

BELL SYSTEM PRACTICES
AT&TCo Standard

Task Oriented Practice
(TOP)

LT-1B FACILITY CONNECTOR

ANALOG MULTIPLEX TERMINAL EQUIPMENT

NOTICE

Not for use or disclosure outside the
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PURPOSE

- The acceptance procedure for the LT-1B Connector frame is designed to verify that the bay has been installed properly and that the fuse and alarm panel and communication panel (if installed) are operating properly. Since the frame is shipped without plug-in units, the plug-in units are tested as part of the circuit order requiring their installation.

TROUBLE

- Acceptance procedures do not contain any trouble-clearing information. If trouble is encountered or if requirements are not met, contact the responsible installation group.

TEST EQUIPMENT

- All procedures are based on the assumption that any specified test apparatus is functioning properly and is conditioned and connected correctly.

ACCEPTANCE TASKS

- J98736A-1 or J98736B-1 LT-1B Facility Connector Frame
NTP-003

ACCEPTANCE

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DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

	NOTE: Refer Any Problem to WECO Installation Group	-
1	Obtain Support Apparatus Listed Below: <ul style="list-style-type: none"> • Blown Type 70 Fuse • Clip Leads (2 Small Insulated Clip Leads Approximately 12 Inches Long) • Telephone Handset (Required Only if ED-3C660 Communication Panel Installed) 	-
2	Perform Visual Inspection of Frame, Hardware, Cabling, Wiring, and Connectors	DLP-500
3	Inspect Fuse and Alarm Panel for Proper Fusing	DLP-501
4	Test Fuse Alarm Capability	DLP-502
5	If Plug-in Units Are Already Installed in Frame, Perform Item 6B Only.	-
6	Test Operation of Alarm Circuits and Visual Indicators. Audible Alarm Occurrences Depend on Local Alarm Policy. Do A or B, Not Both.	
	<i>WARNING: Plug-in Units Will Be Damaged if They Remain in Frame During Performance of Item 6A.</i>	
	A. Without Plug-in Units Installed	DLP-503
	B. With Plug-in Units Installed	DLP-528
7	If Installed, Test Operation of ED-3C660 Communication Panel	DLP-504

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Obtain Support Apparatus Listed Below (Illustrations of Support Apparatus Are Contained in DLP-529): <ul style="list-style-type: none"> • Ohmmeter With a Resolution of 0.1 Ω • Pin Plugs [KS-19531-L()] (1 Required per Digroup) 	
2	If Not Already Installed, Install and Test Common Carrier Supply Plug-in Units (Condition Alarm Unit and Install Last)	DLP-506
3	Install and Test Carrier Supply 2600-Hz Generators and Switch [Not Required if Entire Frame Is Being Equipped for Common Channel Interoffice Signaling (CCIS)]	DLP-507
4	Condition Two Combine and Split (C&S) Units (Two Required per Digroup)	-
	A. Condition 1030E C&S Unit (Used When Carrier Failure Alarm Not Used)	DLP-521
	B. Condition 1030F C&S Unit (Used When Carrier Failure Alarm Is Used)	DLP-525
5	Condition J98736AB Digital Access Unit-3, If Not Already Installed	DLP-505
<i>CAUTION: If Other Digroup in This Double Digroup Has Been Installed and Is In-Service, Do Not Insert Pin Plug Into Line Interface Unit-3 (LIU-3) LP-() Jack Associated With In-Service Digroup</i>		
6	Install Digroup Common Equipment. Ensure Switches on Alarm Control Unit (ACU) Are Set Properly. Pin Plug(s) Should Be Inserted Into LP-() Jacks on LIU Prior to Installation. Install 282B PCU Last.	DLP-508
7	Test Common Equipment Alarms	DLP-509
8	Store Test Equipment	-
9	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Contact LMX Area and Ensure That Group-To-Group Tests Have Been Conducted on Carrier Facility (if Required) and That Appropriate Group Distributing Frame (GDF) Cross Connects Have Been Installed	-
2	Obtain Support Apparatus Listed Below (Illustrations of Support Apparatus Are Contained in DLP-529): <ul style="list-style-type: none"> • J1C140A Digital Access Time Slot Selector (DATS), List 1, List A; or List 1 Mod A • Two C&S 1030H NET LT-1 Loopback Amplifiers • Noise Measuring Set - Capable of Measuring 26 dBrnc at 600-Ω impedance • P6AA Test Cord • 4P18C Test Cord • 2W22A Test Cord • 52-Type Headset or Equivalent 	
3	Remove Plastic Looping Plug From DAU LT OUT Jack If Not Already Removed	
4	Condition and Install Channel Unit Plug-in Units	DLP-510
5	Connect and Condition DATS for Level Adjustment Test	DLP-512
6	Remove Pin Plug From LIU LP-() Jack for Digroup Being Established (Digroup A or B)	
7	Remove C&S Units From Digroup Being Established	DLP-515
8	Install C&S 1030H LT-1 Loopback Amplifiers Into Combine and Split (C&S) Positions	DLP-515
9	Conduct Loopback Level Adjustment Test	DLP-537
10	Connect and Condition DATS for Loopback Noise Test	DLP-516
11	Conduct Loopback Noise Test	
	A. On Entire Group	DLP-523
	B. On Individual Channels	DLP-527
12	Disconnect and Store Noise Measuring Set	
13	Remove C&S 1030H LT-1 Loopback Amplifiers from Combine and Split (C&S) Positions	DLP-515
14	Replace C&S Units in Correct Shelf Positions	DLP-515

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ESTABLISH CHANNEL(S) IN OUT-OF-SERVICE DIGROUP

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

15	Connect and Condition DATS for Level Adjustment Test	DLP-512
16	Program DATS for Channel Unit Signaling Configuration if any Channels are NOT 2-State	DLP-513
17	Establish Communication With Analog Far-End Office: Request Assistance to Perform Item 18	-
18	Conduct Level Adjustment Test	DLP-514
19	Terminate Communication With Analog Far-End Office	-
20	Disconnect P6AA Test Cord From DAU LT IN and LT OUT Jacks (Remove P6AA Cord From DAU DI IN and DI OUT Jacks Last)	-
21	Disconnect and Store Test Equipment	-
22	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Contact LMX Area and Ensure That Group-To-Group Tests Have Been Conducted on Carrier Facility (if Required) and That Appropriate Group Distributing Frame (GDF) Cross Connects Have Been Installed	-
2	Obtain Support Apparatus Listed Below: <ul style="list-style-type: none"> • J1C140A Digital Access Time Slot Selector (DATS) • P6AA Test Cord • 4P18C Test Cord • 2W22A Test Cord • 52-Type Headset or Equivalent 	DLP-529
3	If Not Already Installed, Install and Test Carrier Supply 2600-Hz Generators and Switch (Required for 2-State or Special Access Signaling)	DLP-507
4	Condition and Install Channel Unit Plug-in Units	DLP-510
5	Connect and Condition DATS for Monitored Level Adjustment Test	DLP-520
6	Program DATS for Channel Unit Signaling Configuration If Any Channels Are NOT 2-State	DLP-513
7	Establish Communication With Analog Far-End Office: Request Assistance to Perform Item 8	-
8	Conduct Monitored Level Adjustment Test on Newly Installed Channel Units	DLP-511
9	Terminate Communication With Analog Far-End Office	-
10	Request VF Test Board Personnel to Conduct End-to-End Noise and Gain Tests If Required	
11	Disconnect and Store All Test Equipment	-
12	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Verify Completion of Facility Order, If Applicable	-
2	Remove Plug-in Units [Assigned to Trunk(s) Being Disconnected]	DLP-515
3	Request Technician in LMX Area to Disconnect LT-1B Connector From Present Group Assignment	-
4	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Ensure Service Has Been Removed From Entire LT-1B Frame	-
2	Obtain Two 1025AT 4-KHZ Generators	-
3	Change 4-KHZ Generators	DLP-518
4	Ensure Office Cabling Has Been Installed Between New Synchronization Source And LT-1B Carrier Supply	-
5	Test 4-KHZ Generators	DLP-522
6	Restore Service to Frame	-

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CONVERT CARRIER SUPPLY FROM 64- TO 512-KHZ SYNCHRONIZATION SOURCE

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DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Determine Group Assignment	-
2	Obtain Following Apparatus: <ul style="list-style-type: none"> • Two 1025AR 100.08-KHZ Generator (GEN) • One 1025AD Group Switch (GR SW) • One 1030F Combine and Split (C&S) Unit 	-
3	Install and Test 100.08-KHZ Generators and Group Switch (If Not Already Installed)	DLP-519
4	Ensure That Service Has Been Removed From Group to Be Converted	-
5	Remove 1030E C&S Unit From Group to Be Converted	DLP-515
6	Condition 1030F C&S Unit	DLP-525
7	Install 1030F C&S Unit Into Shelf Position From Which 1030E C&S Unit Was Removed	DLP-515
8	Restore Service to Group	-
9	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Determine Group Assignment	-
2	Obtain Following Apparatus: • One 1030E Combine and Split (C&S) Unit	-
3	Ensure That Service Has Been Removed From Group to Be Converted	-
4	Remove 1030F C&S Unit From Group to Be Converted	DLP-515
5	Condition 1030E C&S Unit	DLP-521
6	Install 1030E C&S Unit Into Shelf Position From Which 1030F C&S Unit Was Removed	DLP-515
7	Restore Service to Group	-
8	Update Office Records	-

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DISCONNECT CARRIER FAILURE ALARM (CFA) SYSTEM

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Ensure That Service Has Been Removed From Channel to Be Changed	-
2	Remove Channel Unit to Be Changed	DLP-515
3	Disassemble Circuit Module From Channel Unit Printed Wiring Board	DLP-517
4	Condition and Install Channel Unit Plug-in Unit	DLP-510
5	Connect and Condition Digital Access Time Slot Selector (DATS) for Monitored Level Adjustment Test	DLP-520
6	Conduct Monitored Level Adjustment Test	DLP-511
7	Restore Service to Channel	-
8	Update Office Records	-

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Ensure Service Has Been Removed From Entire LT-1B Frame	-
2	Obtain Two 1025U 4-KHZ Generators	-
3	Change 4-KHZ Generators	DLP-518
4	Ensure Office Cabling Has Been Installed Between New Synchronization Source and LT-1B Carrier Supply	-
5	Test 4-KHZ Generators	DLP-522
6	Restore Service to Frame	-

CONVERT CARRIER SUPPLY FROM 512-KHZ TO 64-KHZ SYNCHRONIZATION SOURCE

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Ensure Service Has Been Removed From Double Digroup to Be Converted	-
2	Obtain One 1030J Line Interface Unit-TIC (LIU-TIC) And One J98726AG-2, L2 Syndes Unit (SU)	-
3	Obtain Support Apparatus Listed Below (Illustrations of Support Apparatus Are Contained in DLP-529): <ul style="list-style-type: none"> • J1C140A-1, L1, LA, L2, or L1 Mod A, L2 Digital Access Time Slot Selector (DATS) • P6AA Test Cord • 2W22A Test Cord • P3BH Test Cord ("310 Cord") • Noise Measuring Set - Capable of Measuring 30 dBrc at 600-Ω Impedance • Two C&S 1030H NET Loopback Amplifiers 	
4	Remove J98726AH Line Interface Unit-3 (LIU-3) From Double Digroup Shelf	DLP-515
5	Install LIU-TIC and SU Into Double Digroup	DLP-530
6	Remove J98736AB Digital Access Unit-3 (DAU-3) From Double Digroup Shelf	-
7	Condition DAU-3 for TIC Operation and Note Position of TIMING Switch for Resetting per Item 23	DLP-532
8	Reinstall DAU-3 Into Double Digroup Shelf	-
9	Remove Four 1030E or 1030F Combine and Split (C&S) Units From Digroup A and Digroup B	-
10	Install Two 1030H Loopback Amplifiers Into Digroup A C&S Positions	-
11	Connect and Condition DATS for TIC Level Adjustment Test	DLP-533
12	At DATS keypad, Enter C-3-D	
13	Conduct TIC Loopback Transmission Test on Digroup A	DLP-534
14	Remove Two 1030H Loopback Amplifiers From Digroup A C&S Positions and Reinstall Into Digroup B C&S Positions	-
15	At DATS Keypad, Enter C-4-D	
16	Conduct TIC Loopback Transmission Test on Digroup B	DLP-534
17	Connect and Condition DATS for TIC Loopback Noise Test	DLP-535

CONVERT DOUBLE DIGROUP TO TIC OPERATION

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

18	At DATS Keypad, Enter C-4-D	
19	Conduct T1C Loopback Noise Test on Digroup B	DLP-536
20	Remove Two 1030H Loopback Amplifiers From Digroup B C&S Positions and Reinstall Into Digroup A C&S Positions	-
21	At DATS Keypad, Enter C-3-D	-
22	Conduct T1C Loopback Noise Test on Digroup A	DLP-536
23	At DAU-3 , Reset TIMING Switch to Position Noted in Item 7	-
24	Remove Two 1030H Loopback Amplifiers From Digroup A C&S Positions	-
25	Reinstall Four 1030E or 1030F C&S Units Into Digroup A and Digroup B	-
26	Disconnect and Store Test Equipment	-
27	Restore Service to Double Digroup	-
28	Update Office Records	-

CONVERT DOUBLE DIGROUP TO T1C OPERATION

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	From Office Records, Determine Which Digroups Are Connected to Digital Access Cross-Connect System	-
2	If Only One Digroup of a Double Digroup Is Connected to DACS, the Remaining Digroup CANNOT Be Connected to a Digital System Requiring Loop Timing	-
3	Remove Service From Entire Double Digroup	-
4	Condition DAU-3 for Operation With DACS	DLP-531
5	Restore Service to Double Digroup	-
6	Update Office Records	-

CONDITION LT-1B DIGROUP FOR OPERATION WITH DIGITAL ACCESS CROSS-CONNECT SYSTEM (DACs)

DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

1	Contact LMX Area and Ensure That Group-To-Group Tests Have Been Conducted on Carrier Facility (if Required) and That Appropriate Group Distributing Frame (GDF) Cross Connects Have Been Installed	-
2	Obtain Support Apparatus Listed Below (Illustrations of Support Apparatus Are Contained in DLP-529): <ul style="list-style-type: none"> • J1C140A Digital Access Time Slot Selector (DATS), List 1, List A; or List 1 Mod A • Ohmmeter With A Resolution of 0.1Ω • Two C&S 1030H NET LT-1 Loopback Amplifiers • Noise Measuring Set - Capable of Measuring 30 dBrc at 600-Ω Impedance • P6AA Test Cord • 4P18C Test Cord • 2W22A Test Cord • Pin Plug [KS-19531-L()] (1 Required) 	
3	If Not Already Installed, Install and Test Common Carrier Supply Plug-in Units (Condition Alarm Unit and Install Last)	DLP-506
4	Install and Test Carrier Supply 2600-Hz Generators and Switch [Not Required If Entire Frame Is Being Equipped for Common Channel Interoffice Signaling (CCIS)]	DLP-507
5	Condition Combine and Split (C&S) Units (Two Required per Digroup)	-
	A. Condition 1030E C&S Unit (Used When Carrier Failure Alarm Not Used)	DLP-521
	B. Condition 1030F C&S Unit (Used When Carrier Failure Alarm Is Used)	DLP-525
6	Condition DAU-3 for TIC Operation and Note Position of TIMING Switch for Resetting per Item 27	DLP-532
7	Install Digroup Common Equipment. (Two Complete Sets For Double Digroup.) Ensure Switches on Alarm Control Unit (ACU) Are Set Properly. Pin Plug Should Be Inserted Into LP Jack on LIU Prior to Installation. Install 282B PWR UNIT Last.	DLP-508
8	Test Common Equipment Alarms	DLP-509
9	Condition and Install Channel Plug-in Units	DLP-510
10	Connect and Condition DATS for TIC Level Adjustment Test	DLP-533

ESTABLISH TIC DIGROUP

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DO THE ITEMS BELOW IN THE ORDER LISTED FOR DETAILS, GO TO

11	Program DATS for Channel Unit Signaling Configuration if Any Channels Are NOT 2-State	DLP-513
12	Remove Pin Plug From LIU LP Jack	-
13	Establish Communication With Analog Far-End Office: Request Assistance to Perform Items 15 and 17	-
14	At DATS Keypad, Enter C-3-D	-
15	Conduct Level Adjustment Test on Digroup A	DLP-514
16	At DATS Keypad, Enter C-4-D	-
17	Conduct Level Adjustment Test on Digroup B	DLP-514
18	Terminate Communication With Analog Far-End Office	-
19	Connect and Condition DATS for TIC Loopback Noise Test	DLP-535
20	Remove Four C&S Units From Digroup A and Digroup B	DLP-515
21	Install Two 1030H Loopback Amplifiers Into Digroup A C&S Positions	-
22	At DATS Keypad, Enter C-3-D	-
23	Conduct TIC Loopback Noise Test on Digroup A	DLP-536
24	Remove Two 1030H Loopback Amplifiers From Digroup A C&S Positions And Reinstall Into Digroup B C&S Positions	-
25	At DATS Keypad, Enter C-4-D	-
26	Conduct TIC Loopback Noise Test On Digroup B	DLP-536
27	At DAU-3, Reset TIMING Switch to Position Noted in Item 6	-
28	Remove Two 1030H Loopback Amplifiers From Digroup B C&S Positions	-
29	Reinstall Four 1030E or 1030F C&S Units Into Digroup A and Digroup B	-
30	Disconnect and Store Test Equipment	-
31	Update Office Records	-

ESTABLISH TIC DIGROUP

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This TOP practice is structured on the following basis:

OVERALL STRUCTURE

- All procedures are designed to be used on a programmed-logic basis; therefore, any attempt to use procedures by other than the prescribed method of entry may cause erroneous test results and operational troubles

ALARMS

- In the event of trouble, all alarms should be cleared first. Then, if trouble remains, it should be cleared in accordance with indicated procedures
- When major and minor alarms occur simultaneously, the major alarm should be cleared first
- Some panel lamps that light during alarm conditions may not be significant in clearing trouble; thus, they may not be listed in the trouble-locating procedures

TROUBLE-LOCATION SEQUENCE

- Trouble-location procedures are structured so that applicable adjustments are made first. Then, if necessary, all plug-in units that may be causing trouble are replaced (one at a time). If this does not clear the trouble, associated wiring and components (external to the plug-in units) are checked
- Aid in locating trouble in wiring and associated equipment not covered in this practice may be obtained by use of BSPs, SDs, etc, as provided locally

MAINTENANCE PHILOSOPHY

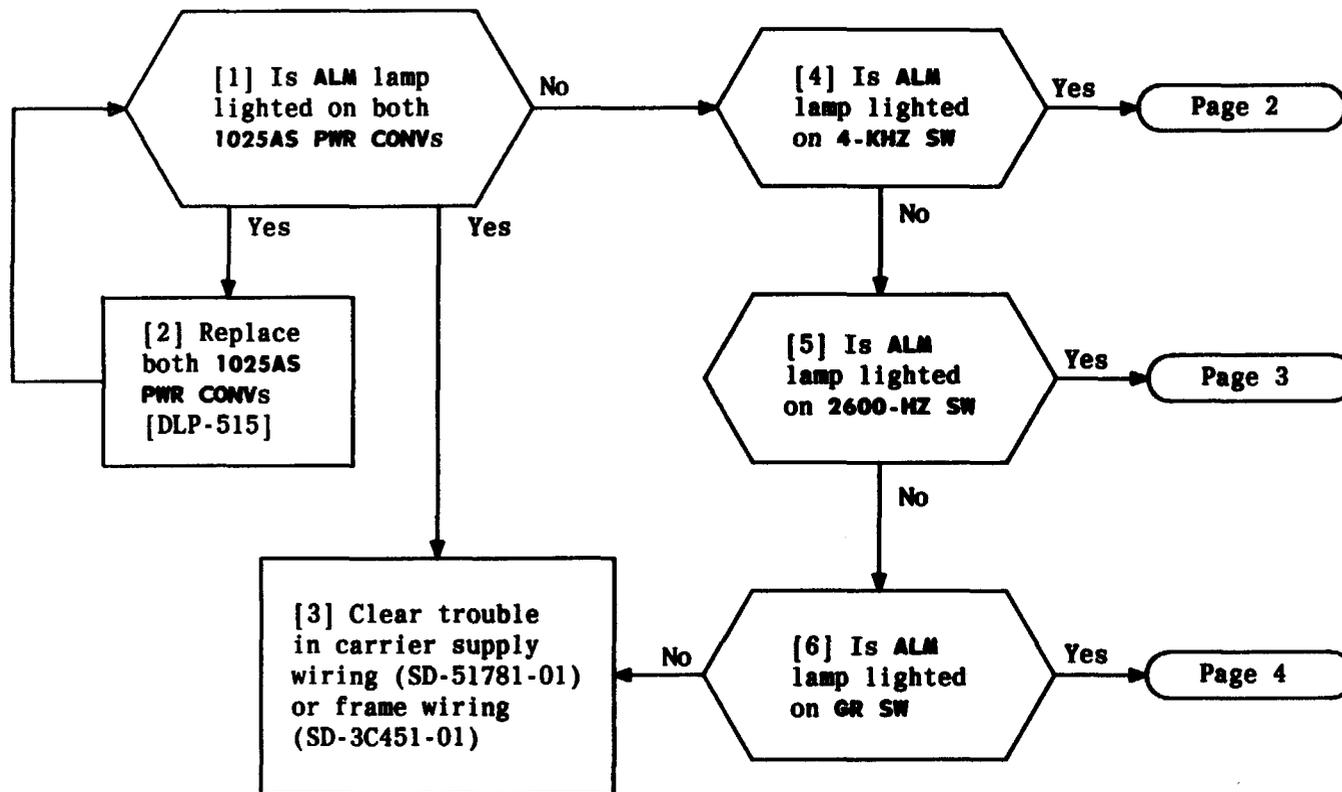
PLUG-IN UNITS

- If a plug-in unit is replaced with a spare in an attempt to correct a trouble, and the spare does not correct the trouble, the original plug-in unit should be reinserted
- If a plug-in unit must be replaced with a spare, when the original plug-in unit had been conditioned and adjusted according to prior procedures, those conditioning and adjusting procedures must also be performed on the spare plug-in unit before continuing with a procedure requiring a plug-in unit replacement.
- If a plug-in unit is replaced with a spare and the spare does correct the trouble, all tests that preceded the test in which the replacement was made should be repeated for any equipment that may be affected by the replacement unit
- Defective plug-in units will normally be sent to a service center for repair

