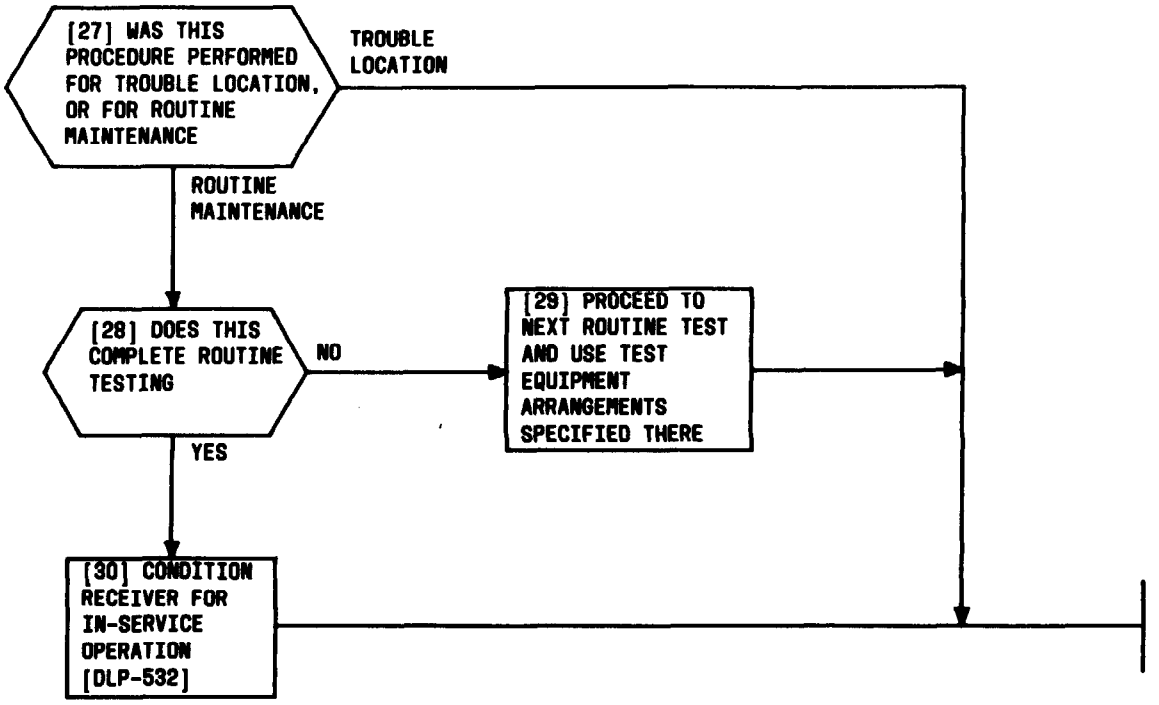
MEASURE RECEIVER OSCILLATOR FREQUENCIES



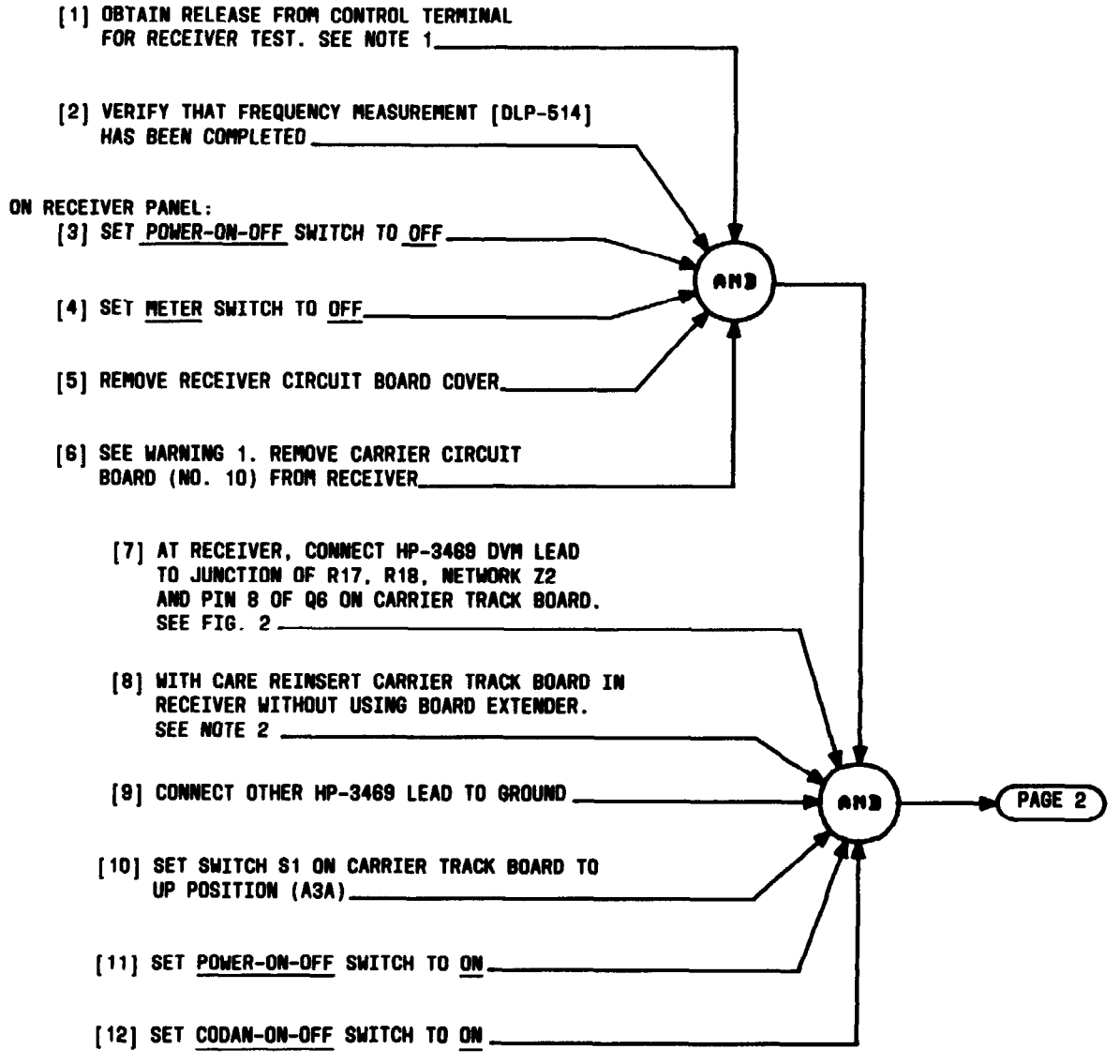
MEASURE RECEIVER OSCILLATOR FREQUENCIES



MEASURE RECEIVER OSCILLATOR FREQUENCIES



MEASURE RECEIVER OSCILLATOR FREQUENCIES



NOTES

1. FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. USE OF CARD EXTENDER WILL GIVE INCORRECT READING

WARNING 1

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN CHANGE TO COMPONENTS

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

[13] GET TEST EQUIPMENT PER TABLE A

[14] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[15] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[16] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D RF ATTENUATOR WITH RG 58/U CABLE

AND

PAGE 3

[17] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 WITH UG491 A/U BNC MALE ADAPTER

[18] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

[19] SET 355D AND AR-2 ATTENNUATORS TO 100 DB

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP-5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF ATTENUATOR	HP-355D
NOISE MEASURING SET	WECO J964003C
T CONNECTOR	BNC UG274 B/U
BNC MALE ADAPTER	UG491 A/U
4 6-FOOT LENGTHS OF COAX CABLE	RG 58/U
TELEPHONE CORD	3P6C

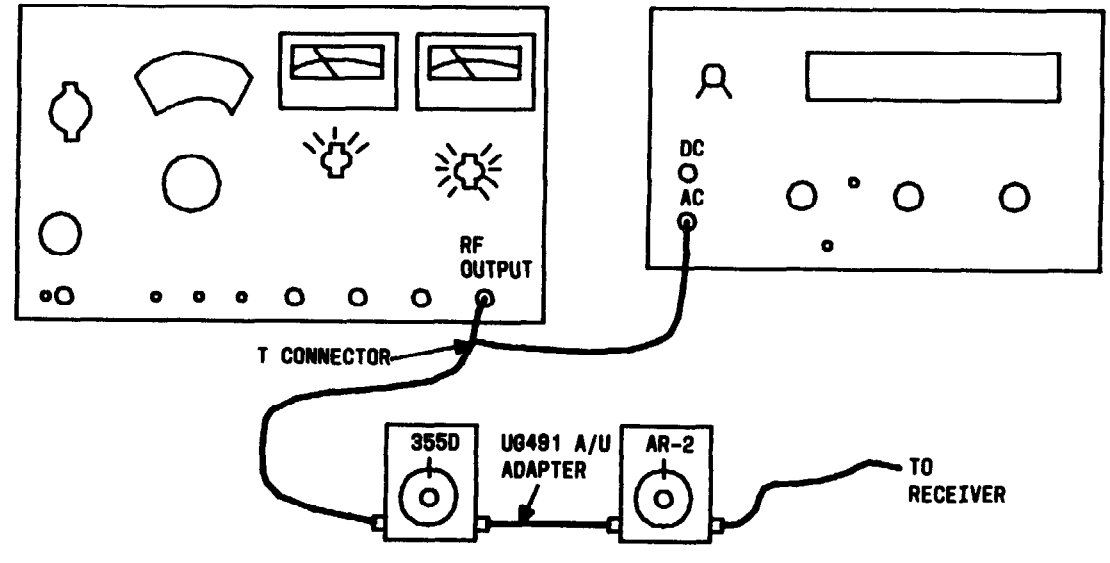
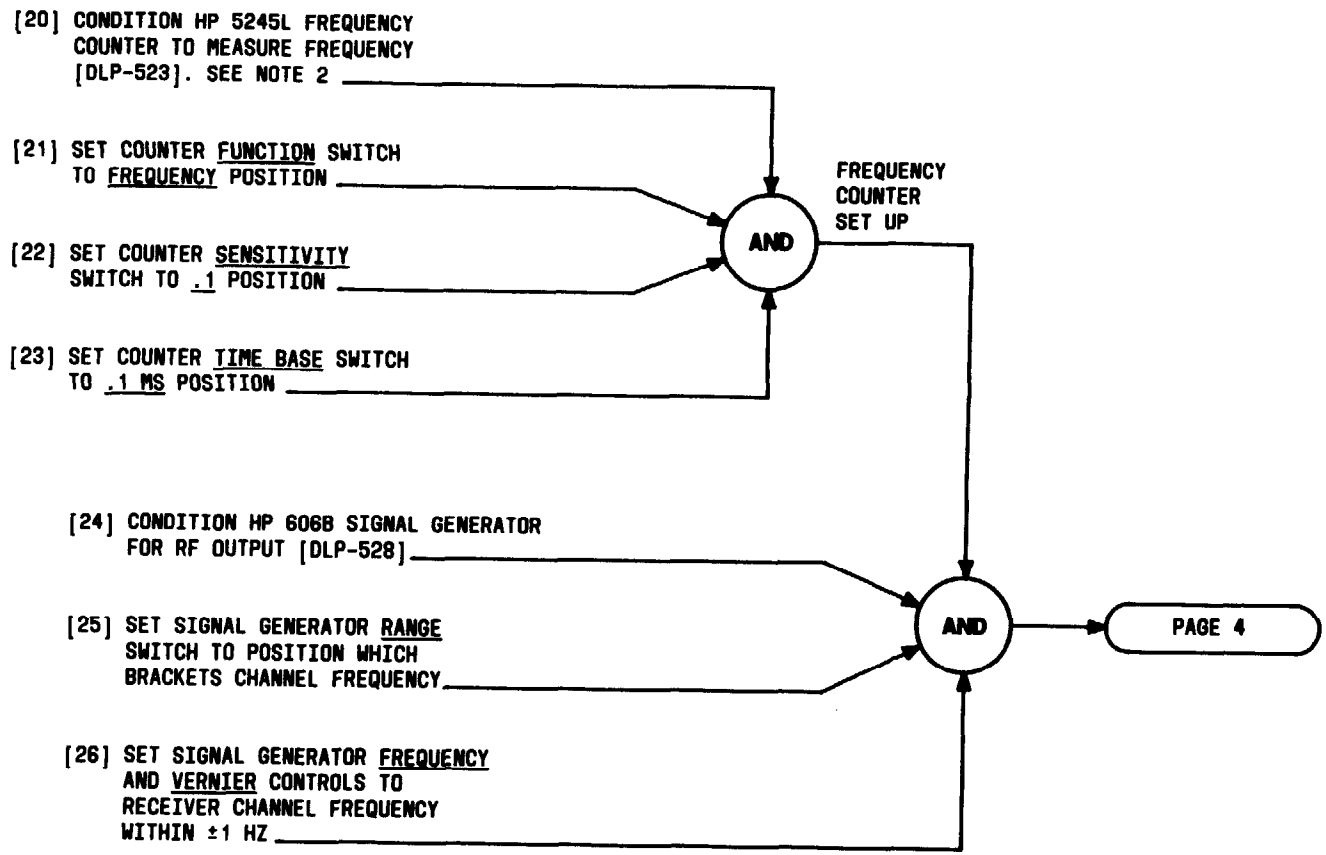


FIG. 1

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)



NOTE 2
EXTERNAL FREQUENCY COUNTER IS NEEDED TO MEASURE 100HZ

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

[27] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[28] SET SIGNAL GENERATOR MODULATION SELECTOR TO CW POSITION

[29] WAIT TWO MINUTES

AND

[30] DOES HP-3469 INDICATE BETWEEN 3.49 AND 3.51 VOLTS

YES → PAGE 5

NO → [31] ADJUST R19 ON CARRIER CIRCUIT BOARD (FIG. 2) UNTIL HP-3469 READS 3.5 VOLTS

NO → [32] SEE WARNING 2. PERFORM DLP-527 TO REPLACE CARRIER TRACK BOARD (NO. 10)

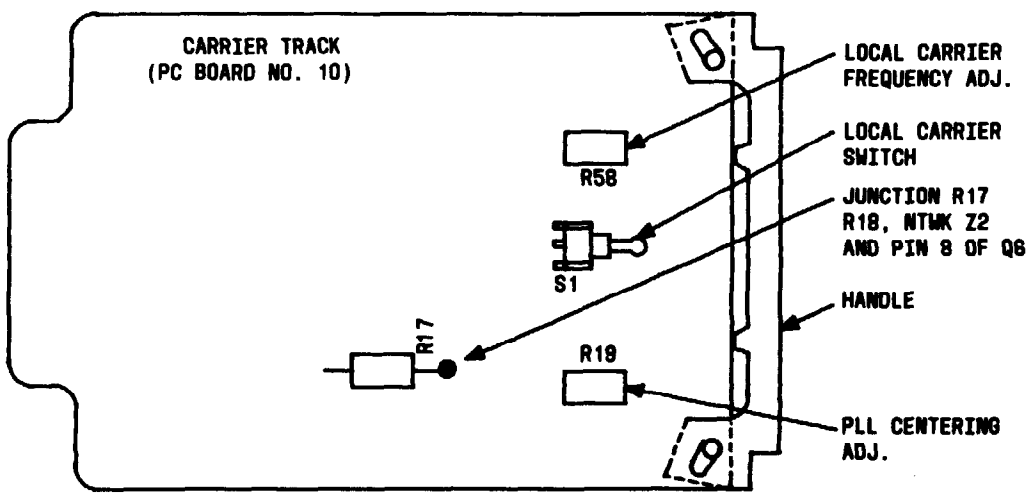
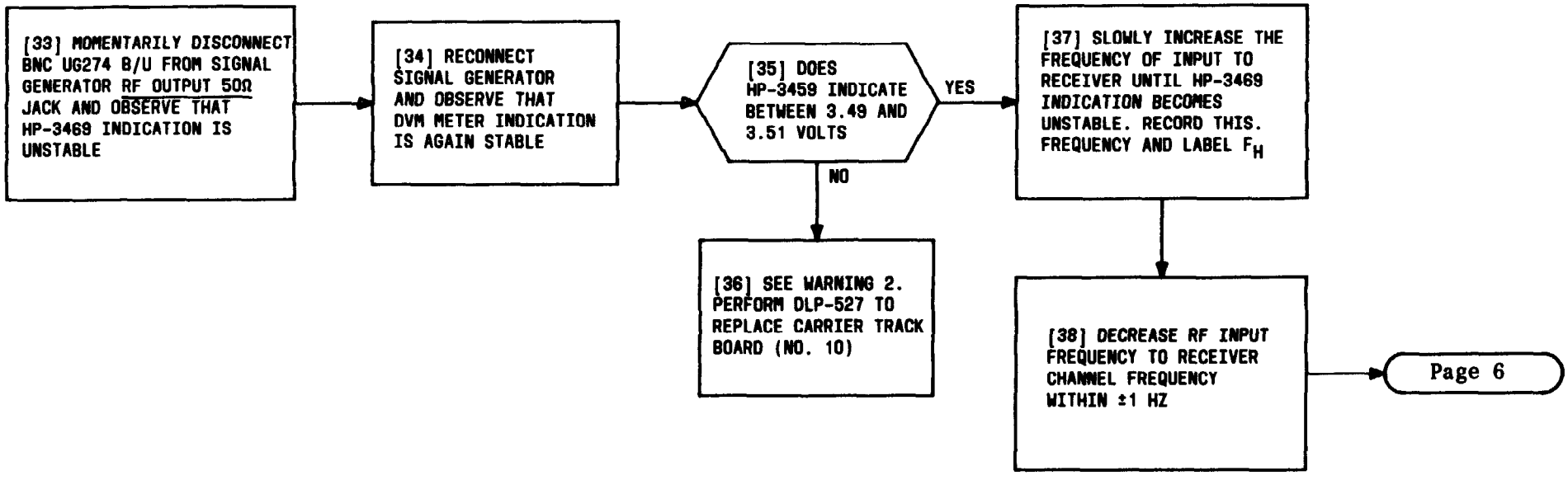


FIG. 2 - CARRIER TRACK BOARD

WARNING 2

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN CHANGE TO COMPONENTS

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)



TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

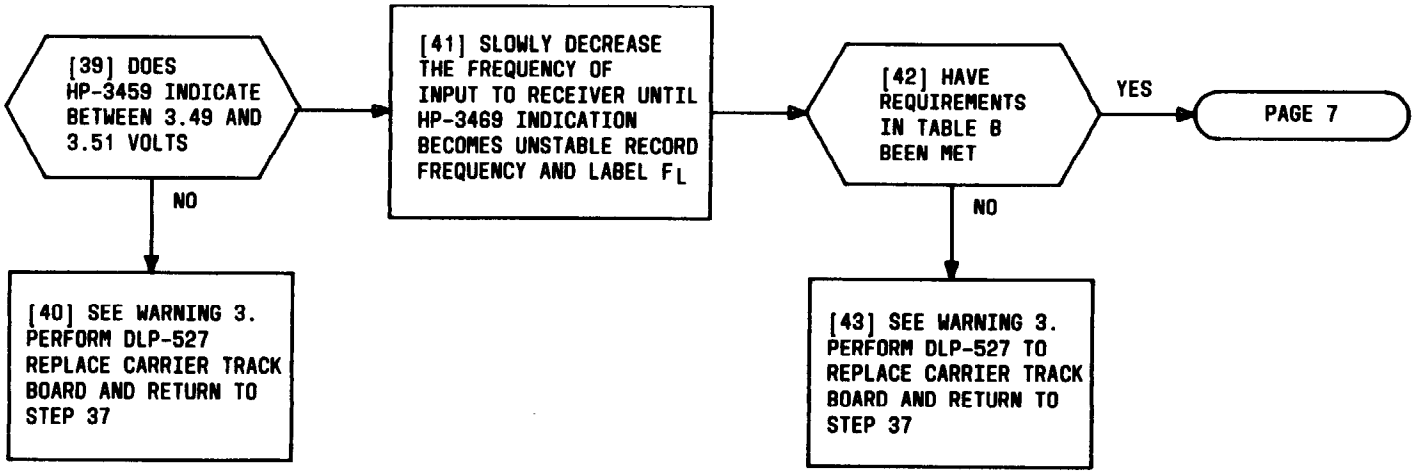
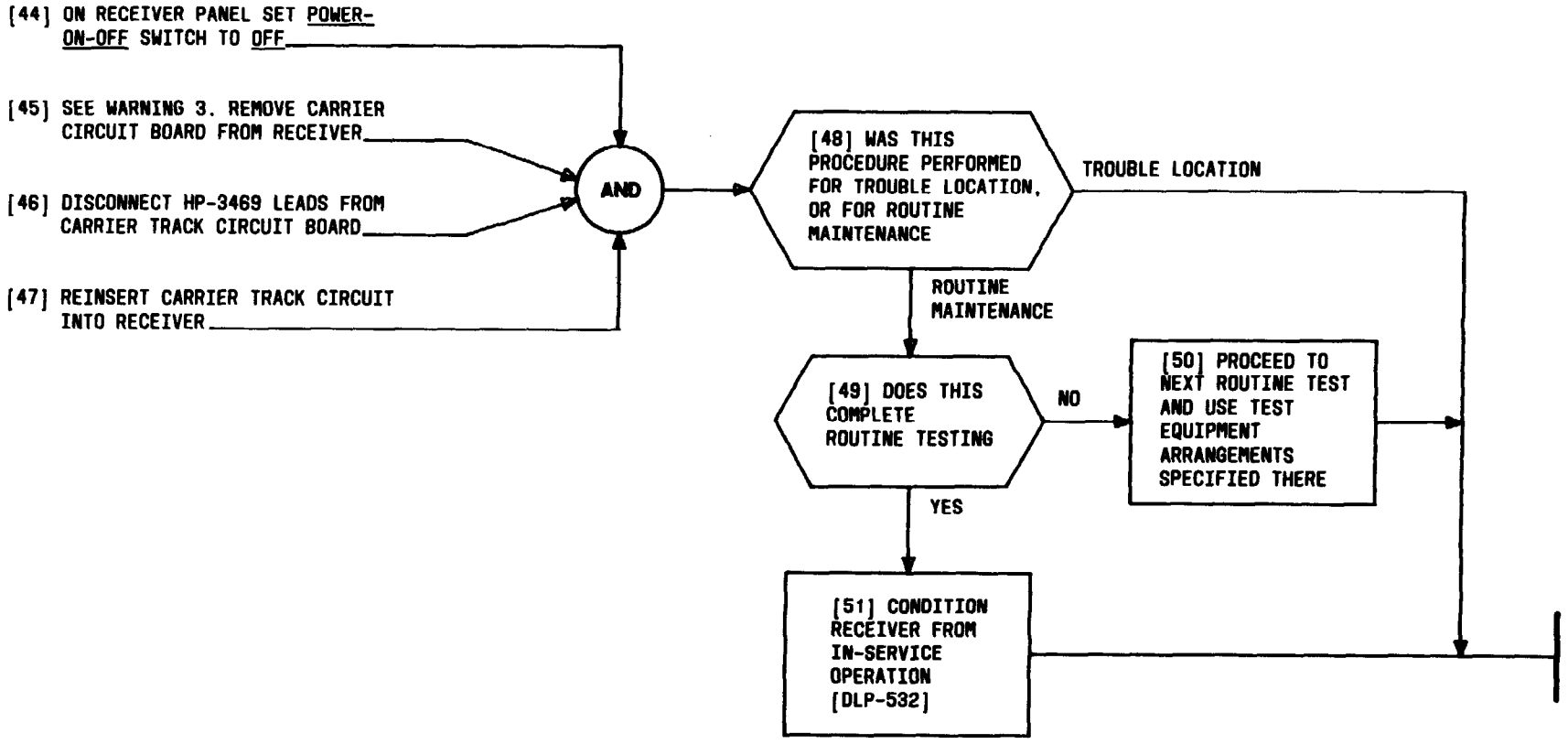


TABLE B
F_{CH} = RECEIVER CHANNEL FREQUENCY
F_H = FREQUENCY ABOVE F_{CH}
F_L = FREQUENCY BELOW F_{CH}
REQUIREMENTS:
$F_H - F_{CH}$ GREATER THAN 100 HZ
$F_{CH} - F_L$ GREATER THAN 100 HZ

WARNING 3
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

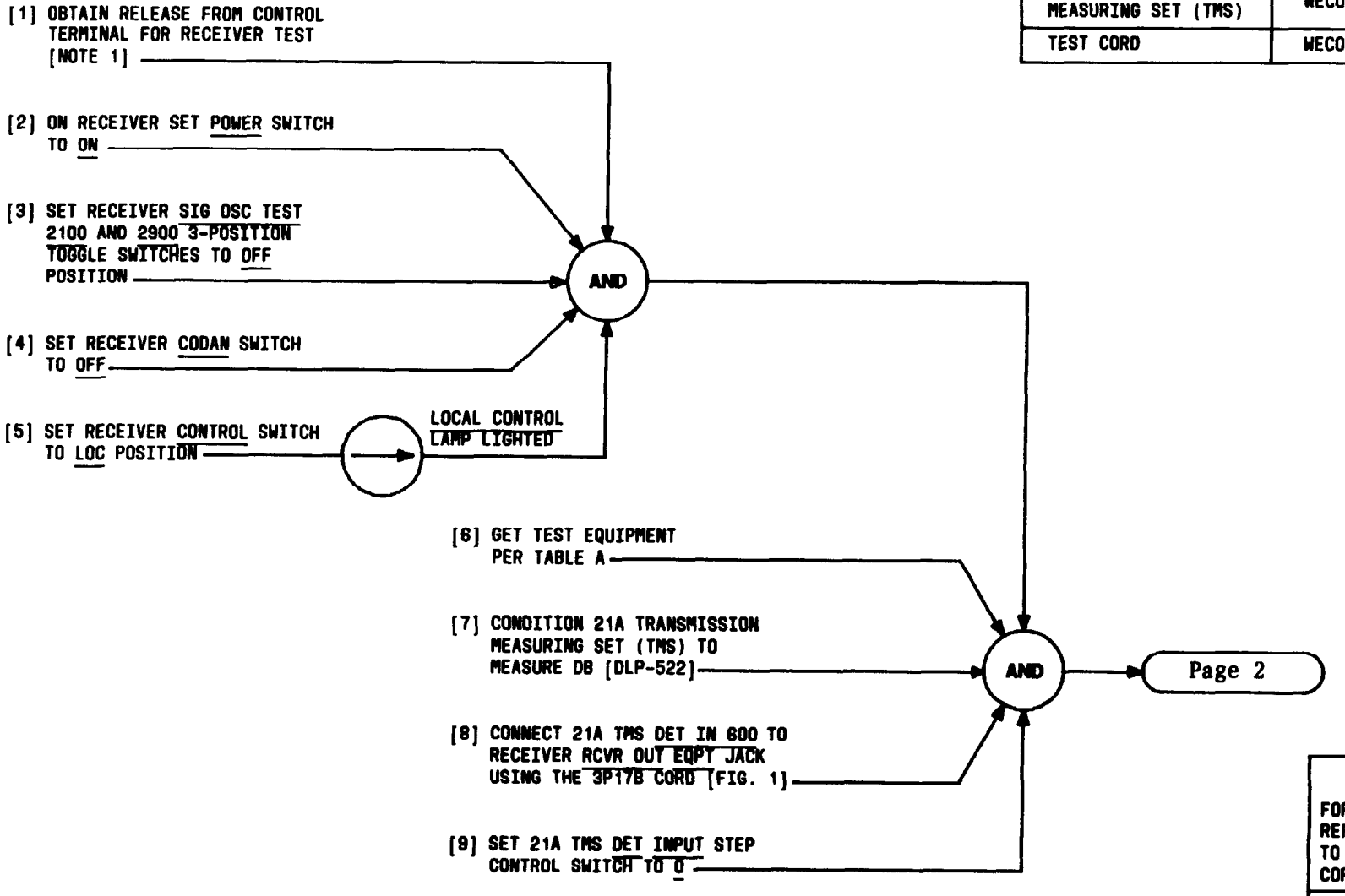


TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

SUMMARY

USING 21A TRANSMISSION SET AT RECEIVER OUTPUT, MEASURE 1900-HZ AND 2100-HZ SIGNALING TONES FOR A LEVEL OF BETWEEN -2 DBM AND -4 DBM AND 2900-HZ SIGNALING TONE FOR A LEVEL OF BETWEEN -8 AND -12 DBM

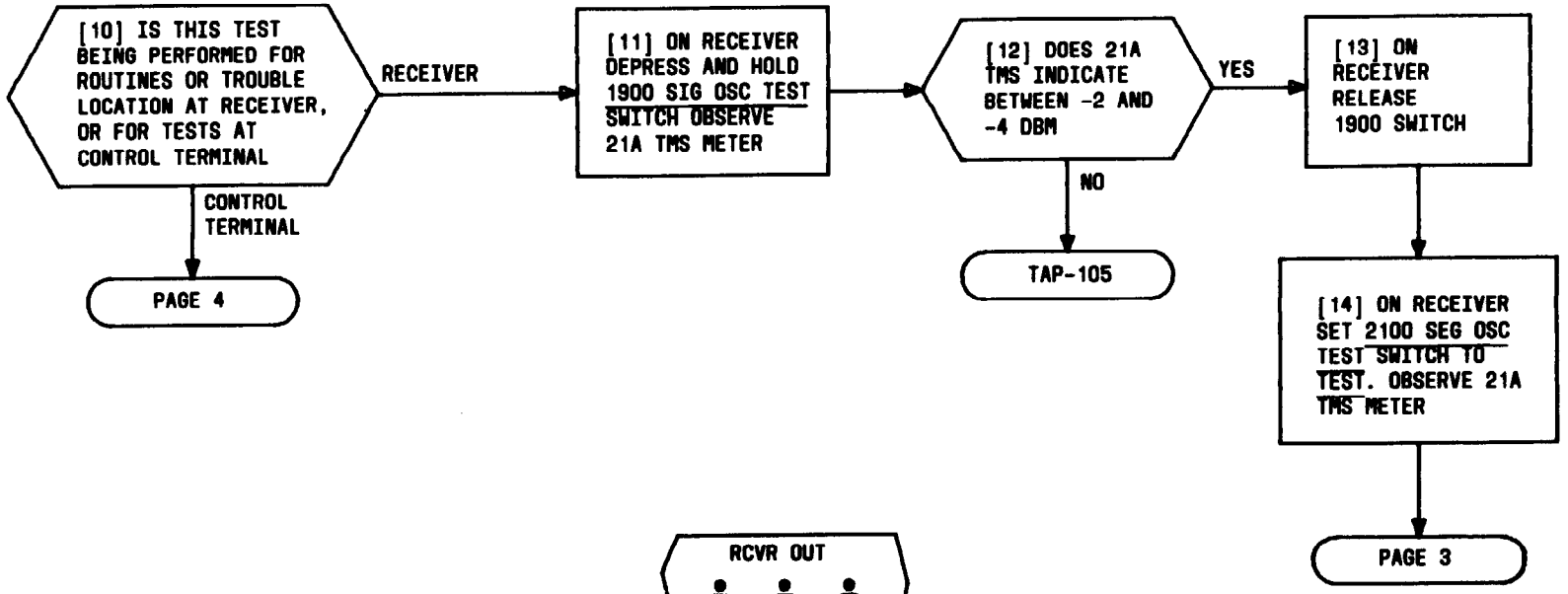
TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET (TMS)	WECO J94021A TMS
TEST CORD	WECO 3P17B



NOTE 1

FOR ACCEPTANCE PROCEDURES REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS



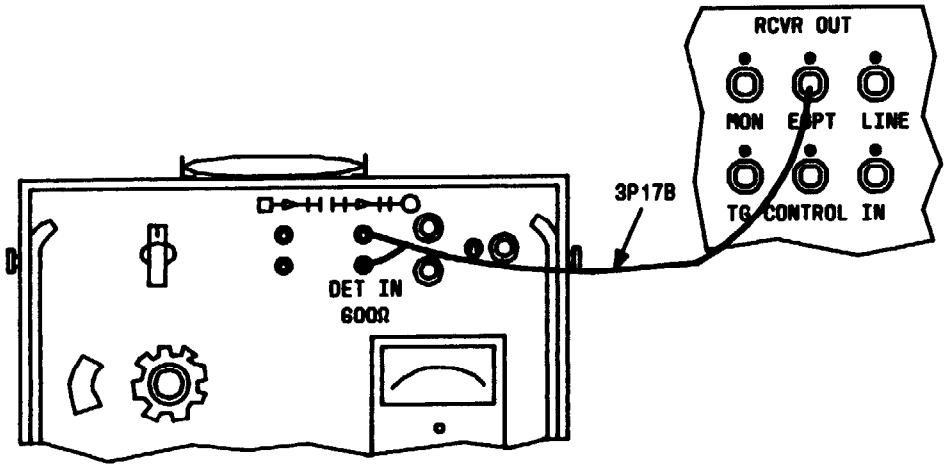
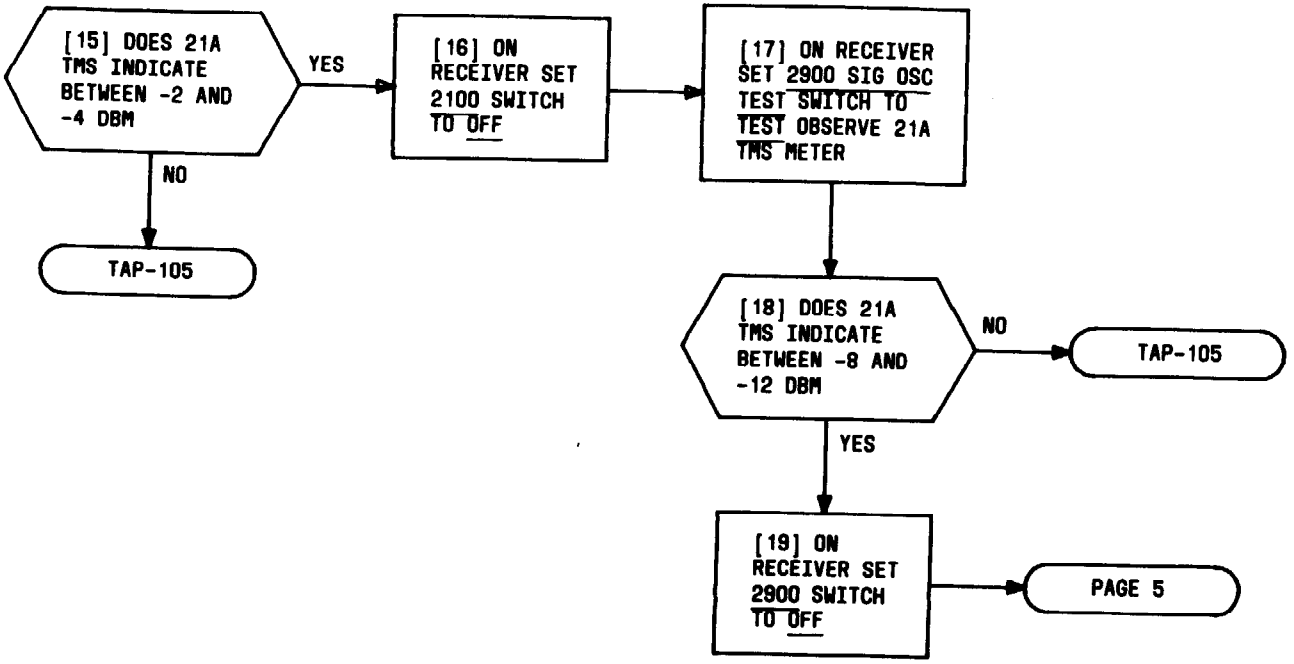
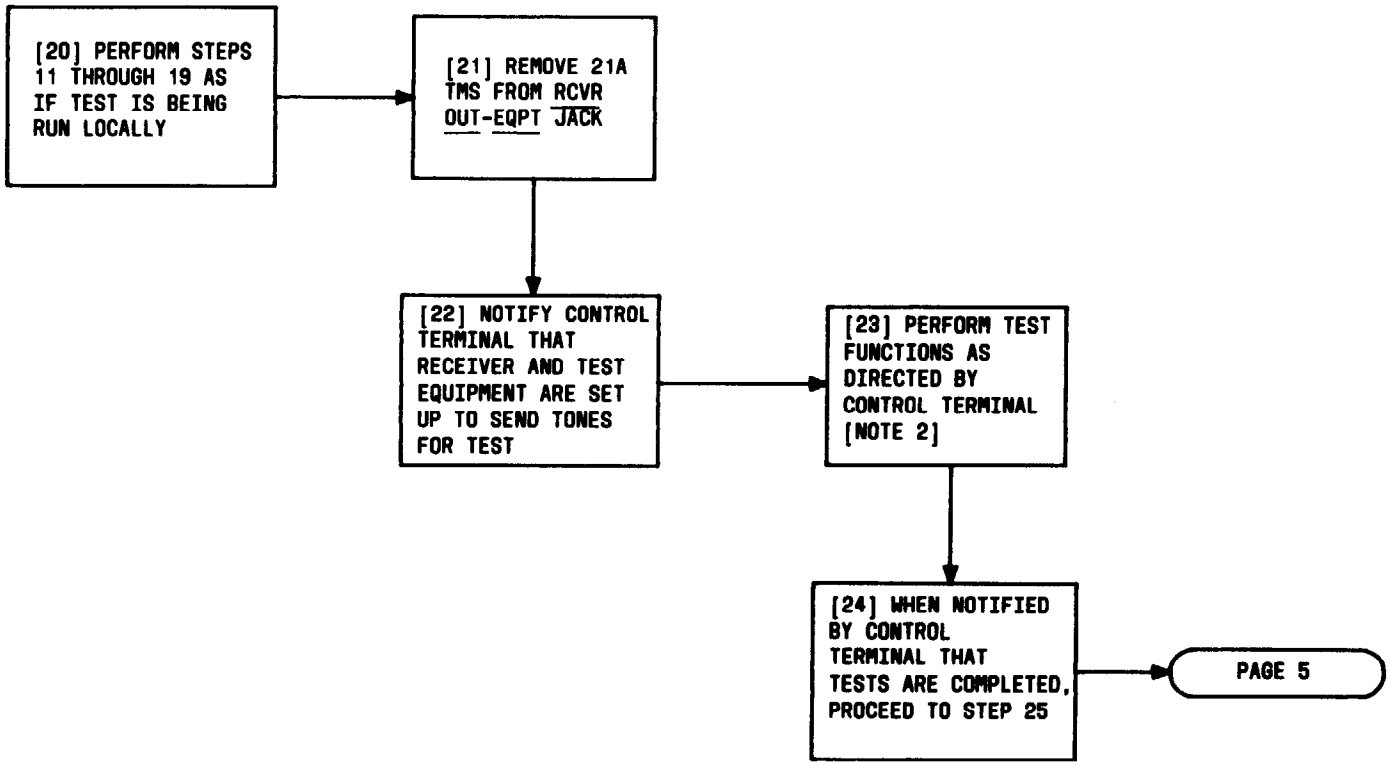


FIG. 1

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS

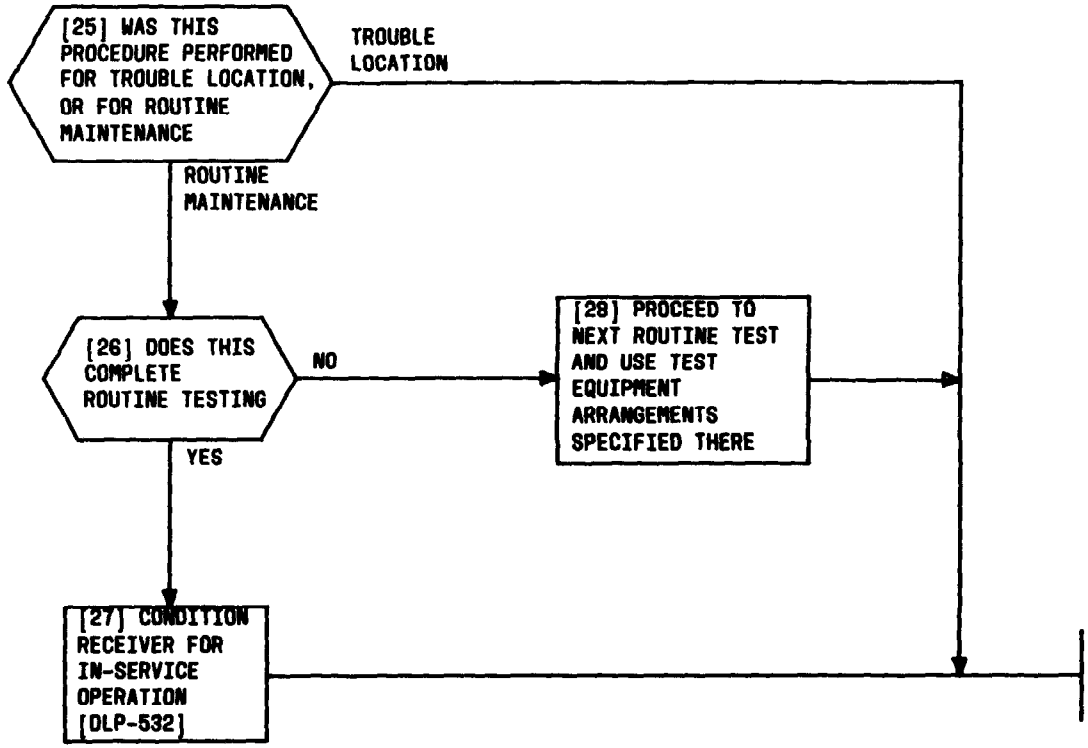


MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS



NOTE 2
IN EVENT OF AN ABNORMAL TONE LEVEL INDICATION AT CONTROL TERMINAL, TONE LEVEL AT RECEIVER OUTPUT HAS BEEN VERIFIED AS CORRECT

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS

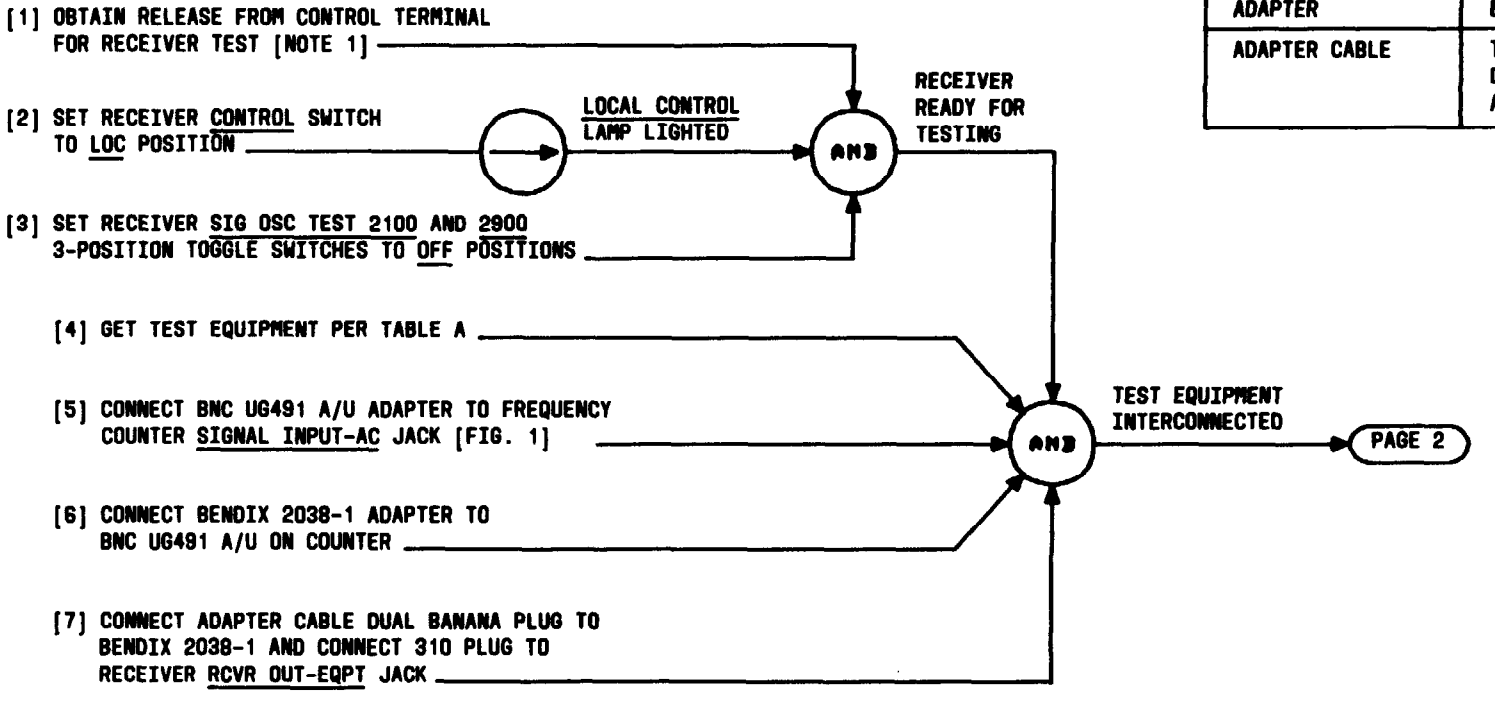


MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS

SUMMARY

USING FREQUENCY COUNTER, MEASURE FREQUENCY OF 1900-HZ SIGNALING TONE FOR BETWEEN 1894 AND 1906 HZ, 2100-HZ SIGNALING TONE FOR BETWEEN 2094 AND 2106 HZ, AND 2900-HZ SIGNALING TONE FOR BETWEEN 2891 AND 2909 HZ

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
FREQUENCY COUNTER	HP 5245L
ADAPTER	BENDIX 2038-1
ADAPTER	BNC UG491 A/U
ADAPTER CABLE	TWISTED PAIR WITH DUAL BANANA PLUG AND 310 PLUG



NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES

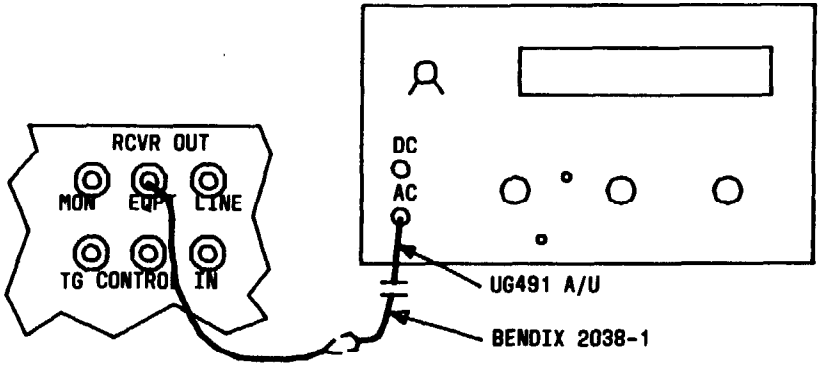
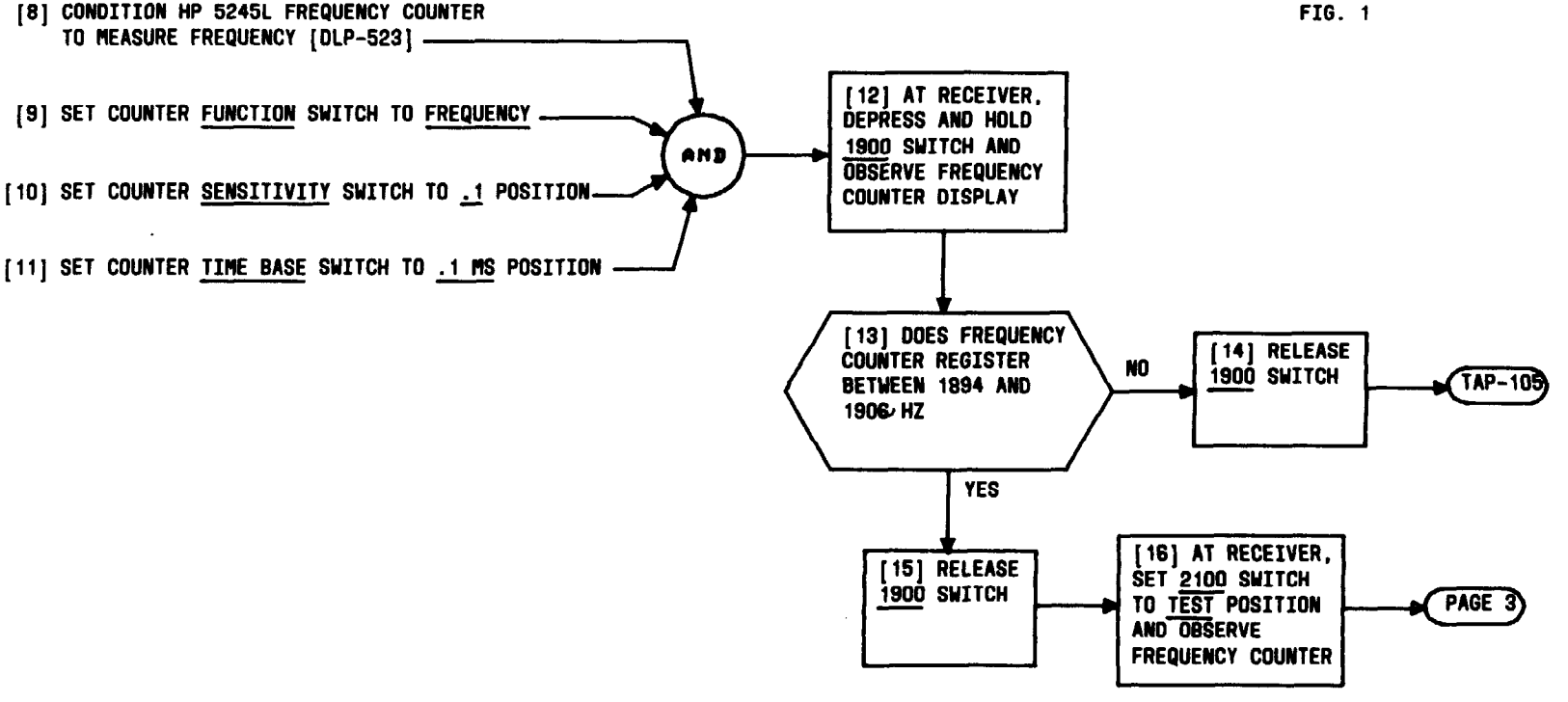
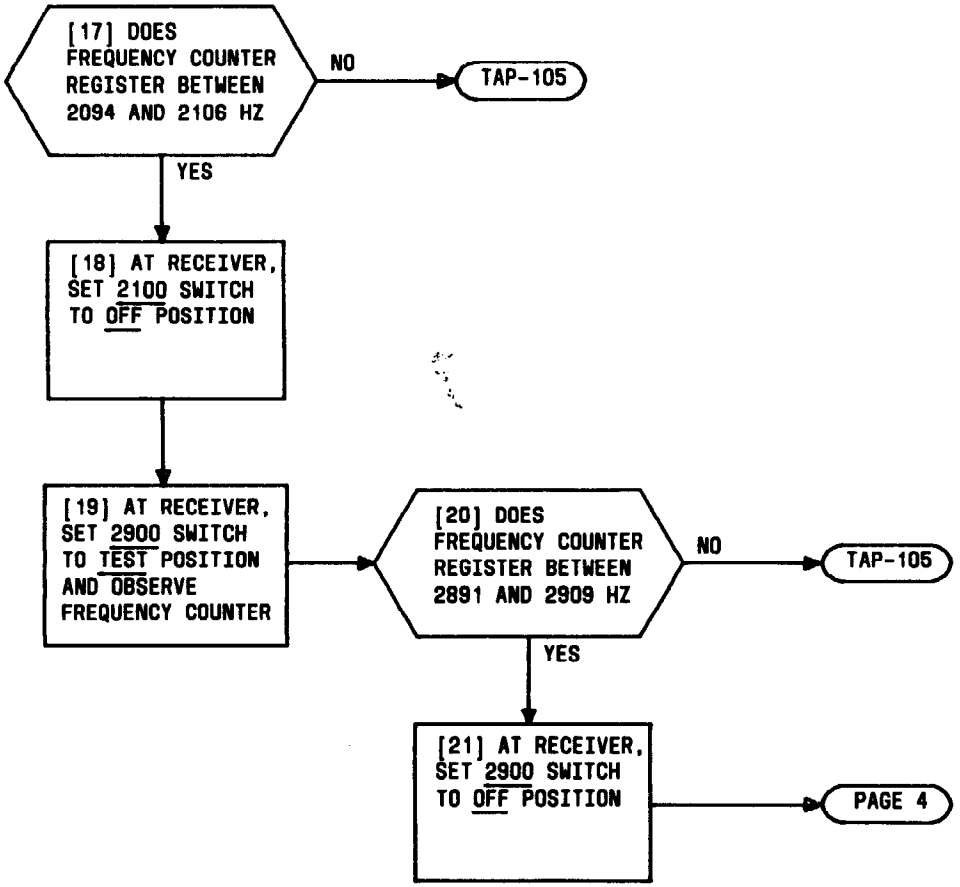


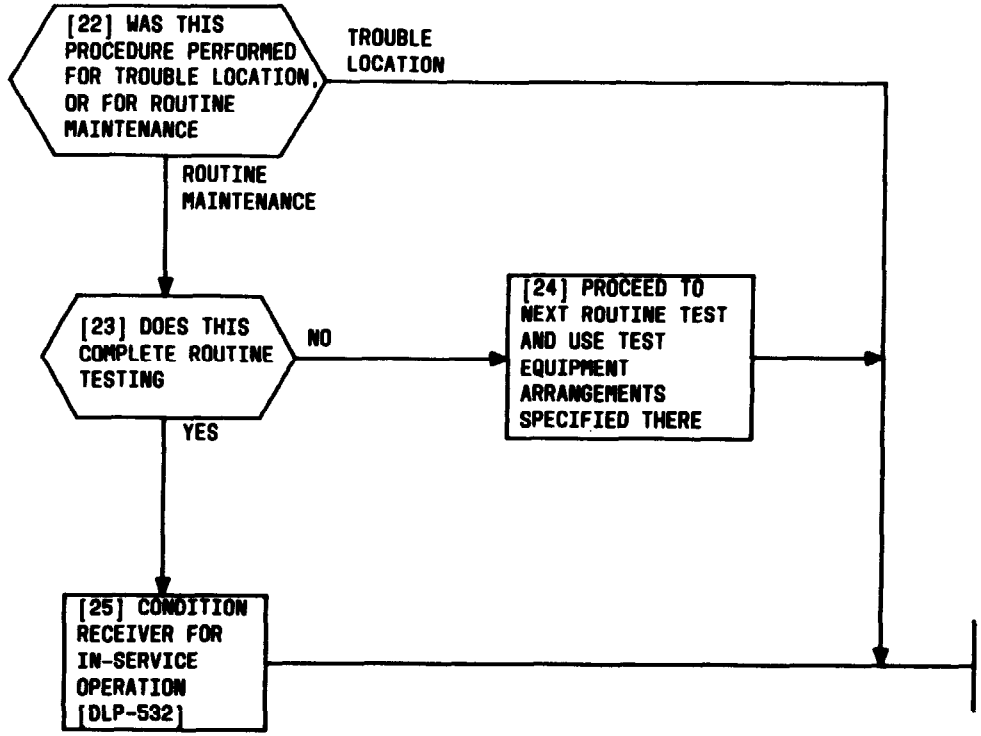
FIG. 1



MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES



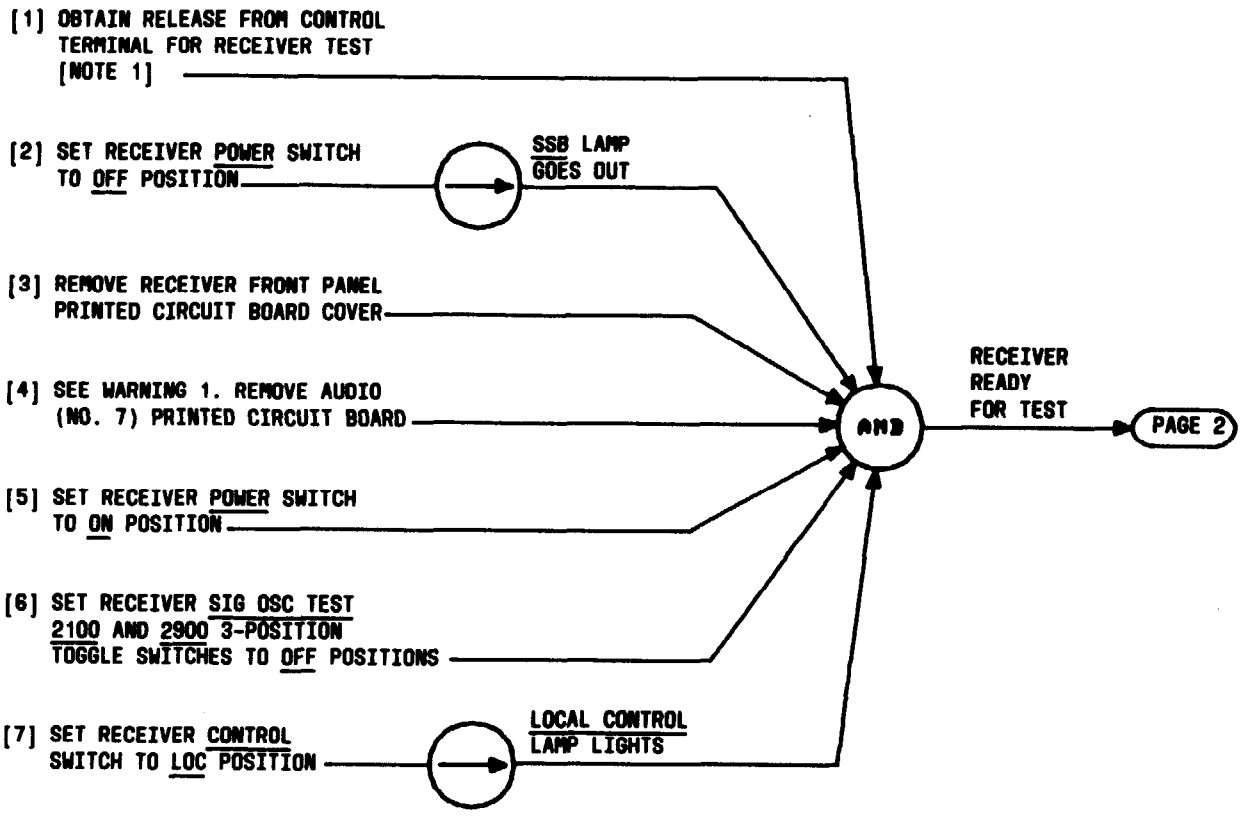
MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE FREQUENCIES



MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES

SUMMARY

USING 3C NOISE MEASURING SET, MEASURE RECEIVER SIGNALING TONE LEAKAGE AT NOT GREATER THAN 47 DBRN



NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

WARNING 1
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE

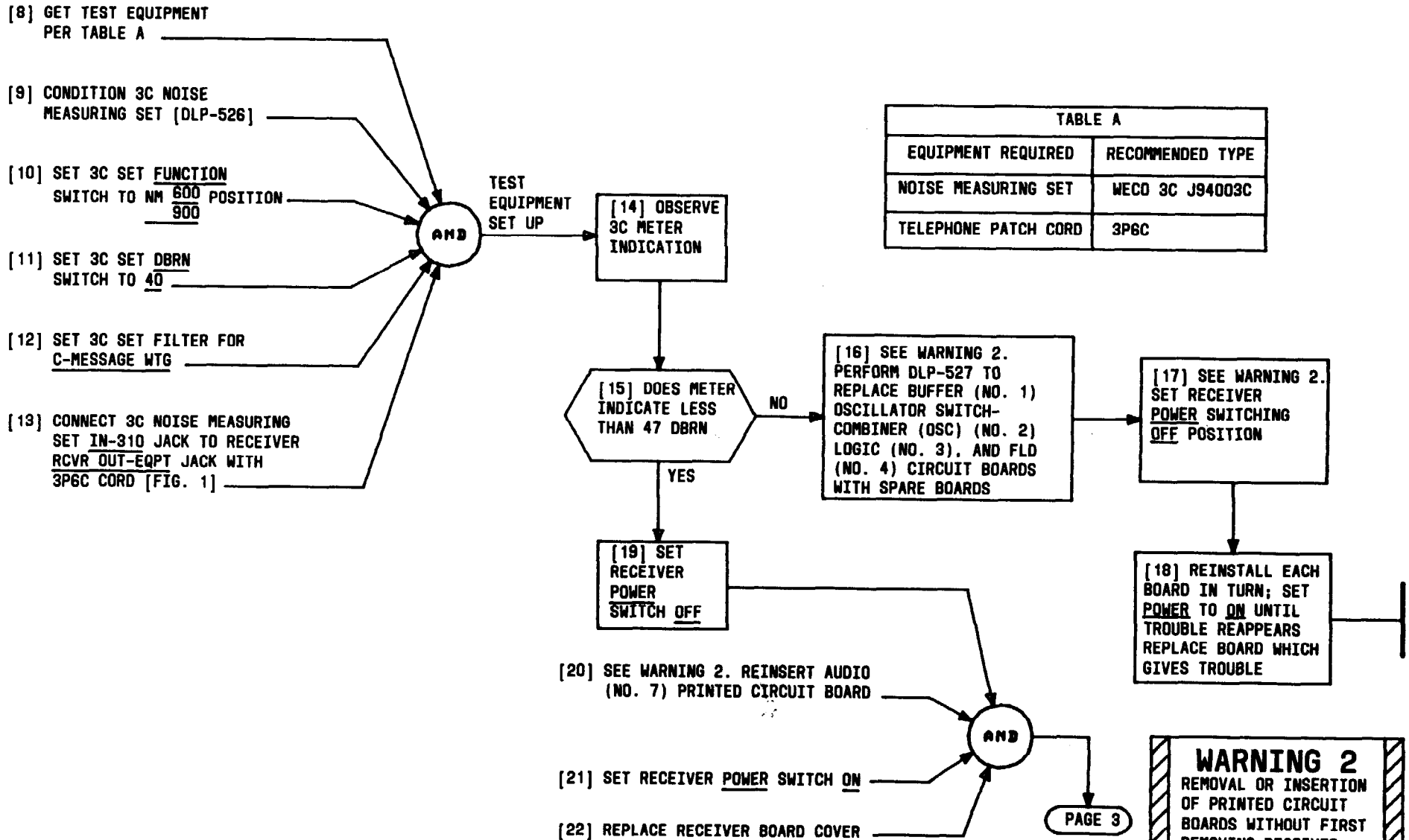
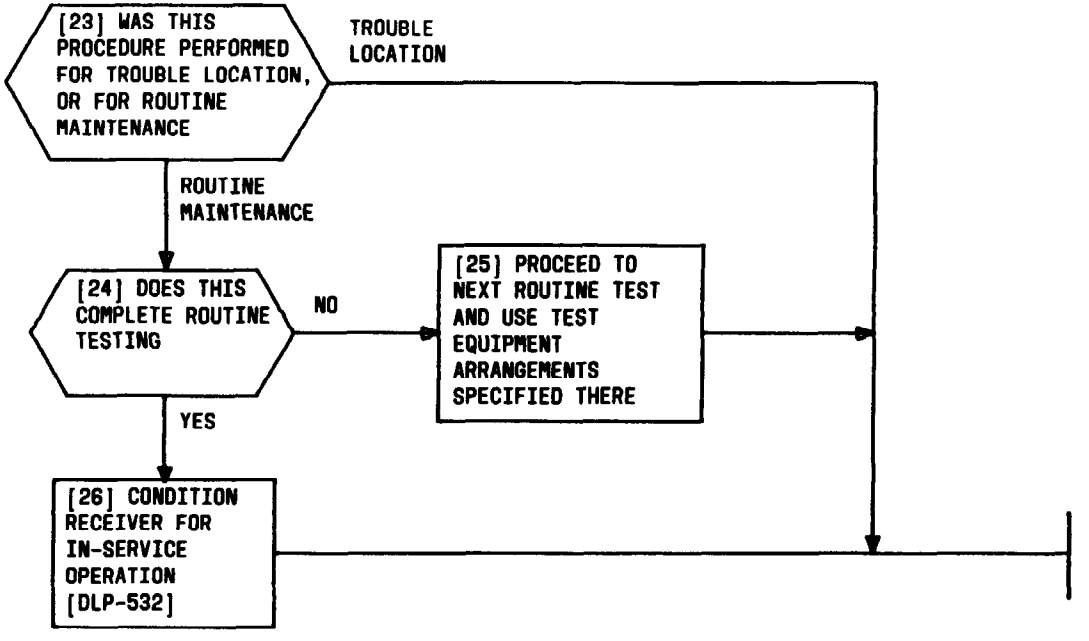


TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
NOISE MEASURING SET	WECO 3C J94003C
TELEPHONE PATCH CORD	3P6C

WARNING 2

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE



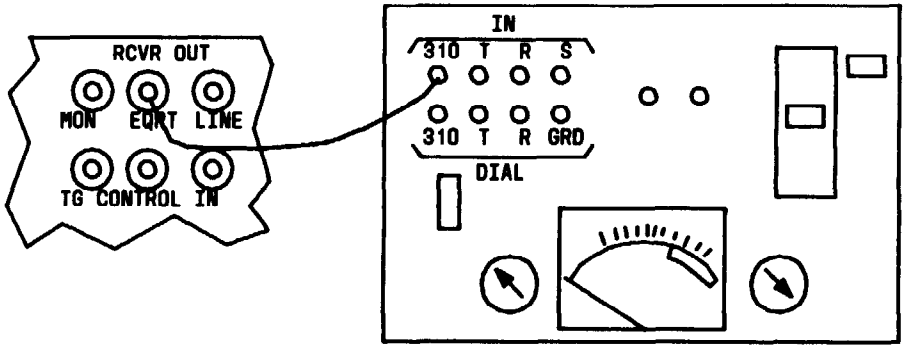
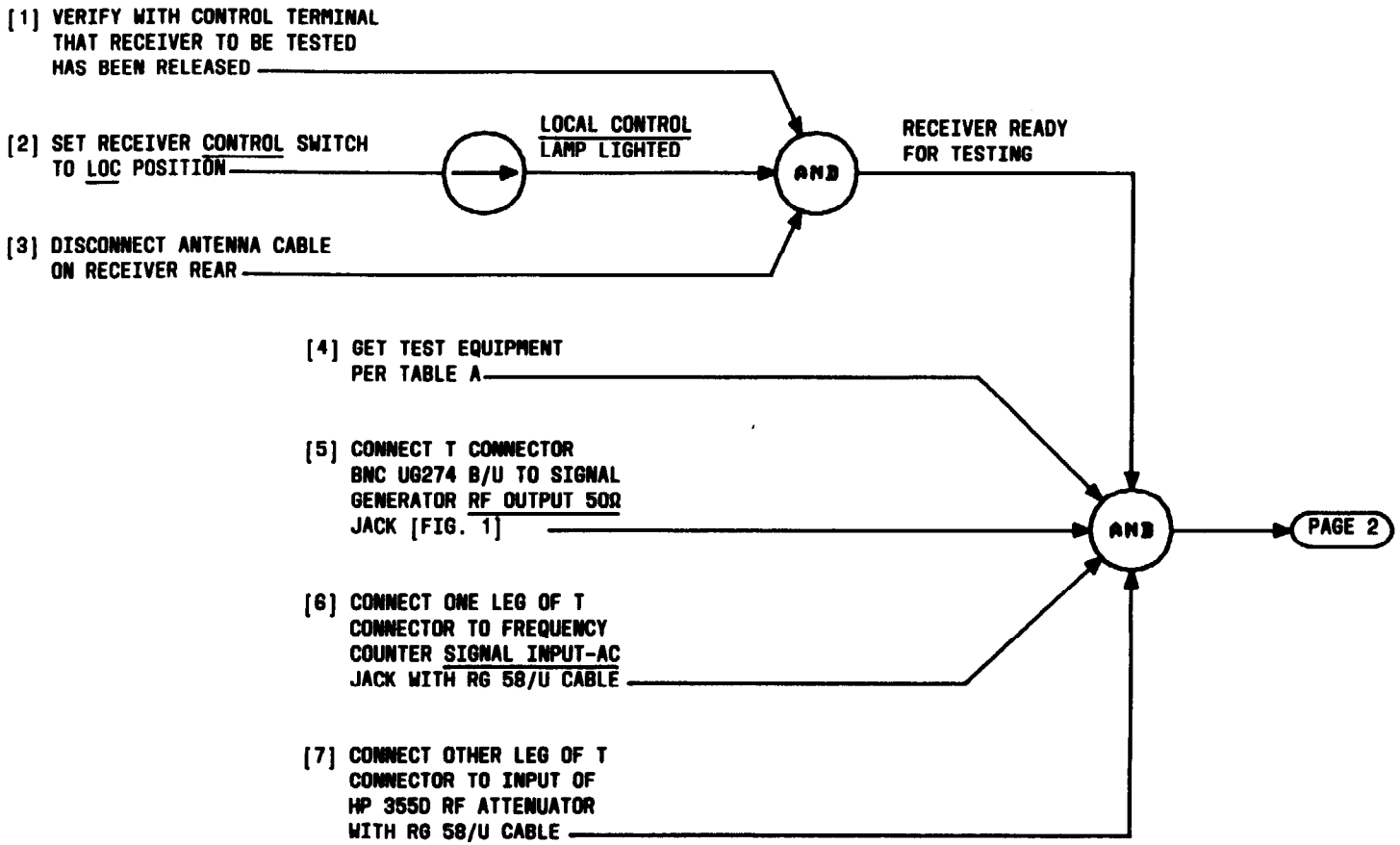


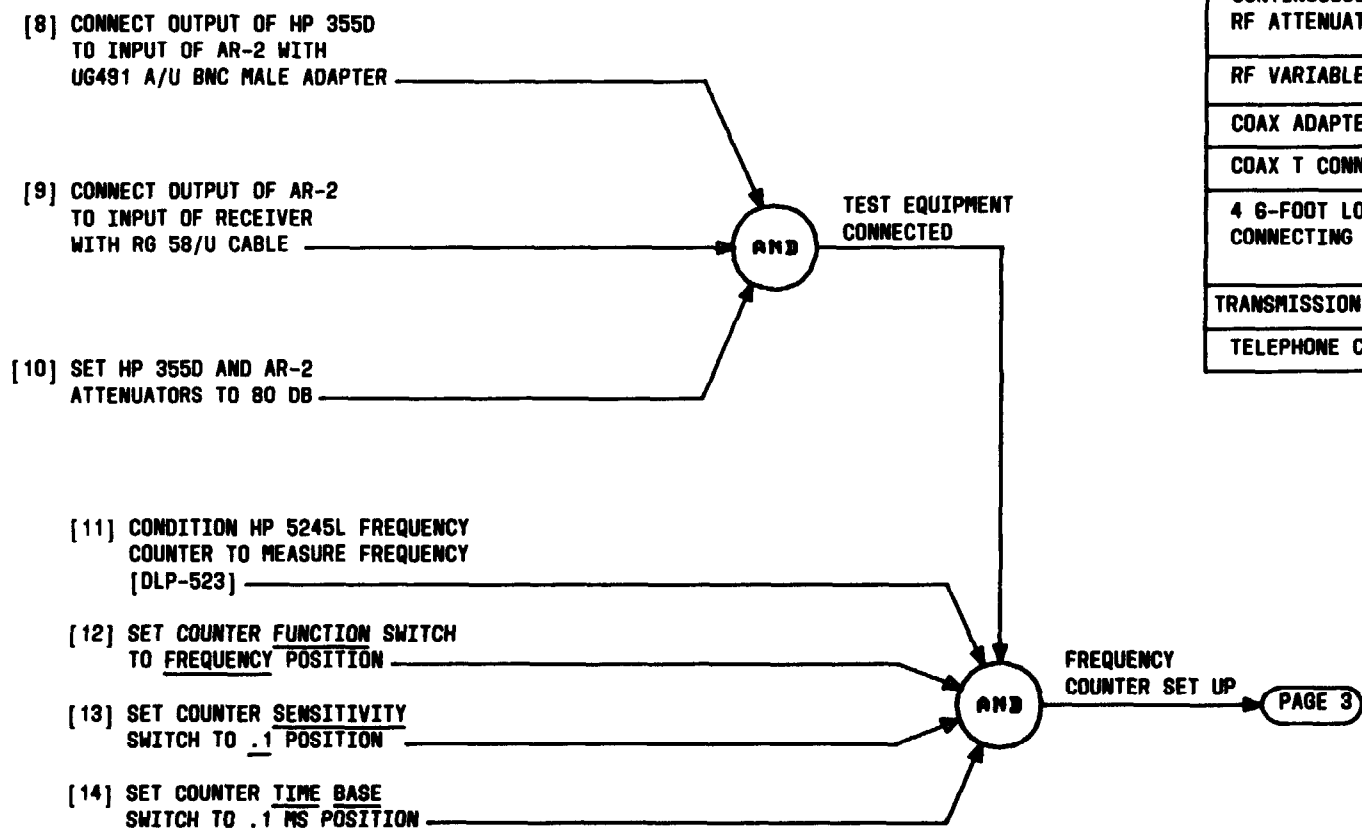
FIG. 1

MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE

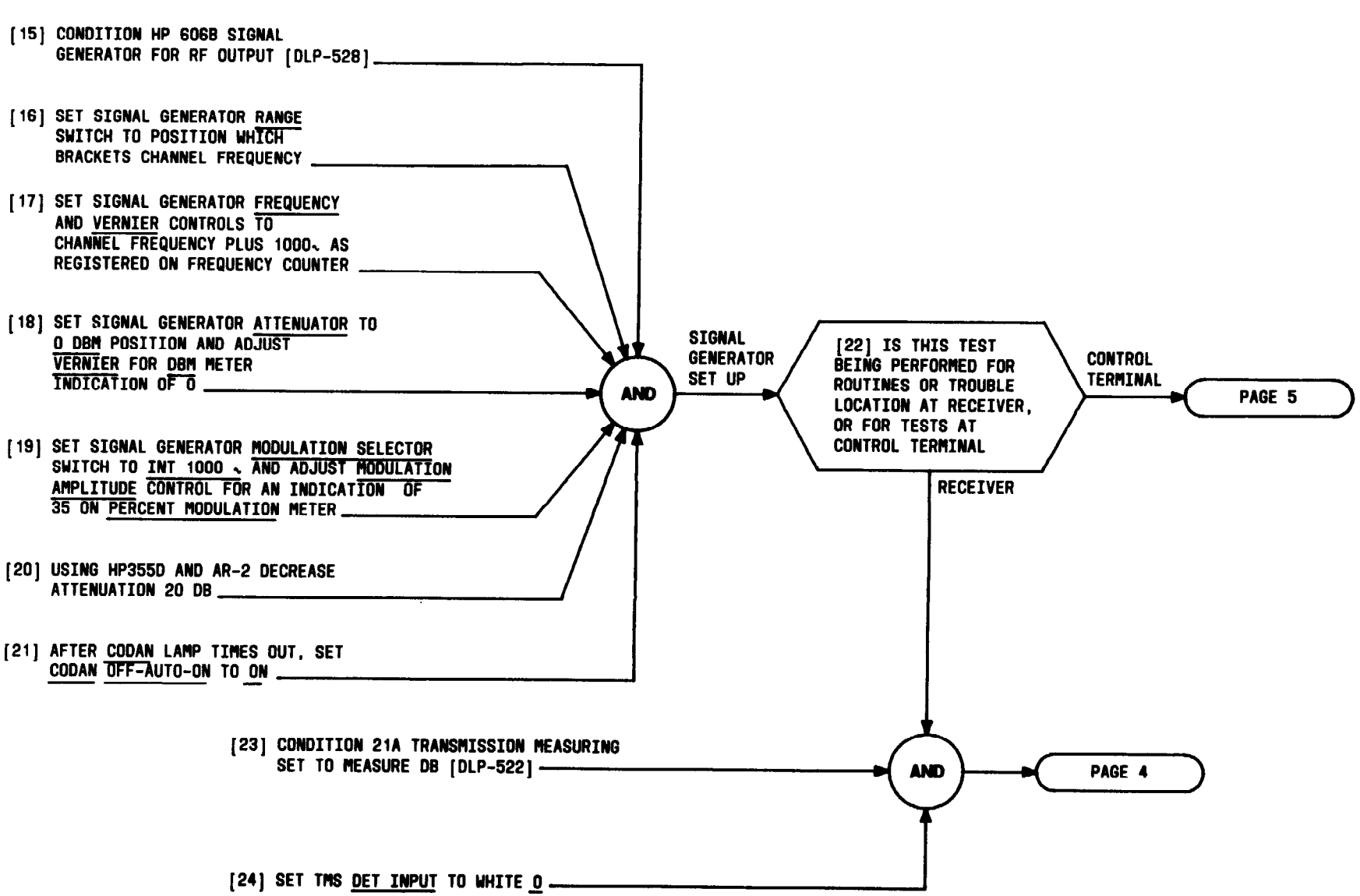


MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF VARIABLE ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
TRANSMISSION MEASURING SET	WECO J94021A TMS
TELEPHONE CORD	3P17B



MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL



MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

[25] CONNECT TRANSMISSION MEASURING SET DET IN 600Ω JACK TO RECEIVER RCVR OUT-EQPT JACK WITH 3P17B CORD [FIG. 2]

[26] OBSERVE TMS METER INDICATION

AND

[27] DOES TMS INDICATE BETWEEN -1 AND +1 DBM

YES → PAGE 5

NO → [28] ADJUST RECEIVER AF GAIN CONTROL FOR METER INDICATION OF 0 DBM

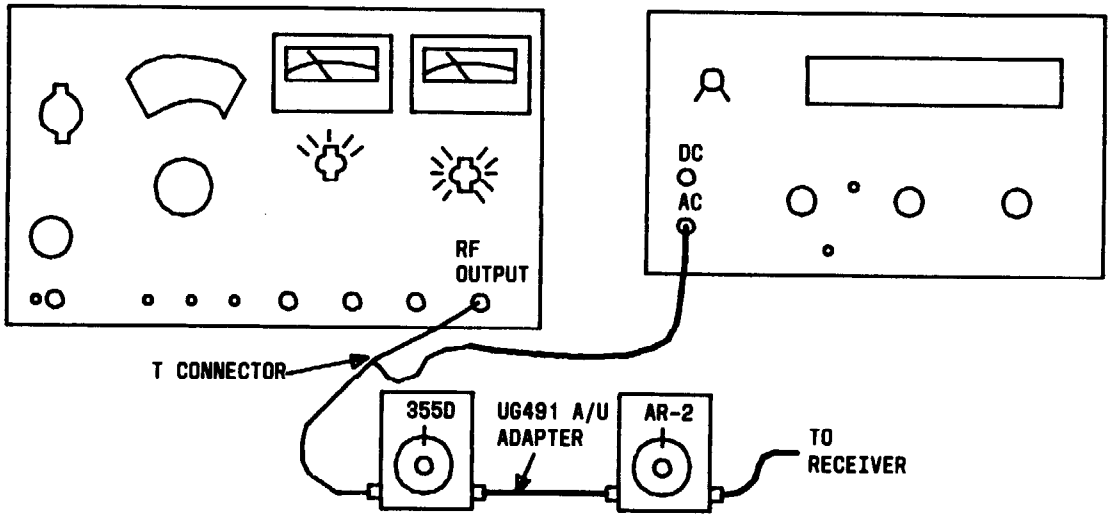


FIG. 1

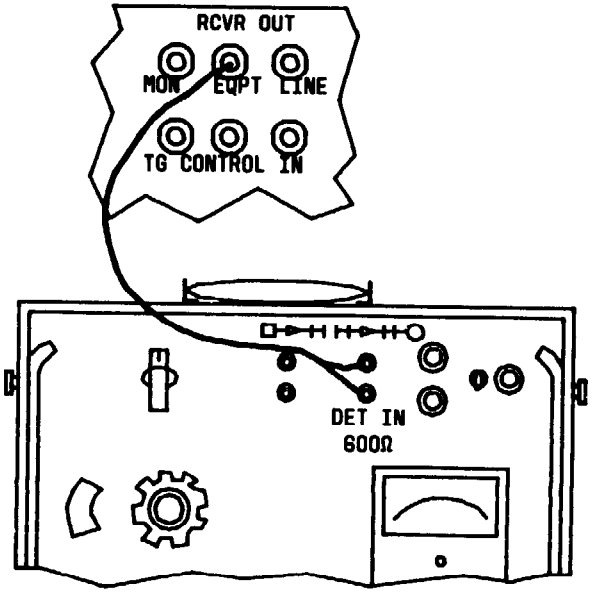
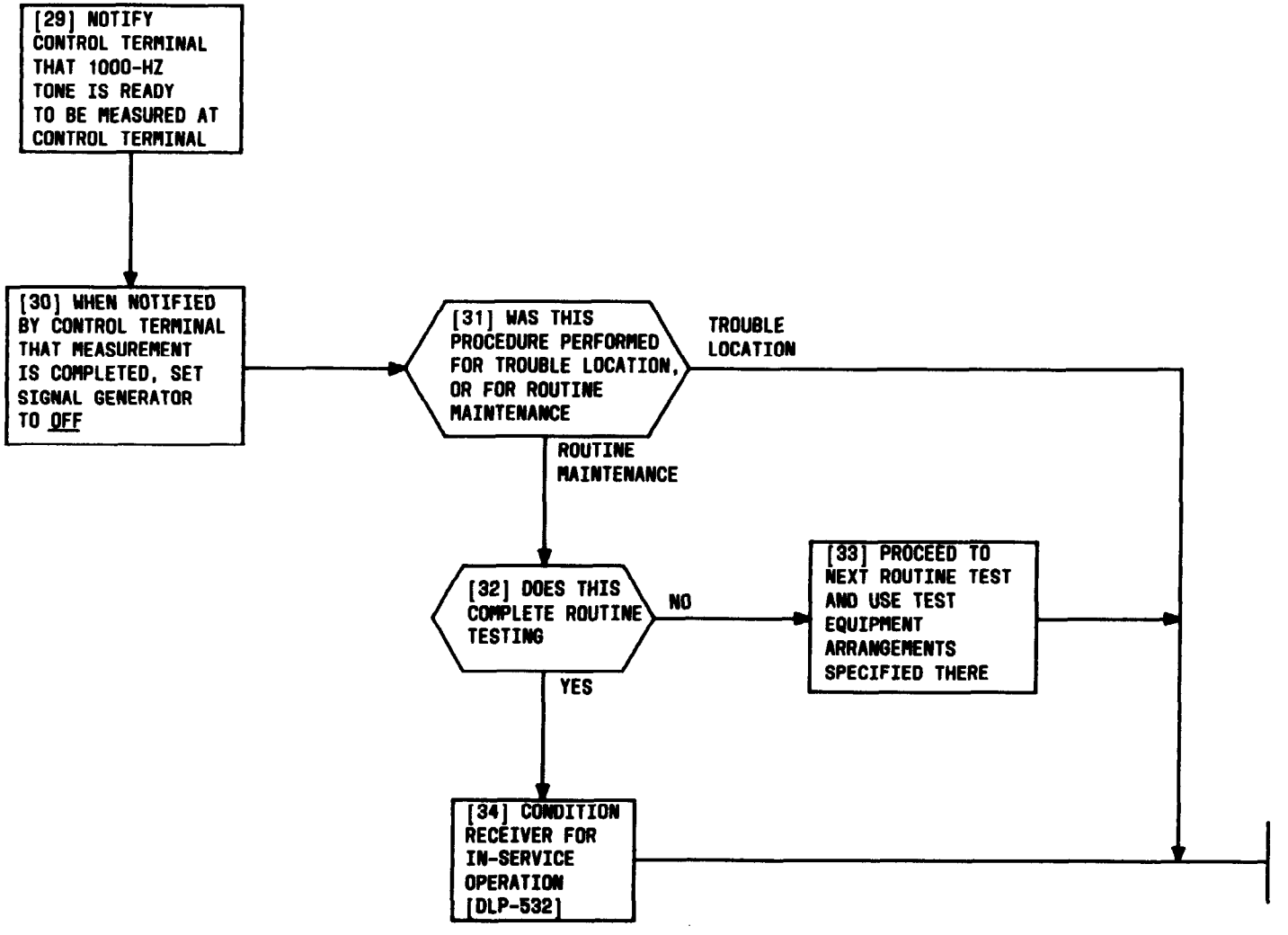


FIG. 2

MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL



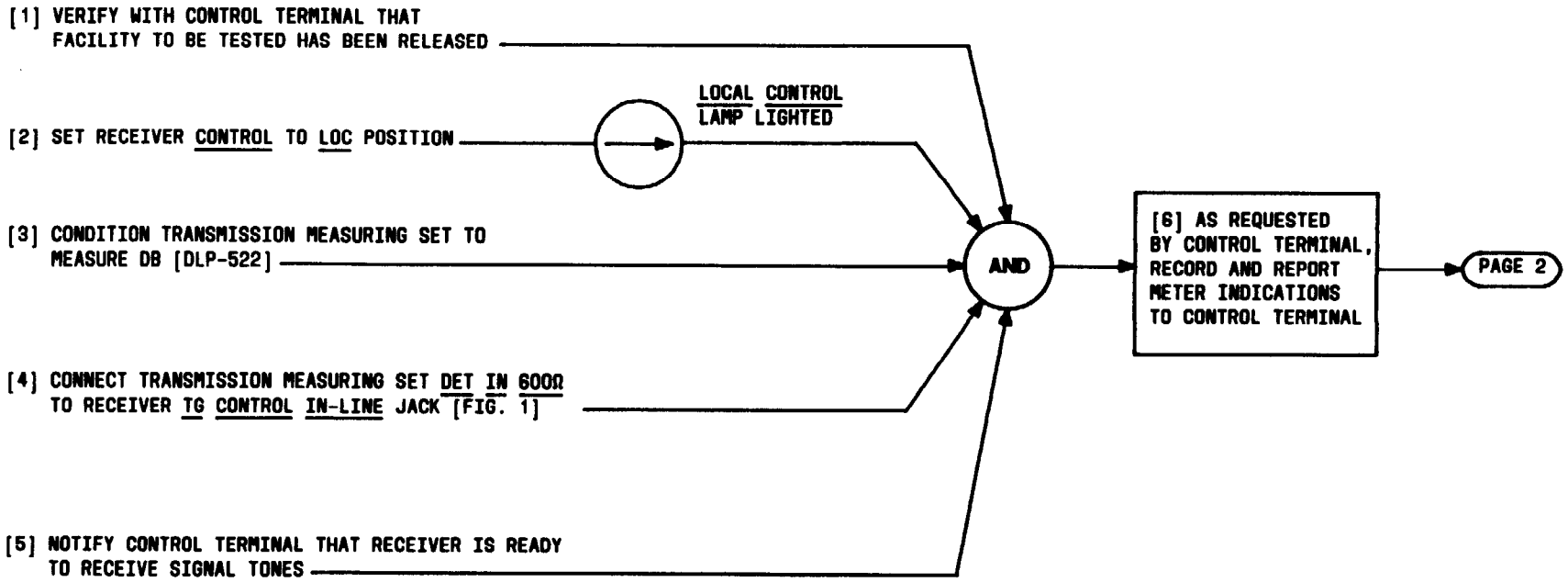
MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

SUMMARY

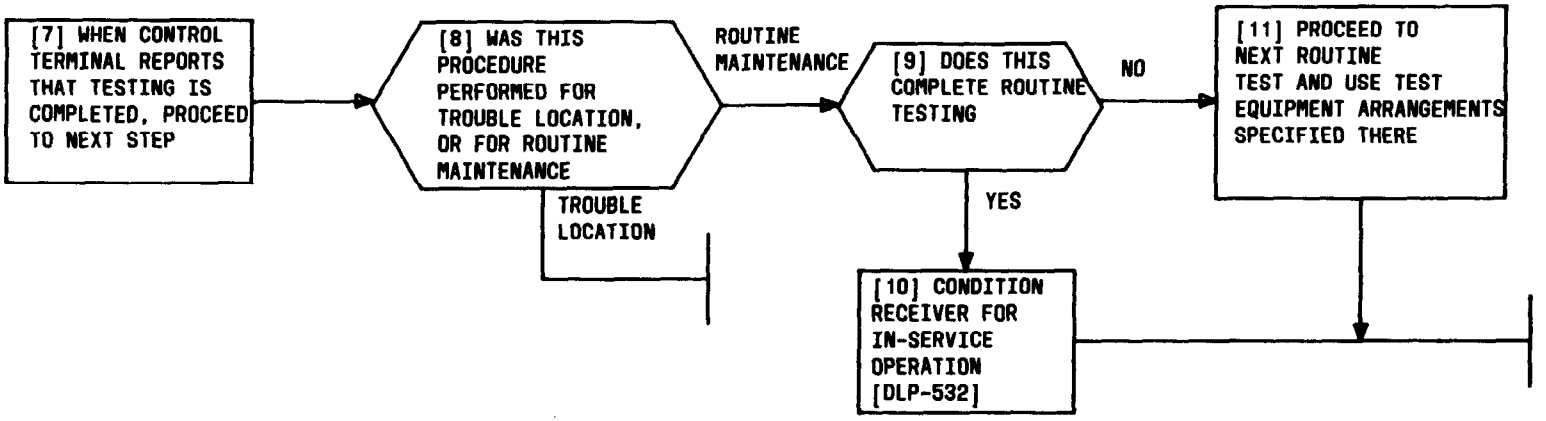
USING TRANSMISSION MEASURING SET CONNECTED TO RECEIVER TG CONTROL IN-LINE JACK, MEASURE 1900-HZ AND 2100-HZ SIGNALING TONE LEVELS FROM CONTROL TERMINAL FOR BETWEEN -10.0 AND -24.0 DBM, AND 2900-HZ SIGNALING TONE FOR BETWEEN -19.0 AND -37.0 DBM

TABLE A

EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET (TMS)	WECO J94021A TMS
TEST CORD	WECO 3P17B



MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS



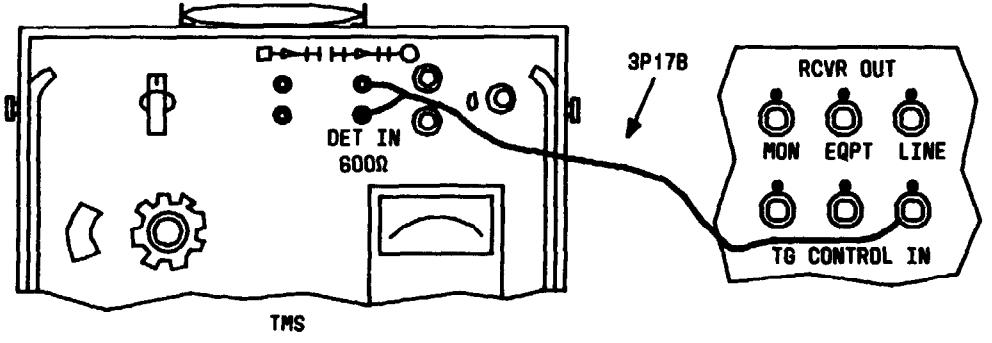


FIG. 1

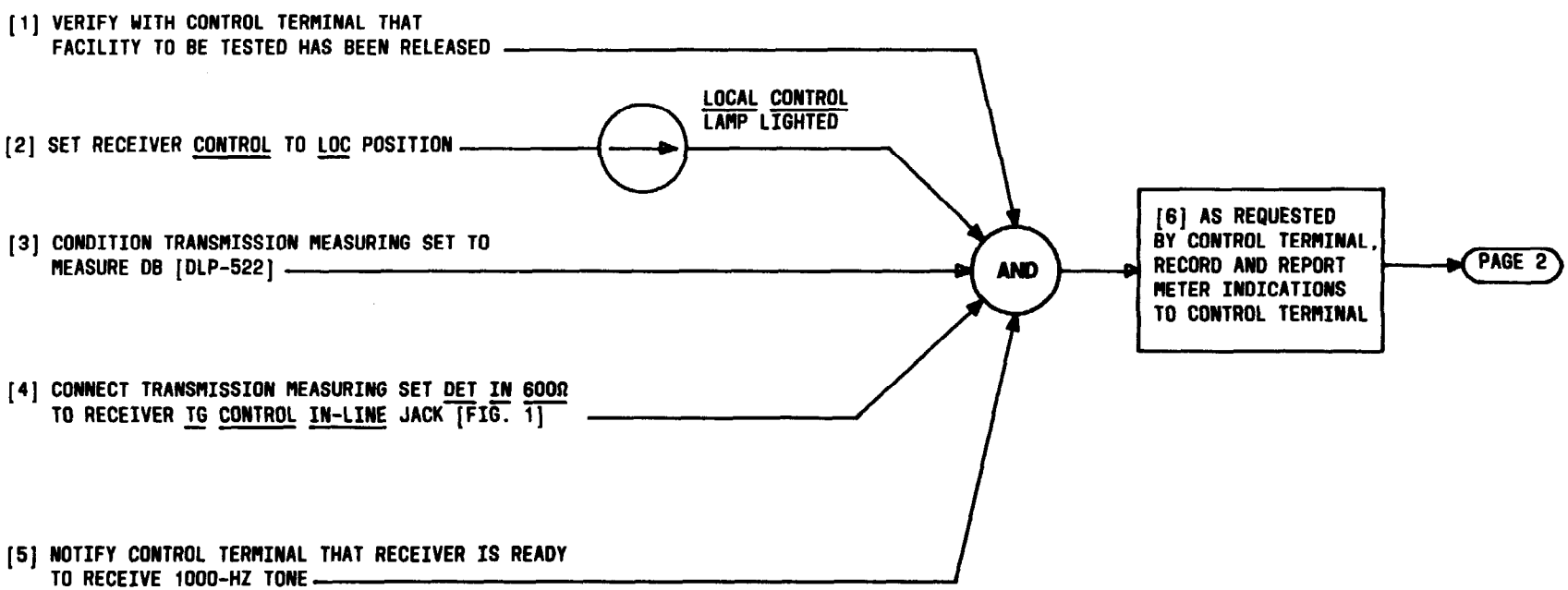
MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS

SUMMARY

USING TRANSMISSION MEASURING SET CONNECTED TO RECEIVER TG CONTROL IN-LINE JACK, MEASURE 1000-HZ TONE LEVEL FROM CONTROL TERMINAL FOR BETWEEN -13.0 AND -19.0 DBM

TABLE A

EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET	WECO J94021A TMS
TEST CORD	WECO 3P17B



MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL

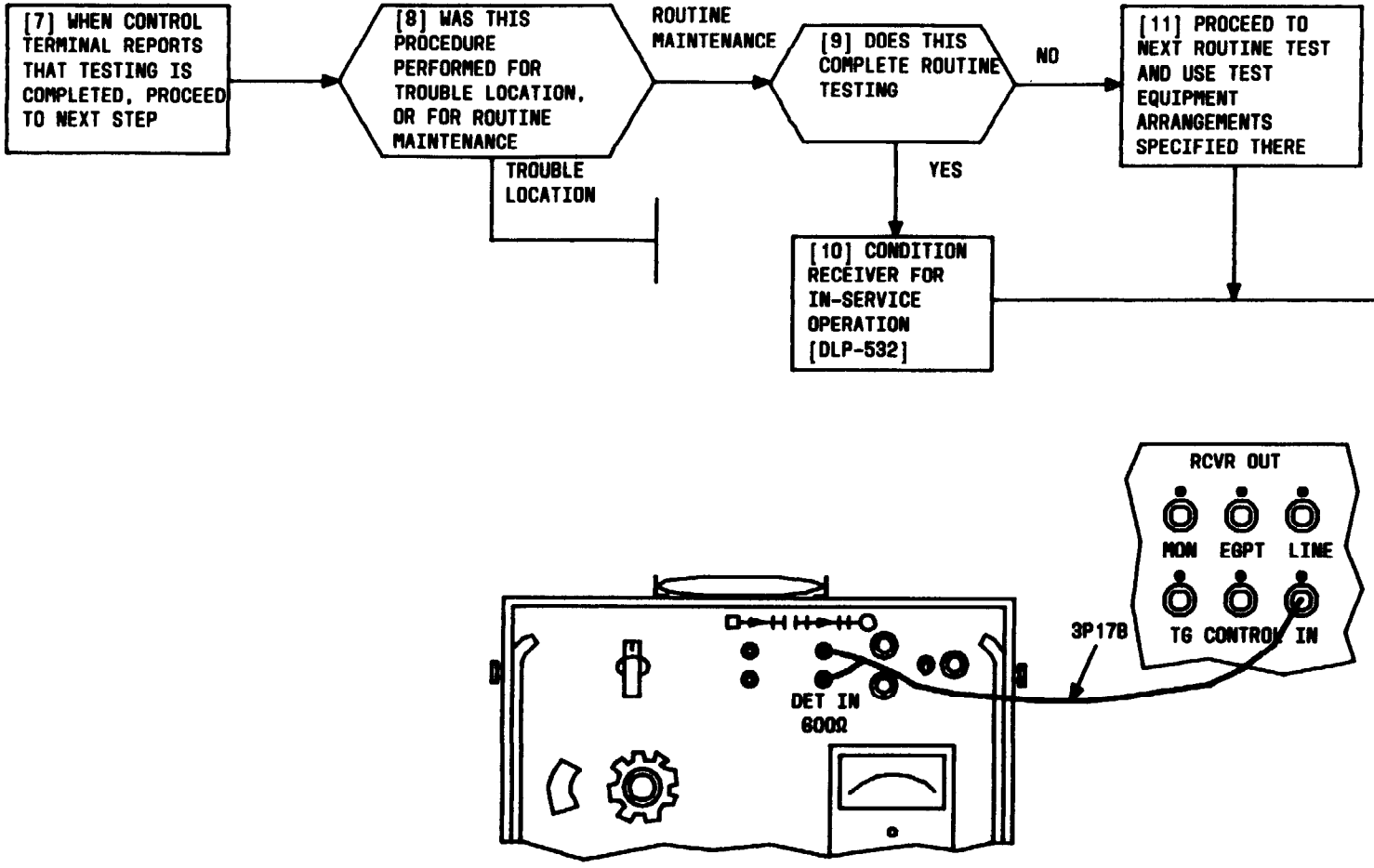
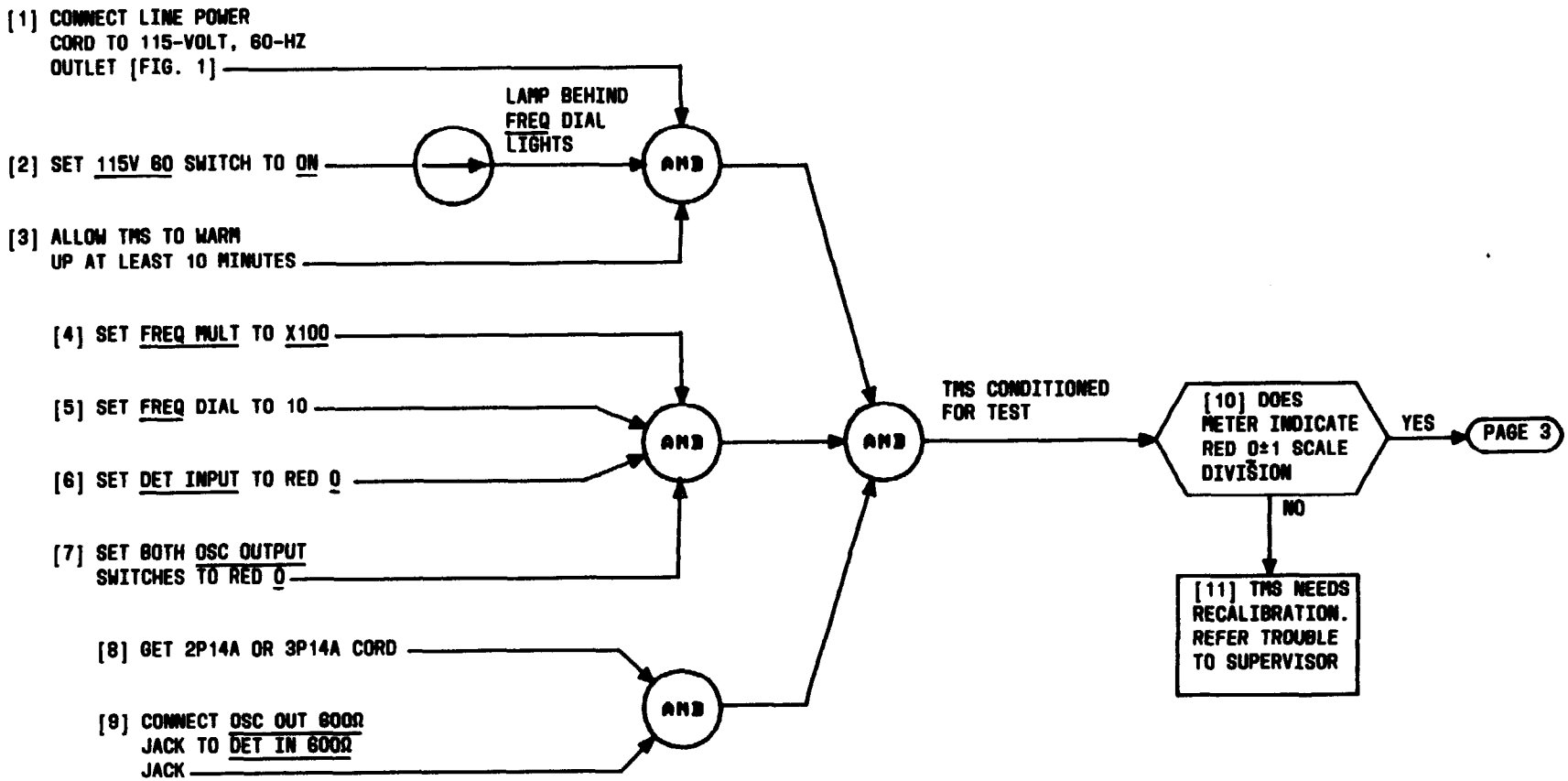


FIG. 1

MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL



CONDITION J94021A (21A) TMS FOR TEST

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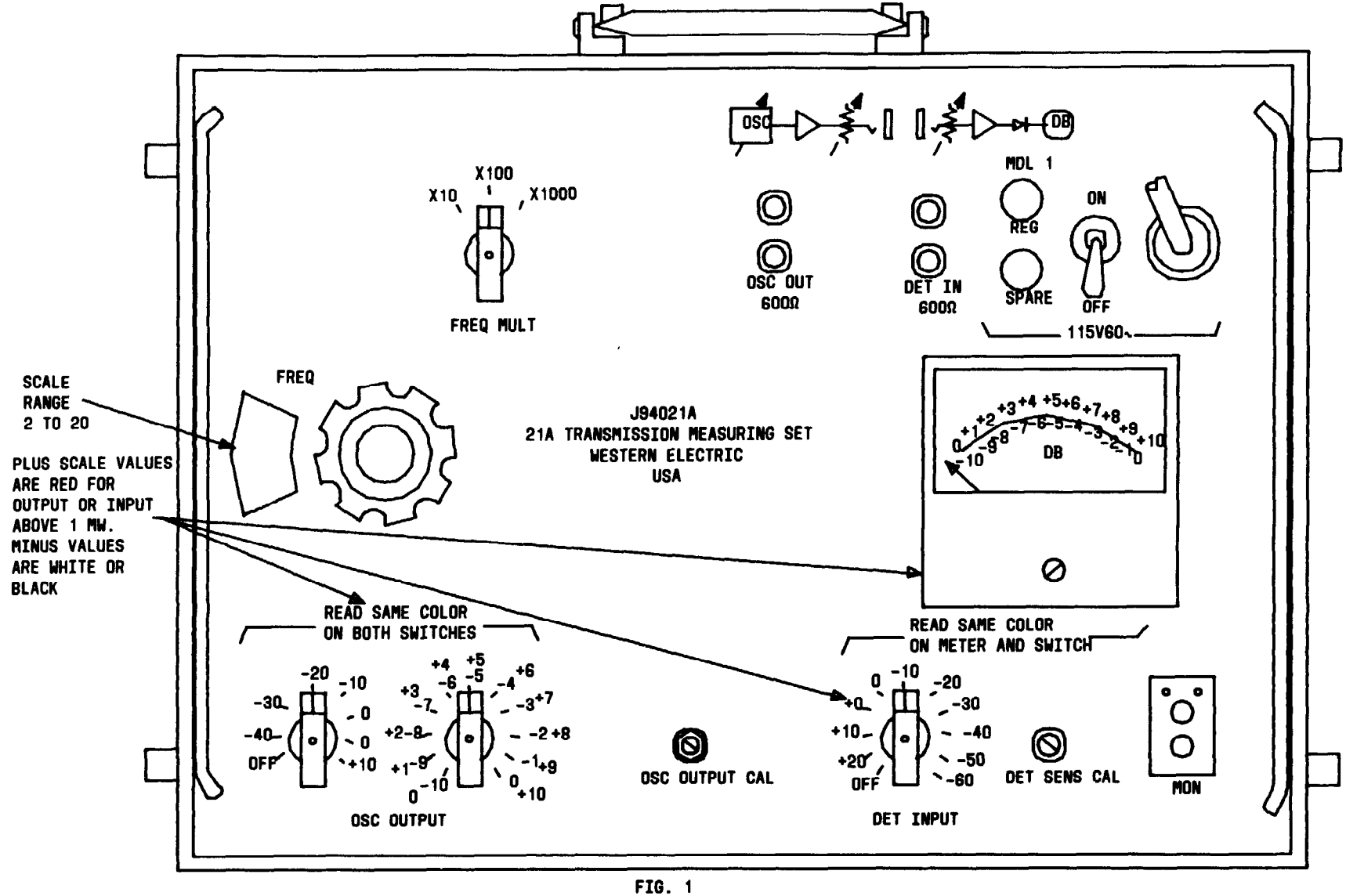

FIG. 1

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CONDITION J94021A (21A) TMS FOR TEST

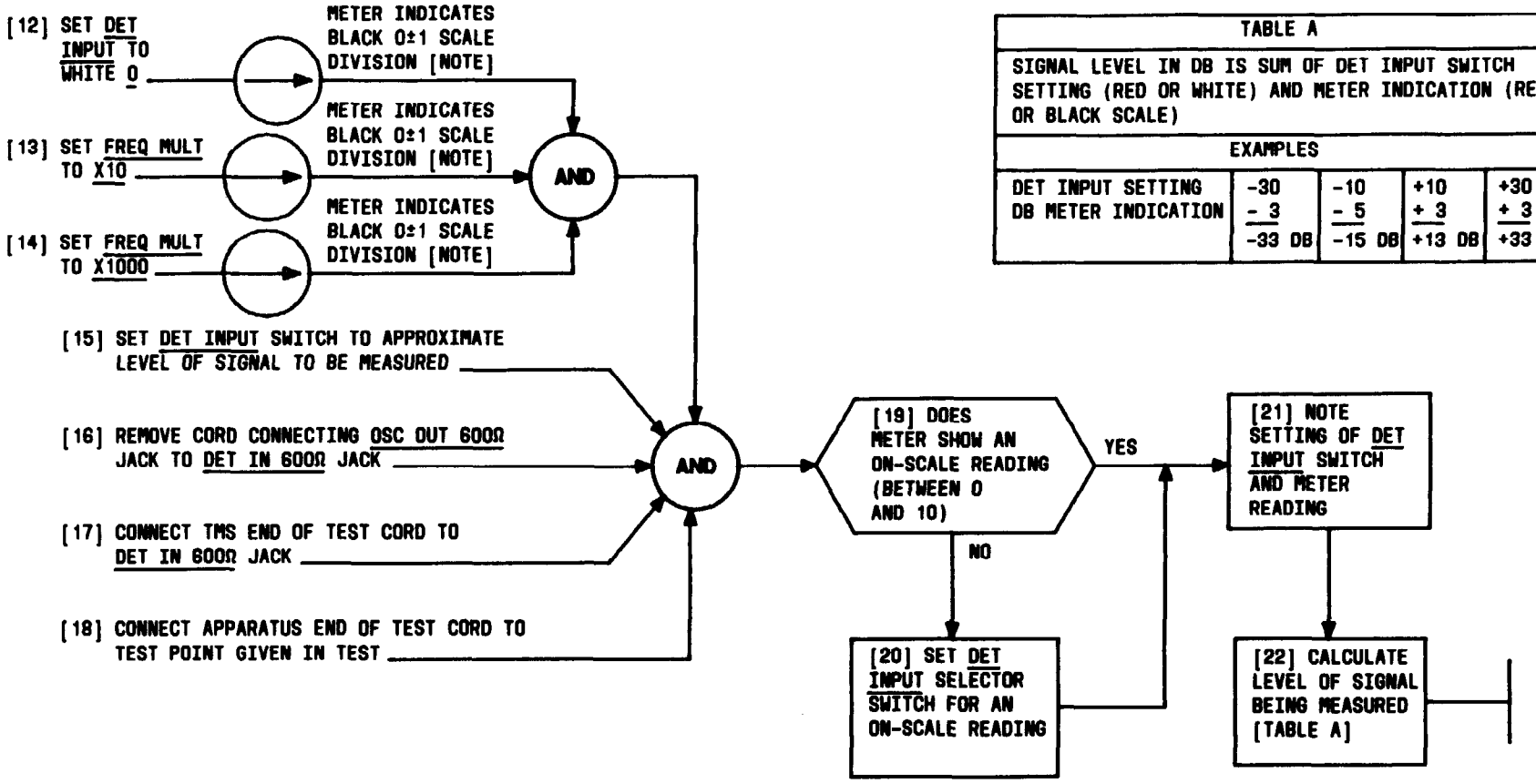


TABLE A				
SIGNAL LEVEL IN DB IS SUM OF DET INPUT SWITCH SETTING (RED OR WHITE) AND METER INDICATION (RED OR BLACK SCALE)				
EXAMPLES				
DET INPUT SETTING DB METER INDICATION	-30 - 3 -33 DB	-10 - 5 -15 DB	+10 + 3 +13 DB	+30 + 3 +33 DB

NOTE
IF METER REQUIREMENT IS NOT MET, TMS NEEDS RECALIBRATION. REFER TROUBLE TO SUPERVISOR

CONDITION J94021A (21A) TMS FOR TEST

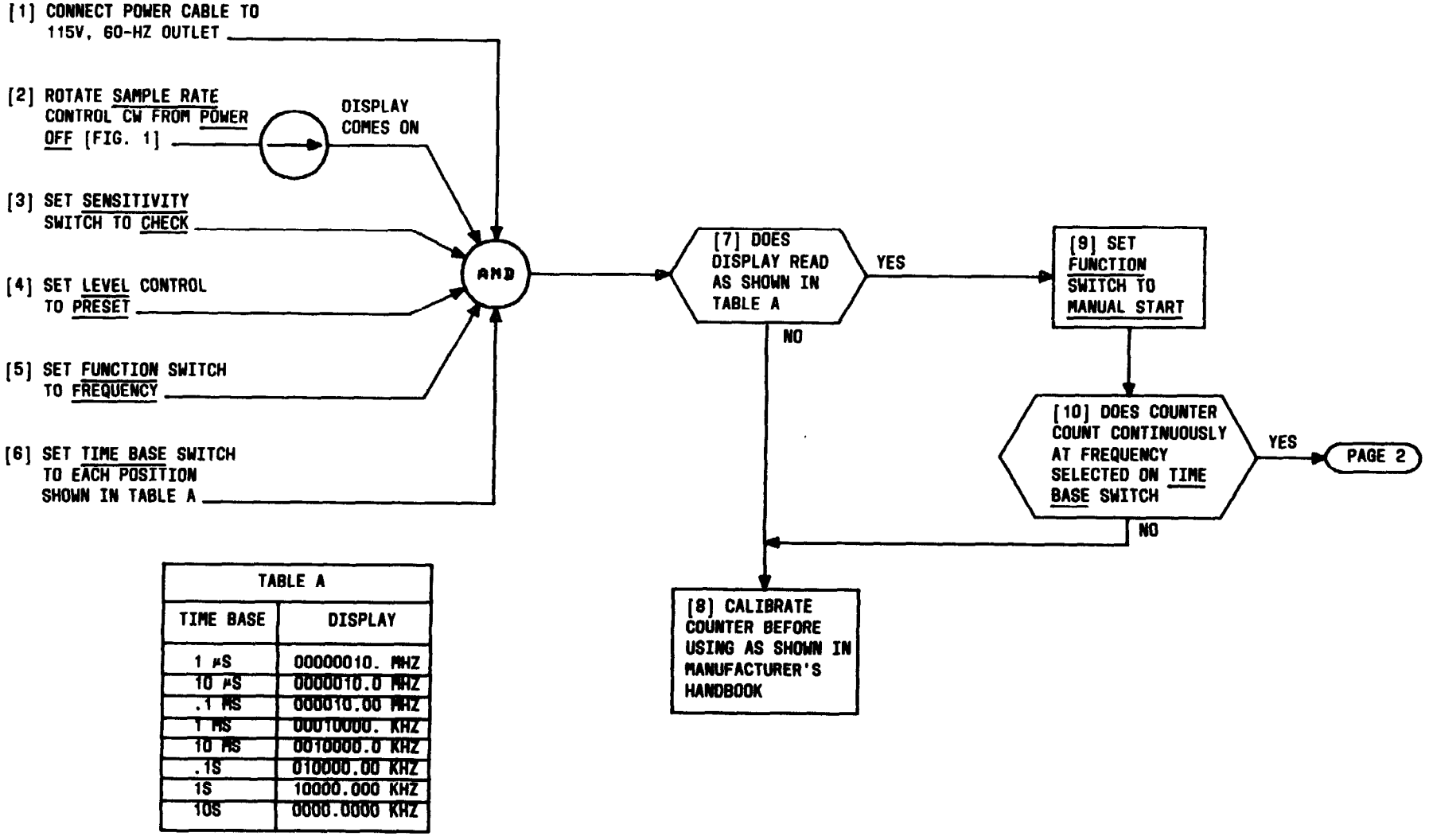


TABLE A	
TIME BASE	DISPLAY
1 µS	00000010. MHZ
10 µS	0000010.0 MHZ
.1 MS	000010.00 MHZ
1 MS	00010000. KHZ
10 MS	0010000.0 KHZ
.1S	010000.00 KHZ
1S	10000.000 KHZ
10S	0000.0000 KHZ

CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY

[11] SET FUNCTION SWITCH TO EACH PERIOD AVERAGE SETTING IN TABLE B

[12] DOES DISPLAY READ AS SHOWN IN TABLE B

NO → [13] CALIBRATE COUNTER BEFORE USING ACCORDING TO MANUFACTURER'S HANDBOOK

YES → [14] SET FUNCTION SWITCH TO FREQUENCY → [15] SET TIME BASE SWITCH FOR DESIRED COUNT TIME → [16] CONNECT UNKNOWN SIGNAL TO AC OR DC SIGNAL INPUT JACK → [17] SET SENSITIVITY SWITCH TO 10 [NOTE]

NOTE
IF THERE IS NO COUNT, OR IF COUNT IS UNCERTAIN, PROGRESSIVELY CHANGE SENSITIVITY TO LOWER RANGES

TABLE B

PERIOD AVERAGE	DISPLAY
1	00000001
10	00000010
100	00000100
1K	00001000
10K	00010000
100K	00100000

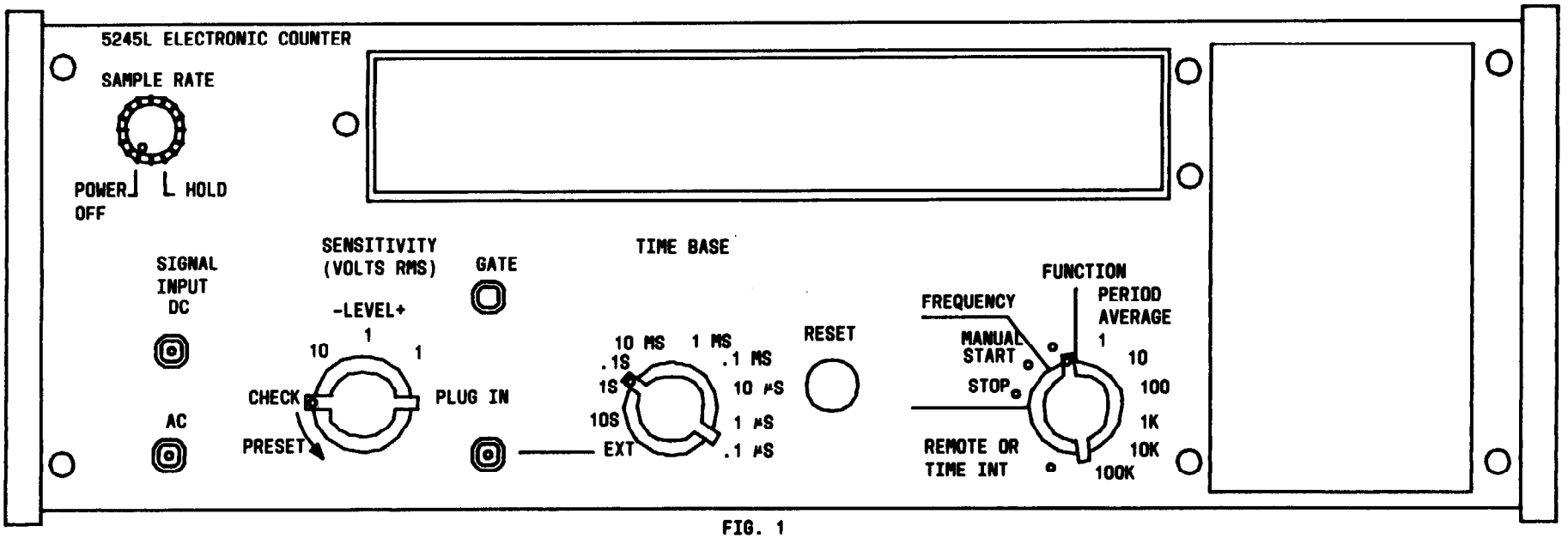


FIG. 1

CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY

CONDITION KS-14510 METER (VOM) FOR MEASUREMENT

[1] PLACE METER ON HORIZONTAL SURFACE WITH FRONT OF METER UP [NOTE]

[2] SET FUNCTION SWITCH TO OFF [FIG. 1]

AND

[3] ADJUST METER ZERO SCREW FOR ZERO INDICATION

[4] INSERT SHORT PIN PLUG OF RED TEST LEAD IN + JACK

AND

[5] INSERT SHORT PIN PLUG OF BLACK TEST LEAD IN - JACK

[6] SEE FIG. 1 AND WARNINGS. SET FUNCTION SWITCH TO PARAMETER TO BE MEASURED AND TO REQUIRED RANGE

PAGE 2

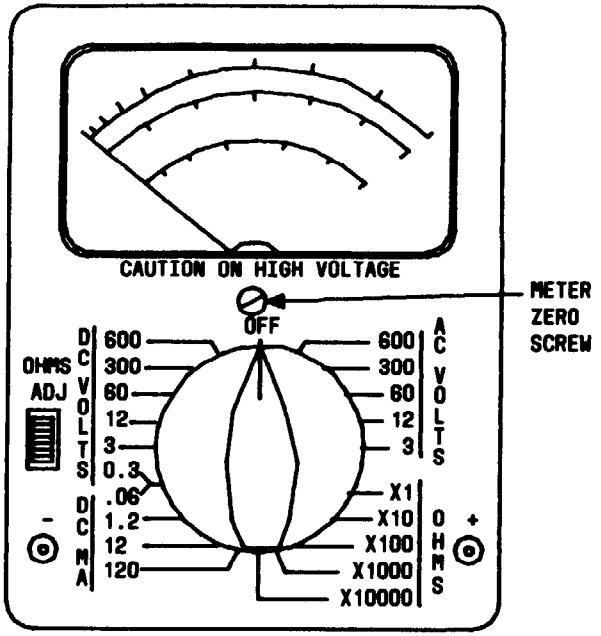
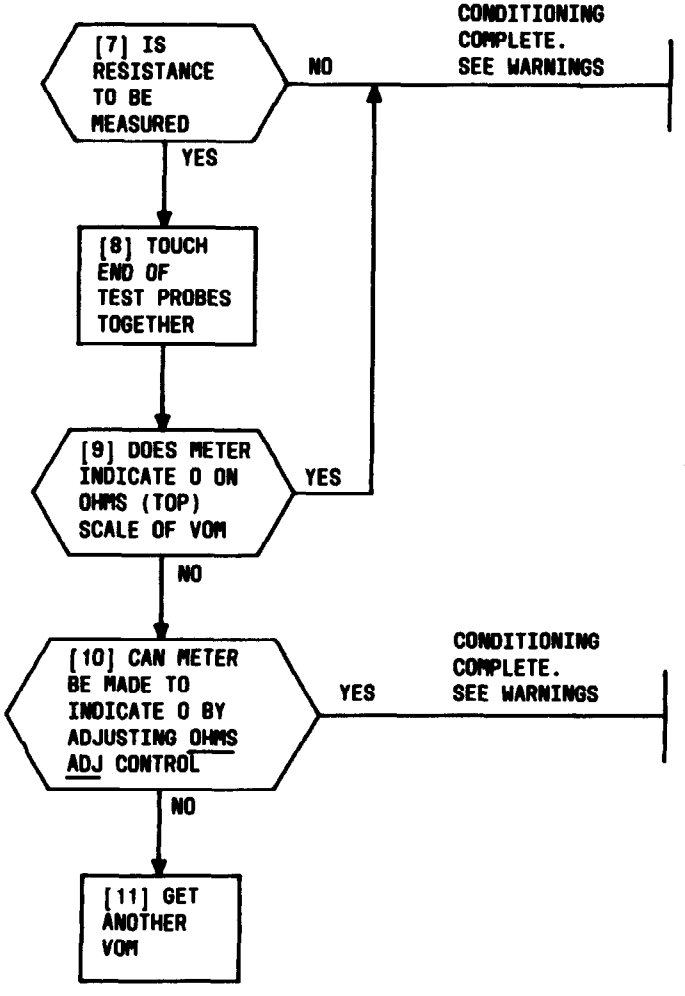


FIG. 1

NOTE
METER SHOULD NOT BE PLACED ON A MAGNETIC SURFACE OR OTHER LOCATION WHERE METER MOVEMENT WILL BE SUBJECT TO INFLUENCE OF MAGNETIC FIELD



WARNINGS

1. WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO CIRCUIT BEING MEASURED, AS DAMAGE TO METER WILL RESULT
2. WHEN MAKING EITHER CURRENT OR VOLTAGE MEASUREMENTS, SET FUNCTION SWITCH TO PROPER RANGE BEFORE MAKING CONTACT WITH TEST PROBES TO CIRCUIT BEING MEASURED. IF THERE IS ANY DOUBT AS TO APPROXIMATE VALUE OF VOLTAGE OR CURRENT TO BE MEASURED, SET FUNCTION SWITCH TO HIGHEST VALUE FOR INITIAL TEST AND THEN DECREASE STEP-BY-STEP UNTIL PROPER RANGE IS REACHED

CONDITION KS-14510 METER (VOM) FOR MEASUREMENT

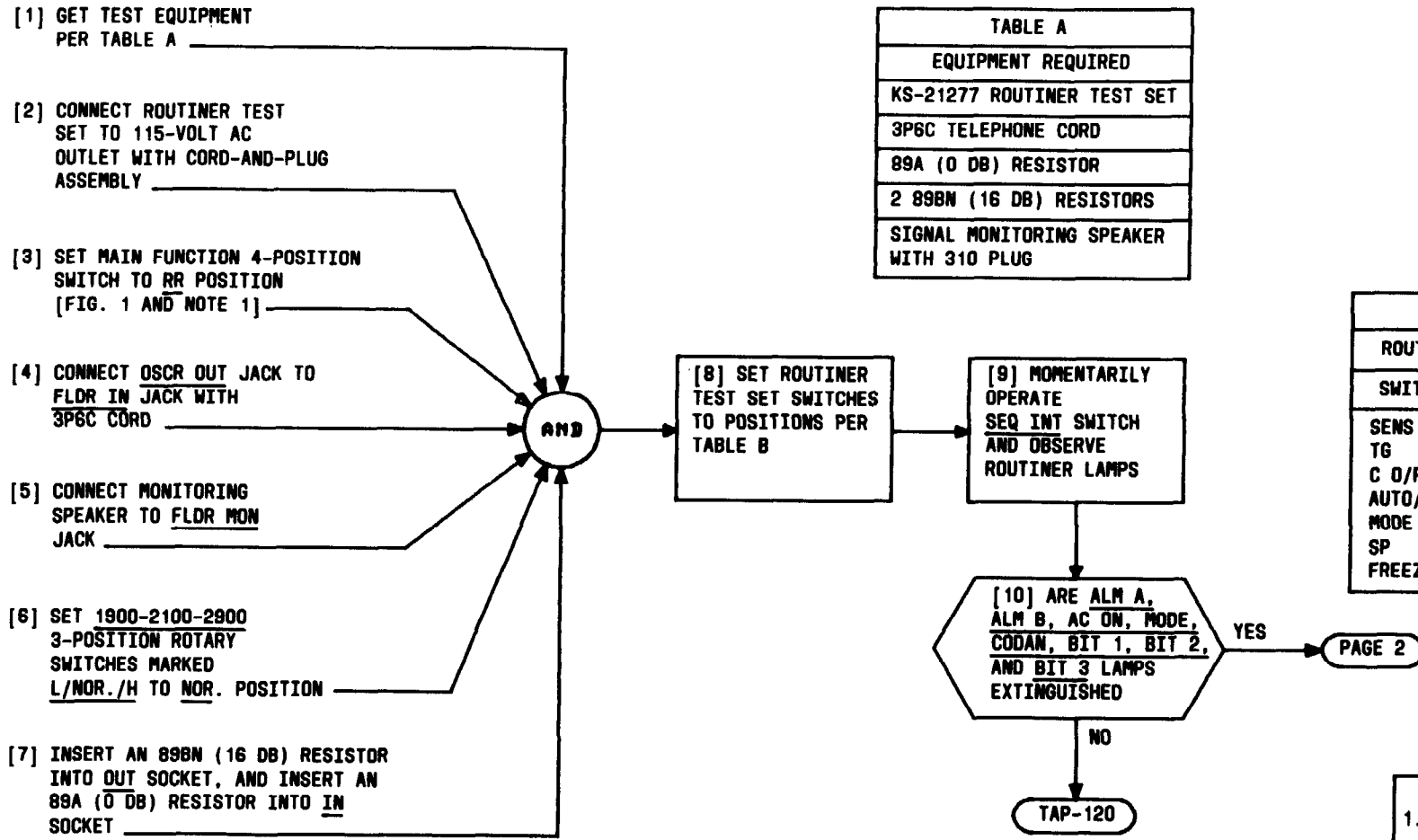


TABLE A
EQUIPMENT REQUIRED
KS-21277 ROUTINER TEST SET
3P6C TELEPHONE CORD
89A (0 DB) RESISTOR
2 89BN (16 DB) RESISTORS
SIGNAL MONITORING SPEAKER WITH 310 PLUG