TEST EQUIPMENT

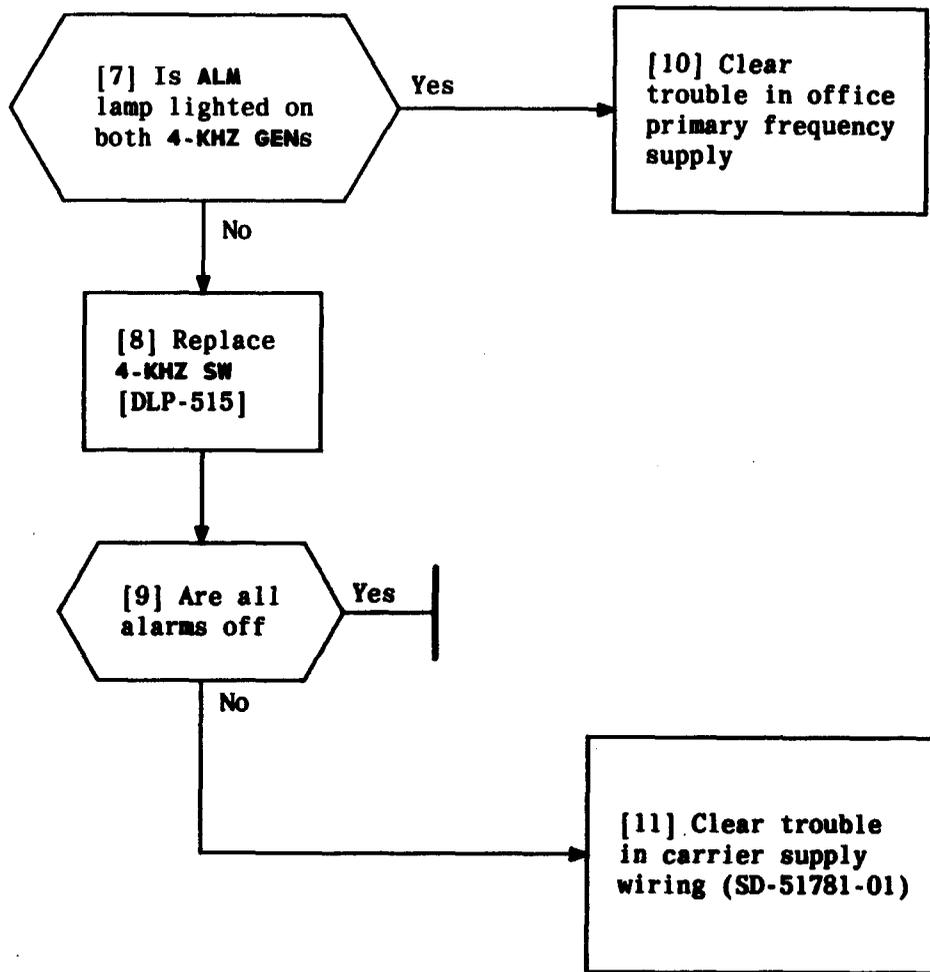
- All tests are based on the assumption that the required test equipment is functioning properly

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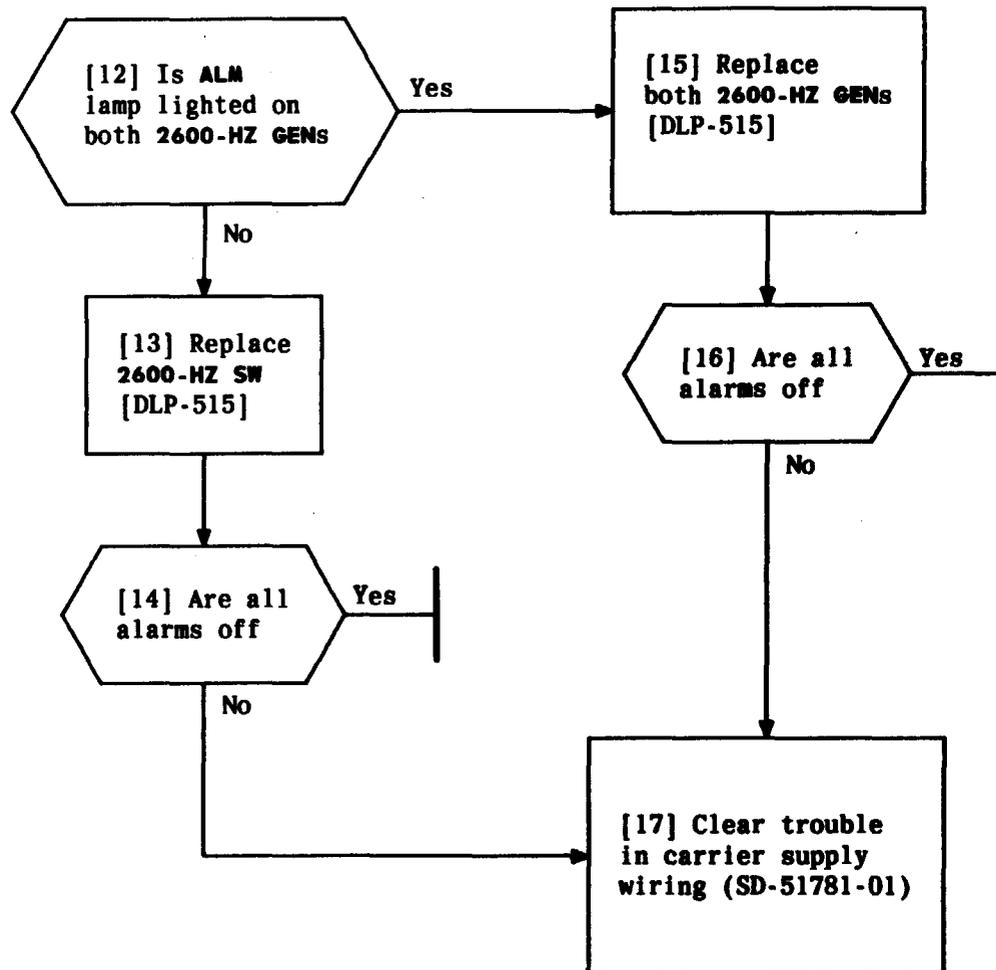
CLEAR MAJOR ALARM

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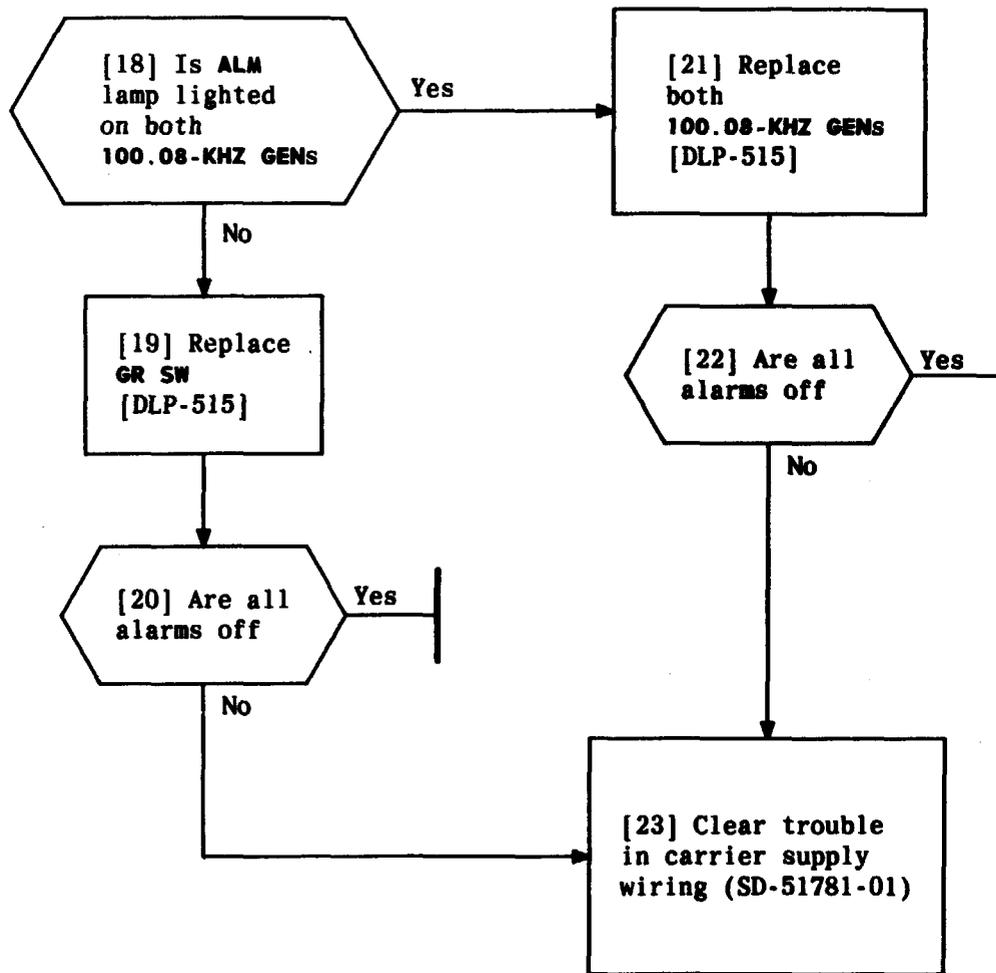
CLEAR MAJOR ALARM

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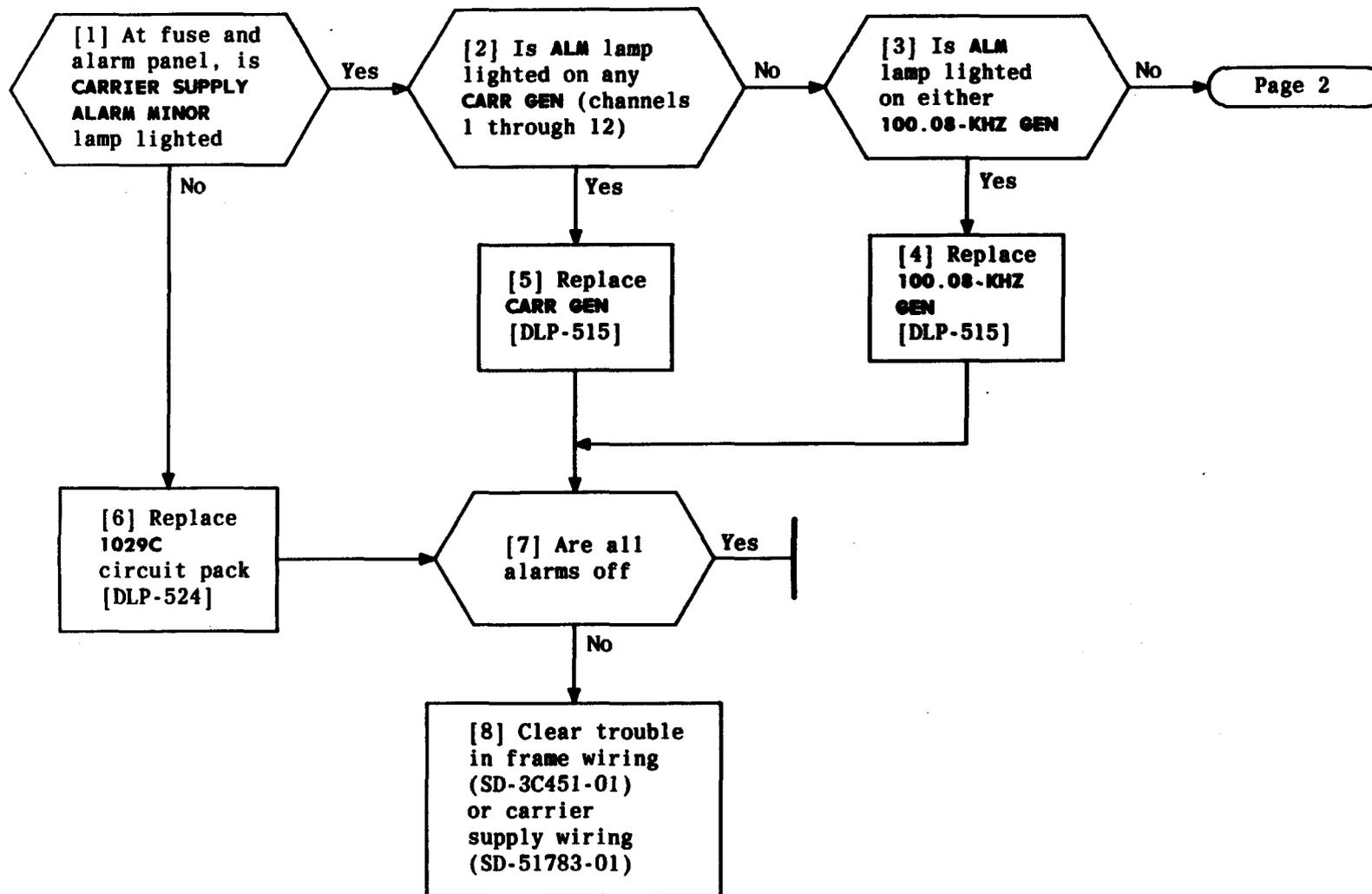
CLEAR MAJOR ALARM

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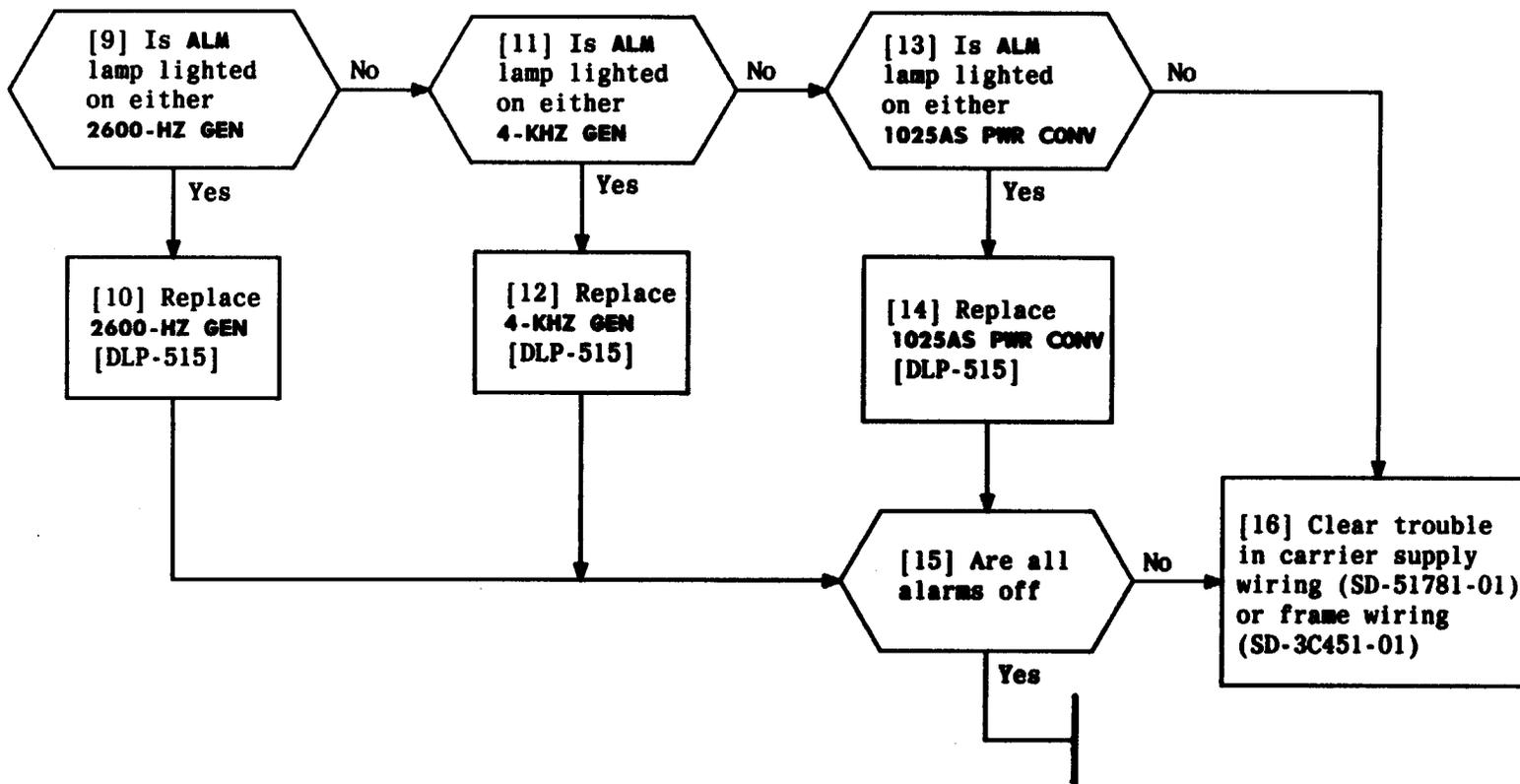
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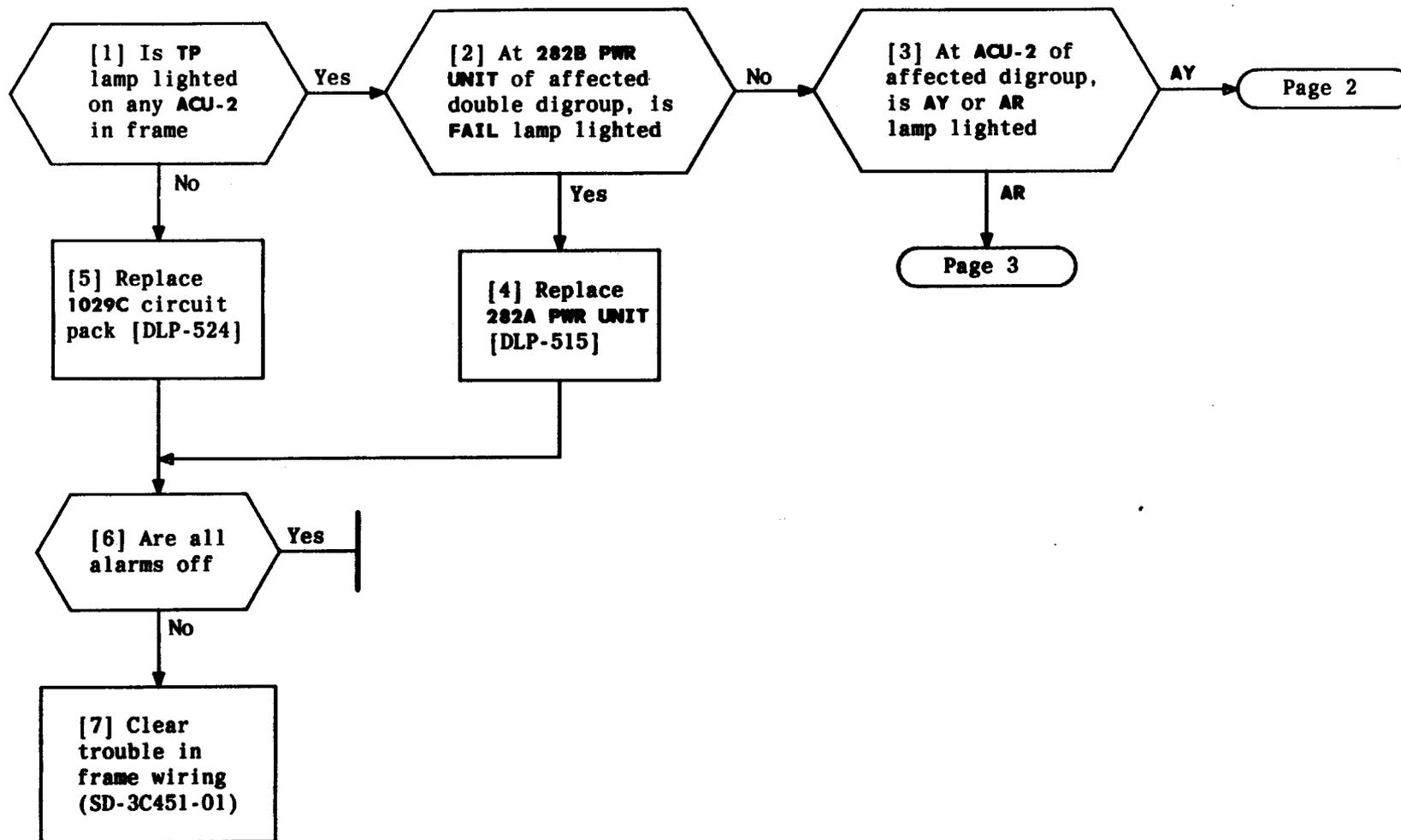
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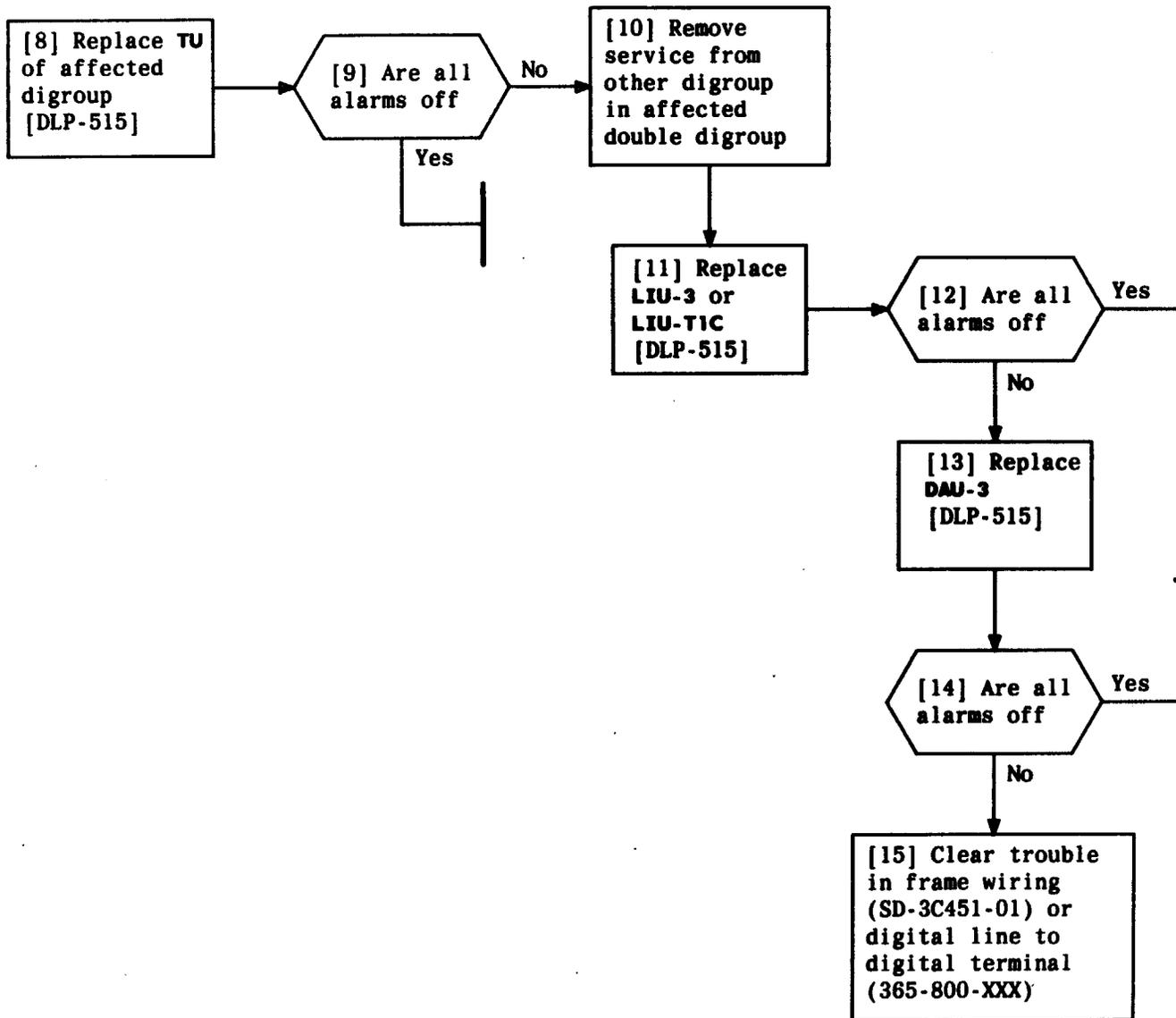
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CLEAR DIGROUP ALARM