TABLE B	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	LO
TG	OFF
C O/R	AUTO
AUTO/MAN	MAN
MODE	SSB
SP	OFF
FREEZE	OFF

NOTES

1. THE RECEIVER PORTION OF ROUTINER TEST SET IS LOCATED AT UPPER-LEFT PART OF PANEL. SWITCHES AND LAMPS ARE COLOR-CODED GREEN AND BLACK
2. IGNORE ANY LAMP INDICATIONS ON TERMINAL AND TRANSMITTER PORTIONS OF ROUTINER

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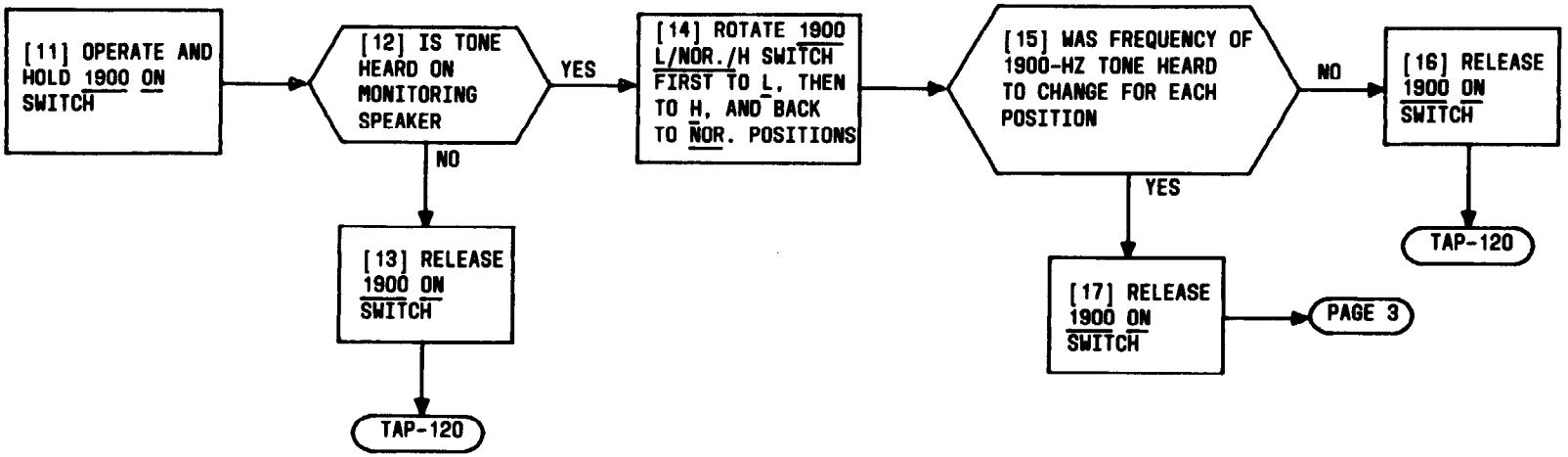
SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS



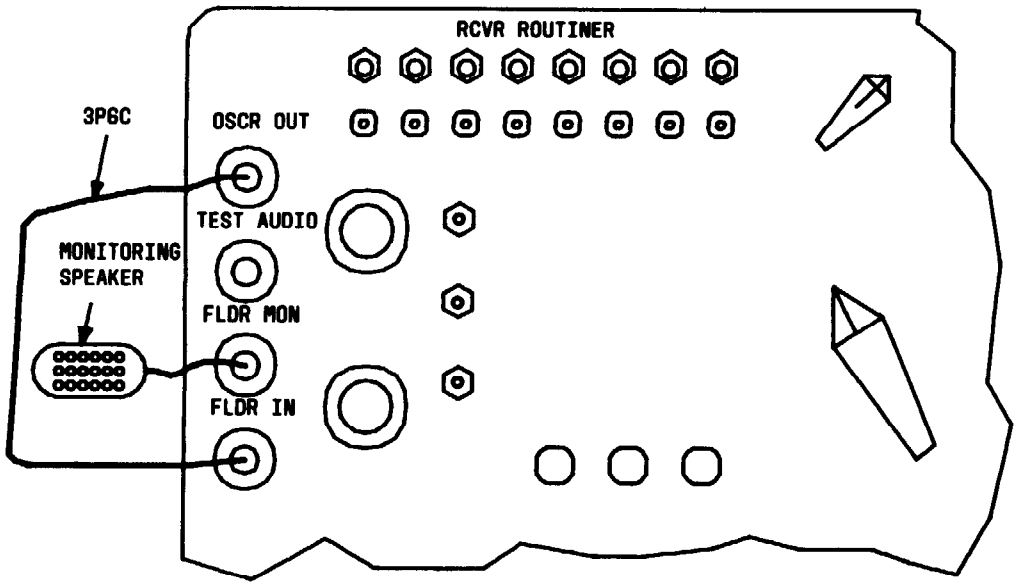
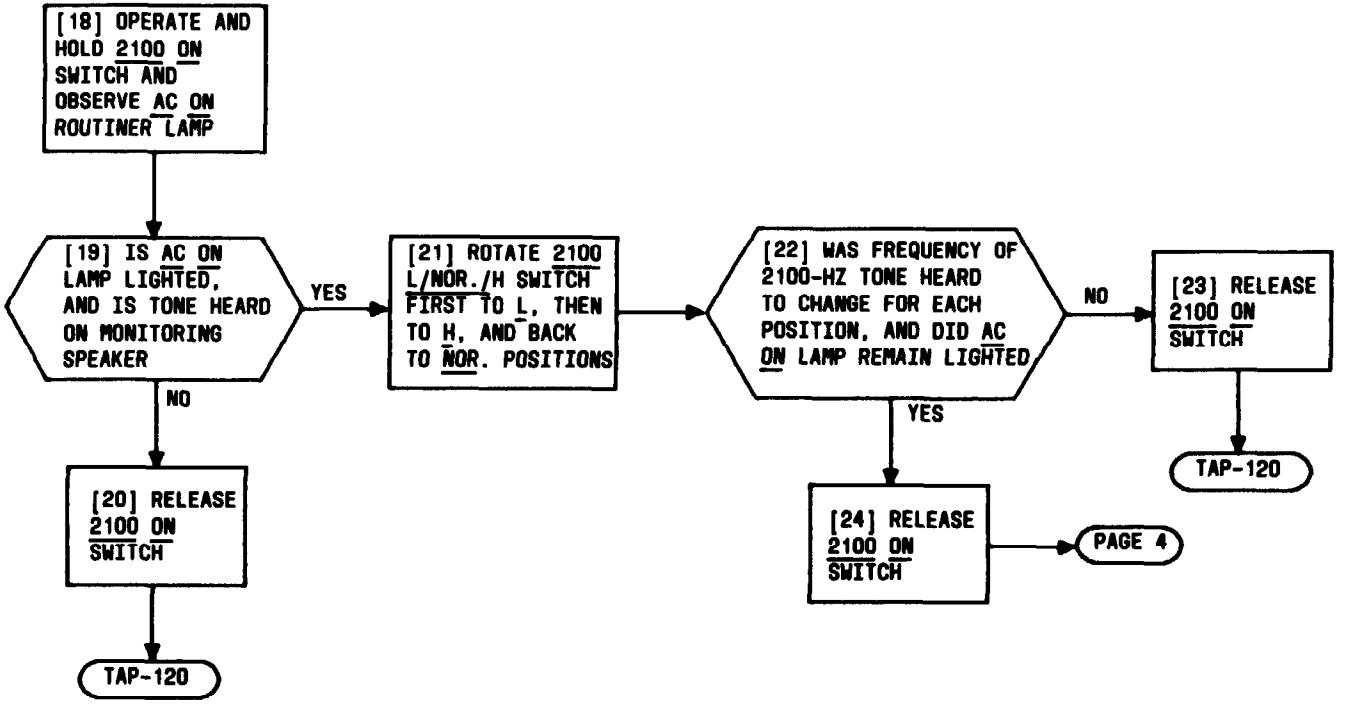
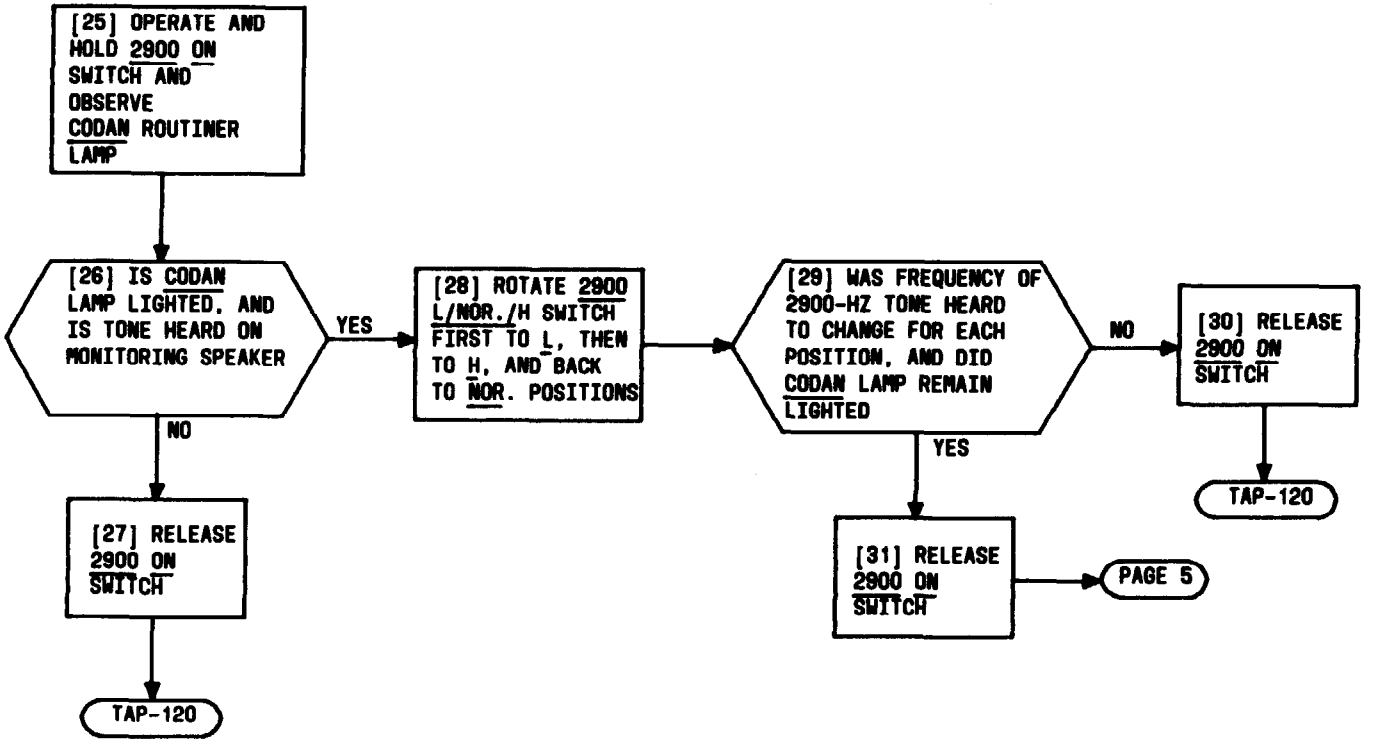


FIG. 1

SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS



SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS



SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

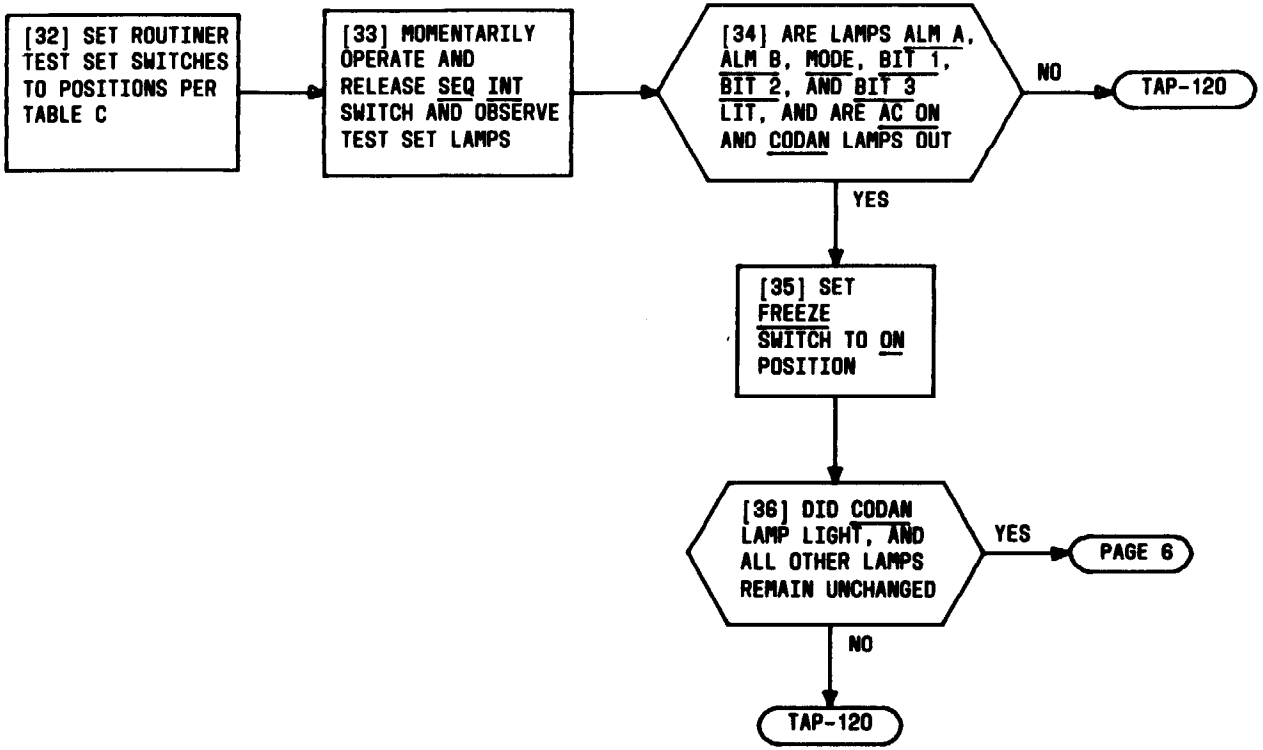


TABLE C	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	HI
TG	ON
C O/R	ON
AUTO/MAN	AUTO
MODE	AM
SP	ON
FREEZE	OFF

SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

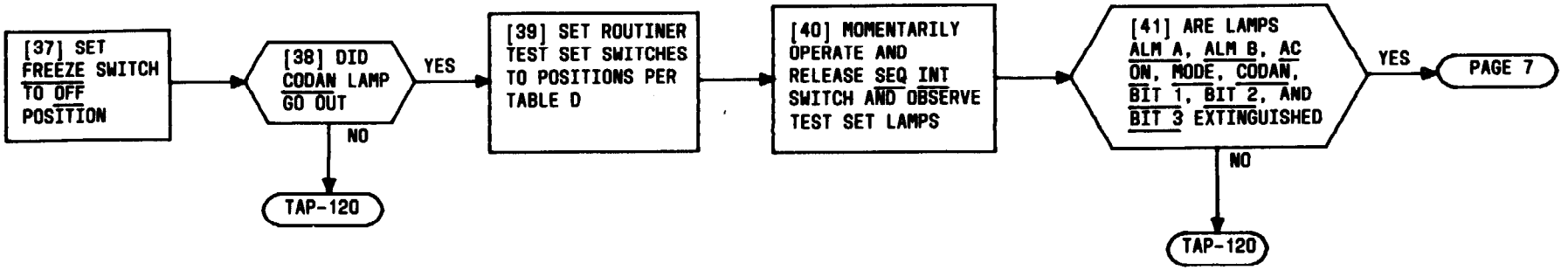
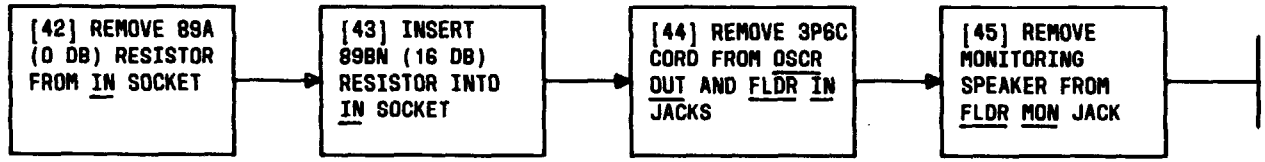


TABLE D	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	LO
TG	OFF
C O/R	AUTO
AUTO/MAN	MAN
MODE	SSB
SP	OFF
FREEZE	OFF

SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS



SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

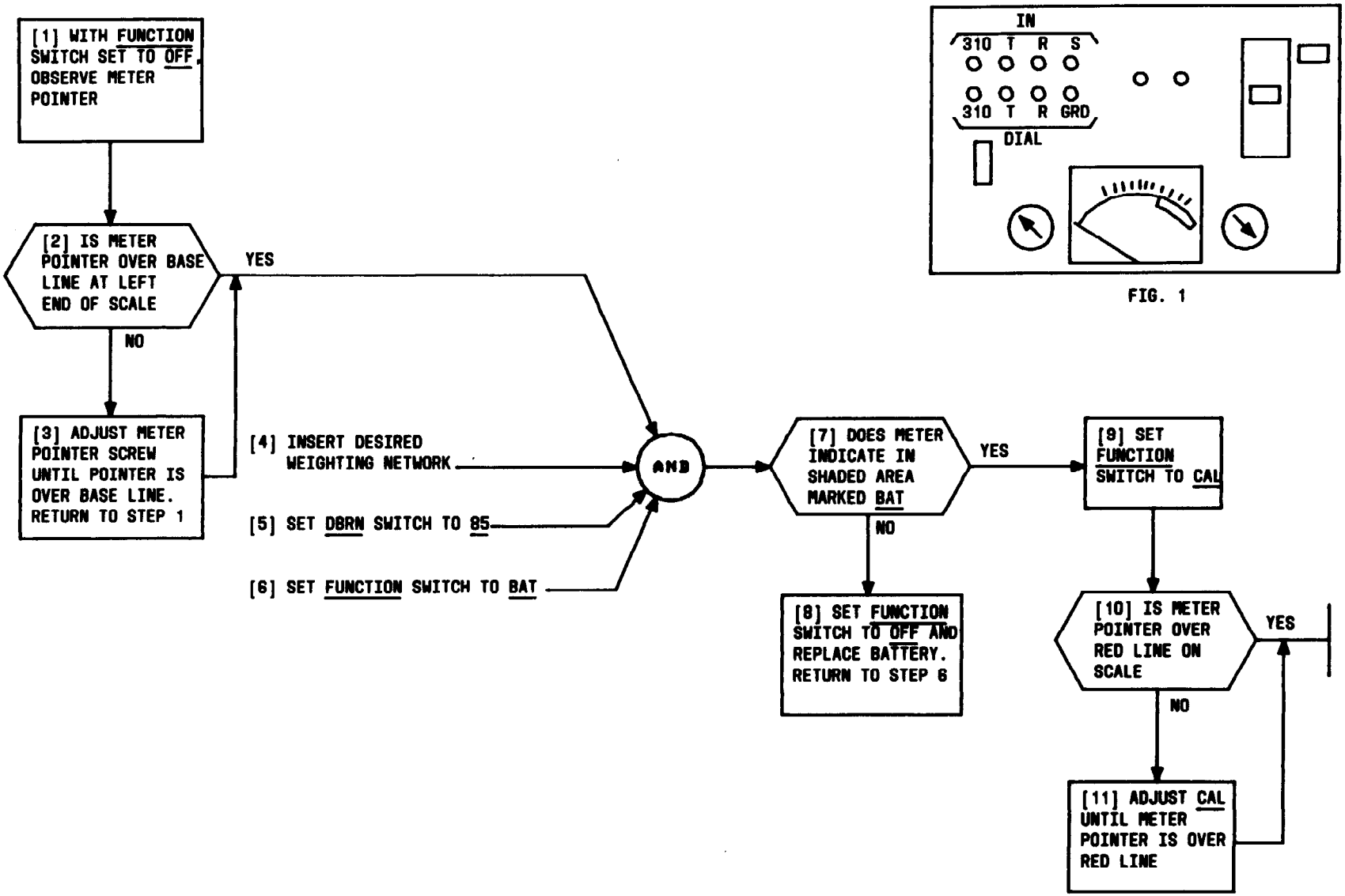


FIG. 1

CONDITION 3C NOISE MEASURING SET FOR MEASUREMENT

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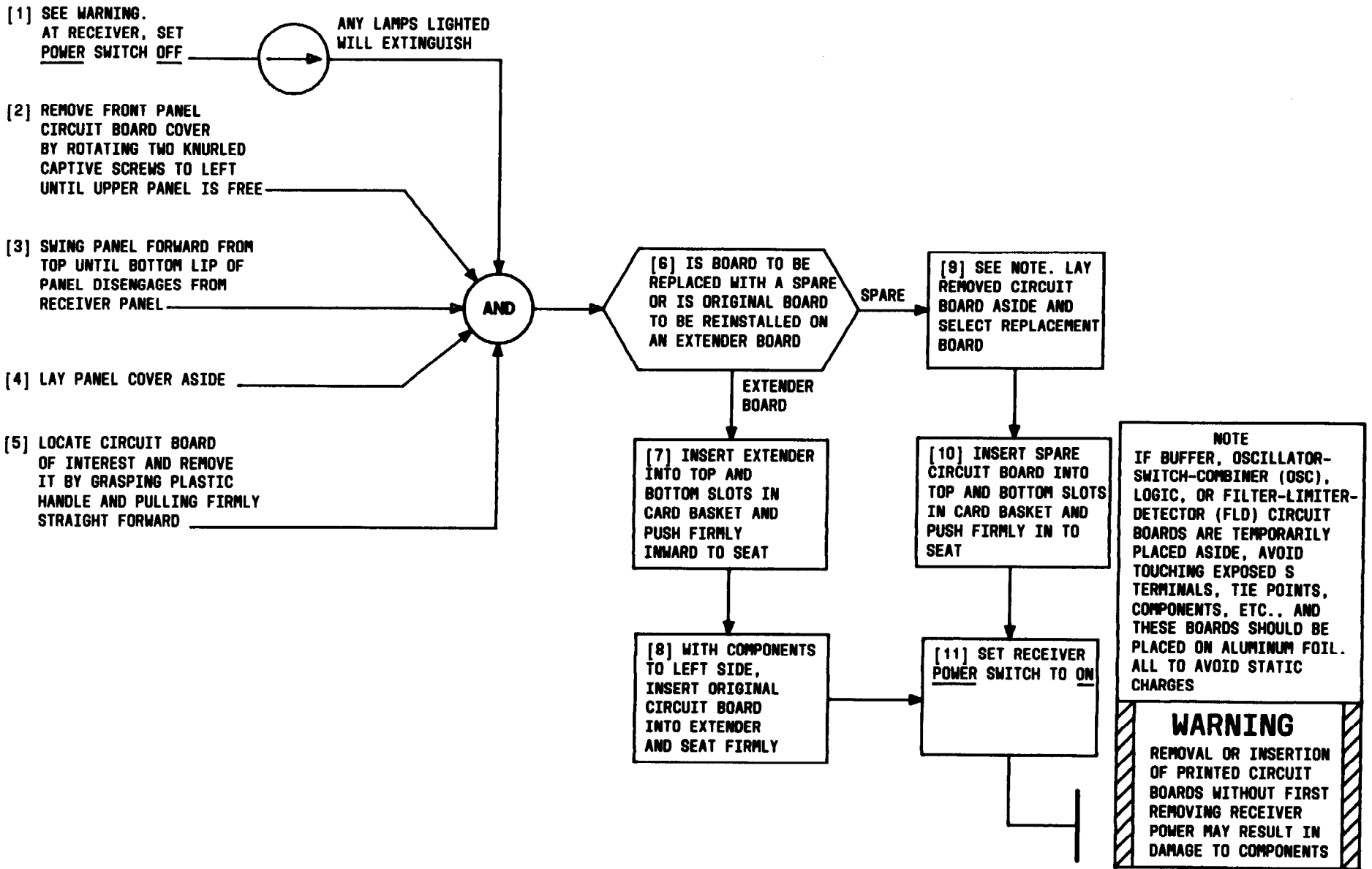
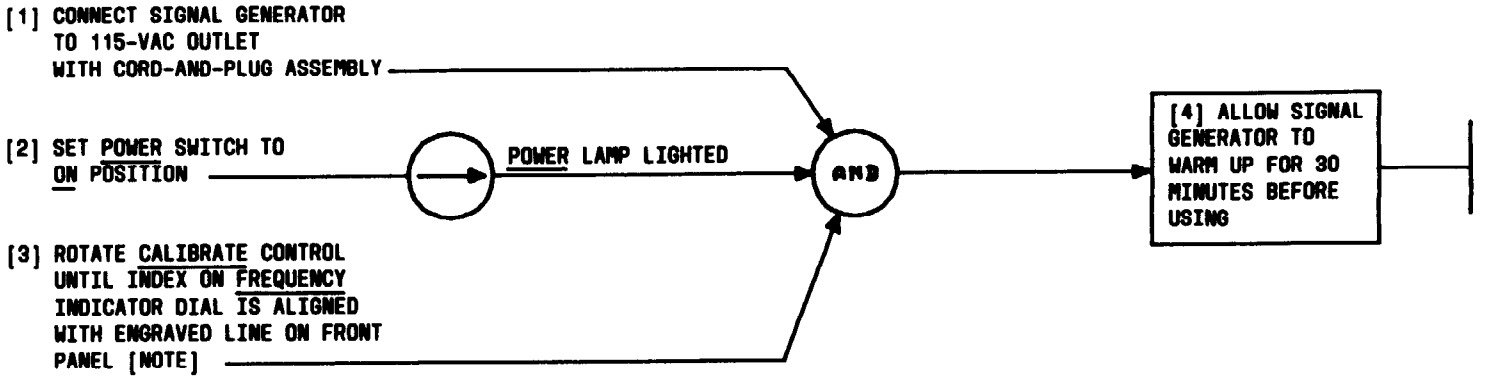


REMOVE AND INSTALL CIRCUIT BOARD



NOTE
FREQUENCY DIAL IS NOT ACCURATE UNTIL INDICATOR IS ALIGNED

CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT

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[1] CONNECT LINE CORD TO 117-VAC POWER SUPPLY

[2] DEPRESS PUSHBUTTON OF FUNCTION TO BE MEASURED [FIG. 1]

[3] CONNECT TEST LEADS FOR SPECIFIC MEASUREMENT TO BE MADE

[4] DEPRESS LINE PUSHBUTTON → DISPLAY APPEARS

[5] SET RANGE SWITCH TO DESIRED RANGE

[6] SEE WARNING. CONNECT TEST LEADS TO EQUIPMENT UNDER TEST

AND

WARNING

WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO THE CIRCUIT BEING MEASURED, AS DAMAGE TO THE METER WILL RESULT

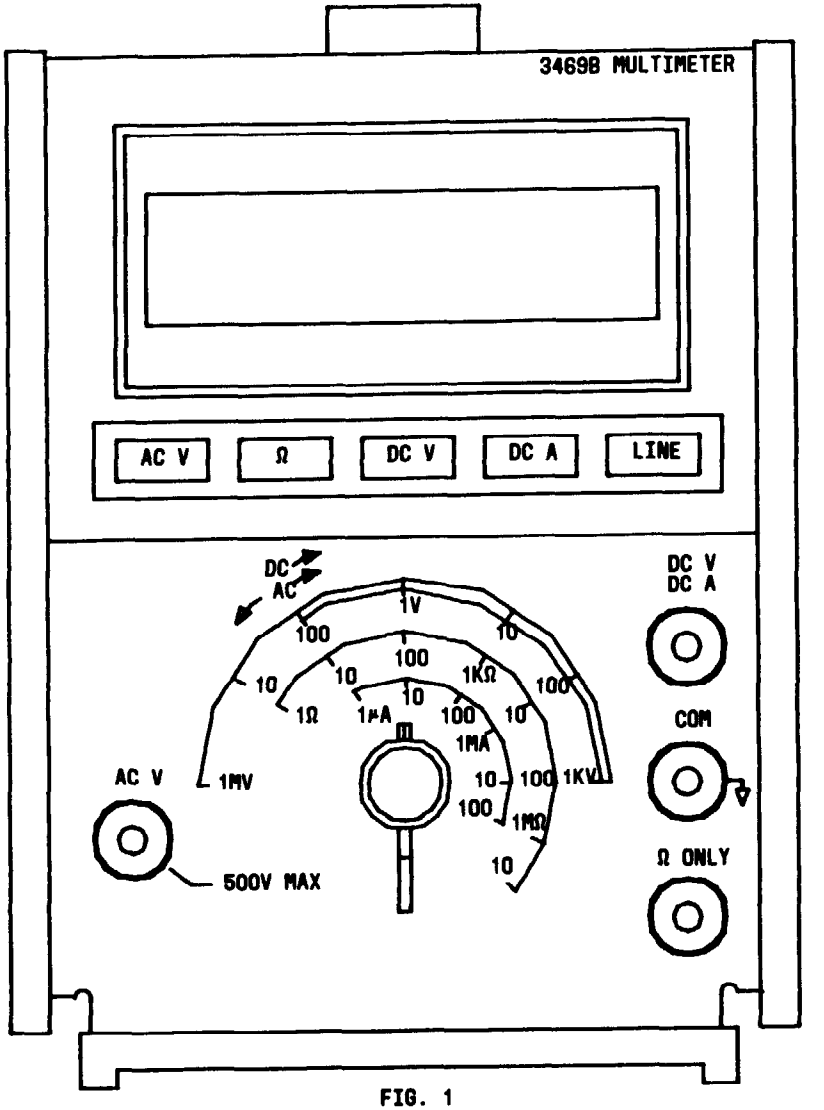

FIG. 1

CONDITION HEWLETT-PACKARD 3469B DIGITAL MULTIMETER FOR MEASUREMENT

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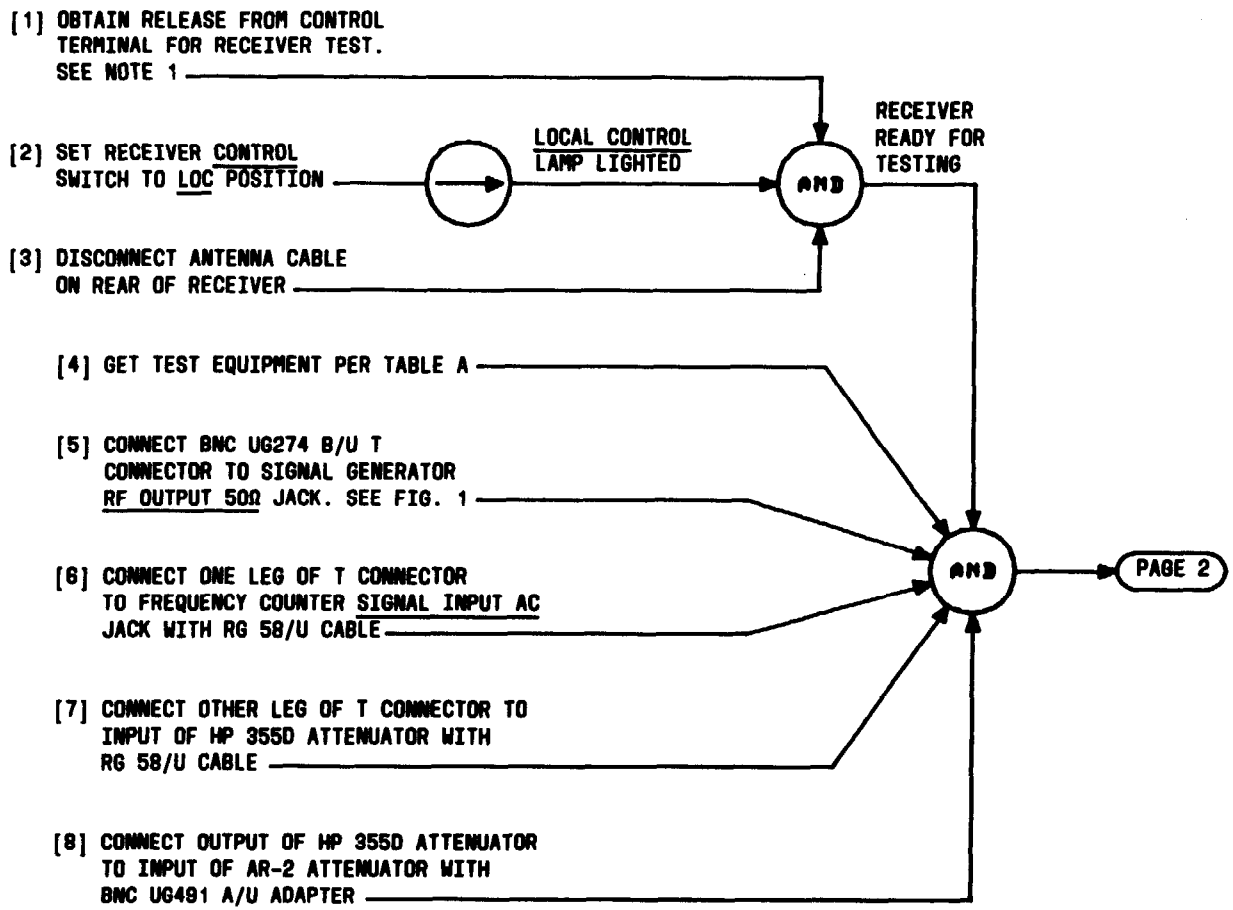

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
ADAPTER BNC MALE	UG491 A/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U
T CONNECTOR	BNC UG274 B/U
ROUTINER TEST SET	KS-21277
TELEPHONE CORD	3P6C

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET HP355D AND AR-2 ATTENUATORS TO 100 DB

AND

TEST EQUIPMENT CONNECTED

[11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

AND

FREQUENCY COUNTER SET UP

PAGE 3

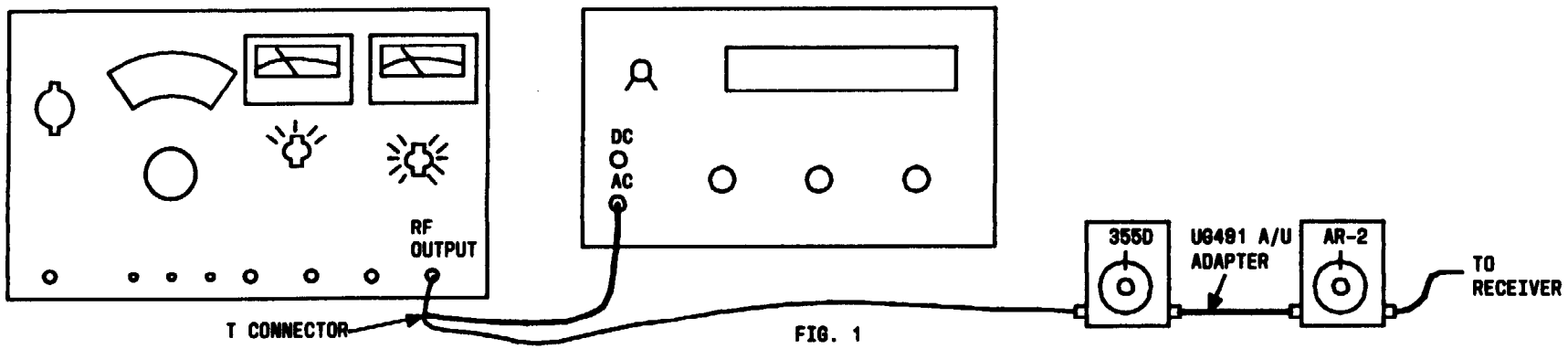

FIG. 1

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TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

[15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000

[18] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[19] SET MODULATION SELECTOR SWITCH TO CW AND SELECT 1000 POSITION

[20] SET MODULATION AMPLITUDE CONTROL TO INDICATE 40 PERCENT ON PERCENT MODULATION METER

AND

SIGNAL GENERATOR SET UP

[21] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL. SEE NOTE 2

CONTROL TERMINAL → PAGE 6

RECEIVER

[22] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[23] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD. SEE FIG.2

[24] OBSERVE LAMP DISPLAYS ON RECEIVER AND ROUTINER AND SET SIGNAL GENERATOR MODULATION SELECTOR CONTROL SWITCH TO INT

AND → PAGE 4

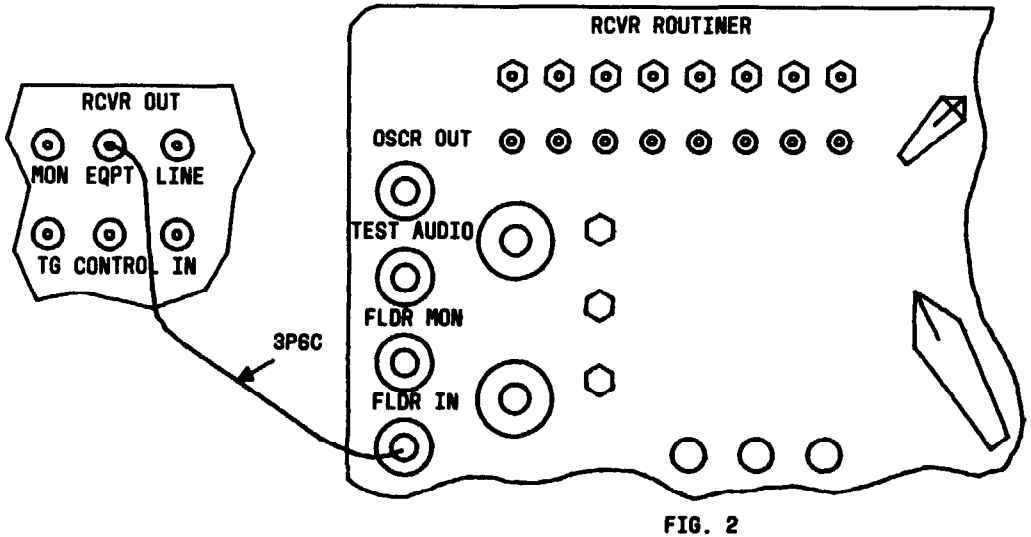
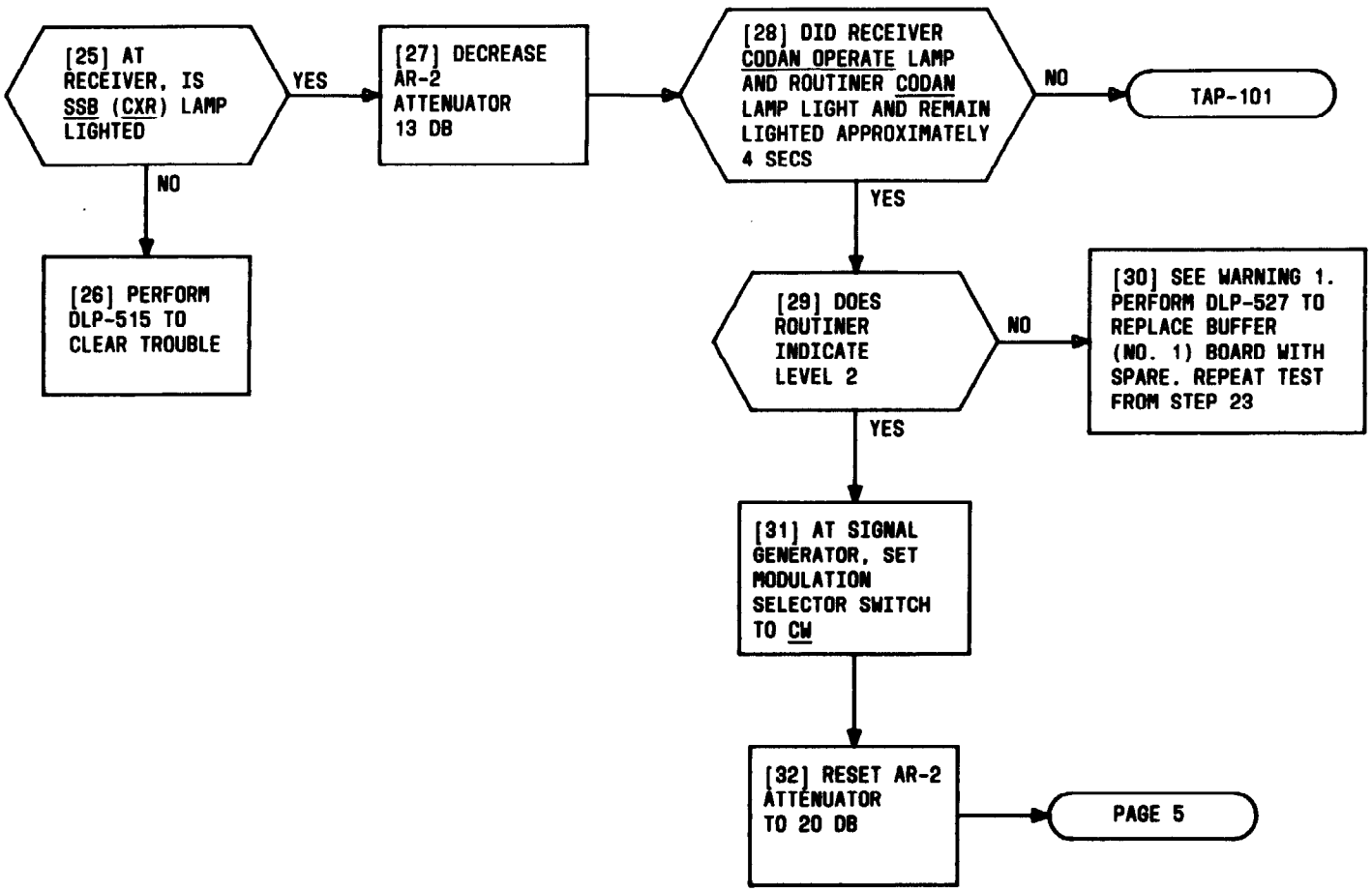


FIG. 2

NOTE 2
IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

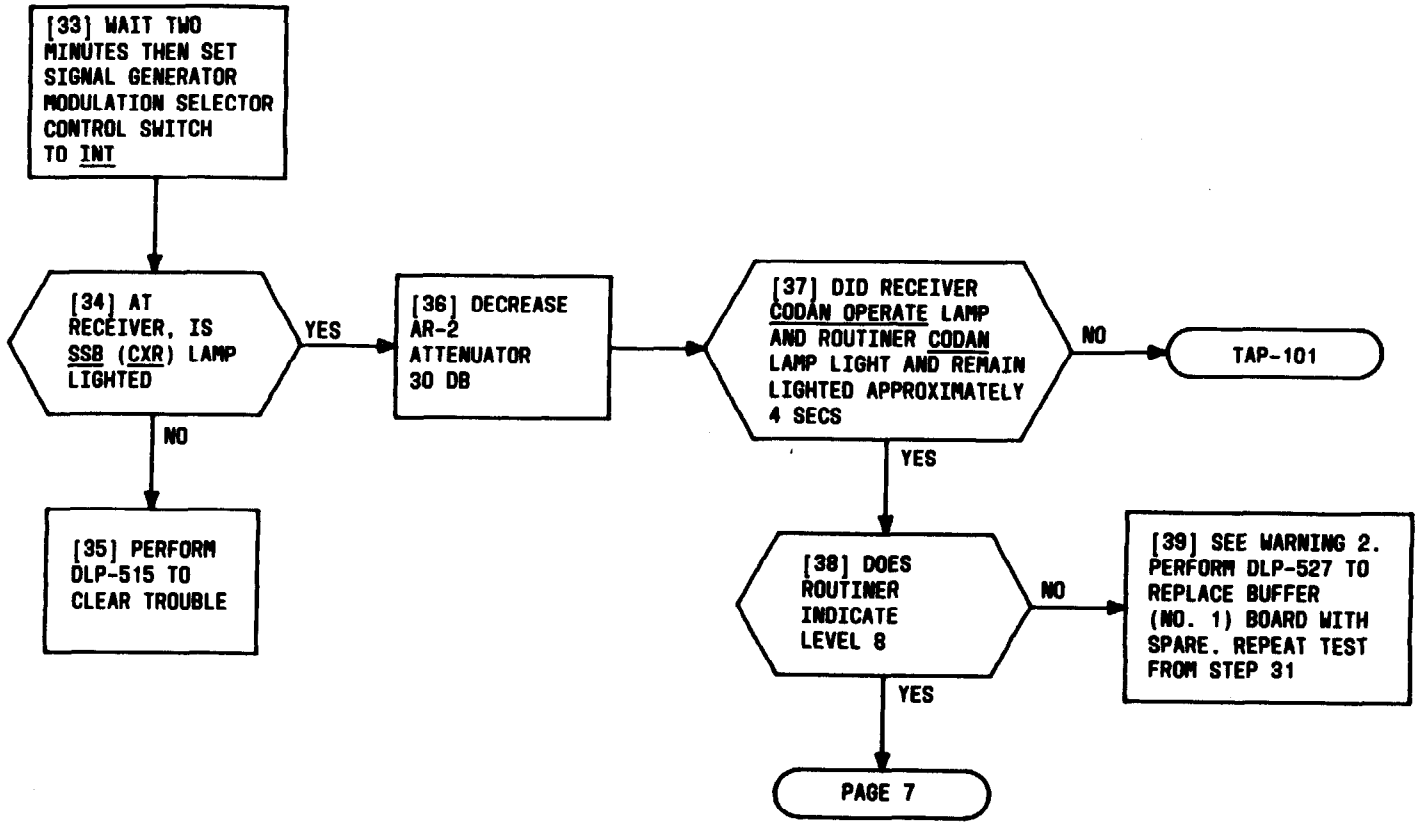
TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING



WARNING 1

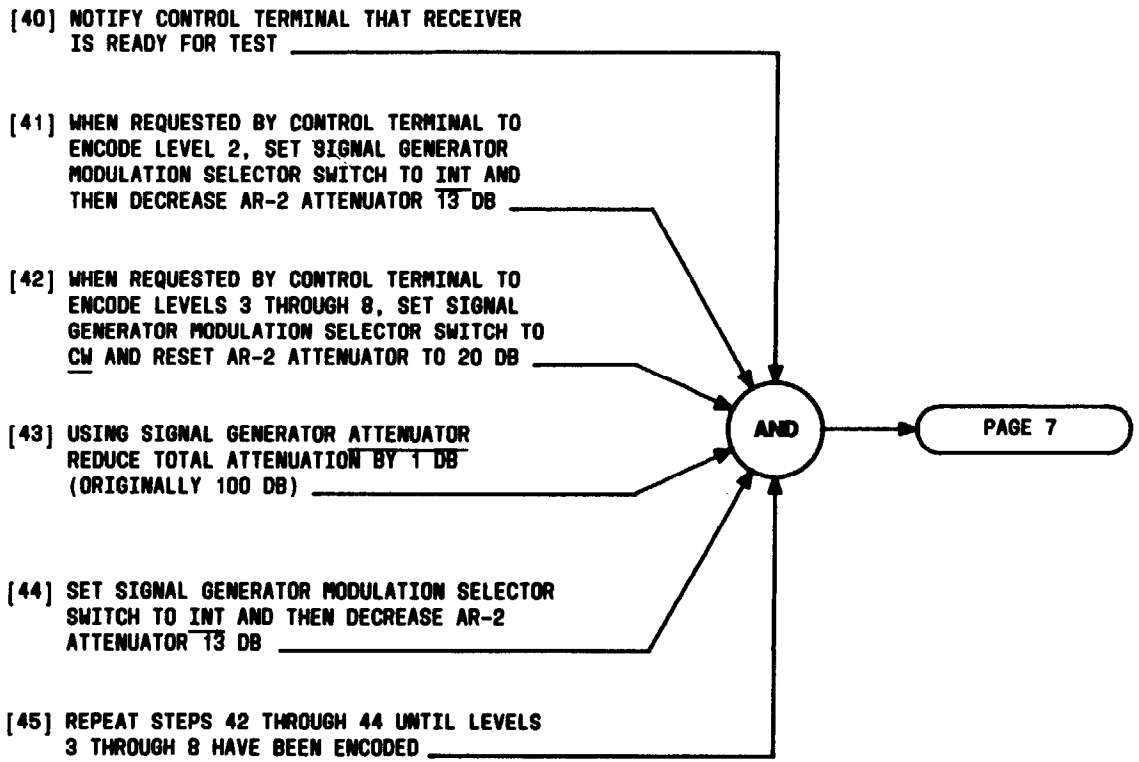
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

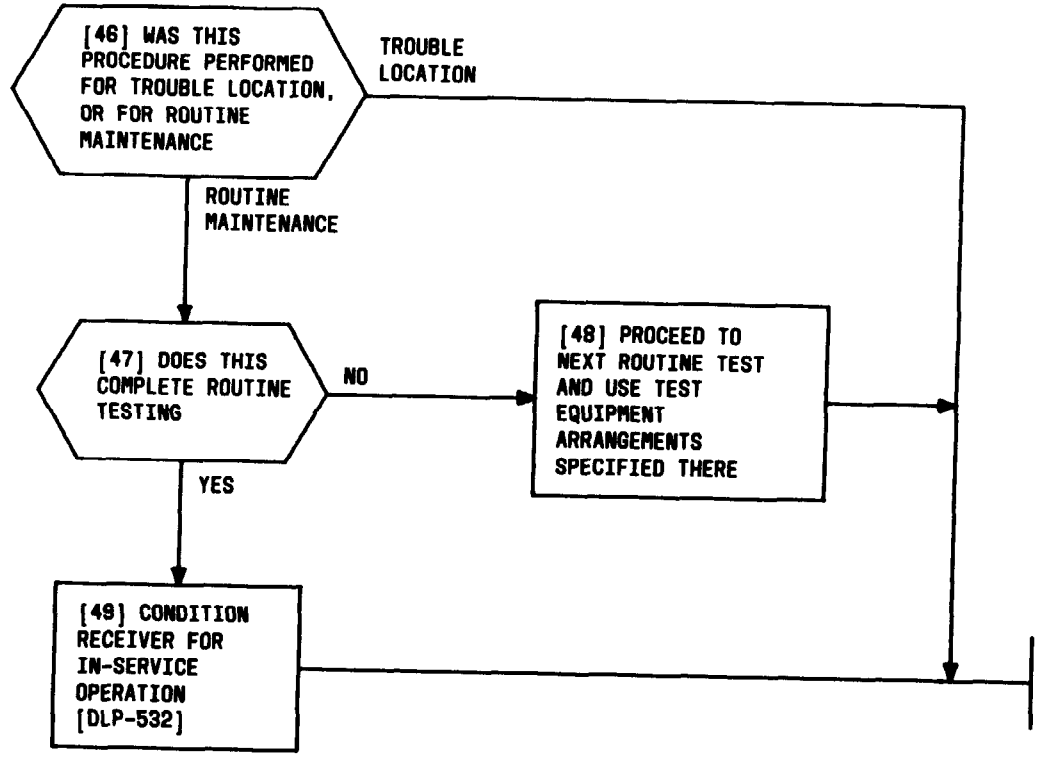


WARNING 2
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING



TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING



TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

[1] CONDITION 3C NOISE MEASURING SET FOR MEASUREMENT [DLP-526]

[2] SET 3C SET FUNCTION SWITCH TO NM $\frac{600}{900}$ POSITION

[3] SET 3C SET DBRN SWITCH TO 85

[4] SET 3C SET FILTER FOR C-MESSAGE WTG

[5] CONNECT 3C SET IN-310 JACK TO RECEIVER RCVR OUT-EQPT JACK WITH 3P6C CORD. SEE FIG. 1

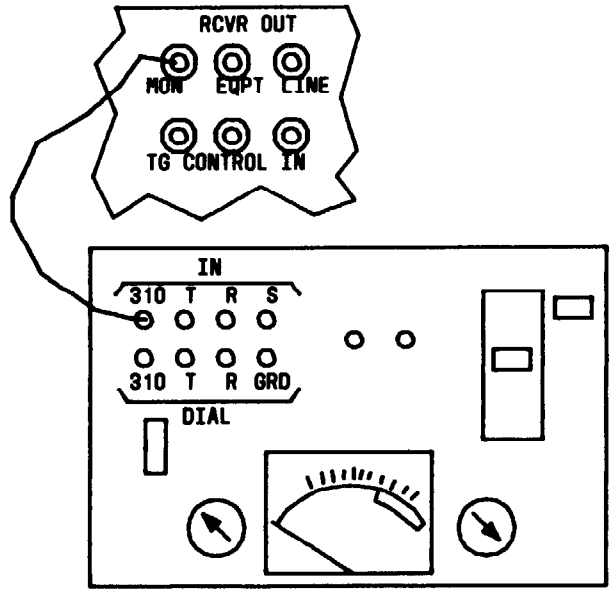


FIG. 1

CONNECT 3C NOISE MEASURING SET TO RECEIVER OUTPUT

[1] DISCONNECT ANY TEST EQUIPMENT FROM ANTENNA INPUT

[2] RECONNECT ANTENNA CABLE TO RECEIVER ANTENNA JACK

[3] RECONNECT ANY WIRING REMOVED FROM BARRIER TERMINAL STRIP

[4] DISCONNECT ANY TEST EQUIPMENT AND TERMINATING PLUGS FROM RECEIVER FRONT PANEL JACK FIELD

[5] SEE WARNING. REMOVE CIRCUIT BOARD EXTENDER BOARD AND REINSTALL REMOVED CIRCUIT BOARDS [DLP-527]

[6] VERIFY CIRCUIT BOARD TOGGLE SWITCH POSITIONS PER TABLE A

[7] REINSTALL RECEIVER FRONT PANEL CIRCUIT BOARD COVER

AND

[8] SET RECEIVER PANEL CONTROLS AND SWITCHES TO POSITIONS PER TABLE B

[9] SET RECEIVER TEST GENERATOR SWITCH TO ON POSITION FOR 5 SECONDS; THEN SET TO OFF POSITION

[10] SET RECEIVER CONTROL SWITCH TO REM POSITION. SEE NOTE

[11] NOTIFY CONTROL TERMINAL THAT RECEIVER IS CONDITIONED FOR IN-SERVICE OPERATION

TABLE A

CIRCUIT BOARDS OPERATIONAL TOGGLE SWITCH POSITIONS

CIRCUIT BOARD	SWITCH SET	SWITCH FUNCTION
8	CENTER	OPERATE
10	UP	LOCK A3A
12	UP	SAFETY AND CALLING
12	DOWN	PUBLIC CORRESPONDENCE

TABLE B

CONTROL	SET
POWER	ON
CONTROL	LOC
TEST GENERATOR	OFF
CODAN	AUTO
METER	OFF
SIG OSC TEST	
2100 TEST/NORM/OFF	NORM
2900 TEST/NORM/OFF	NORM

NOTE
ONLY SSB LAMP SHOULD REMAIN LIGHTED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

CONDITION RECEIVER FOR IN-SERVICE OPERATION

SUMMARY

THIS PROCEDURE INTERCONNECTS TEST EQUIPMENT AND RECEIVER TO PROVIDE FOR APPLICATION OF AN RF INPUT TO RECEIVER ANTENNA INPUT AT VARIOUS LEVELS

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST

[2] DISCONNECT ANTENNA CABLE FROM REAR OF RECEIVER

[3] GET TEST EQUIPMENT PER TABLE A

[4] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[5] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT-AC JACK WITH RG 58/U CABLE

[6] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE

[7] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH UG491 A/U ADAPTER

AND

PAGE 2

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF VARIABLE ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS

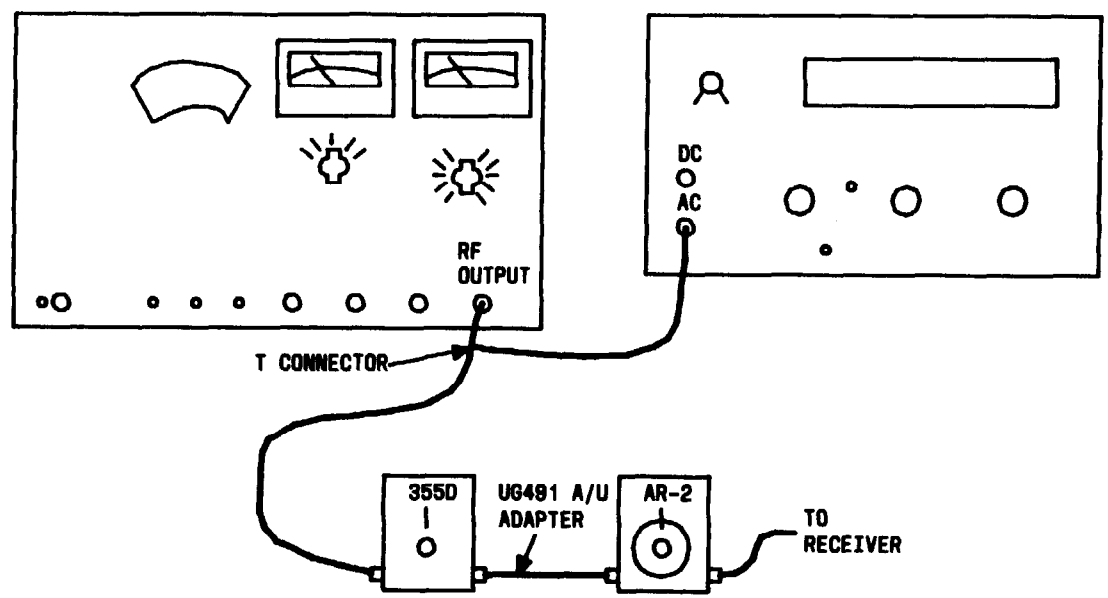
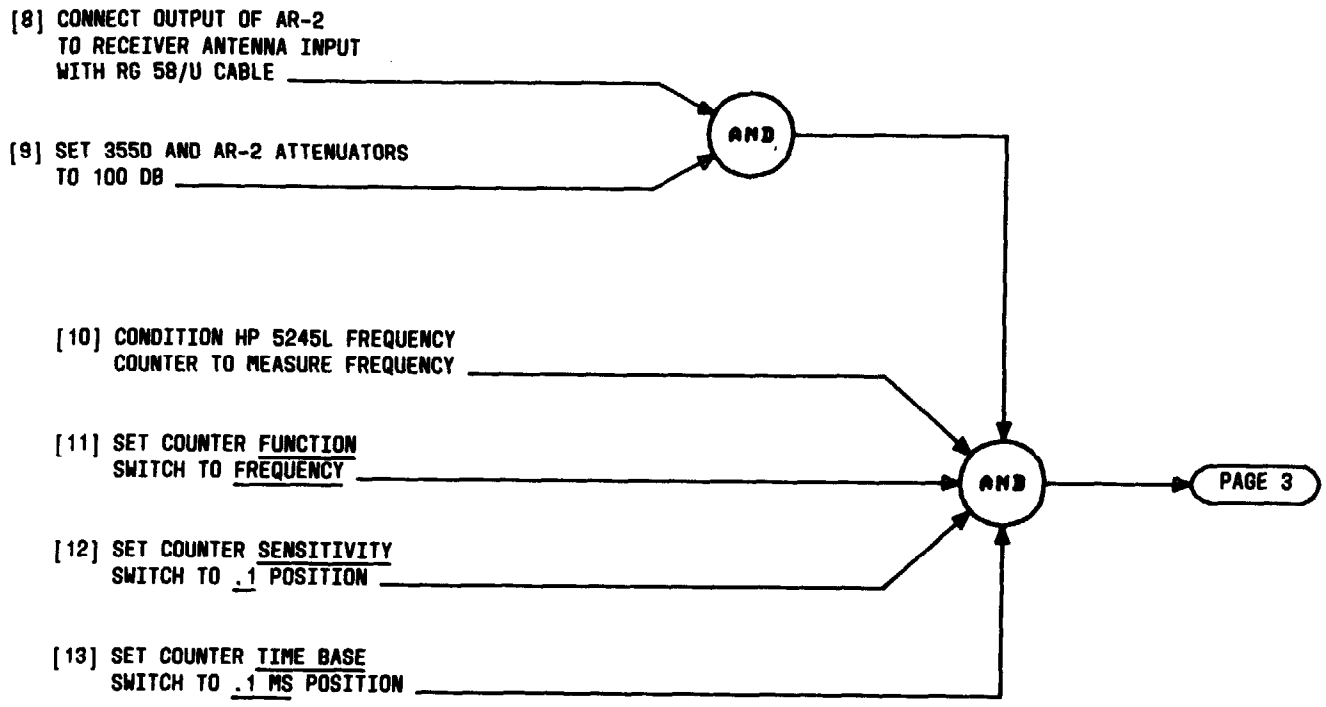
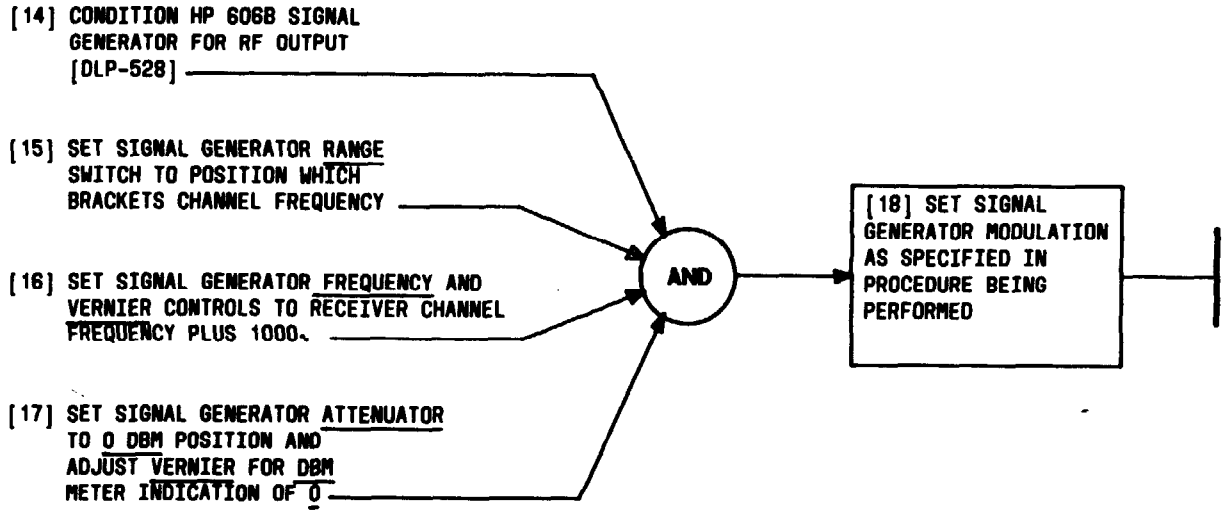


FIG. 1

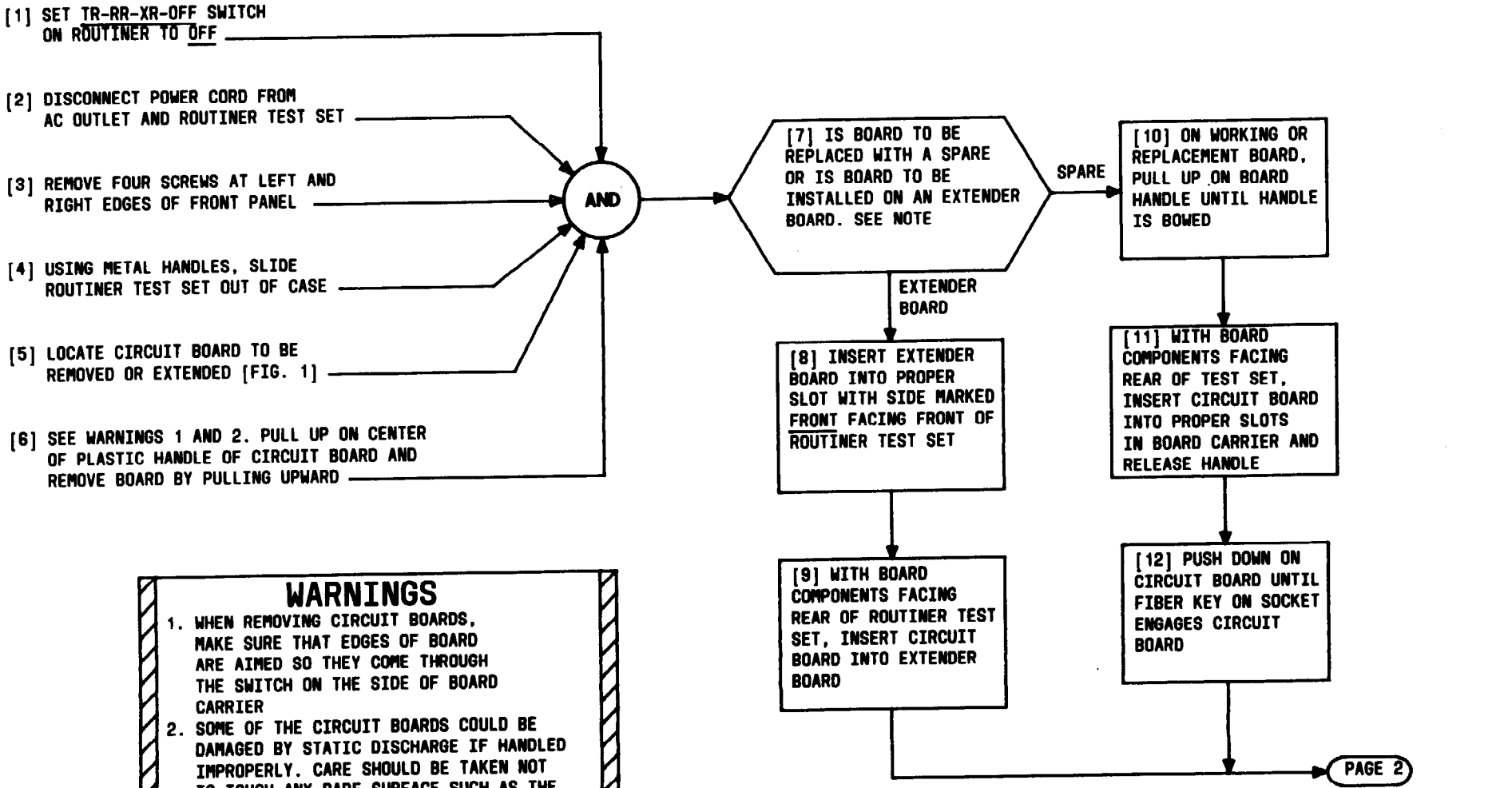
CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT



CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT



CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT



WARNINGS

1. WHEN REMOVING CIRCUIT BOARDS, MAKE SURE THAT EDGES OF BOARD ARE AIMED SO THEY COME THROUGH THE SWITCH ON THE SIDE OF BOARD CARRIER
2. SOME OF THE CIRCUIT BOARDS COULD BE DAMAGED BY STATIC DISCHARGE IF HANDLED IMPROPERLY. CARE SHOULD BE TAKEN NOT TO TOUCH ANY BARE SURFACE SUCH AS THE CONTACT POINTS. IF A CIRCUIT BOARD IS TO BE STORED, IT SHOULD BE PLACED IN A CONDUCTIVE MEDIUM SUCH AS ALUMINUM FOIL.