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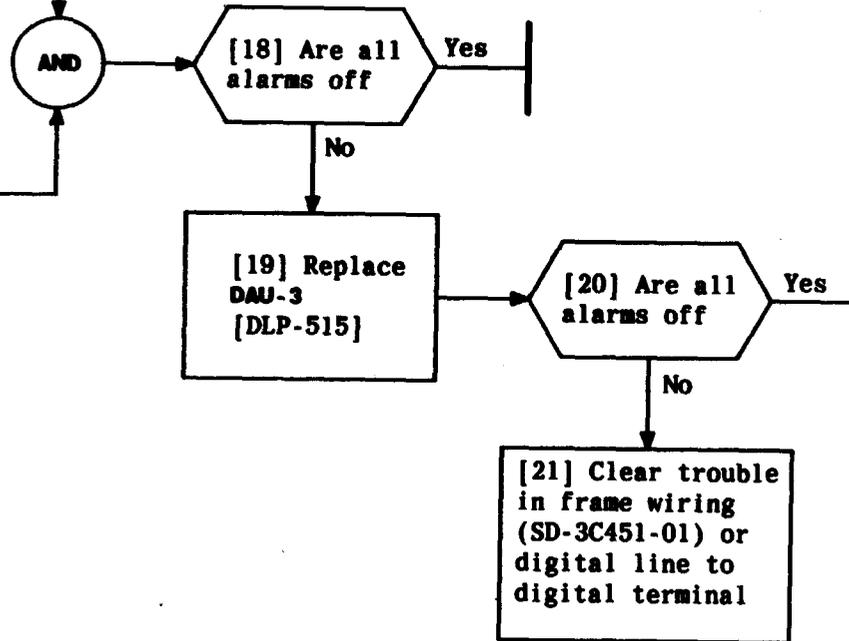


CLEAR DIGROUP ALARM

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[16] Remove service from other digroup in affected double digroup

[17] Replace LIU-3 or LIU-T1C [DLP-515]



CLEAR DIGROUP ALARM

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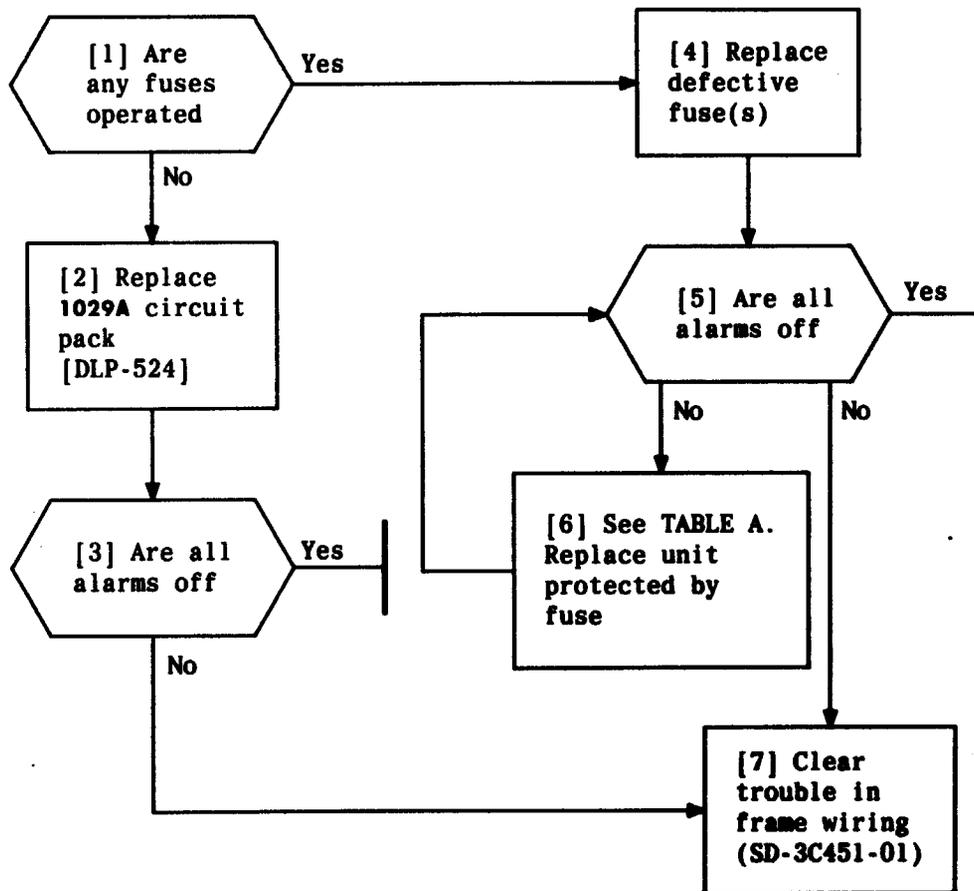
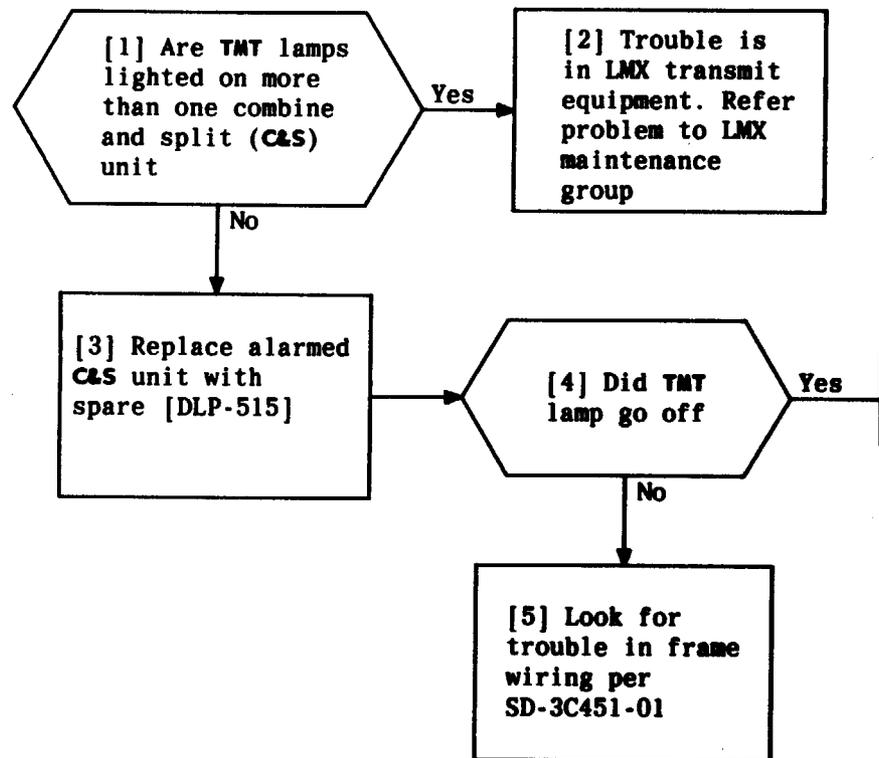


TABLE A UNITS PROTECTED BY FUSES	
FUSE LOCATION	UNIT(S) PROTECTED
1 through 10	PWR UNIT of Same Numbered Double Digroup
C1	Filter Capacitor C1
C2	Filter Capacitor C2
ABS-A	ACUs in Left Bay
ABS-B	ACUs in Right Bay
CPWR-A	Left Carrier PWR CONV
CPWR-B	Right Carrier PWR CONV
C ALM	1029A, 1029C, and 1029D PWBs
COMM	3C660 COMMUNICATION PANEL

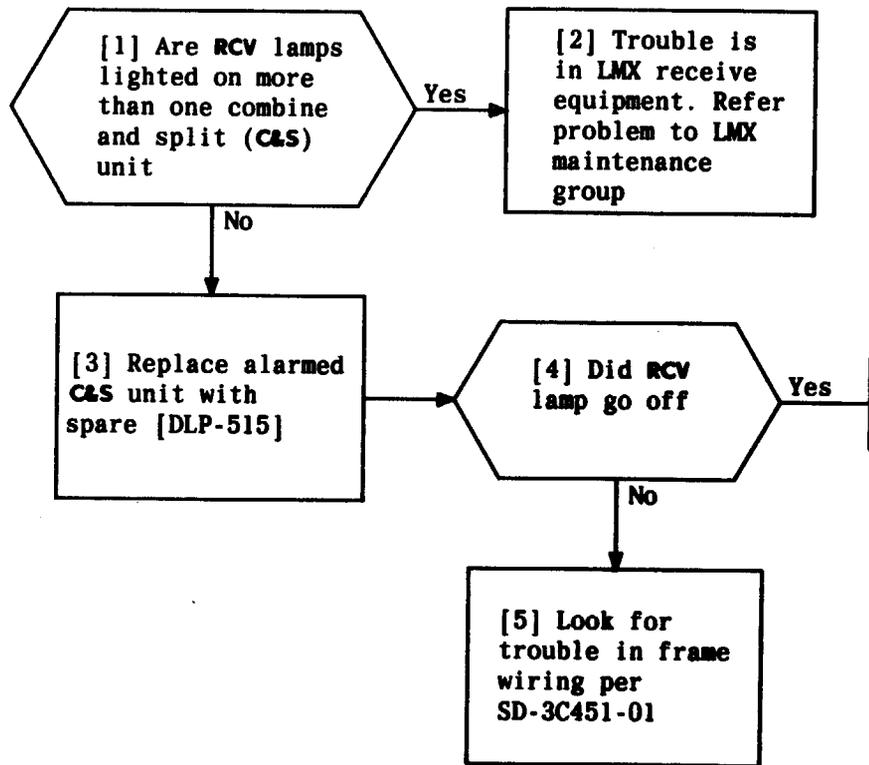
CLEAR FUSE ALARM

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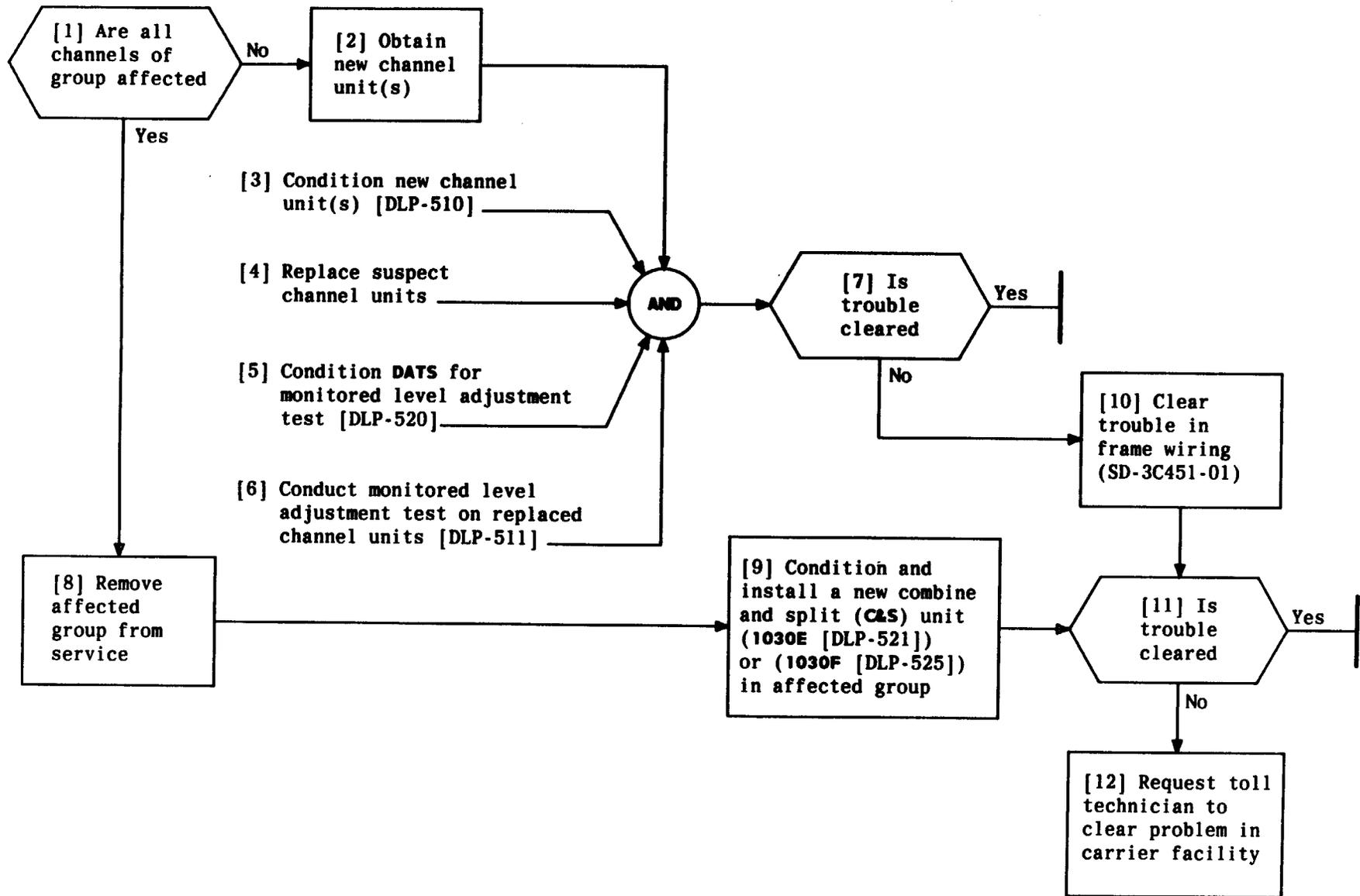
CLEAR GROUP TRANSMIT ALARM

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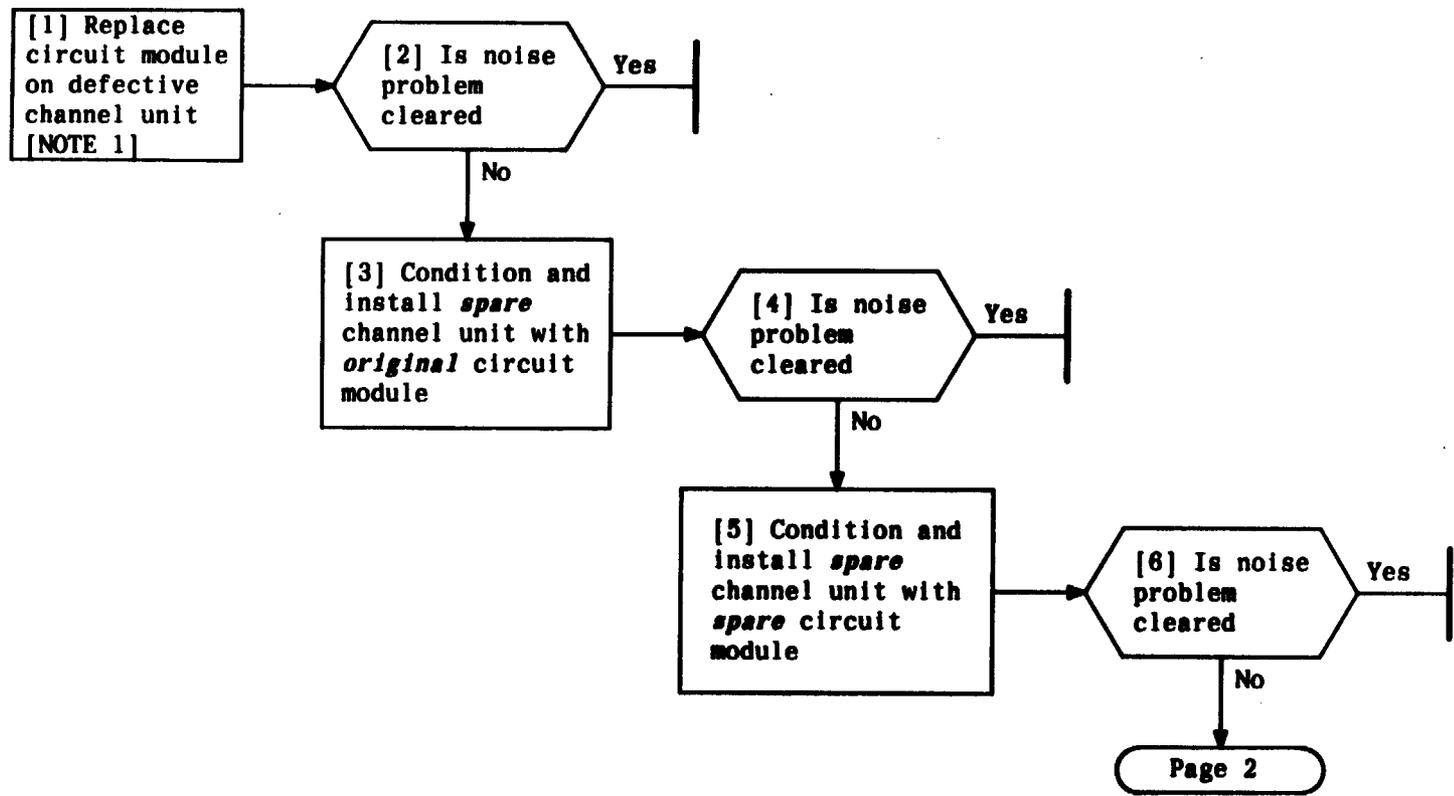


CLEAR GROUP RECEIVE ALARM

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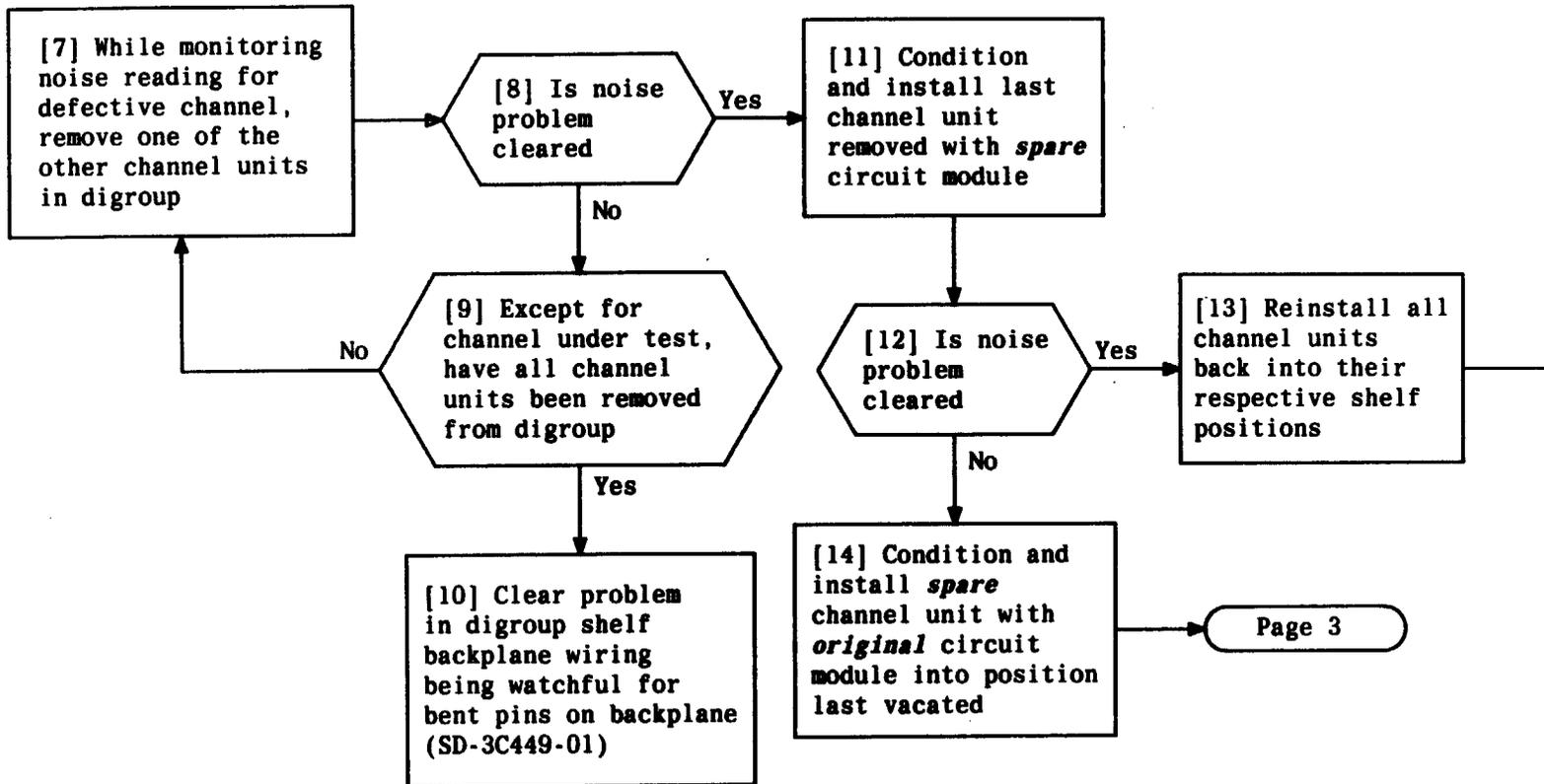