NOTE
EXTENDER BOARD IS STORED ON SIDE OF CIRCUIT BOARD CARRIER

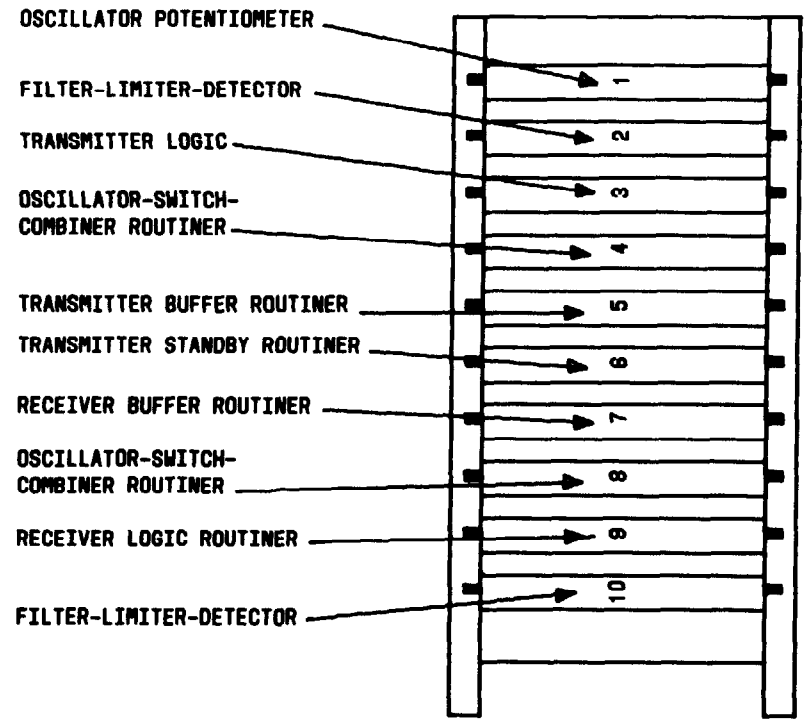
REMOVE AND INSTALL ROUTINER TEST SET CIRCUIT BOARD

[13] WHEN CIRCUIT BOARD TEST IS COMPLETED, IF NECESSARY, REMOVE CIRCUIT AND/OR EXTENDER BOARDS. INSTALL WORKING CIRCUIT BOARD INTO BOARD CARRIER USING STEPS 10 THRU 12. STORE EXTENDER BOARD

[14] USING METAL HANDLES, SLIDE ROUTINER TEST SET INTO CASE

[15] CONNECT CASE AND ROUTINER TEST SET USING FOUR SCREWS REMOVED IN STEP 3

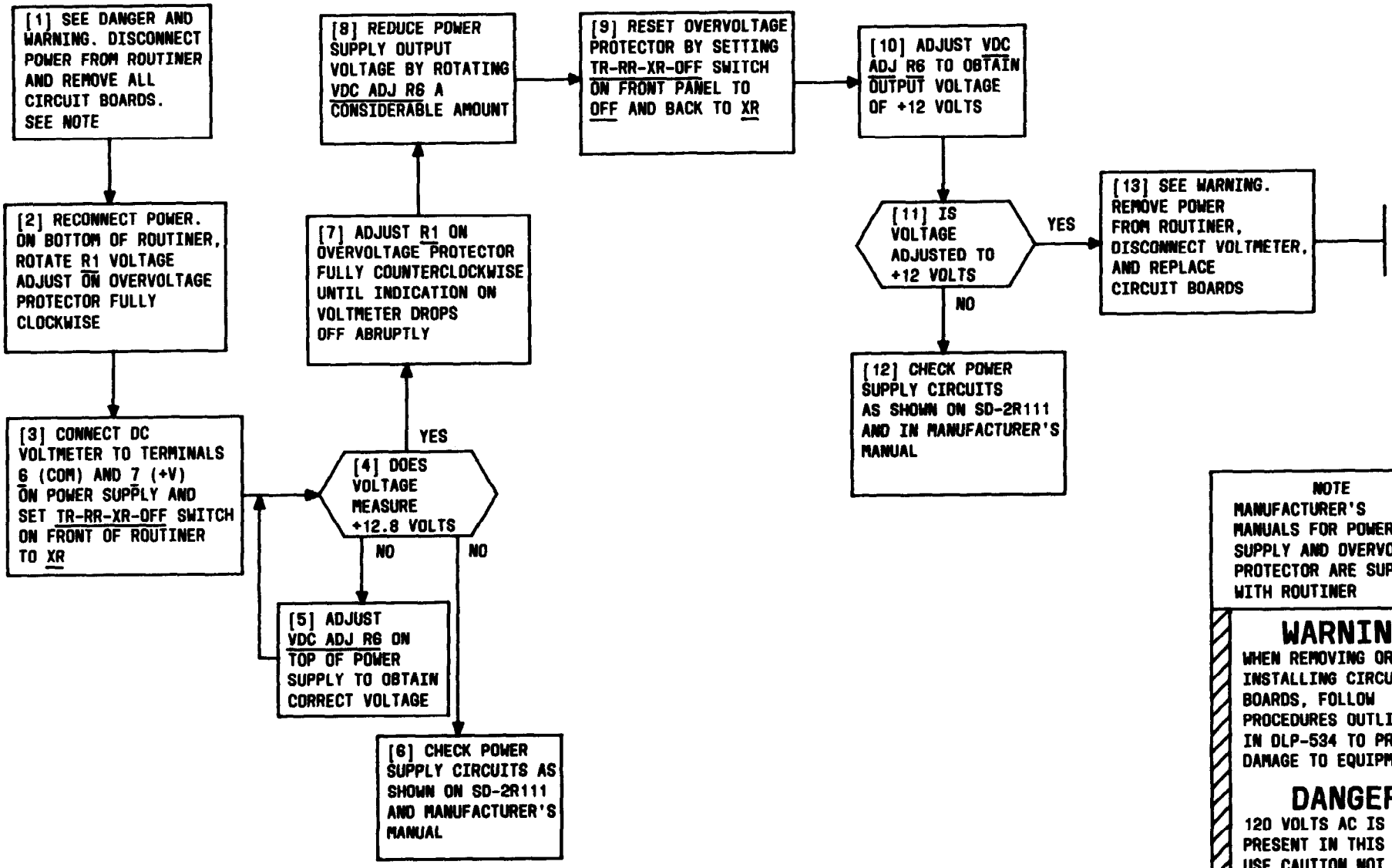
AND



ROUTINER FRONT PANEL
(BACK SIDE)

FIG. 1

REMOVE AND INSTALL ROUTINER TEST SET CIRCUIT BOARD



NOTE
MANUFACTURER'S MANUALS FOR POWER SUPPLY AND OVERVOLTAGE PROTECTOR ARE SUPPLIED WITH ROUTINER

WARNING

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

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ADJUST ROUTINER TEST SET POWER SUPPLY OUTPUT

[1] SEE DANGER 1. REMOVE POWER AND CONNECTIONS FROM ROUTINER, AND REMOVE ROUTINER FROM CASE [DLP-534]

[2] RECONNECT POWER AND SET TR-RR-XR-OFF SWITCH ON FRONT PANEL OF ROUTINER TO TR

[3] CONDITION FREQUENCY COUNTER [DLP-523] AND CONNECT COUNTER INPUT TO OSCT OUT JACK

[4] ON RIGHT MIDDLE SIDE OF ROUTINER, SET 1900, 2100, AND 2900 SWITCHES TO NOR.

AND

ROUTINER CONDITIONED FOR OSCILLATOR FREQUENCY MEASUREMENT

[5] SEE TABLE A AND FIG. 1. PERFORM STEPS 6 THRU 47 TO MEASURE FREQUENCY AND MAKE ADJUSTMENTS AS REQUIRED. IF TROUBLE IS ENCOUNTERED, CONTINUE TO NEXT STEP

PAGE 2

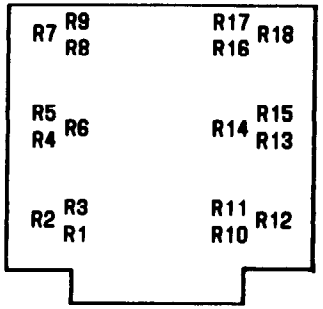

FIG. 1 - OSCILLATOR POTENTIOMETER BOARD

TABLE A - OSCILLATOR ADJUSTMENTS

POTENTIOMETER	FREQUENCY *	POTENTIOMETER	FREQUENCY
R1	2900 (T) L	R10	1900 (T) L
R2	2900 (T) NOR.	R11	1900 (T) H
R3	2900 (T) H	R12	1900 (T) NOR.
R4	2900 (R) L	R13	2100 (R) L
R5	2900 (R) NOR.	R14	2100 (R) NOR.
R6	2900 (R) H	R15	2100 (R) H
R7	2100 (T) NOR.	R16	1900 (R) L
R8	2100 (T) L	R17	1900 (R) H
R9	2100 (T) H	R18	1900 (R) NOR.

* (T) TRANSMITTER SIDE
(R) RECEIVER SIDE

DANGER 1
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

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ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

[6] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[7] OBSERVE FREQUENCY COUNTER AND ADJUST R12 FOR AN INDICATION OF 1900 HZ AND RELEASE 1900 ON SWITCH

[8] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[9] OBSERVE FREQUENCY COUNTER AND ADJUST R7 FOR AN INDICATION OF 2100 HZ AND RELEASE 2100 ON SWITCH

[10] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[11] OBSERVE FREQUENCY COUNTER AND ADJUST R2 FOR AN INDICATION OF 2900 HZ AND RELEASE 2900 ON SWITCH

[12] ON RIGHT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE L POSITION

[13] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[14] OBSERVE FREQUENCY COUNTER AND ADJUST R10 FOR AN INDICATION OF 1889 HZ AND RELEASE 1900 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

[15] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[16] OBSERVE FREQUENCY COUNTER AND ADJUST R8 FOR AN INDICATION OF 2089 HZ AND RELEASE 2100 ON SWITCH

[17] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[18] OBSERVE FREQUENCY COUNTER AND ADJUST R1 FOR AN INDICATION OF 2886 HZ AND RELEASE 2900 ON SWITCH

[19] ON RIGHT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE H POSITION

[20] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[21] OBSERVE FREQUENCY COUNTER AND ADJUST R11 FOR AN INDICATION OF 1911 HZ AND RELEASE 1900 ON SWITCH

[22] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[23] OBSERVE FREQUENCY COUNTER AND ADJUST R9 FOR AN INDICATION OF 2111 HZ AND RELEASE 2100 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

[24] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD THE 2900 ON SWITCH

[25] OBSERVE FREQUENCY COUNTER AND ADJUST R3 FOR AN INDICATION OF 2914 HZ AND RELEASE THE 2900 ON SWITCH

[26] DISCONNECT FREQUENCY COUNTER FROM OSCT OUT JACK AND CONNECT FREQUENCY COUNTER TO OSCR OUT JACK

[27] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO NOR POSITION

[28] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[29] OBSERVE FREQUENCY COUNTER AND ADJUST R18 FOR AN INDICATION OF 1900 HZ AND RELEASE 1900 ON SWITCH

[30] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[31] OBSERVE FREQUENCY COUNTER AND ADJUST R14 FOR AN INDICATION OF 2100 HZ AND RELEASE 2100 ON SWITCH

[32] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[33] OBSERVE FREQUENCY COUNTER AND ADJUST R5 FOR AN INDICATION OF 2900 HZ AND RELEASE 2900 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

[34] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE L POSITION

[35] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[36] OBSERVE FREQUENCY COUNTER AND ADJUST R16 FOR AN INDICATION OF 1889 HZ AND RELEASE 1900 ON SWITCH

[37] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[38] OBSERVE FREQUENCY COUNTER AND ADJUST R13 FOR AN INDICATION OF 2089 HZ AND RELEASE 2100 ON SWITCH

[39] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[40] OBSERVE FREQUENCY COUNTER AND ADJUST R4 FOR AN INDICATION OF 2886 HZ AND RELEASE 2900 ON SWITCH

[41] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO H POSITION

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

[42] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

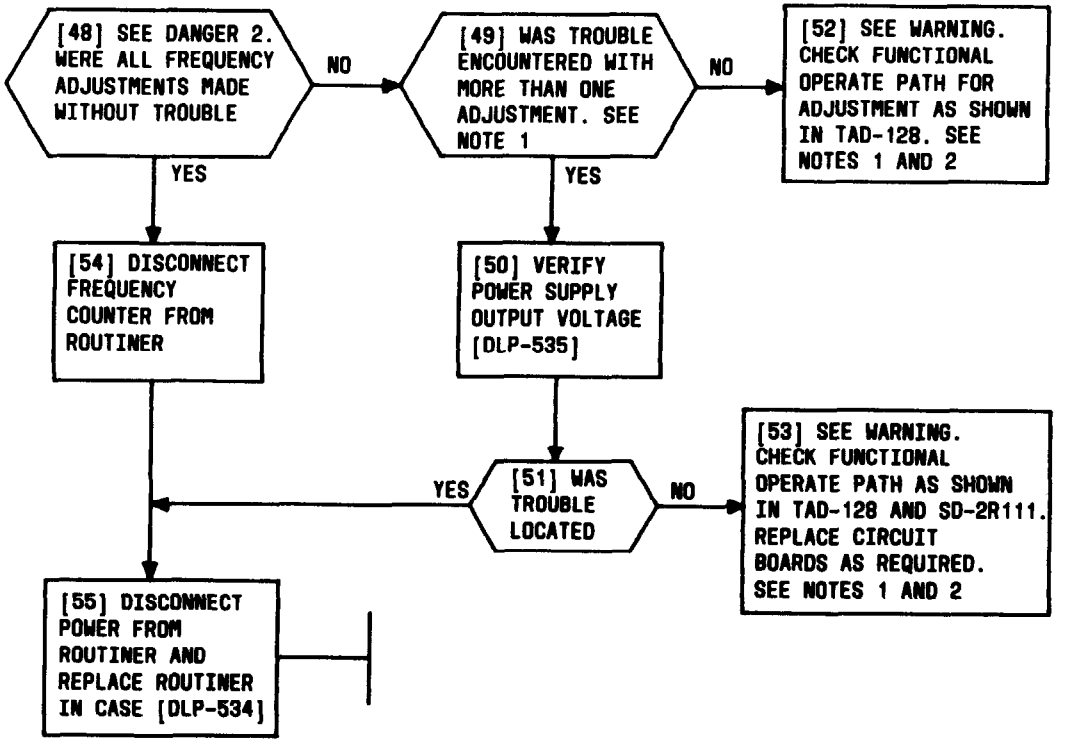
[43] OBSERVE FREQUENCY COUNTER AND ADJUST R17 FOR AN INDICATION OF 1911 HZ AND RELEASE 1900 ON SWITCH

[44] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

[45] OBSERVE FREQUENCY COUNTER AND ADJUST R15 FOR AN INDICATION OF 2111 HZ AND RELEASE 2100 ON SWITCH

[46] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[47] OBSERVE FREQUENCY COUNTER AND ADJUST R6 FOR AN INDICATION OF 2914 HZ AND RELEASE 2900 ON SWITCH



NOTES

1. PARTICULAR ATTENTION SHOULD BE GIVEN TO FAULTY AND INTERMITTENT SWITCH CONTACTS
2. WHEN OSCILLATOR POTENTIOMETER OR OSCILLATOR-SWITCH-COMBINER BOARDS ARE REPLACED, ALL ADJUSTMENTS ON THIS PROCEDURE MUST BE REPEATED AND DLP-537 MUST BE PERFORMED

WARNING

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER 2

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

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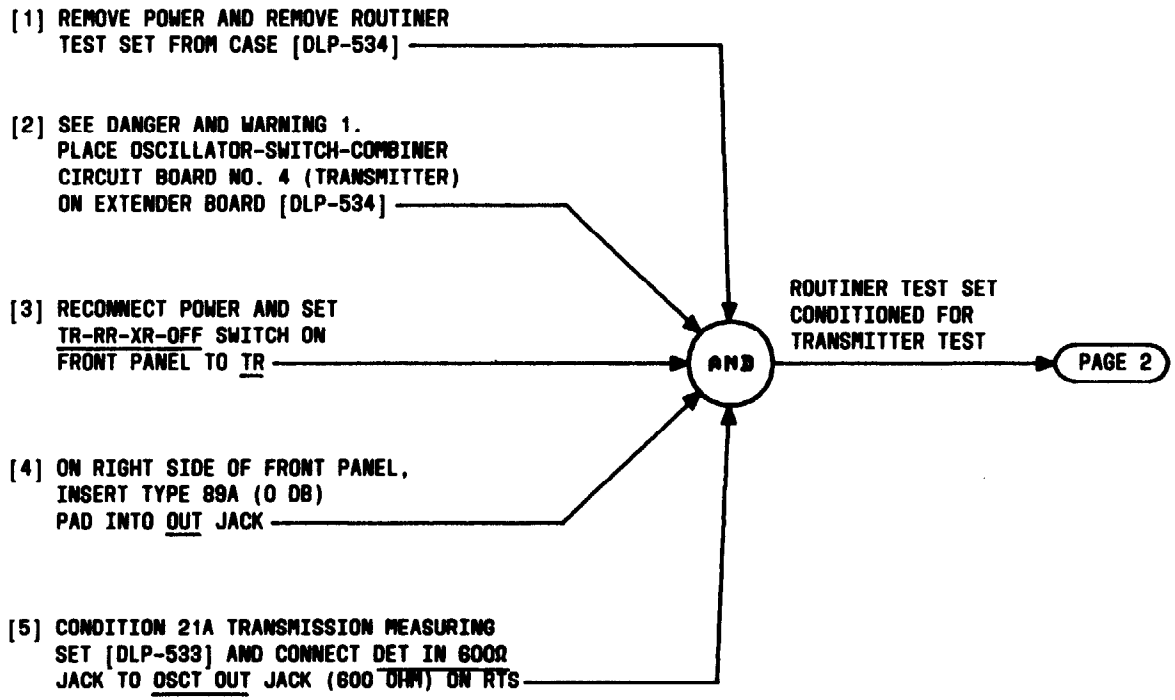
ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

ADJUST ROUTINER TEST SET OUTPUT LEVELS

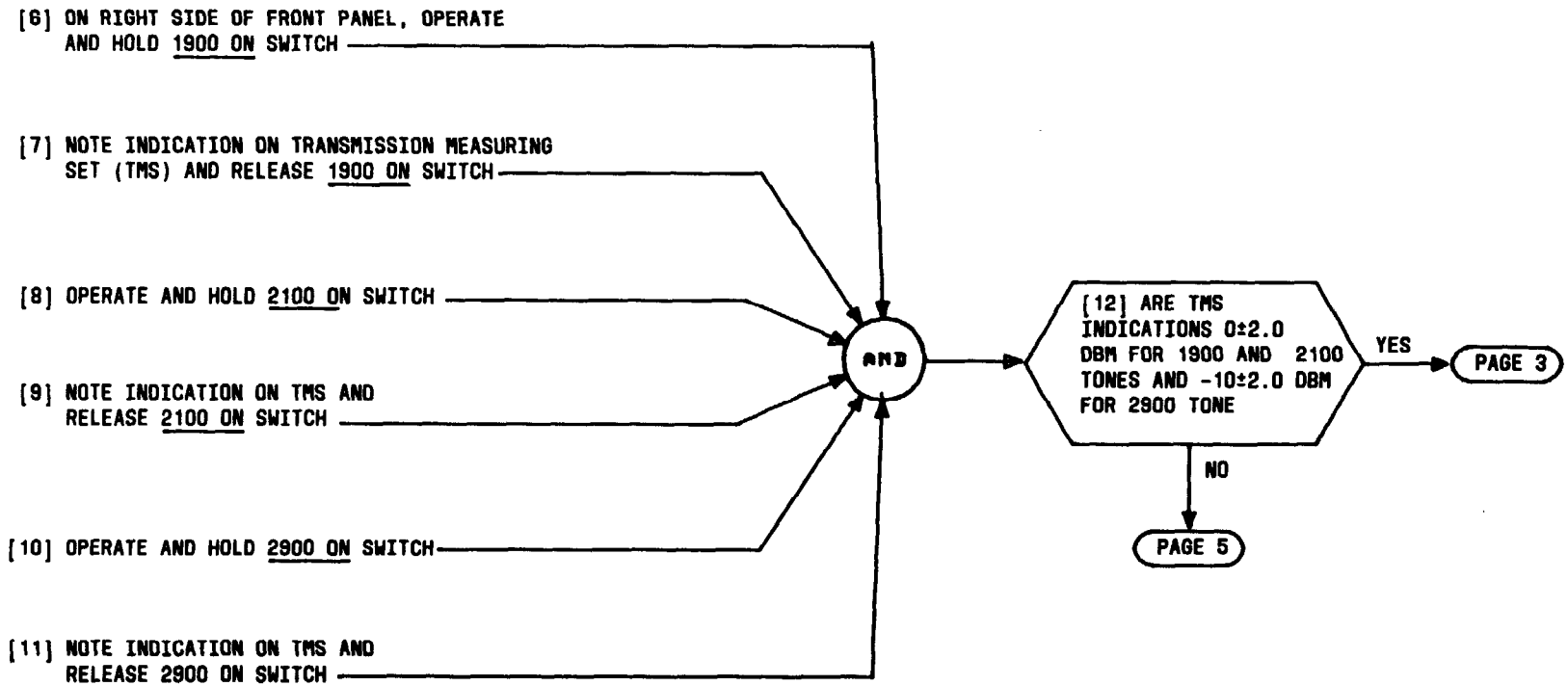


WARNING 1

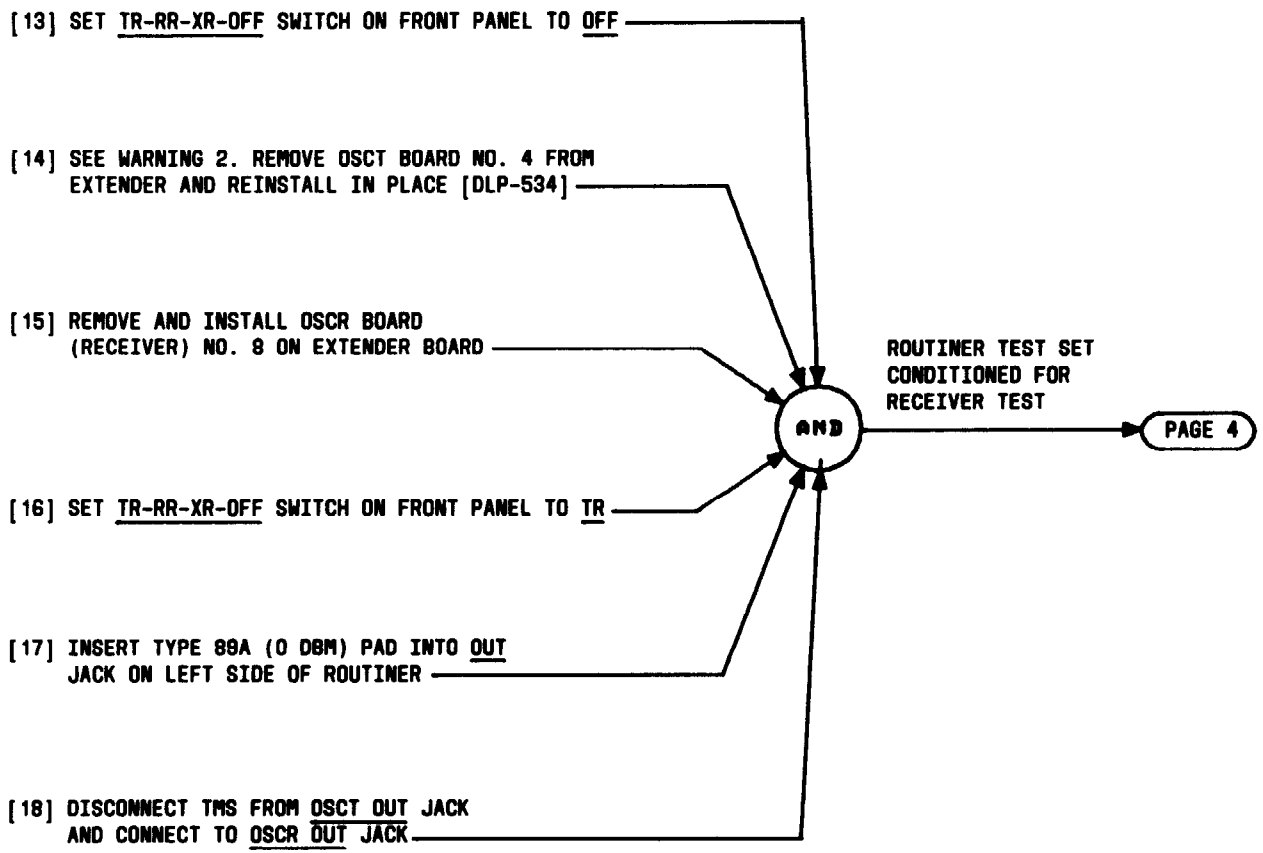
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