CLEAR LEVEL PROBLEM



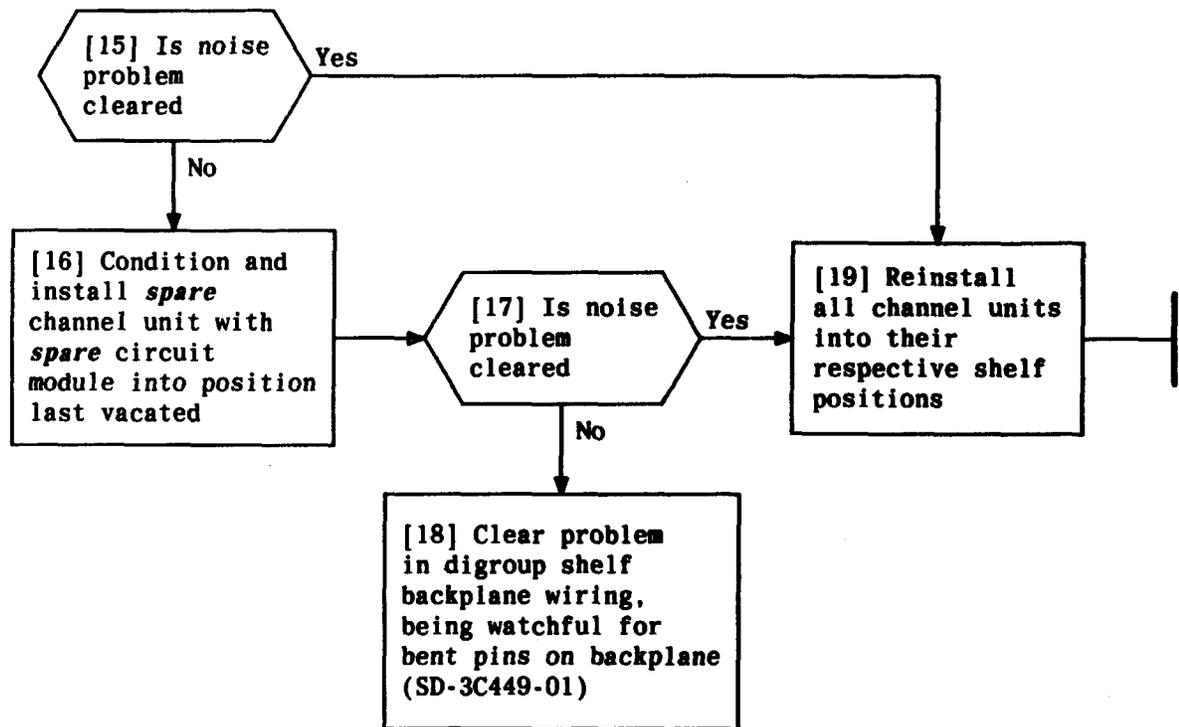
CLEAR NOISE PROBLEM

NOTE 1	
Noise problems may be caused by loose faceplate jack(s) and/or poor ground connections on DAU	
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CLEAR NOISE PROBLEM

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CLEAR NOISE PROBLEM

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SUMMARY

Using vacuum tube voltmeter (VTVM) and line matching transformer (LMT) set for 135-ohm bridging measurement, measure level of signal at CARR OUT jacks of carrier generators [FIG. 1] per TABLE B. Level should be between -16 and -13.5 dBm.

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
Vacuum Tube Voltmeter (VTVM)	Hewlett-Packard* Model 400 ()
Test Cord	W2DW Cord with Phone Tips
Line Matching Transformer (LMT)	Hewlett-Packard* Model 11004A

* Trade Name

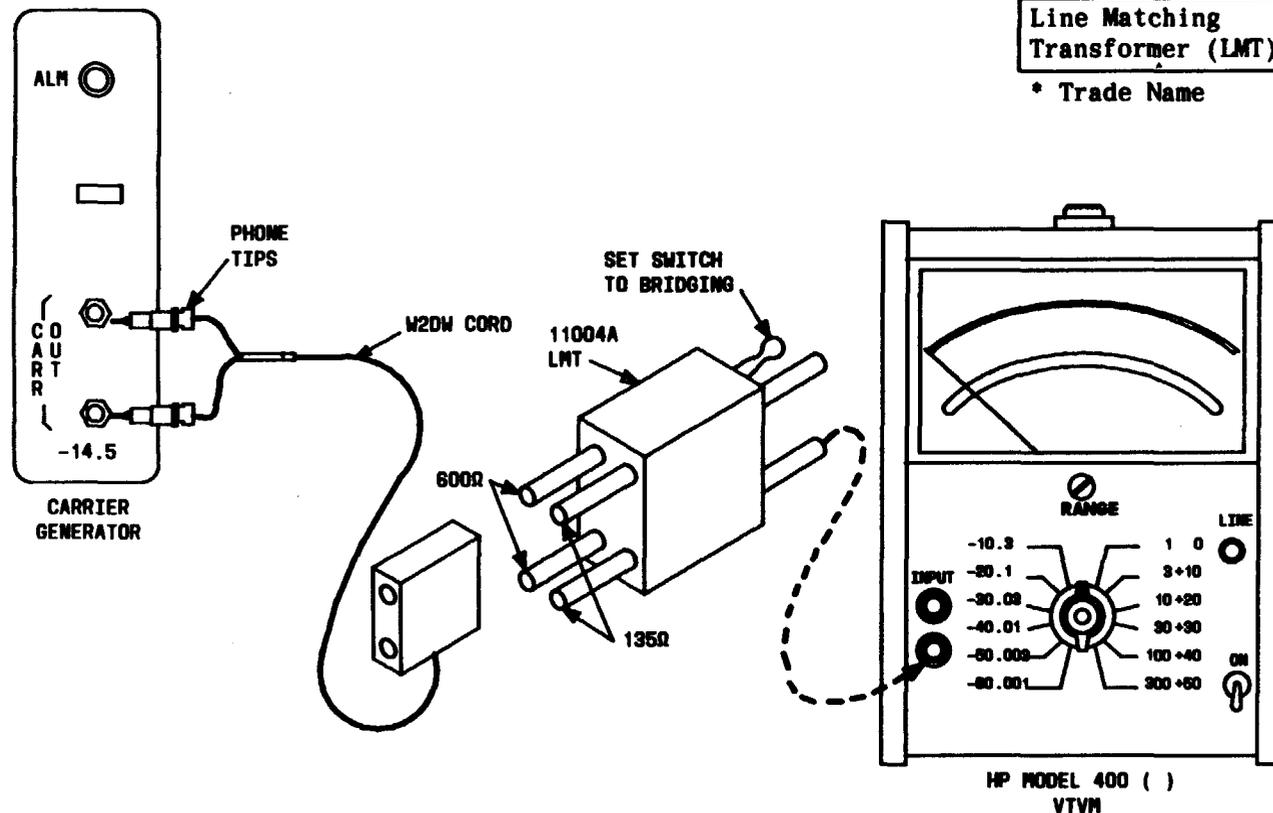


FIG. 1

TABLE B		
CODE	DESCRIPTION	CHANNEL NUMBER
1025A	CARR GEN	CH 1
1025AE	CARR GEN	CH 2
1025C	CARR GEN	CH 3
1025AF	CARR GEN	CH 4
1025E	CARR GEN	CH 5
1025AG	CARR GEN	CH 6
1025G	CARR GEN	CH 7
1025AH	CARR GEN	CH 8
1025J	CARR GEN	CH 9
1025AJ	CARR GEN	CH 10
1025L	CARR GEN	CH 11
1025AK	CARR GEN	CH 12

MEASURE POWER LEVEL OF CARRIER GENERATORS

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[1] On line matching transformer (LMT), set 135Ω/BRIDGING switch to BRIDGING [FIG. 1, page 1]

[2] Plug meter end of test cord into 135Ω terminals on LMT

[3] Connect LMT to INPUT jacks of meter

[4] Condition VTVM to measure decibels

[5] Set RANGE switch to -10

[6] Connect phone tips of test cord to CARR OUT jack on channel 1 generator (1025A)

AND

[7] Does meter indicate signal level between -16 and -13.5 dBm

No

TAP-110

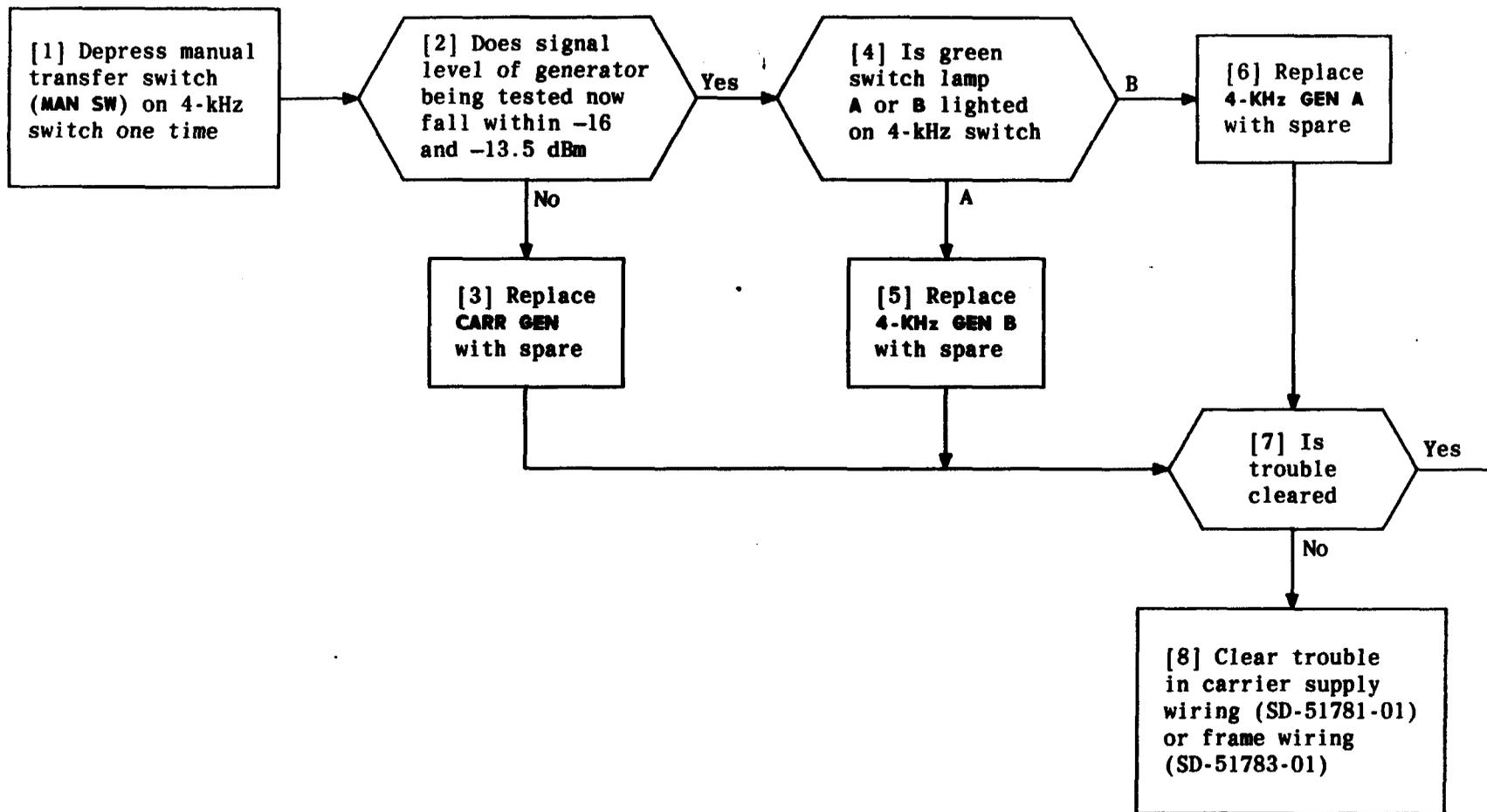
Yes

[8] Repeat steps 6 and 7 for each remaining generator listed in TABLE B, page 1

[9] Disconnect phone tips from CARR OUT jack of last generator tested

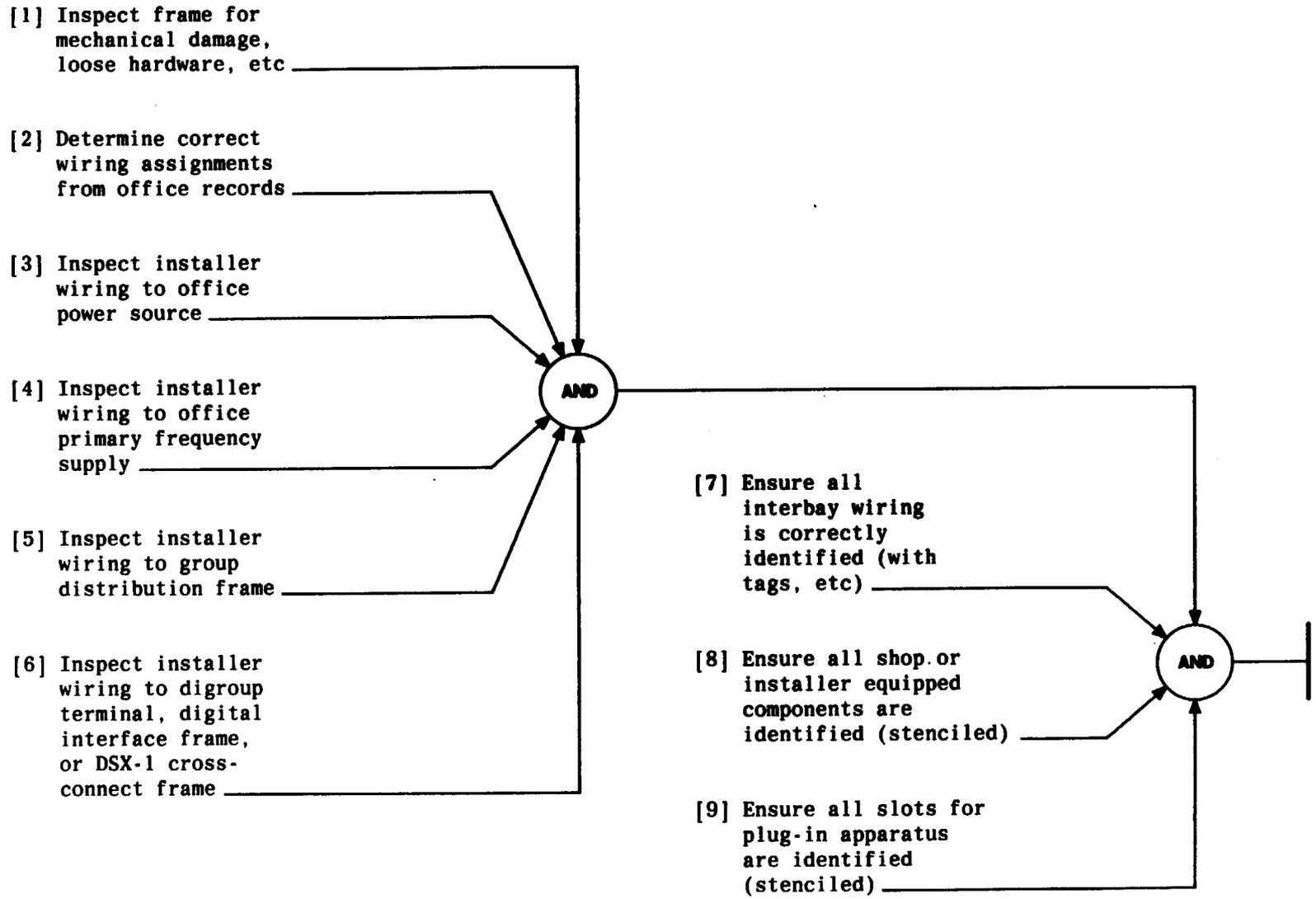
MEASURE POWER LEVEL OF CARRIER GENERATORS

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CLEAR TROUBLE IN CARRIER GENERATOR OUTPUT LEVEL

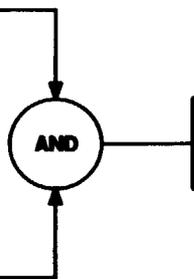
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PERFORM VISUAL INSPECTION OF FRAME, HARDWARE, CABLING, WIRING, AND CONNECTORS

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[1] Inspect fuse panel for proper installation of 70-type fuses per TABLE A and FIG. 1



[2] Replace any blown or missing fuses with proper 70-type fuse [TABLE A and FIG. 1]

TABLE A FUSE TYPES AND LOCATIONS		
LOCATION	TYPE	BEAD COLOR
1 through 10	70C	Blue
C1	70D	Green W/Black Stripes
C2	70D	Green W/Black Stripes
ABS-A	70H	Brown
ABS-B	70H	Brown
CPWR-A	70A	White
CPWR-B	70A	White
C ALM	70F	Violet
COMM	70F	Violet

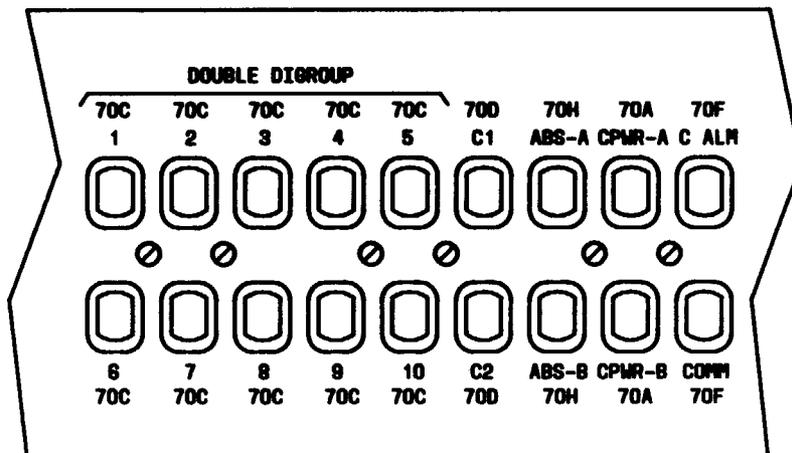


FIG. 1 - Front View of Fuse and Alarm Panel

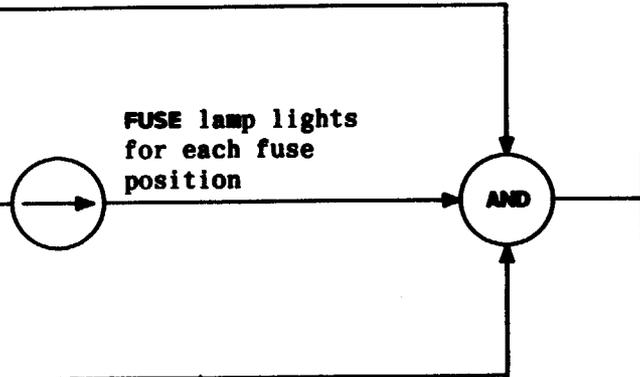
INSPECT FUSE AND ALARM PANEL FOR PROPER FUSING

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[1] At LT-1B frame, locate fuse and alarm panel

[2] At each fuse position, replace good fuses (one at a time) with blown 70-type fuse

[3] Reinsert fuses removed in Step 2



TEST FUSE ALARM CAPABILITY

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SUMMARY

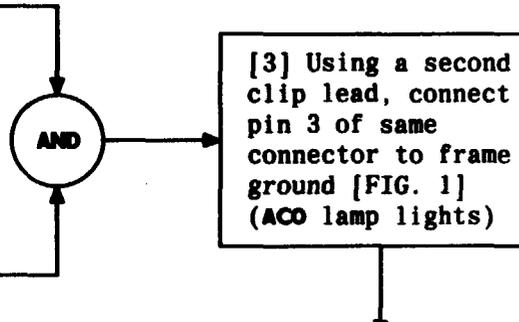
See WARNING 1. Connect terminals at back of frame to bring up major, minor, group, and digroup alarm indications.

Verify frame alarm indicators and operation of ACO relays.
Use two sets of clip leads

[1] See WARNING 1. At fuse and alarm panel (rear of frame, top shelf on right-hand side) remove backplane plastic protective cover

[2] At connector J3 (middle left of top shelf), connect pin 2 to frame ground [FIG. 1]

CARRIER SUPPLY
MAJOR lamp lights



[4] Remove both clip leads from connector J3 (All alarms off)

Page 2

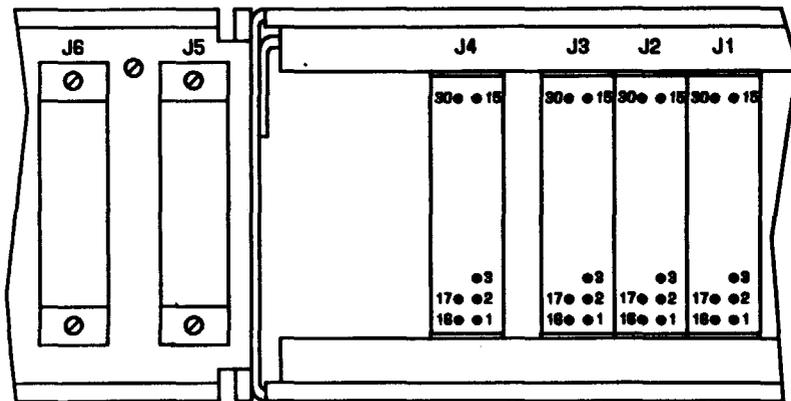
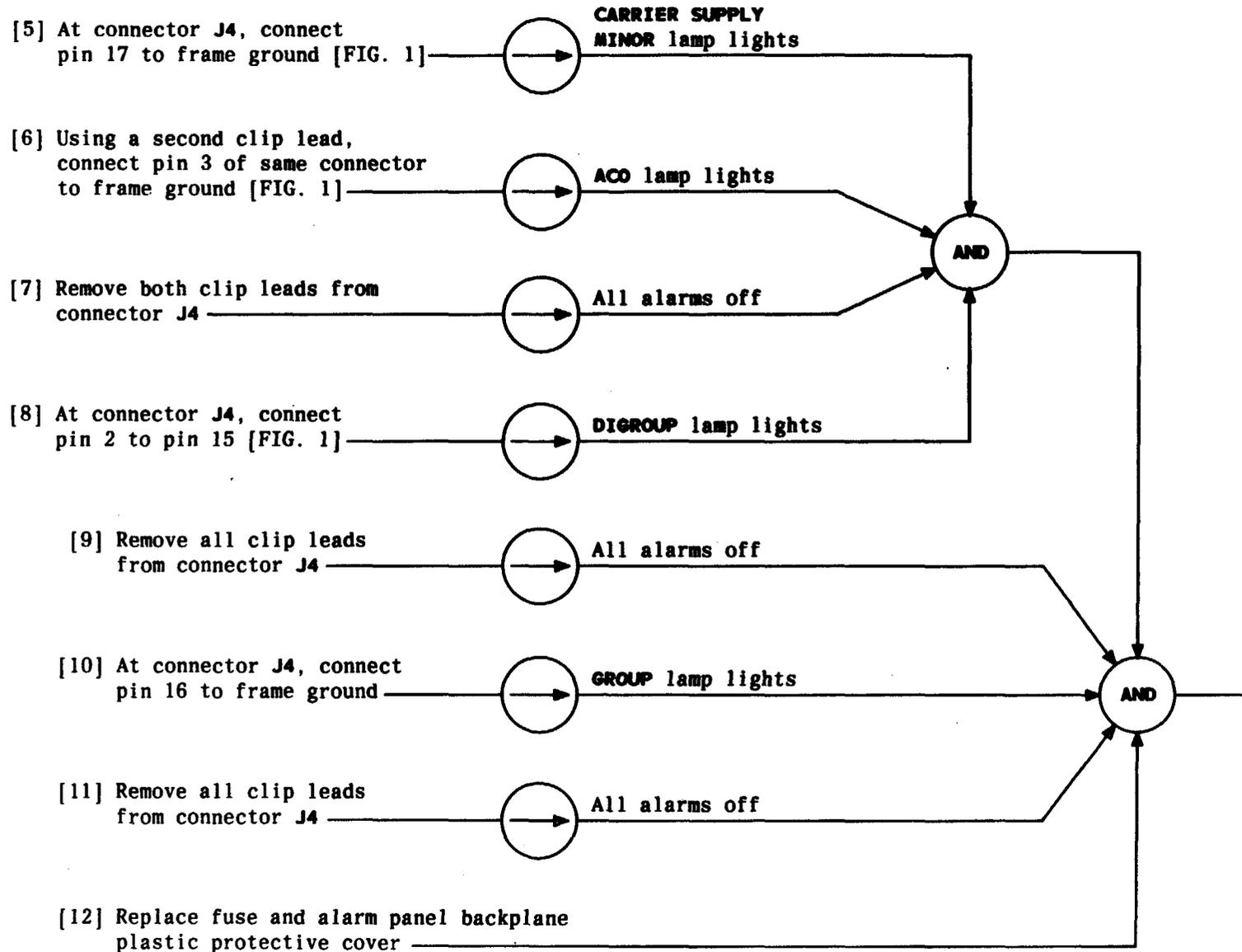


FIG. 1 - Rear of Fuse and Alarm Panel

WARNING 1
Plug-in units will be damaged if they remain in frame during performance of this DLP

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TEST OPERATION OF ALARM CIRCUITS AND VISUAL INDICATORS



TEST OPERATION OF ALARM CIRCUITS AND VISUAL INDICATORS

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[1] At 660 COMMUNICATION PANEL,
connect telephone handset
to HDST jacks

[2] Depress appropriate pushbutton
to connect communication panel
to a working telephone line

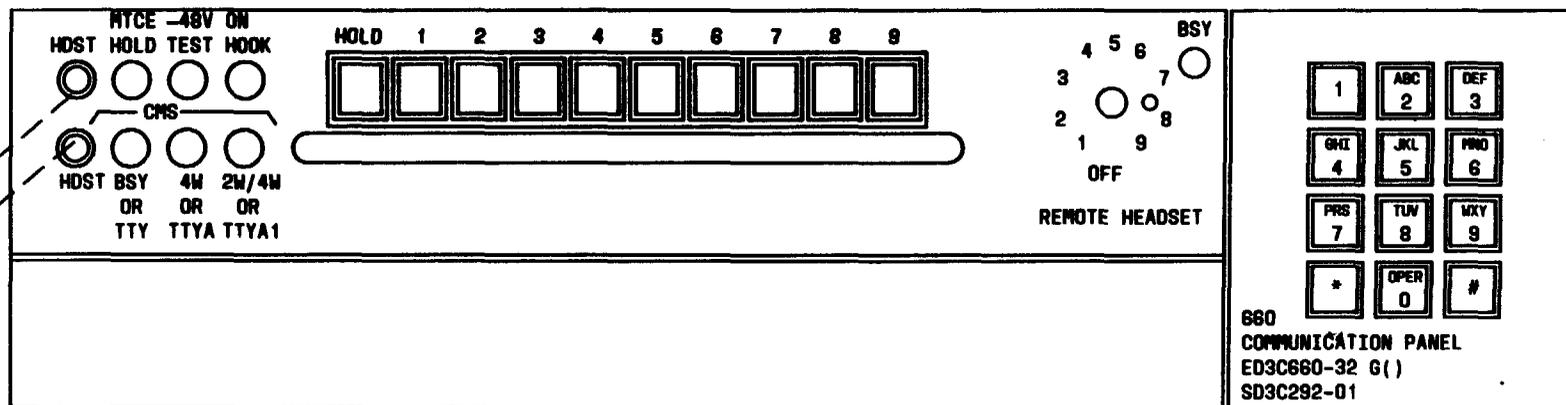
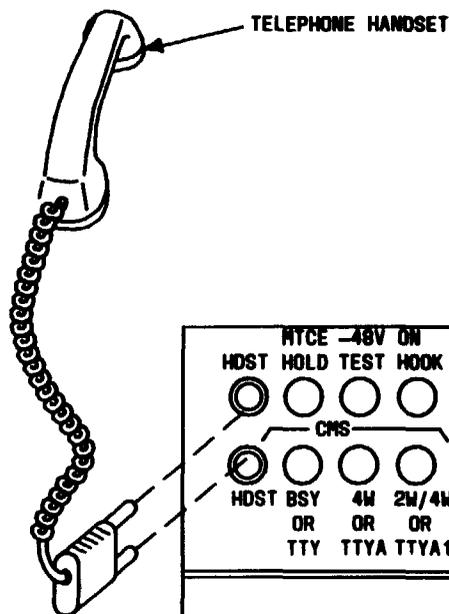
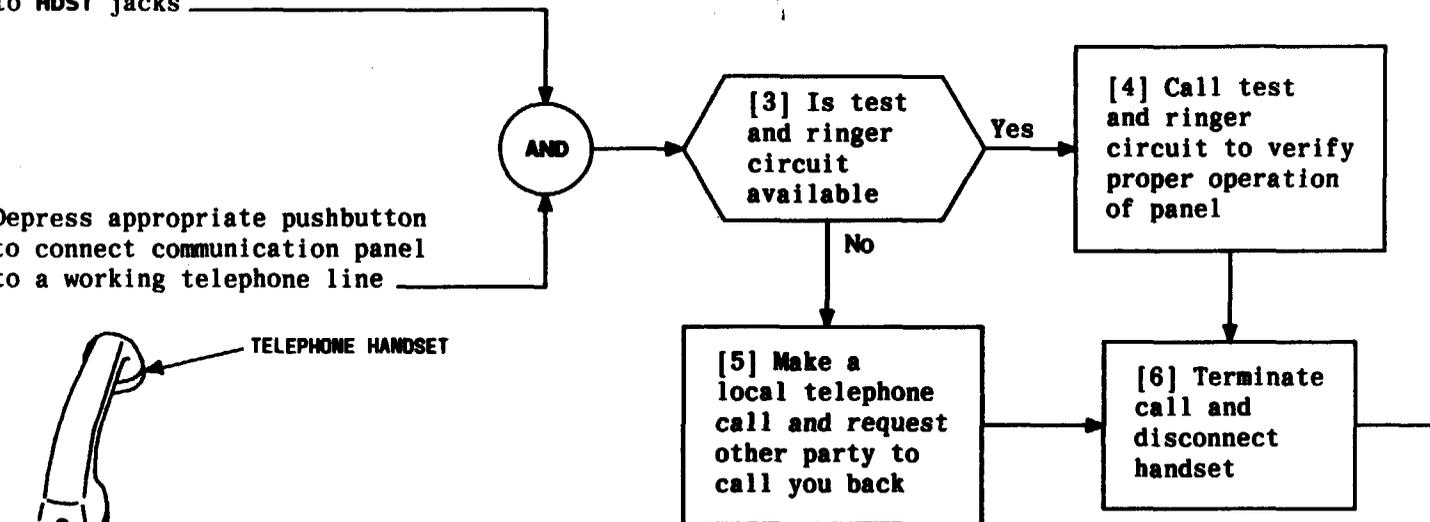


FIG. 1 - Handset Connection to 660 Communication Panel

TEST OPERATION OF ED-3C660 COMMUNICATION PANEL

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SUMMARY

Equip DAU-3 with proper equalizers based on cable length per TABLE A. If double digroup is being equipped for TIC operation, install only one equalizer in TB1. Set **COUNT A** and **COUNT B** switches based on type of D-bank at digital end of facility. Set **TIMING** switch to conform with timing requirements of digital terminal

[1] Determine cable distance between LT-1B and DSX-1 cross-connect frame by checking office records

[2] Determine proper equalizers by applying cable length to TABLE A

[3] Insert proper equalizers into TB1 and TB2 per FIG. 1. If for TIC operation, install equalizer in TB1 only [TB2 (Digroup B) is above TB1 (Digroup A)]

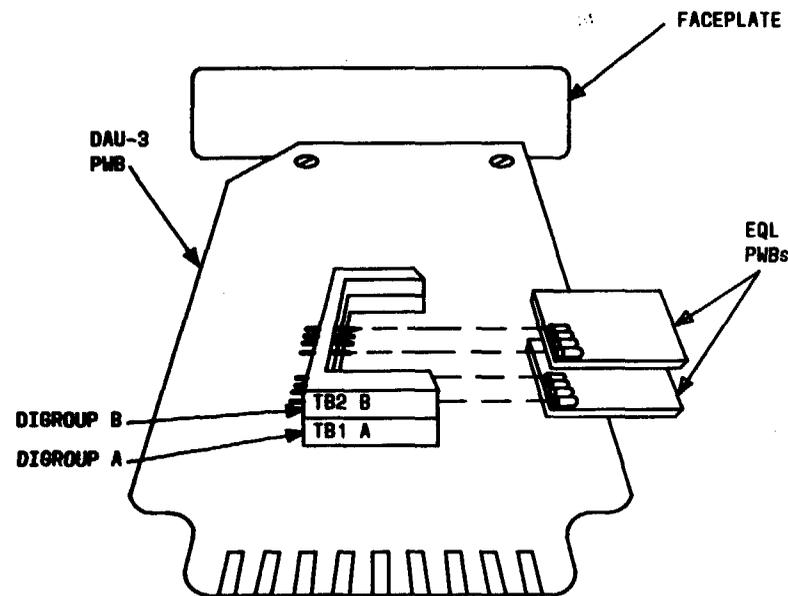
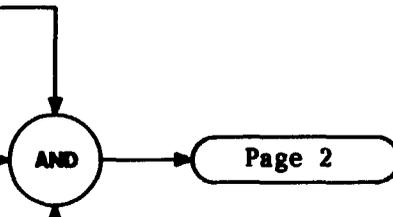


FIG. 1

TABLE A	
DISTANCE FROM LT-1B TO DSX-1 (FT.)	EQUALIZER
0 to 133	ED-3C655-31G6
133 to 267	ED-3C655-30G2
267 to 400	ED-3C655-30G3
400 to 533	ED-3C655-30G4
533 to 655	ED-3C655-30G5

[4] Determine from office records, at what type of D bank each digroup terminates; ie, D1D, D2, or D3/D4

[5] At DAU-3 faceplate, locate screwdriver - slotted switches designated COUNT A and COUNT B

[6] With a small screwdriver, align slot to point toward designation of D-bank type determined in Step 4 [FIG. 2]

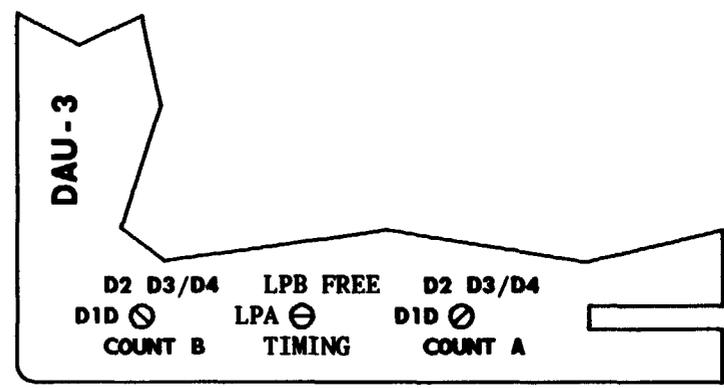
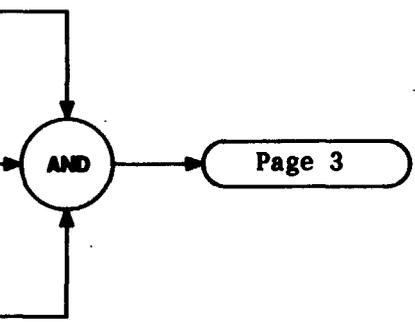


FIG. 2 - P/O DAU-3 Faceplate Showing Digroup B Set for D2 Counting Sequence and Digroup A Set for D3/D4 Counting Sequence

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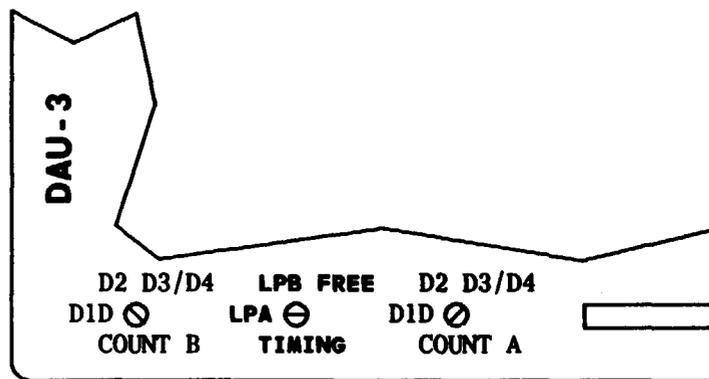
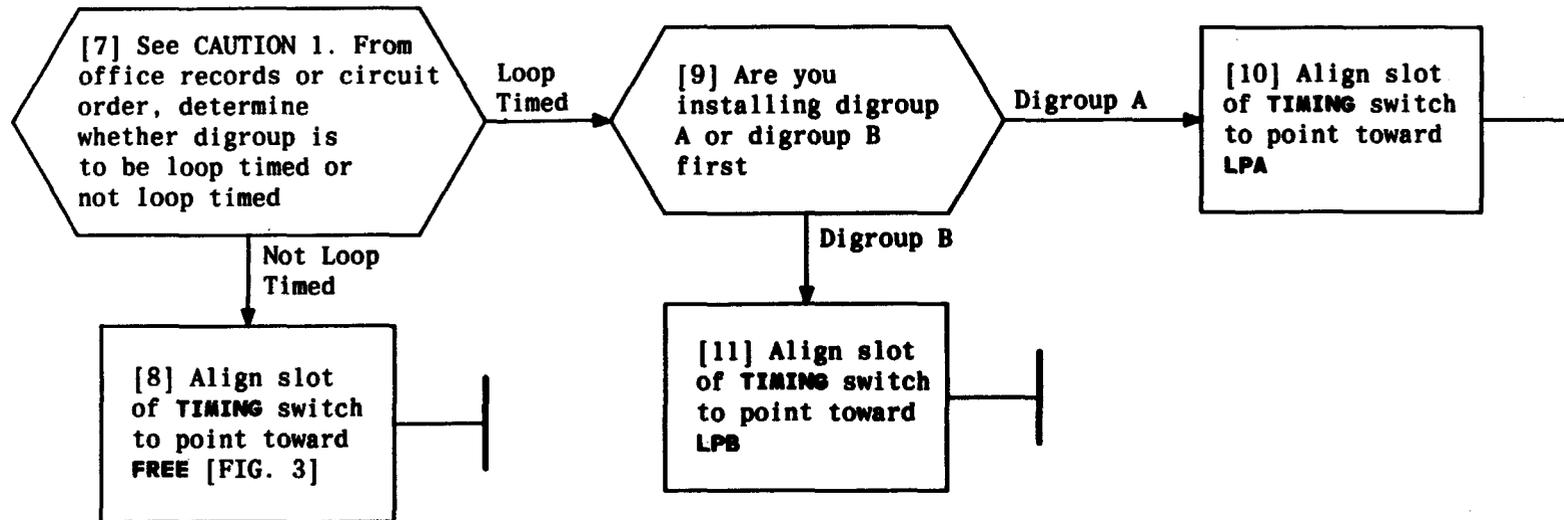


FIG. 3 - P/O DAU-3 Faceplate Showing TIMING Switch Set to LPA (Digroup A)

CAUTION 1	
<i>One end of digital facility must be loop timed. Both ends of digital facility must NOT be loop timed</i>	
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**TABLE A
CARRIER SUPPLY PLUG-IN UNITS**

ITEM NO.	PLUG-IN UNIT	MAX NO. REQ'D	APPARATUS CODE	ITEM NO.	PLUG-IN UNIT	MAX NO. REQ'D	APPARATUS CODE	
1	Channel 1 Carrier Generator	1	1025A	2	Power Converter Unit	2	1025AS	
	Channel 2 Carrier Generator	1	1025AE	3	4-kHz Generator (64 kHz)*	2	1025U	
	Channel 3 Carrier Generator	1	1025C		4-kHz Generator (512 kHz)*	2	1025AT	
	Channel 4 Carrier Generator	1	1025AF	4	4-kHz Switch	1	1025T	
	Channel 5 Carrier Generator	1	1025E	* Generator frequency must match sync frequency from primary frequency supply	5	Alarm Unit	1	1025AL
	Channel 6 Carrier Generator	1	1025AG					
	Channel 7 Carrier Generator	1	1025G					
	Channel 8 Carrier Generator	1	1025AH					
	Channel 9 Carrier Generator	1	1025J					
	Channel 10 Carrier Generator	1	1025AJ					
	Channel 11 Carrier Generator	1	1025L					
	Channel 12 Carrier Generator	1	1025AK					