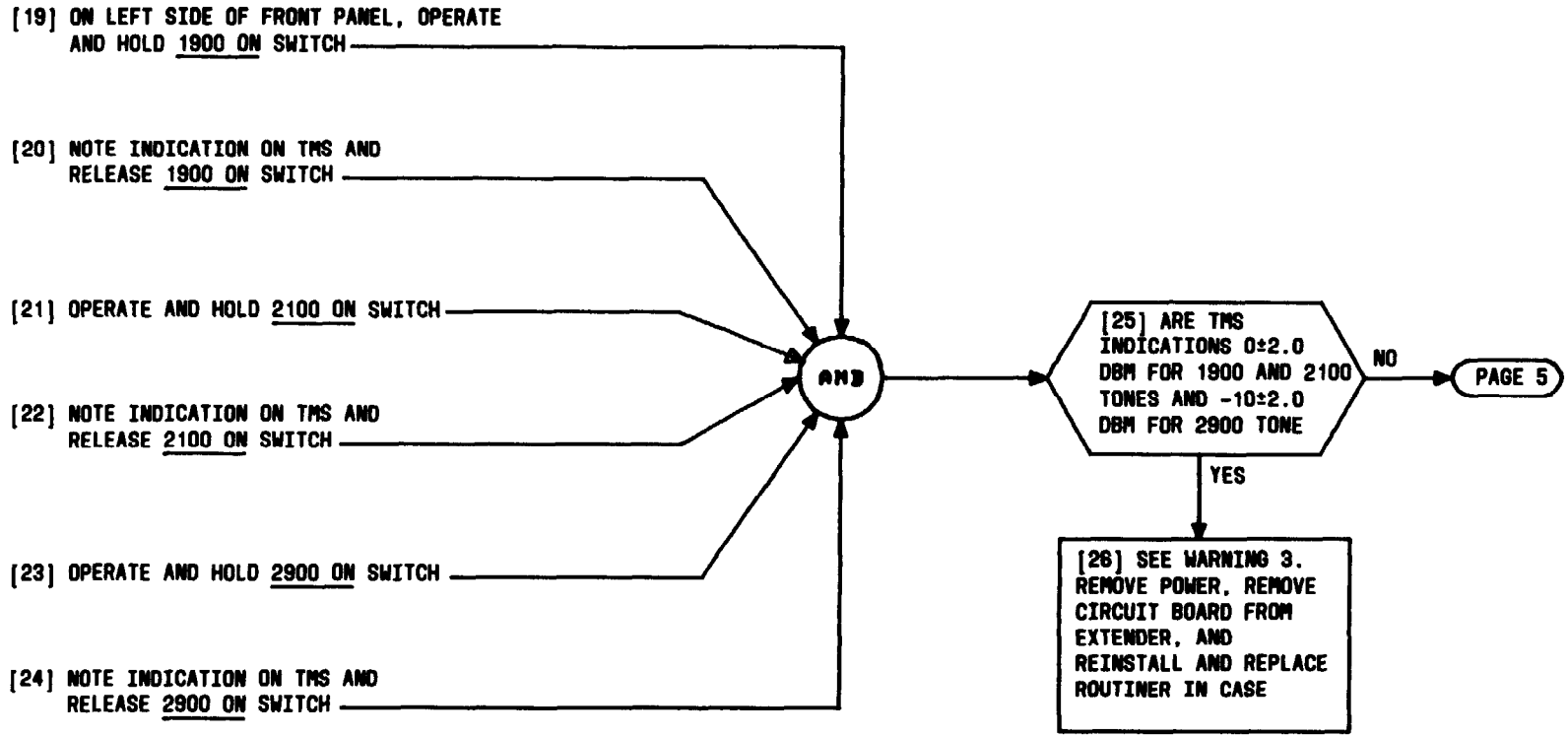


ADJUST ROUTINER TEST SET OUTPUT LEVELS



WARNING 2
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

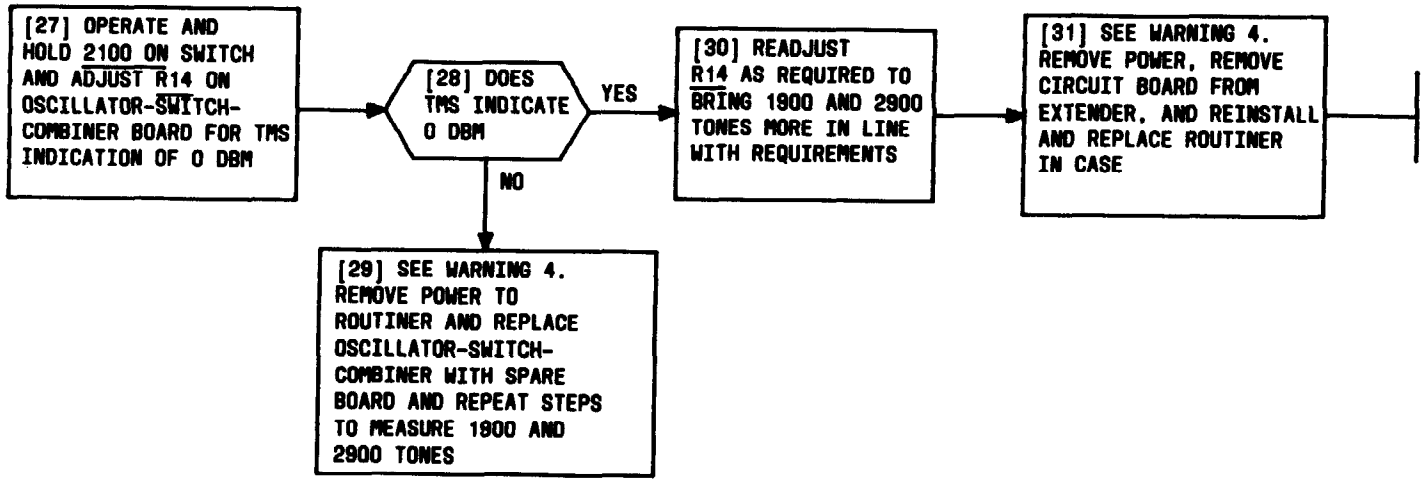
ADJUST ROUTINER TEST SET OUTPUT LEVELS



WARNING 3

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

ADJUST ROUTINER TEST SET OUTPUT LEVELS



WARNING 4
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

ADJUST ROUTINER TEST SET OUTPUT LEVELS

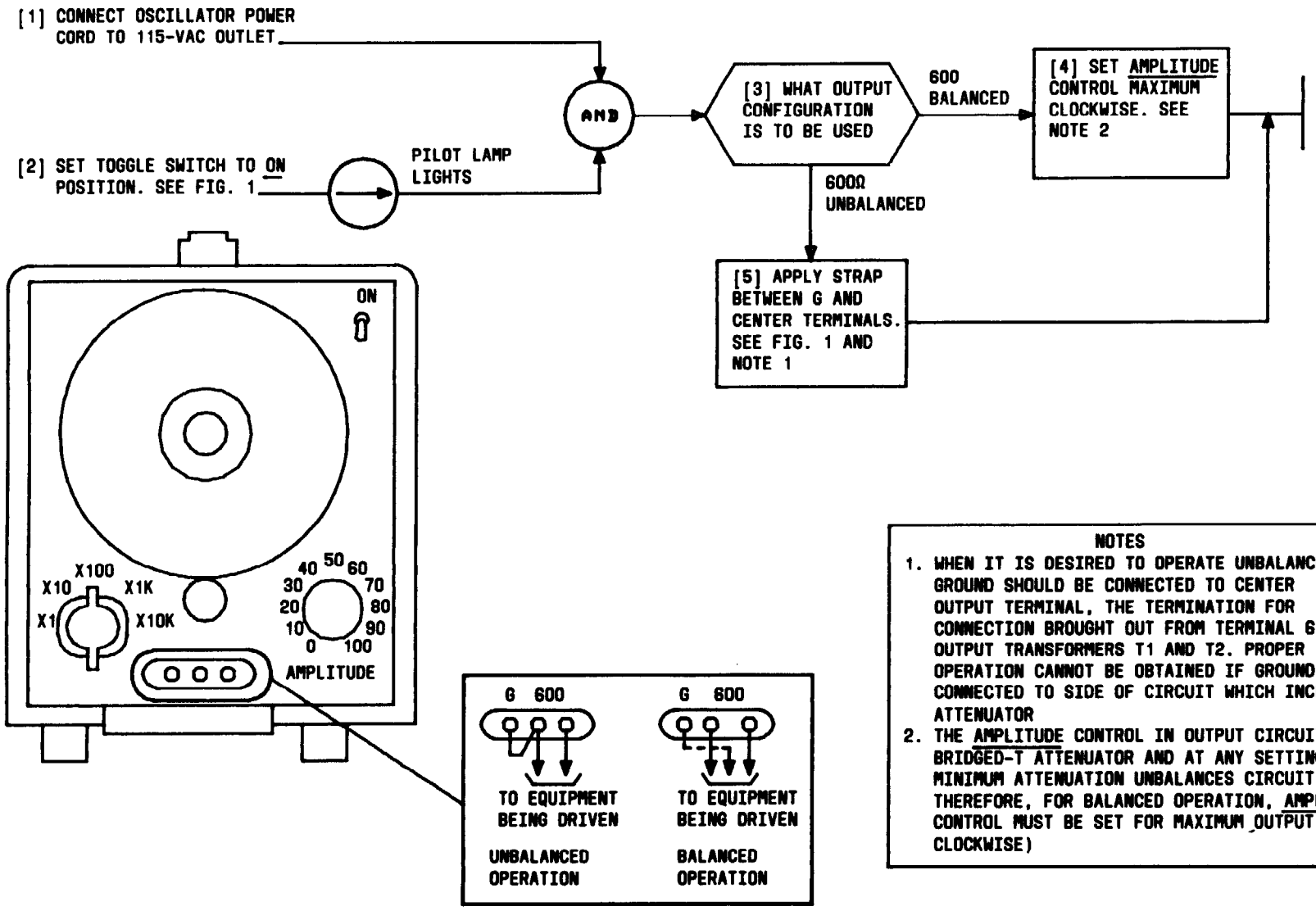


FIG. 1

NOTES

1. WHEN IT IS DESIRED TO OPERATE UNBALANCED, GROUND SHOULD BE CONNECTED TO CENTER OUTPUT TERMINAL, THE TERMINATION FOR CONNECTION BROUGHT OUT FROM TERMINAL G OF OUTPUT TRANSFORMERS T1 AND T2. PROPER OPERATION CANNOT BE OBTAINED IF GROUND IS CONNECTED TO SIDE OF CIRCUIT WHICH INCLUDES ATTENUATOR
2. THE AMPLITUDE CONTROL IN OUTPUT CIRCUIT IS A BRIDGED-T ATTENUATOR AND AT ANY SETTING EXCEPT MINIMUM ATTENUATION UNBALANCES CIRCUIT. THEREFORE, FOR BALANCED OPERATION, AMPLITUDE CONTROL MUST BE SET FOR MAXIMUM OUTPUT (FULLY CLOCKWISE)

CONDITION HP 200CD WIDE RANGE OSCILLATOR FOR TEST

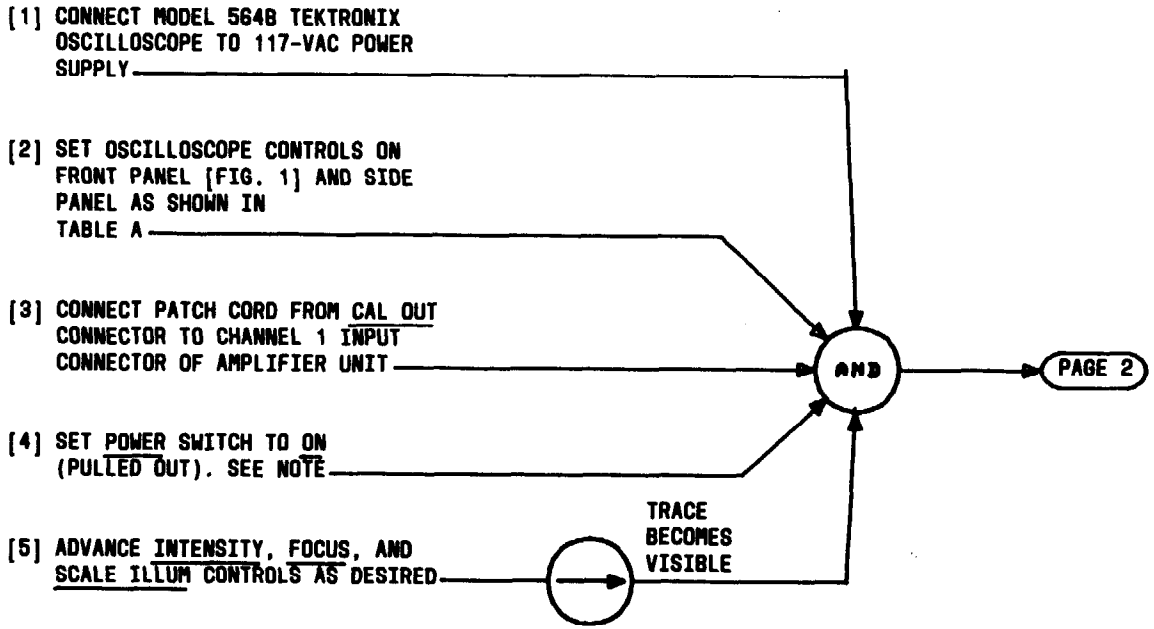
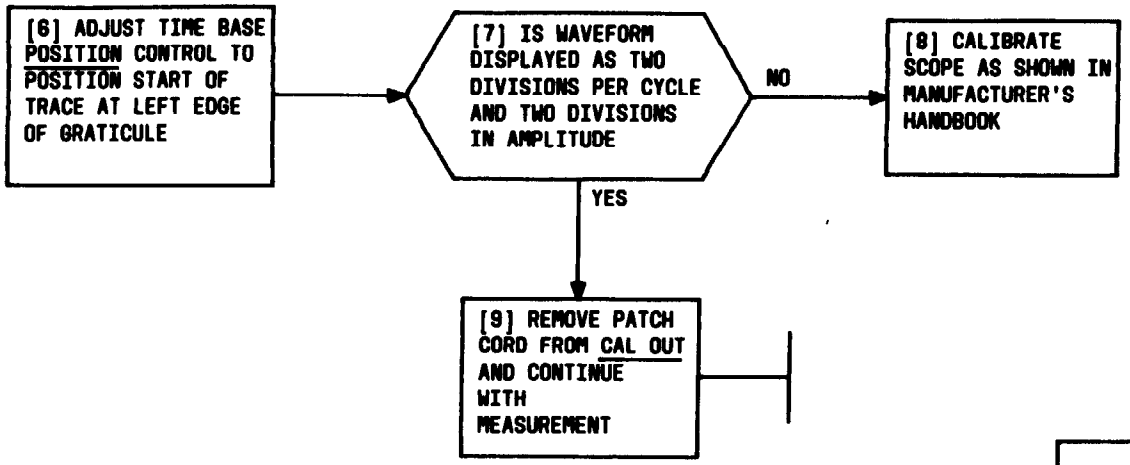


TABLE A

FRONT PANEL CONTROLS			FRONT PANEL CONTROLS		
CONTROL TYPE	CONTROL	SETTING	CONTROL TYPE	CONTROL	SETTING
CRT CONTROLS	INTENSITY	COUNTERCLOCKWISE	TIME-BASE UNIT (FOR EXAMPLE, TYPE 3B3)	TIME/DIV	.5 MS
	FOCUS	MIDRANGE		VARIABLE (TIME/DIV)	CALIBRATED
	SCALE ILLUM	COUNTERCLOCKWISE		MAGNIFIER	OFF
	CALIBRATOR	4V		MODE	NORMAL
	STORE (BOTH)	NON-STORE (OUT)		NORMAL-SINGLE SWEEP	NORMAL
	ENHANCE (BOTH)	OFF (OUT)		LEVEL	CLOCKWISE (FREE RUN)
	LEVEL	COUNTERCLOCKWISE		TRIGGERING SOURCE	INTERNAL
	CRT CATHODE SELECTOR (REAR PANEL)	NORM		SLOPE	+
				COUPLING	AUTO
AMPLIFIER UNIT (FOR EXAMPLE, TYPE 3A6)	POSITION	CENTERED			
	MODE	NORMAL (CHANNEL 1)			
	VOLTS/DIV	2			
	VARIABLE (VOLTS/DIV)	CALIBRATED			
	INPUT COUPLING	DC			

NOTE
ALLOW APPROXIMATELY 2 MINUTES WARM-UP TIME

CONDITION TEKTRONIX 564B OSCILLOSCOPE FOR MEASUREMENT



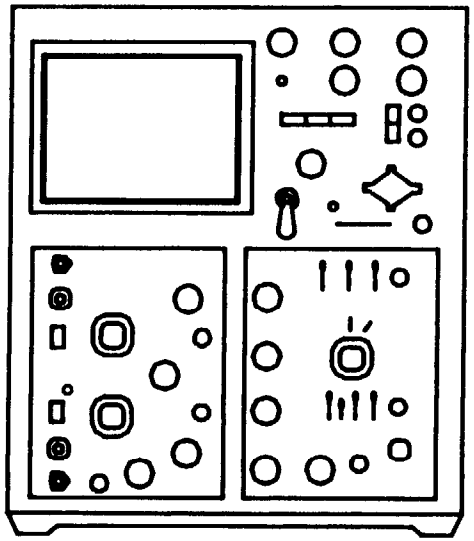
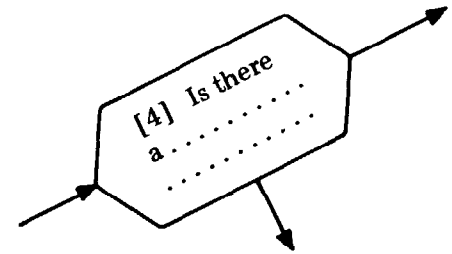


FIG. 1

CONDITION TEKTRONIX 564B OSCILLOSCOPE FOR MEASUREMENT

INDEX



This is a . . . . . .

TASK ORIENTED PRACTICE . . . . . or TOP

The next few pages will tell you how to use this document.

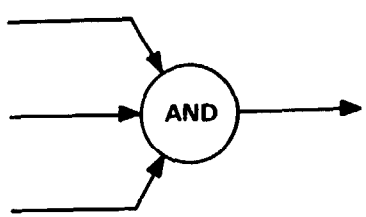
TAP

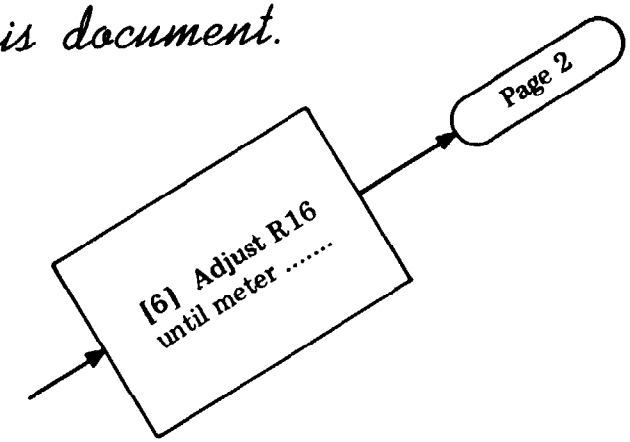
TIL

ATP

[DLP-540]

ATL





This book is called a Task Oriented Practice or a "TOP." It is a type of programmed document — one which gives you step-by-step instructions of how to do a job (or task). A TOP can be a big help in your everyday work, but you must know how to use it correctly. Take a few minutes, say 15 or 20, and study these few pages until you feel you understand how to use a TOP. Taking this time now will very likely save you time and effort later on.

An important thing to remember about TOP is that it contains all the needed instructions to complete a job. If you are doing the job for the first time, you will be directed through each action without having to guess or remember where to find the necessary information. If you are experienced on a particular job, TOP can provide just that information which you may have forgotten.

Almost all of your jobs can be classified into one of four types — *Routine, Acceptance, Company Order,* or *Trouble Clearing.* This is how TOP defines these four work types:

Routine

that work you do as part of a Controlled Maintenance Plan like scheduled cleaning or scheduled tests. Routine work may also include those things you do as a "routine" part of your job like requesting a TTY printout or turning on equipment in the mornings and off in the evenings.

Acceptance

that work you do to verify that equipment is installed properly. Normally this is a test or inspection you perform when Western Electric has completed a new installation or addition. It could also be a test you perform when another group from *your* Company has completed an installation or addition of equipment. Acceptance work, however, is always related to testing or checking newly installed equipment.

Company Order

that work you do in response to one of several different "orders" which may be given to you. Some of the orders you may be familiar with are: Circuit Orders, Service Orders, Traffic Orders, Recent Change Orders, etc. Normally, company order type work is something done to install, establish, change, or discontinue some service offered by the telephone company.

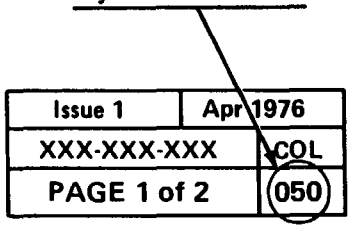
Trouble Clearing

is simply what it says—that work you do to clear and repair troubles in the system. Trouble clearing may be done in answering a customer complaint, responding to some office alarm, an abnormal TTY printout, etc.

Try to fix these four work types firmly in your mind. As you will see, you must classify each job you get in one of these four types before you will be able to look up the instructions in the TOP.

Now glance briefly at the front cover: there are several things which will be useful there. In the upper-right corner is the 9-digit volume number. Near the center is the volume title which tells you something about the contents—such things as the system (or subsystem) name and perhaps the type of jobs included in the volume. Next is a four-line index located in the lower-left corner. This index provides the location of four "lists" which are simply a listing of all the jobs in each of the

four job types. If a nine-digit (XXX-XXX-XXX) number appears on the front cover index, that particular list is located in another volume of the TOP. A three-digit number on the line means that the list is in this volume, and the list can be located by searching the lower-right corner of each page for the *referenced number*.



These numbers will always be arranged in numerical order; however, all numbers in the sequence will not be used.

Some TOP volumes may cover only a small part of a system, so on the inside of each front cover you will find a documentation plan. This plan will give a bird's-eye view of all the volumes in the TOP and can help you quickly determine the correct volume.

Locate one of the TOP volumes which contains a Company Order List, and note from the front cover that this list is numbered "050." Turn to that number in the TOP.

This Company Order List (COL) is simply a listing of all the Circuit Order jobs, Service Order jobs, etc, that may be done on this system. Once you know the job you have to do, use the lists as an index to find the number of the "procedure" which tells you *what to do* to complete that job.

Now pick one of these jobs from the list which references to a COP (Company Order Procedure), and using the referenced number, locate that procedure in the TOP. Look over this procedure and note that it gives all the items which must be done to complete the job.

The items are numbered and must be completed in that order; however, you may see some lettered (A, B, C...) items in the procedure. These letters are assigned to options or other items which may be done differently because of equipment variations, etc. Look over the following example to get a better idea of what is meant by the numbers (1,2,3...) and letters (A,B,C...) which may be used in the procedure.

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Do the first thing first	DLP-XXX
2	Do the second item next	DLP-XXX
3	Do the following optional items as required by the Company Order or as is required by the system you are working on	
	A. An optional item	DLP-XXX
	B. Another optional item	—
	C. Another optional item which must be done in the sequence below	
	1. First part of Option "C"	DLP-XXX
	2. Last part of Option "C"	DLP-XXX
4	Do the next part of the job	DLP-XXX
5	Do the last part of the job	DLP-XXX

Remember that this procedure tells you *what* to do in order to complete the total job. If you know *how* to do an item in the procedure, you should go ahead and complete it. If you need further information on *how* to do part of the job, then you should turn to the referenced DLP or Detail Level Procedure. When you complete all the steps in the DLP, then you must turn back to the COP or Company Order Procedure to find the next item to be done.

TOP is designed so that you will have to read only what is necessary to get your job done. At any time when you know how to perform all the steps in an item, it is not necessary to look further for the "how to" information—simply complete the item and go on to the next one. This idea, in TOP, is known as "bypassing."

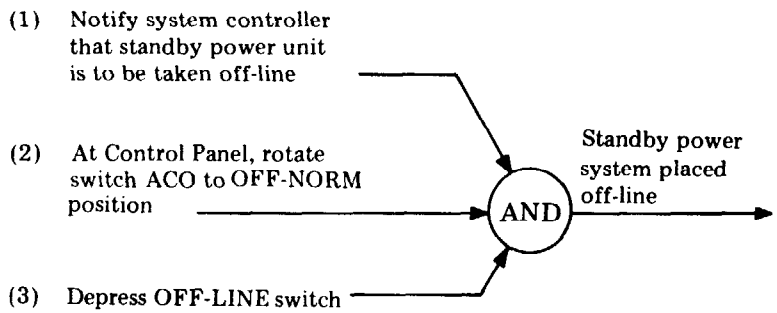
Here are some of the things designed into TOP to help you "bypass" information you may already know:

Summary Statement

A summary statement is used with a DLP (or the flow-charted procedures). It tells you briefly what the procedure does and what type measurement or result can be observed. After reading the summary, you may be able to complete the procedure without reading further. Some shorter DLPs, of course, do not have summary statements.

Result Statement

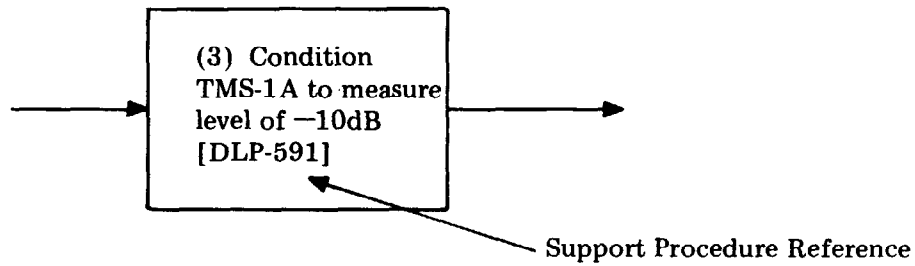
A result statement may be used in a flow-charted procedure along with the "AND" symbol. Here is an example of the "AND" symbol and a *result statement*:



When using a procedure, read the result statement first. If you know how to place standby power system in off-line status, it would be unnecessary to read steps 1, 2, and 3.

Support Procedures

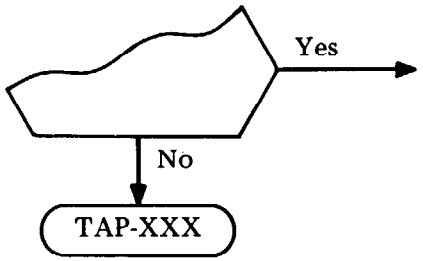
When you see this kind of reference in TOP, it refers to a support procedure.



The support procedure (DLP-591) would provide information about how to operate the TMS-1A. Of course, if you are familiar with the TMS-1A, there is no reason to look up DLP-591.

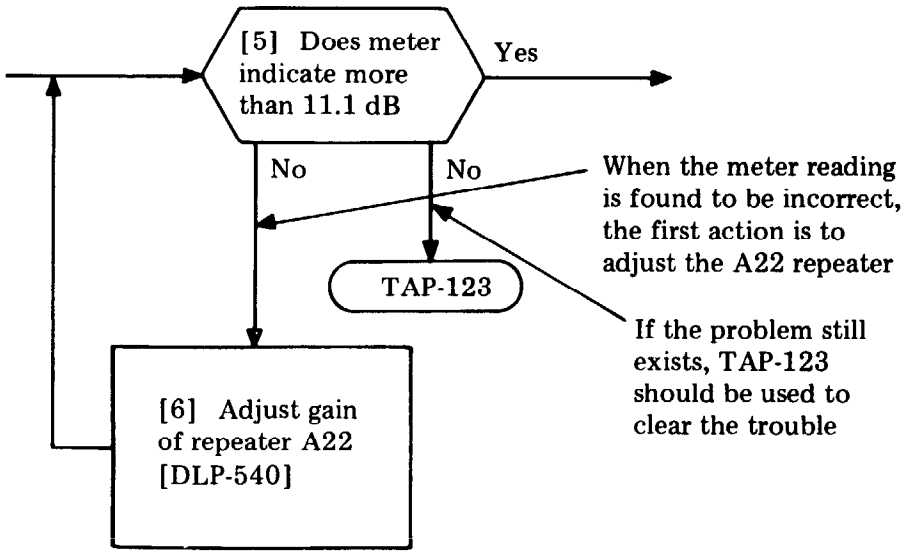
So far, the Company Order type jobs have been the main topic; however, you will find that the Routine and Acceptance categories are used in the same manner. You may come across a couple of new abbreviations in those categories; namely, Acceptance Task Procedure (ATP) and Routine Task Procedure (RTP). These categories are used in the same way that the Company Order Procedure (COP) is used in the Company Order work.

While using TOP, you probably will run across a reference similar to this:



This reference to TAP-XXX indicates that the equipment is not operating correctly and the TAP (Trouble Analysis Procedure) should be used to help you find and repair the trouble.

This idea can be carried further. In some cases, a decision block may have more than one abnormal output. This simply means that you should try more than one solution to the problem. See the example below.



Trouble clearing information in TOP is basically used the same way as the other types. When a trouble report or equipment alarm requires you to troubleshoot a system, the Trouble Indicator List (TIL) is the place to start. This (TIL) is a listing of trouble symptoms or alarms with a reference to a Trouble Analysis Procedure (TAP). The TAP is an aid in analyzing and locating the cause of the trouble. The TAP may reference to other information such as a Trouble Analysis Data (TAD) or an Isolation Diagram (ISD) as an aid in the trouble clearing process.

Any job must always be done safely and it is no different with TOP. Here are three items which you should look for in TOP:

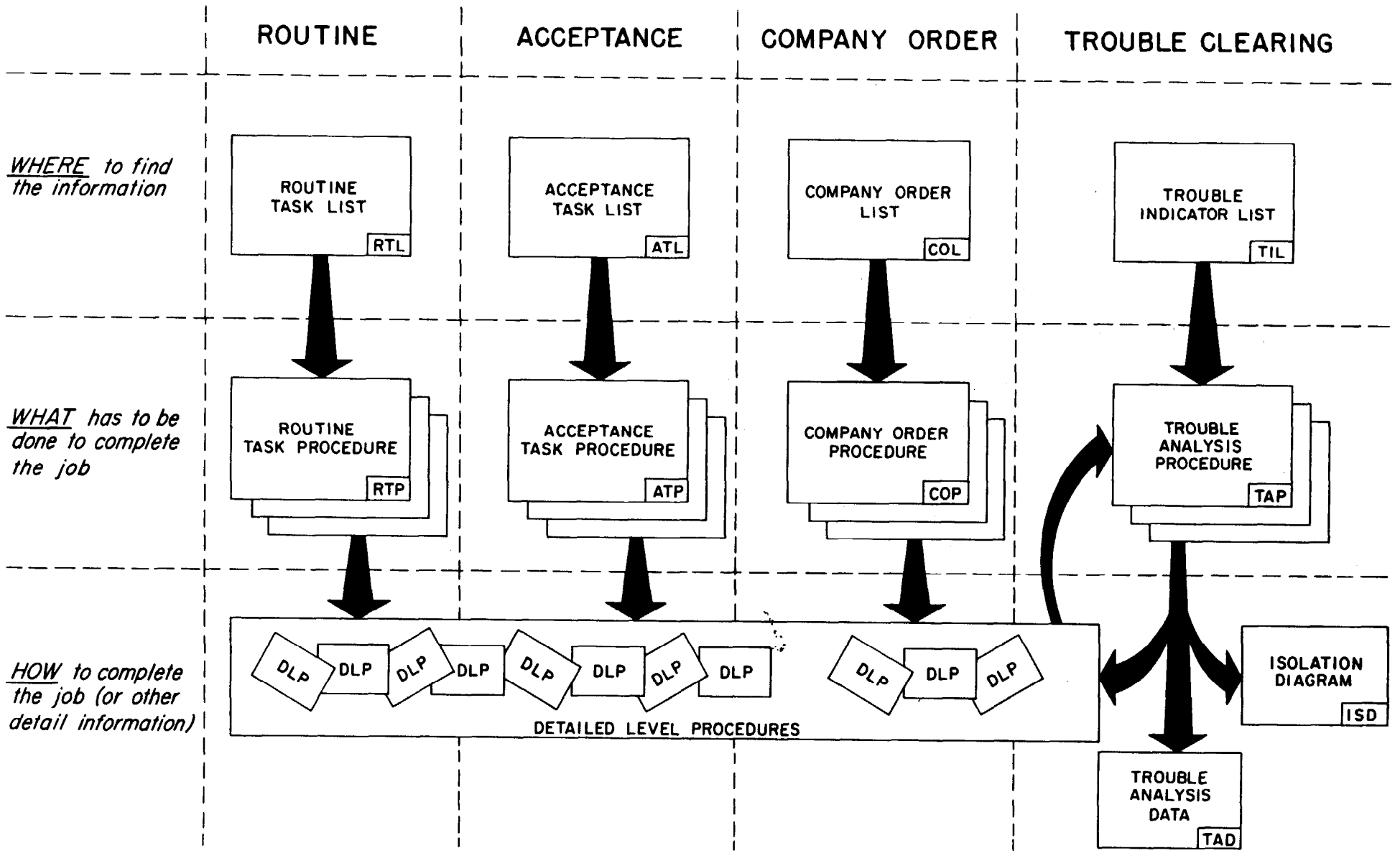
DANGER — *means there is a possibility of personal injury*

CAUTION — *means there is a possibility of service interruption*

WARNING — *means there is a possibility of equipment damage*

The last page of this introductory section is a diagram which shows all the elements used to make up a TOP and basically how they are organized to make a complete document. The diagram may, at first, seem to be complex; but remember, TOP is a programmed document and it always tells you where to find the next bit of information required to do the job. The diagram, however, may be useful later if you need to know the words which DLP, TAP, etc, represent or simply a memory jogger about TOP in general.

While using any TOP, if you find errors, or if a procedure is inadequate or missing, your comments are greatly needed. They may be forwarded by using the standard form E3973 which is available through your Company. Thank you for helping us prepare better documentation.


ROUTINE
ACCEPTANCE
COMPANY ORDER
TROUBLE CLEARING
WHERE to find the information
WHAT has to be done to complete the job
HOW to complete the job (or other detail information)
ROUTINE TASK LIST
RTL
ACCEPTANCE TASK LIST
ATL
COMPANY ORDER LIST
COL
TROUBLE INDICATOR LIST
TIL
ROUTINE TASK PROCEDURE
RTP
ACCEPTANCE TASK PROCEDURE
ATP
COMPANY ORDER PROCEDURE
COP
TROUBLE ANALYSIS PROCEDURE
TAP
DLP
DETAILED LEVEL PROCEDURES
ISOLATION DIAGRAM
ISD
TROUBLE ANALYSIS DATA
TAD