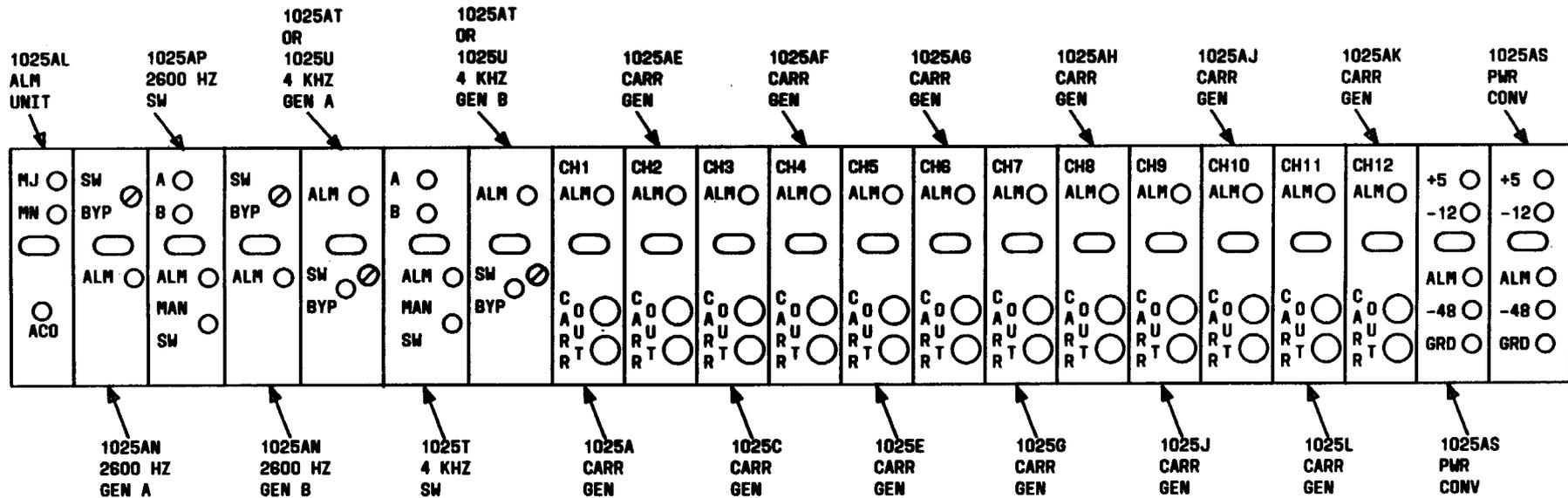


FIG. 1

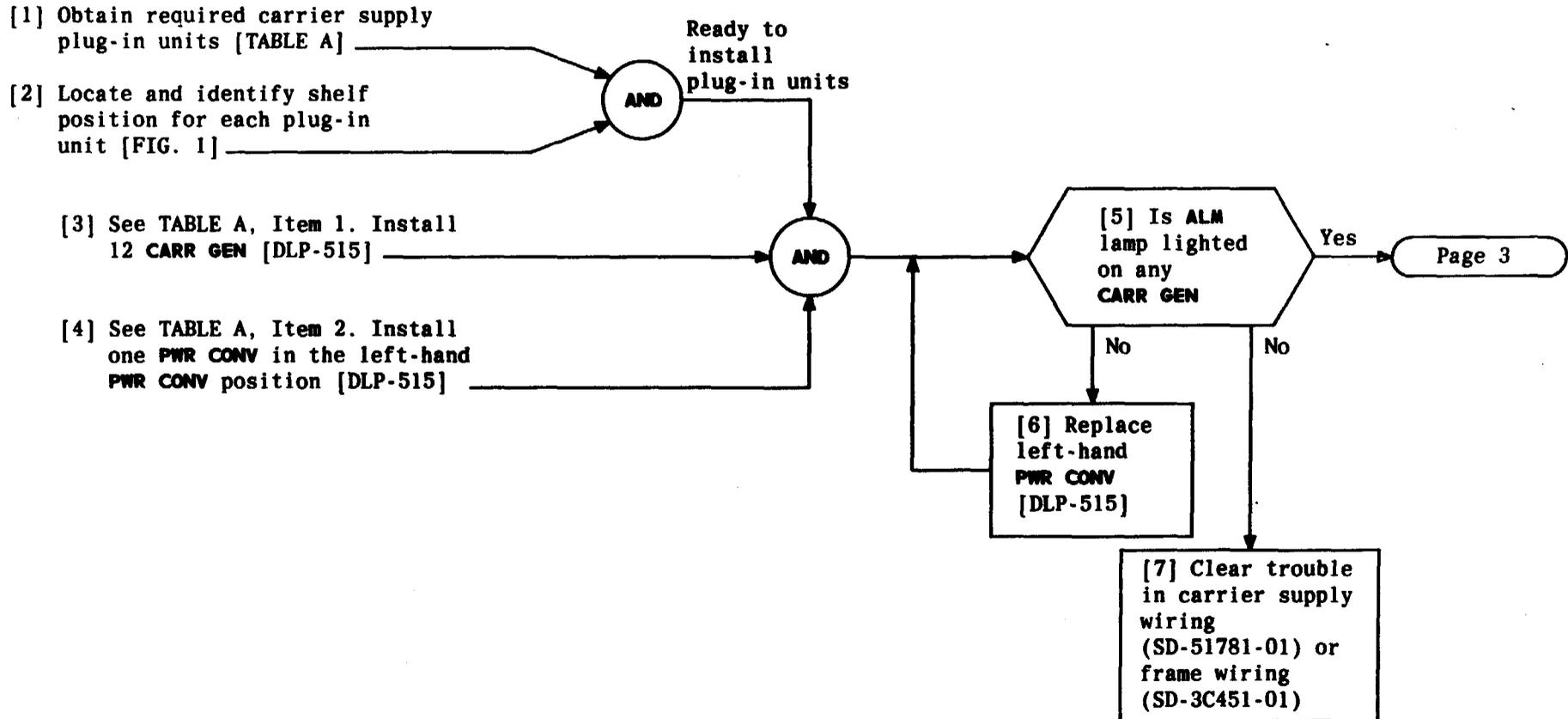
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INSTALL AND TEST COMMON CARRIER SUPPLY PLUG-IN UNITS

SUMMARY

Install 12 carrier generators (CARR GEN). Ensure both power converters (PWR CONV) are working by installing each one separately and observing ALM lamps on carrier generators (All ALM lamps on CARR GEN lighted). Install both 4-KHZ GEN with SW BYP switch in off position (counterclockwise). Operate each SW BYP switch alternately and ensure ALM lamps on CARR GEN go off. Return both SW BYP switches to Off position (counterclockwise). Install 4-KHZ SW and test

manual switching function with MAN SW button. Condition ALM UNIT for AUTO reset function and install in correct shelf position. Test automatic switching function by removing working 4-KHZ GEN (A and B lamps on 4-KHZ SW indicate working generator). Test ALM lamp on 4-KHZ SW by removing both 4-KHZ GEN (Major alarm). Reinstall both 4-kHz generators at conclusion of tests. If required by local policy, condition ALM UNIT for MAN reset function



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[8] See TABLE A, page 1, Item 2. Install second PWR CONV unit in right-hand PWR CONV position [DLP-515]

[9] Remove PWR CONV from left-hand PWR CONV position [DLP-515]

AND

[10] Is ALM lamp lighted on any CARR GEN

Yes

[13] Reinstall left-hand PWR CONV to shelf [DLP-515]

Page 4

No

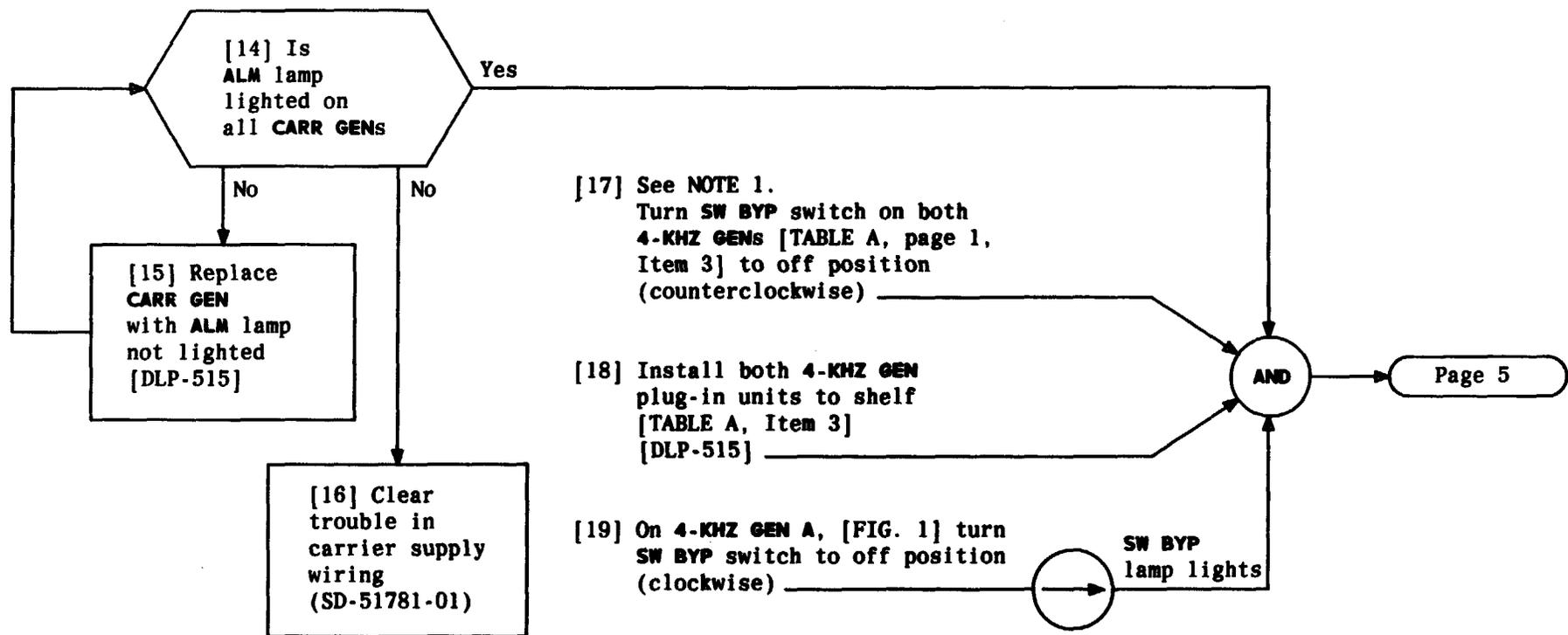
[11] Replace right-hand PWR CONV [DLP-515]

No

[12] Clear trouble in carrier supply wiring (SD-51781-01) or frame wiring (SD-51783-01)

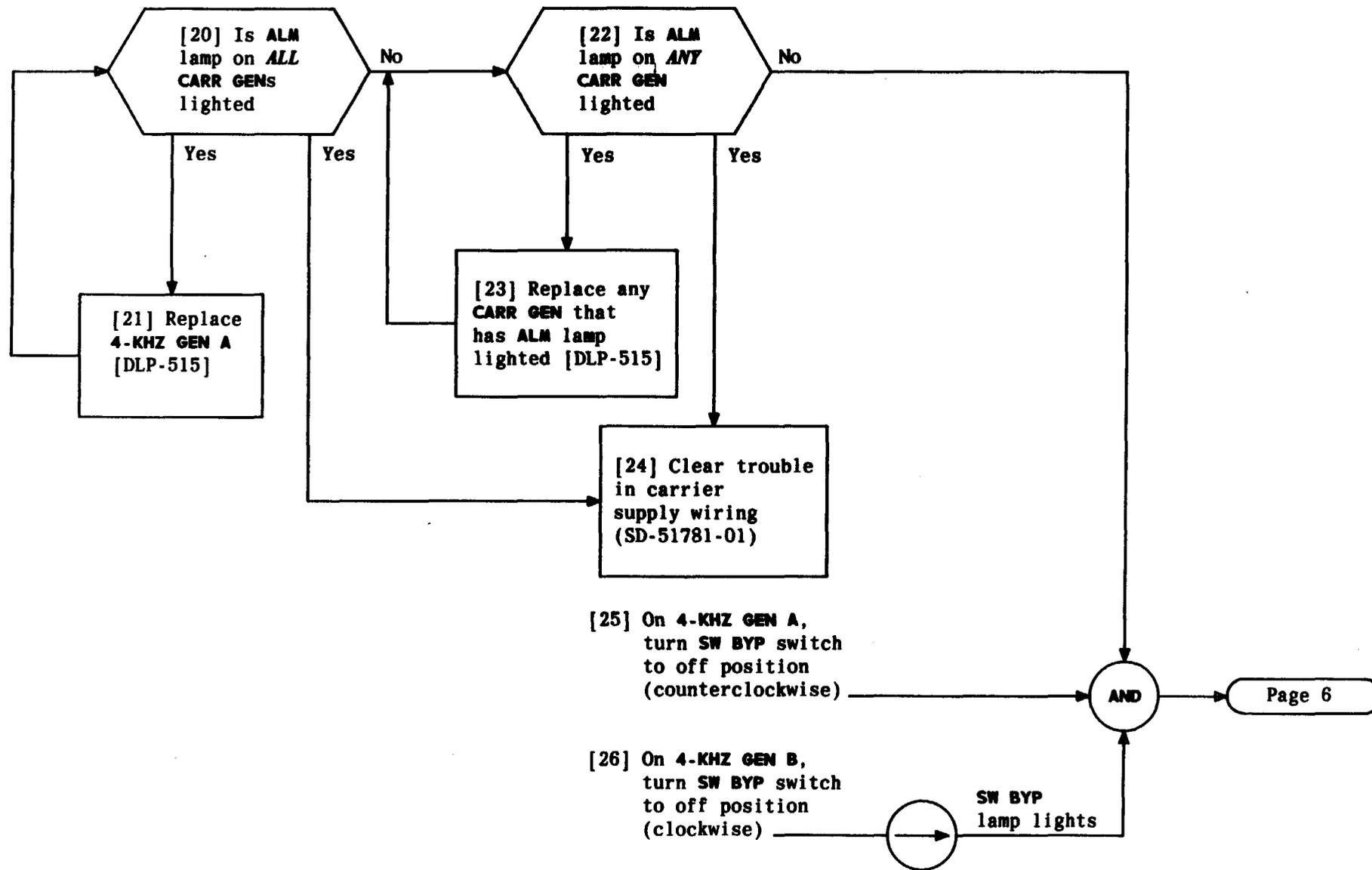
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INSTALL AND TEST COMMON CARRIER SUPPLY PLUG-IN UNITS



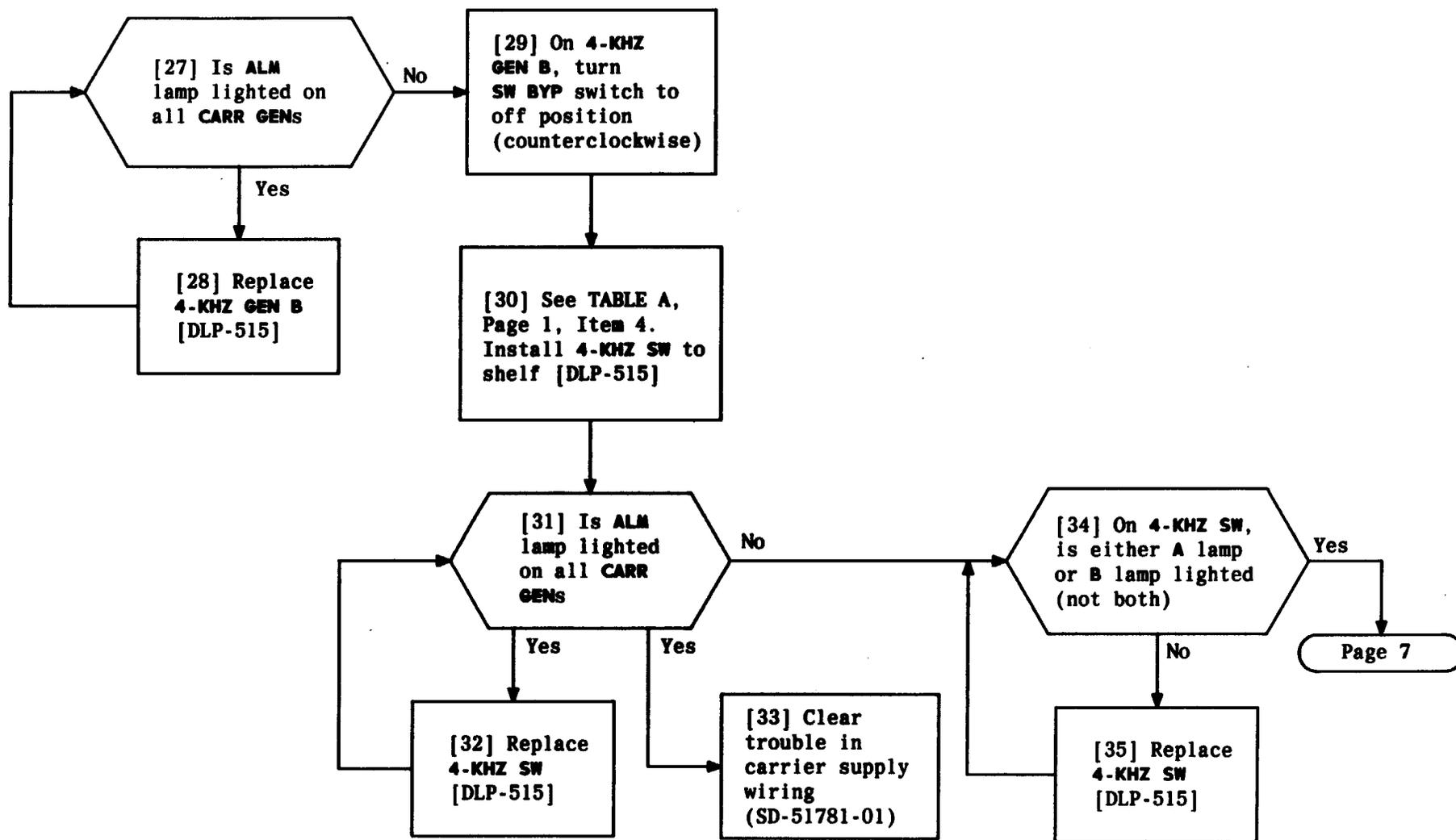
NOTE 1	
SW BYP switch is a flat-head screw with a standard screwdriver slot	
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INSTALL AND TEST COMMON CARRIER SUPPLY PLUG-IN UNITS



INSTALL AND TEST COMMON CARRIER SUPPLY PLUG-IN UNITS

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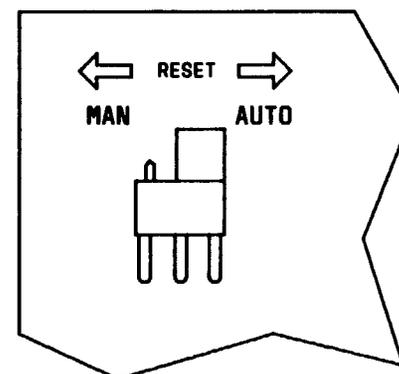
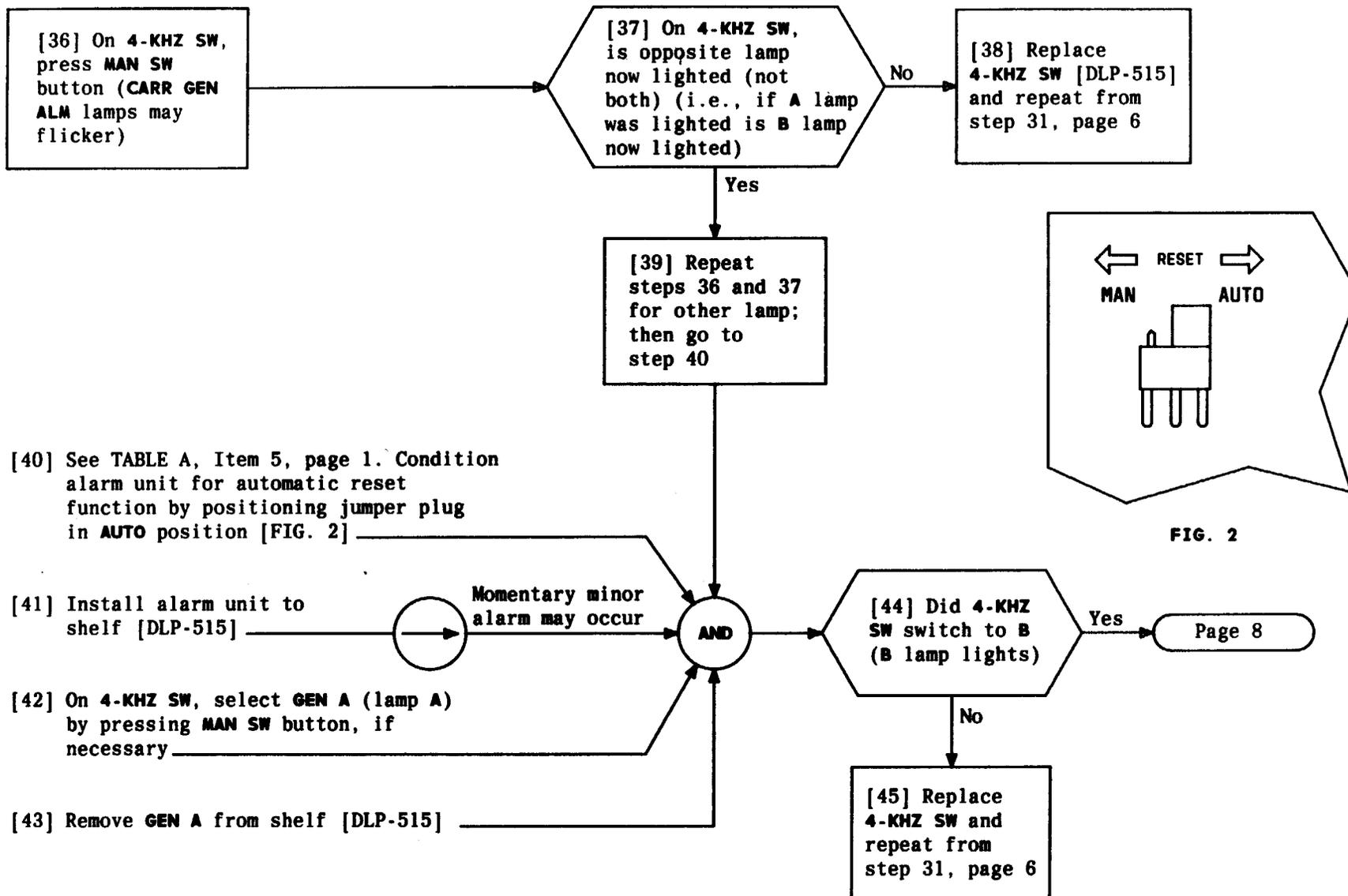


FIG. 2

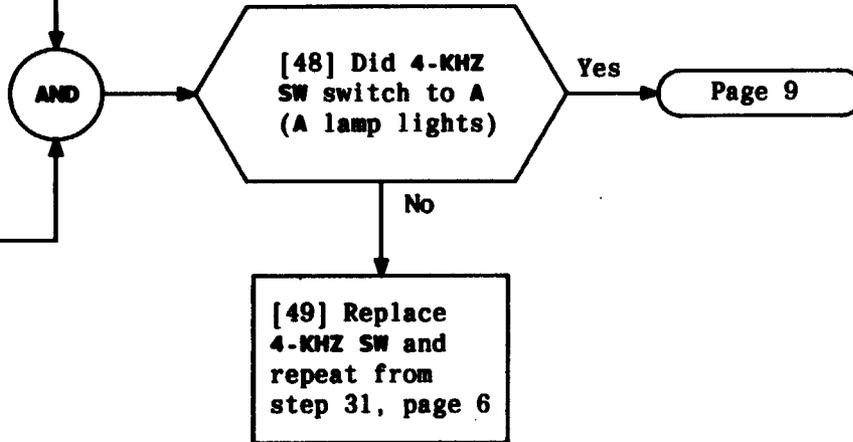
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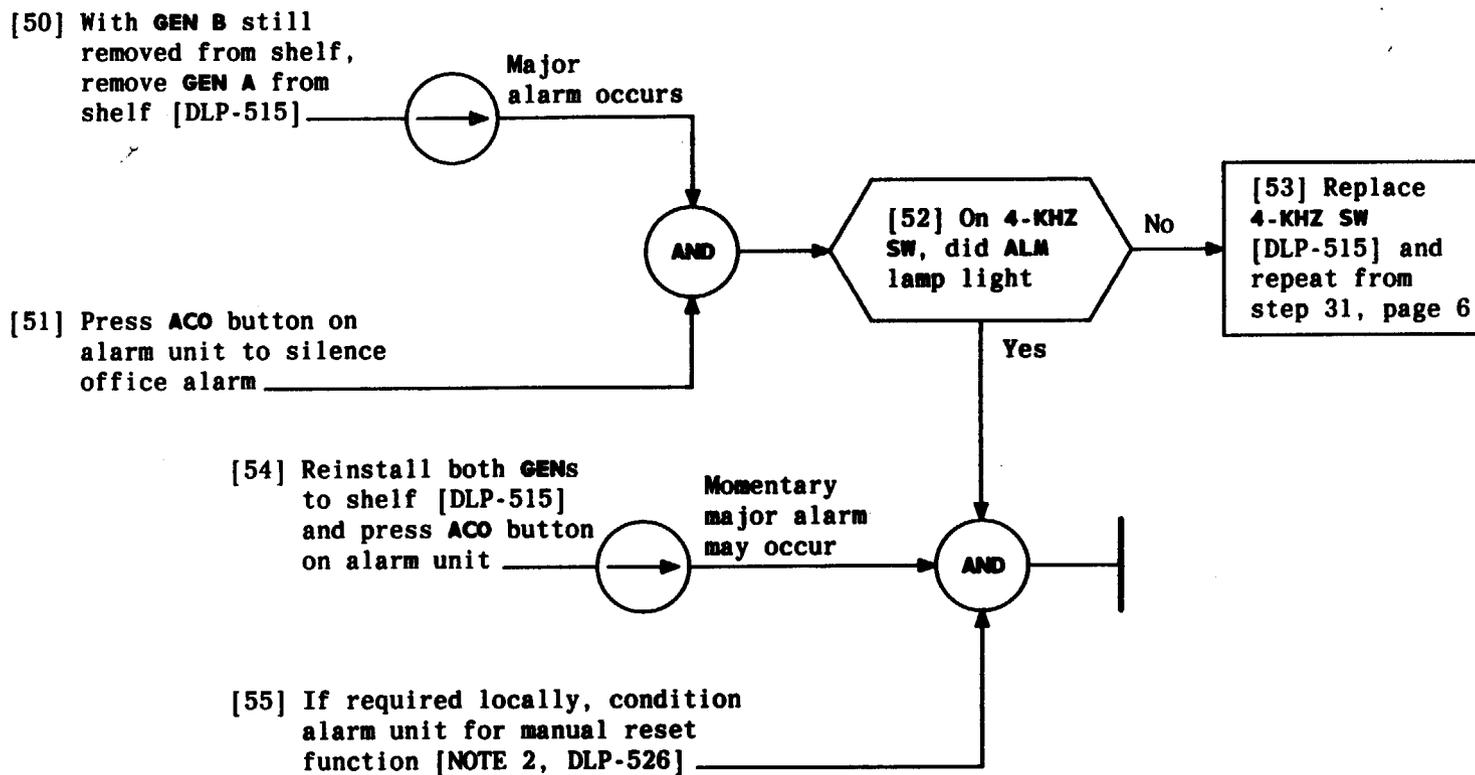
INSTALL AND TEST COMMON CARRIER SUPPLY PLUG-IN UNITS

[46] Reinstall GEN A [DLP-515] and press ACO button on alarm unit

ALM lamp on GEN A and MN lamp on alarm unit may light and then go off

[47] Remove GEN B from shelf [DLP-515]





NOTE 2
 If alarm unit is conditioned to reset manually (MAN), alarms will latch upon detection of carrier supply alarm condition and must be reset by pressing ACO button. If alarm unit is conditioned to reset automatically (AUTO), alarms will *not* latch upon detection of carrier supply alarm condition and will alarm only as long as alarm condition exists. Upon clearing of alarm condition, alarm unit will automatically ACO alarms and reset

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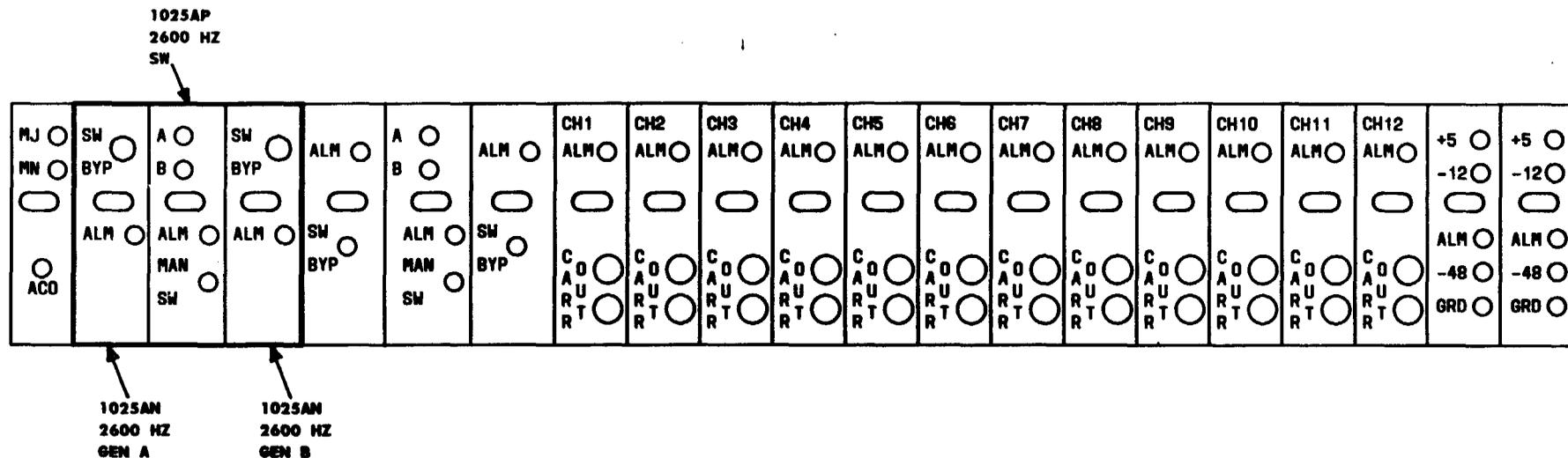


FIG. 1

INSTALL AND TEST CARRIER SUPPLY 2600-HZ GENERATORS AND SWITCH

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SUMMARY

Install 2600-Hz generators with SW BYP off (counterclockwise). Operate SW BYP on each generator and ensure SW BYP lamp lights. Return both SW BYP switches to off position (counterclockwise). Install 2600-HZ switch. Test manual switching function with MAN SW button. Test automatic

switching function by removing working generator (A and B lamps indicate working generator). Removal of one generator causes a minor alarm. Test ALM on 2600-HZ switch by removing both generators (major alarm). Reinstall both generators at completion of tests.

[1] Obtain two 1025AN 2600-HZ generators and one 1025AP 2600-HZ switch

[2] Locate and identify shelf position for each plug-in unit [FIG. 1]

[3] Turn SW BYP switch on both 1025AN 2600-HZ GENS to the off position (counterclockwise)

[4] Install both 2600-HZ GENS in correct shelf position [FIG. 1 and DLP-515]

[5] If necessary to silence alarm, depress ACO button on alarm unit

ALM lamp
may light on
2600-HZ GEN

AND

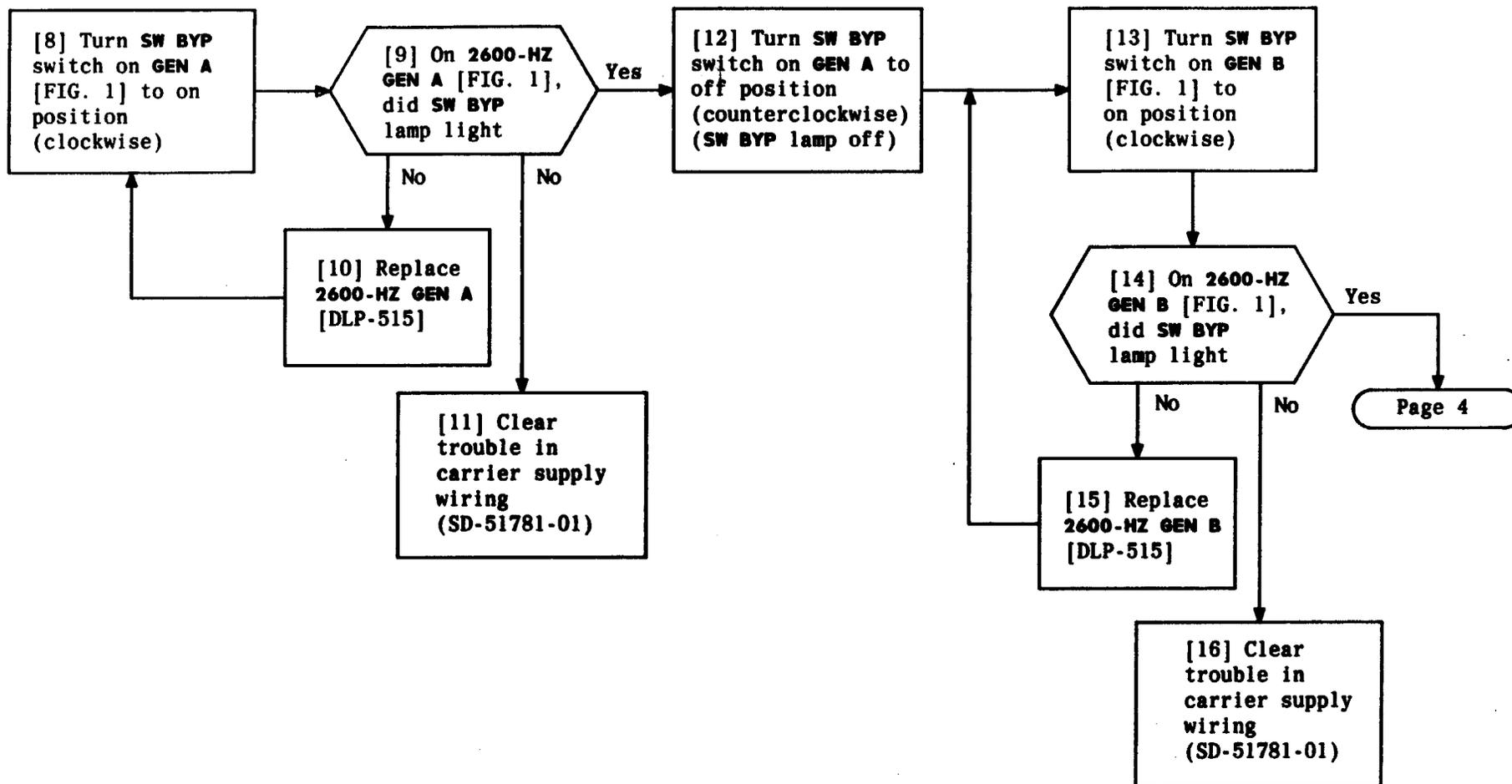
[6] Is ALM lamp
on either 2600-HZ
GEN lighted

No

Page 3

Yes

[7] Replace
defective
2600-HZ GEN
[DLP-515]



INSTALL AND TEST CARRIER SUPPLY 2600-HZ GENERATORS AND SWITCH

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[17] Turn SW BYP switch on GEN B to off position (counter-clockwise)

SW BYP lamp off

[18] Install 1025AP 2600-HZ switch [FIG. 1 and DLP-515]

AND

[19] On 2600-HZ switch, is either A lamp or B lamp lighted (not both)

Yes

[22] Press MAN SW button on 2600-HZ switch

No

No

[21] Clear trouble in carrier supply wiring (SD-51781-01)

[23] On 2600-HZ switch, is opposite lamp lighted (not both) (ie, if A was lighted, is B now lighted)

Yes

No

No

[20] Replace 2600-HZ switch [DLP-515]

[25] Repeat steps 22 and 23 for other lamp and go to step 26

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[24] Clear trouble in carrier supply wiring (SD-51781-01)

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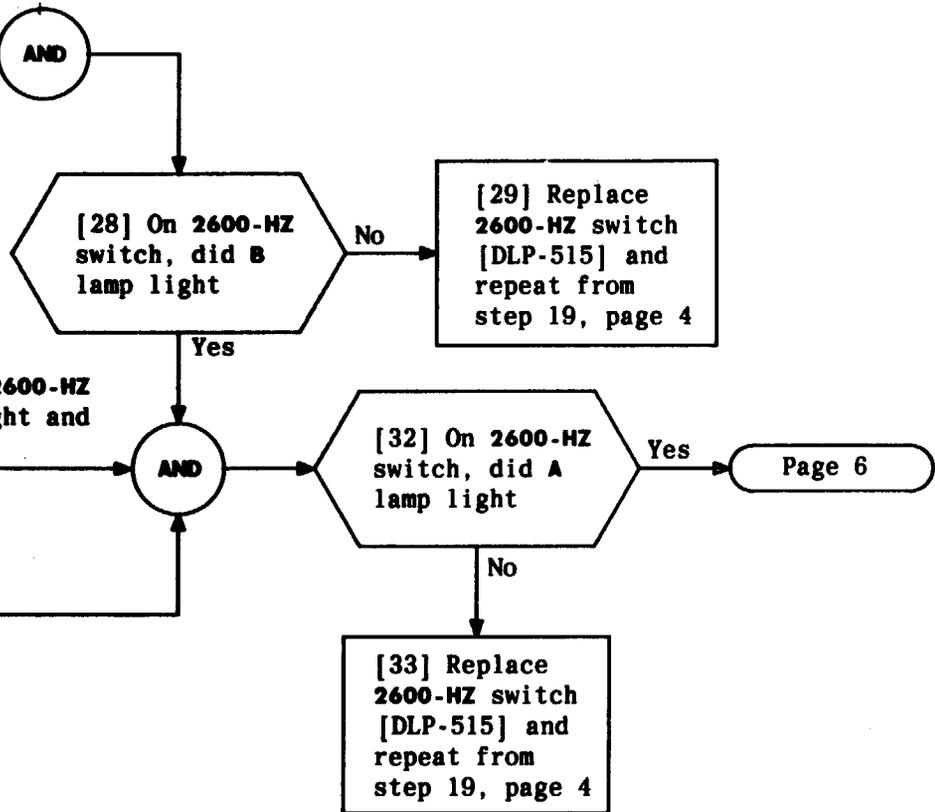
[26] Select **GEN A** by pressing **MAN SW** button on 2600-HZ switch, if necessary

[27] Remove **GEN A** from shelf [DLP-515]

[30] Reinstall **GEN A** to shelf [DLP-515] and press **ACO** button on **ALM UNIT**

[31] Remove **GEN B** from shelf [DLP-515]

ALM lamp on 2600-HZ **GEN A** may light and then go off

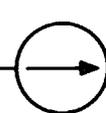


INSTALL AND TEST CARRIER SUPPLY 2600-HZ GENERATORS AND SWITCH

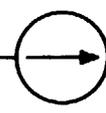
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[34] With GEN B still removed from shelf, remove GEN A from shelf [DLP-515]

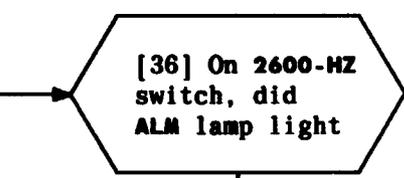
[35] Press ACO button on ALM unit to silence office alarms



Major alarm occurs



ACO lamp on fuse and alarm panel lights



No

[37] Replace 2600-HZ switch, return generators to shelf [DLP-515] and repeat from step 19, page 4

Yes

[38] Reinstall GEN A and B [DLP-515] and press ACO button on ALM UNIT (MJ lamp on ALM UNIT and major carrier supply alarm lamp on fuse and alarm panel go off)

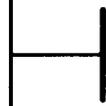


TABLE A Digroup Common Equipment Plug-in Units							
ITEM NO.	PLUG-IN UNIT	MAX. NO. RECD	APPARATUS CODE	ITEM NO.	PLUG-IN UNIT	MAX. NO. RECD	APPARATUS CODE
1	Digital Access Unit (DAU-3)	1	J98736AB	5	Receive Unit (RU)	1	J98726AB
2	Line Interface Unit (LIU-TIC)*	1	1030J	6	Combine and Split (C&S)‡	2	1030E
	Line Interface Unit (LIU-3)	1	J98726AH	7	Combine and Split (C&S)§	2	1030F
3	Syndes Unit (SU)†	1	J98726AG	8	Alarm Control Unit (ACU-2)	1	1030D
4	Transmit Unit (TU)	1	J98726AA	9	Power Unit (PCU)	1	282B
					Blank Insert	1	ED-3C648-30

* Required only for TIC operation
† Required only for TIC operation
‡ C&S (1030E) is for groups not equipped for CFA
§ C&S (1030F) is for groups equipped for CFA

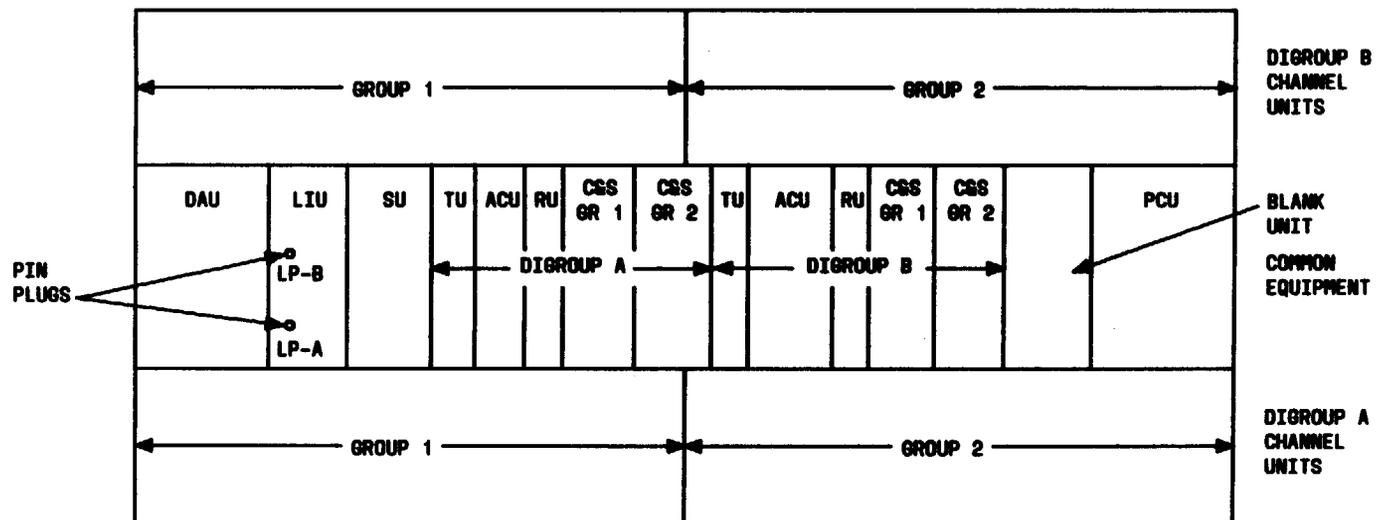


FIG. 1 - Front View of Double Digroup

INSTALL DIGROUP COMMON EQUIPMENT

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[1] Obtain required common equipment plug-in units [TABLE A]

[2] Locate and identify shelf position for each plug-in unit [FIG. 1]

[3] See TABLE A, Item 1. Install digital access unit (not required if installing second digroup) [DLP-515]

[4] See TABLE A, Item 2. Install line interface unit (LIU-T1C or LIU-3) (not required if installing second digroup) [DLP-515]

[5] See CAUTION 1. Insert pin plug into the LP jack (LIU-T1C) or LP-() jack (LIU-3) associated with digroup being established [FIG. 1]

[6] See TABLE A, Item 3. If establishing T1C double digroup, install syndes unit [DLP-530]

[7] See TABLE A, Item 4. Install transmit unit [DLP-515]

[8] See TABLE A, Item 5. Install receive unit [DLP-515]

[9] See TABLE A, Item 6. Install combine and split units [DLP-515]

AND

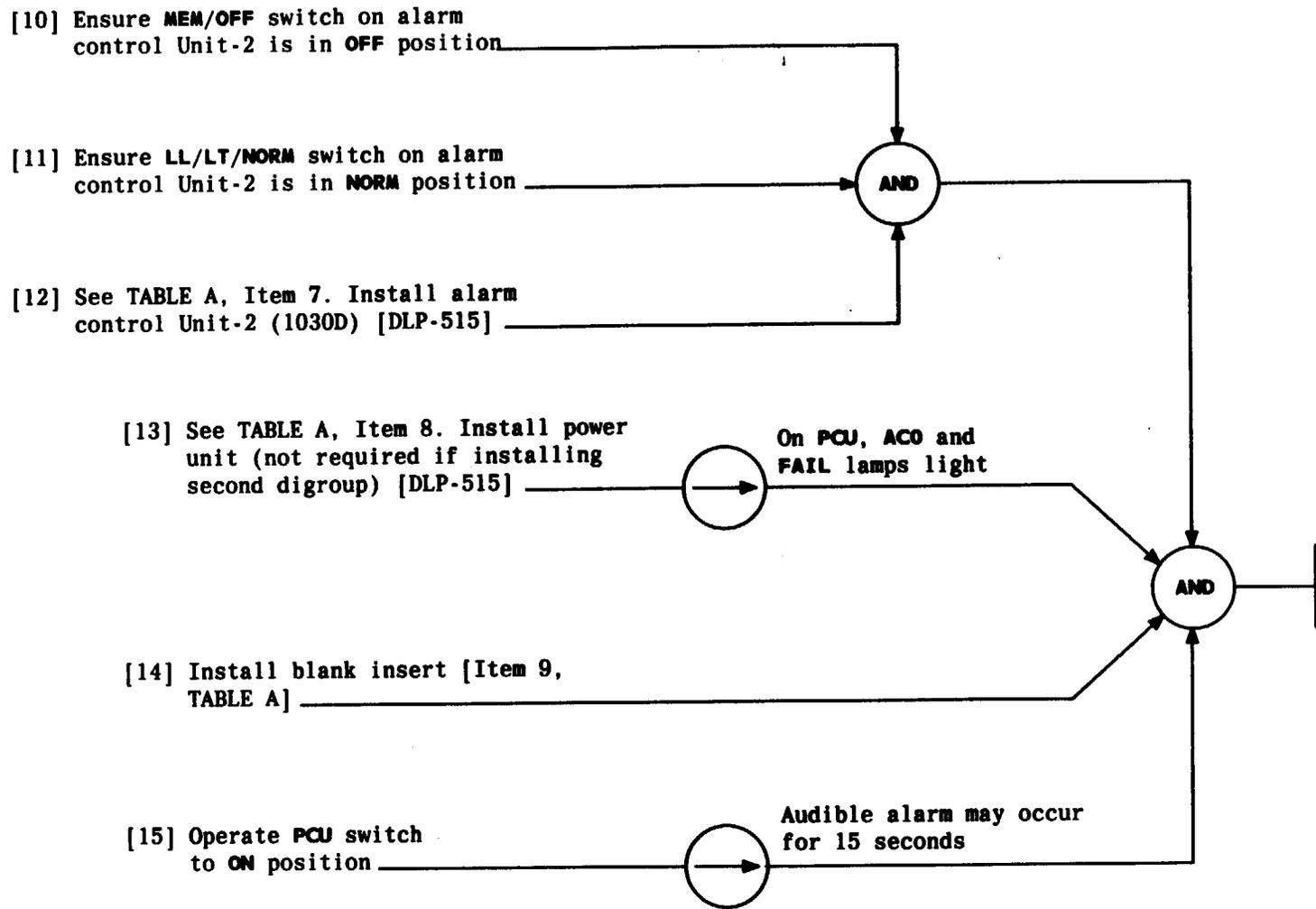
AND

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CAUTION 1
If one digroup in double digroup has been installed and is in service, DO NOT insert pin plug into LIU LP-() jack associated with in-service digroup (LP-A jack loops digroup A; LP-B jack loops digroup B)

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INSTALL DIGROUP COMMON EQUIPMENT



INSTALL DIGROUP COMMON EQUIPMENT

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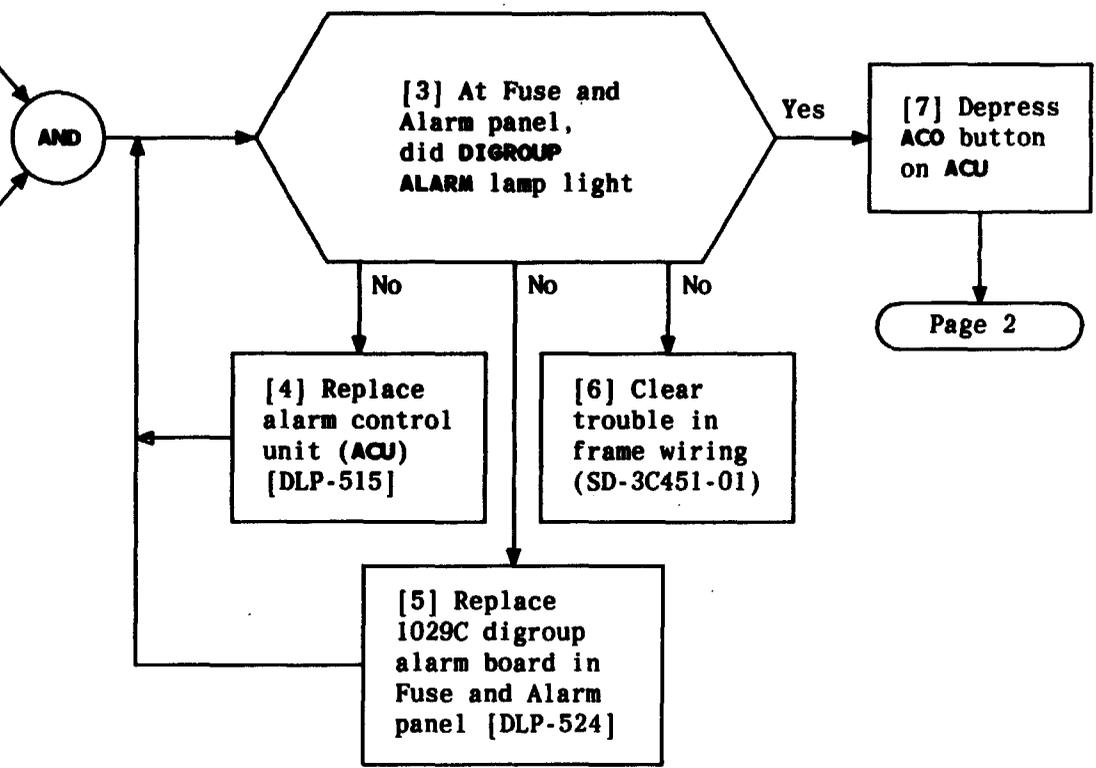
SUMMARY

With looping plug installed in LT OUT jack of DAU-3, remove pin plug from appropriate LP-() jack at LIU. On RU, the RCV lamp should light and, on ACU-2, the AR lamp and TP lamp

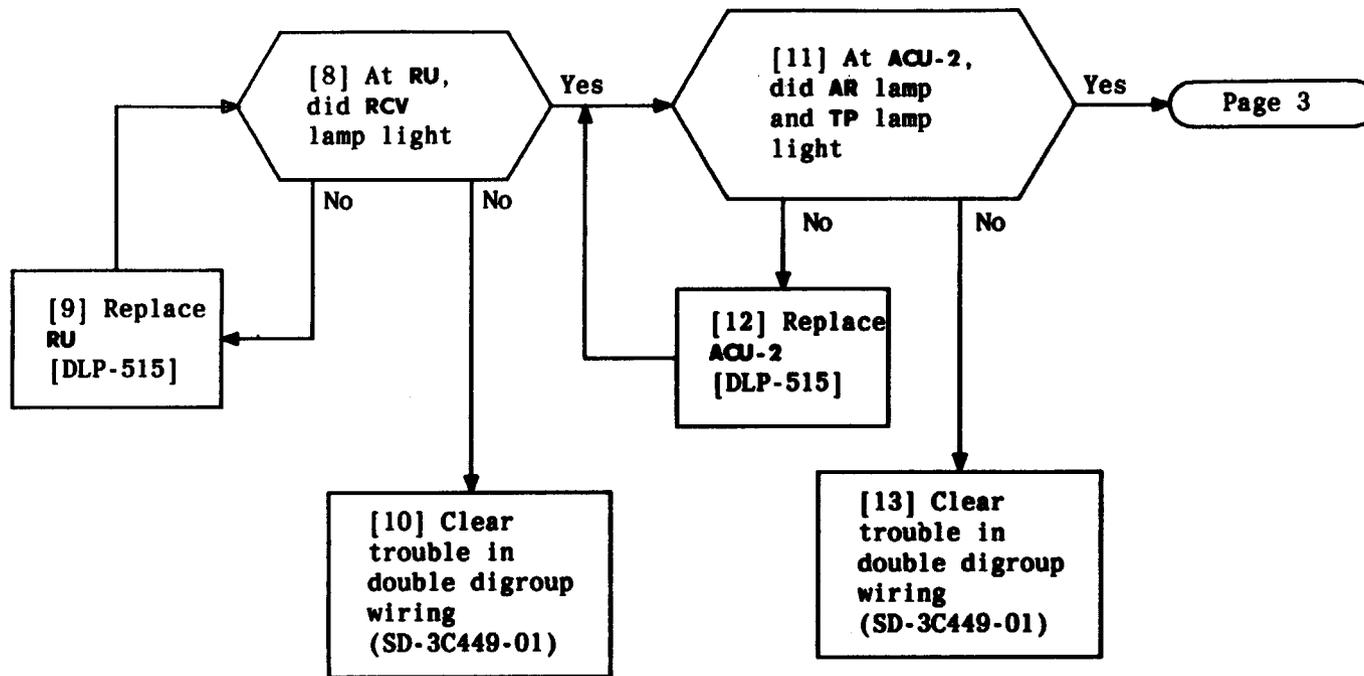
should light. When pin plug is returned to LP-() jack, AY lamp on ACU-2 should light, and RCV lamp on RU and AR lamp on ACU-2 should go off immediately. The AY and TP lamps on ACU-2 should go off about 15 seconds later.

[1] At DAU-3, ensure plastic dummy plug is inserted into LT OUT jack for digroup being tested

[2] At LIU, remove pin plug from appropriate jack for digroup being tested (LP-A for digroup A, LP-B for digroup B)

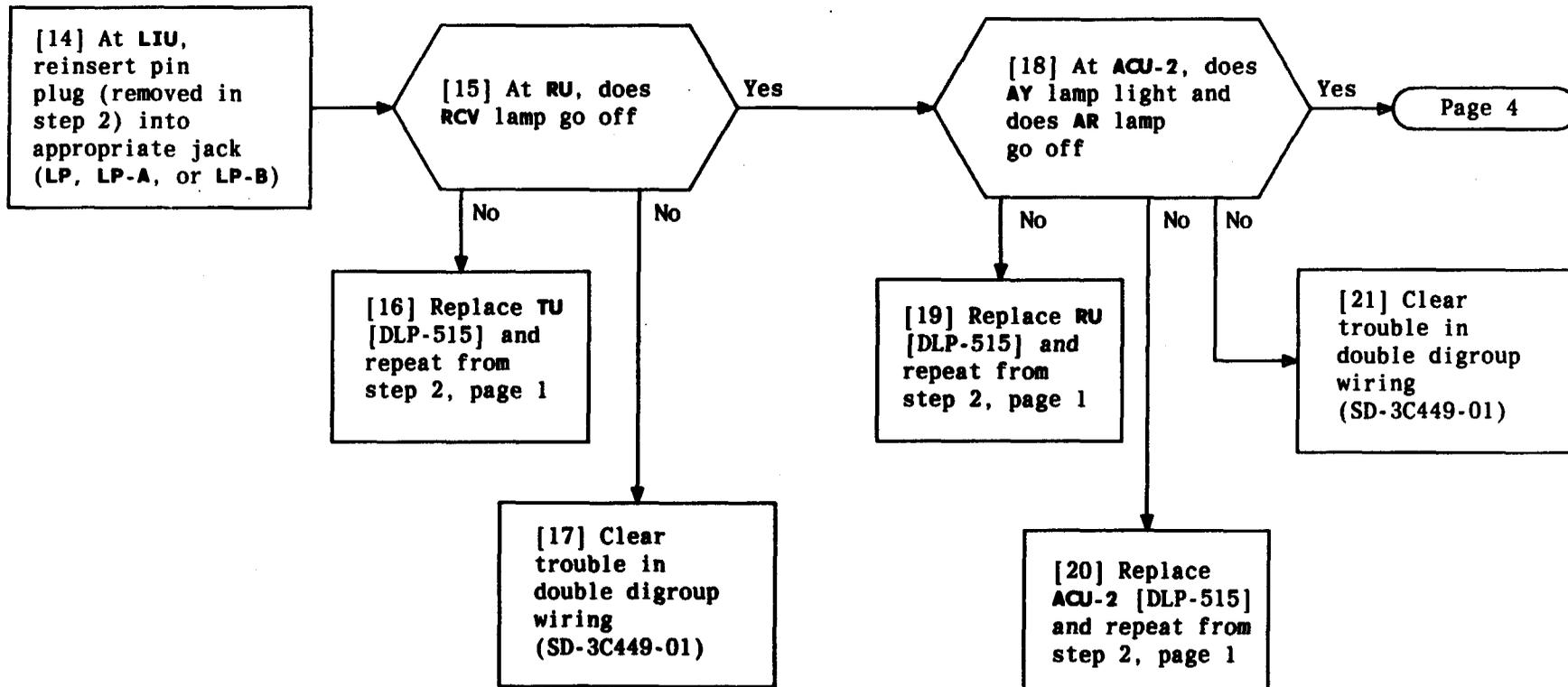


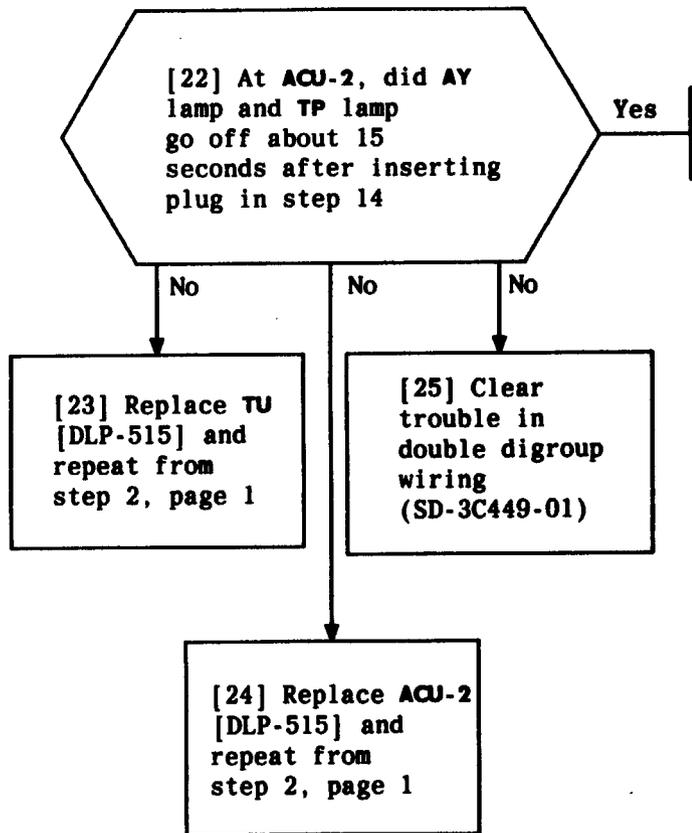
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TEST COMMON EQUIPMENT ALARMS

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TEST COMMON EQUIPMENT ALARMS

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- [1] From circuit order, determine channels to be established
- [2] Obtain required channel unit plug-in units [TABLE A]
- [3] From circuit order, determine 68-type circuit modules to be used for channels being established
- [4] Obtain required 68-type circuit modules (CKT MOD) [TABLE B]

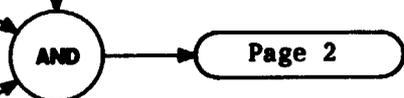


TABLE A - LT-1B CHANNEL UNITS		
PLUG-IN UNITS	REQUIRED	APPARATUS CODE
LT-1B Channel Unit - Ch1	1	1047 A
LT-1B Channel Unit - Ch2	1	1048 A
LT-1B Channel Unit - Ch3	1	1047 B
LT-1B Channel Unit - Ch4	1	1048 B
LT-1B Channel Unit - Ch5	1	1047 C
LT-1B Channel Unit - Ch6	1	1048 C
LT-1B Channel Unit - Ch7	1	1047 D
LT-1B Channel Unit - Ch8	1	1048 D
LT-1B Channel Unit - Ch9	1	1047 E
LT-1B Channel Unit - Ch10	1	1048 E
LT-1B Channel Unit - Ch11	1	1047 F
LT-1B Channel Unit - Ch12	1	1048 F

TABLE B 68-TYPE CIRCUIT MODULES	
COMMON CHANNEL INTEROFFICE SIGNALING (CCIS)	68A CIRCUIT MODULE
TWO-STATE SIGNALING	68B CIRCUIT MODULE
SPECIAL ACCESS - ANALOG STATION/DIGITAL OFFICE	68C CIRCUIT MODULE
SPECIAL ACCESS - ANALOG OFFICE/DIGITAL STATION	68D CIRCUIT MODULE

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[5] From office records, determine EML of analog trunk being established

[6] From office records, determine type of analog trunk (1-way, 2-way, etc.), type of signaling, and whether equipped for carrier failure alarm (CFA)

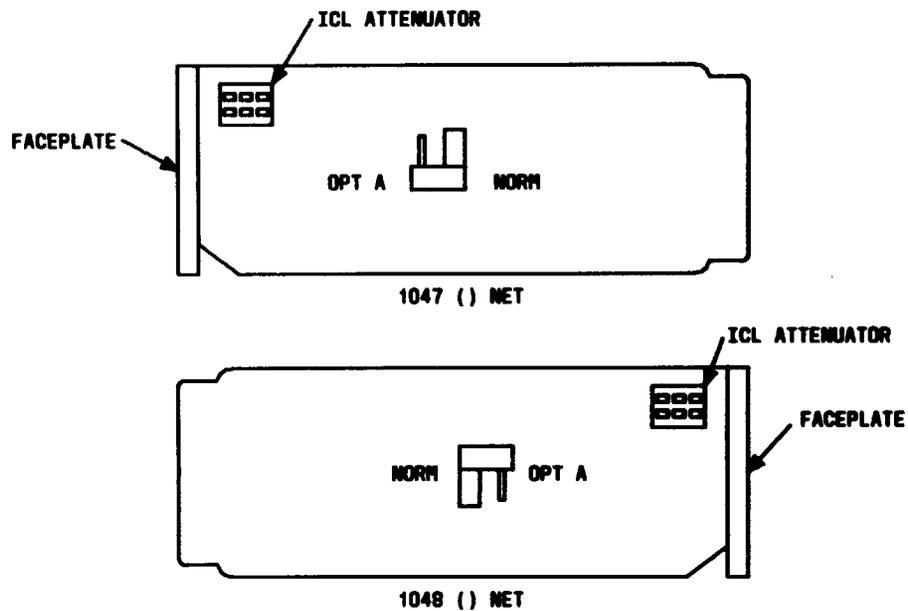
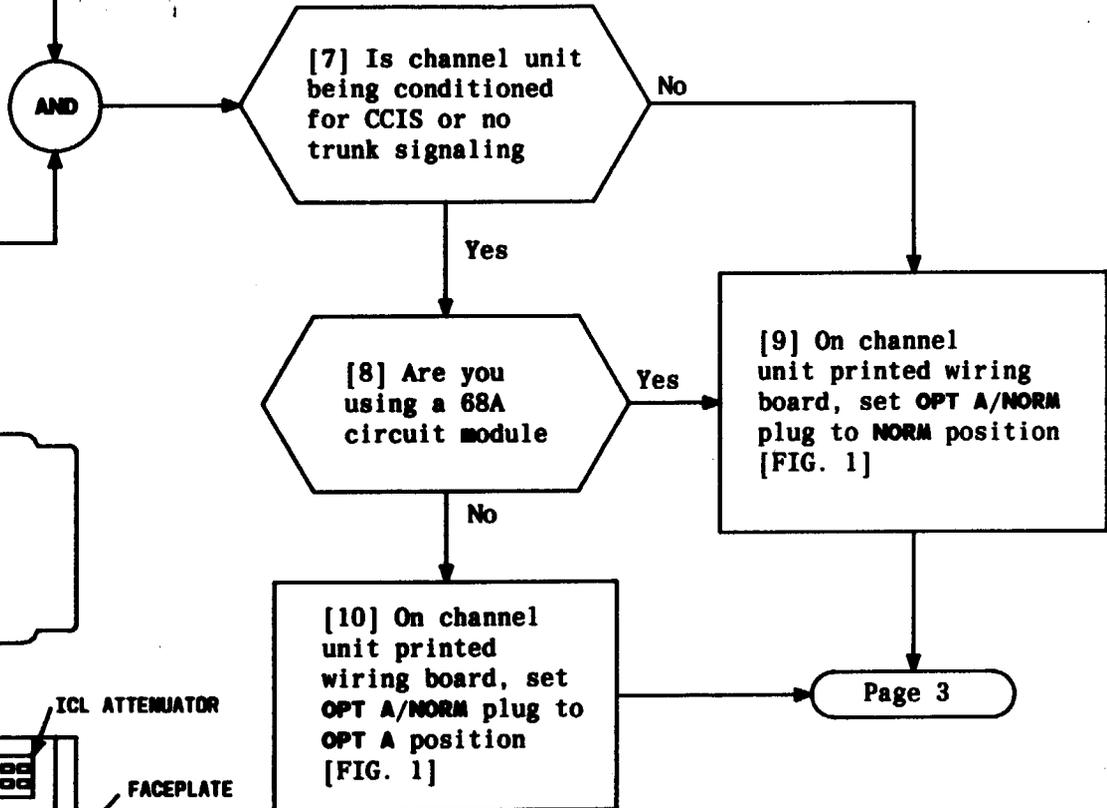


FIG. 1 - Location of OPT A/NORM (NORM/OPT A) and ICL Attenuator on Channel Unit PWBs

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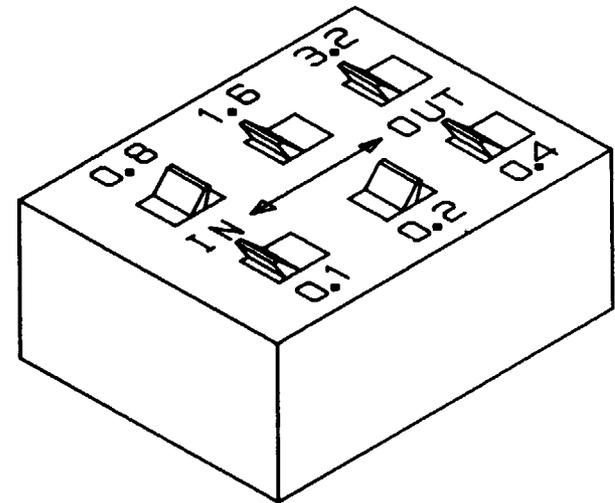
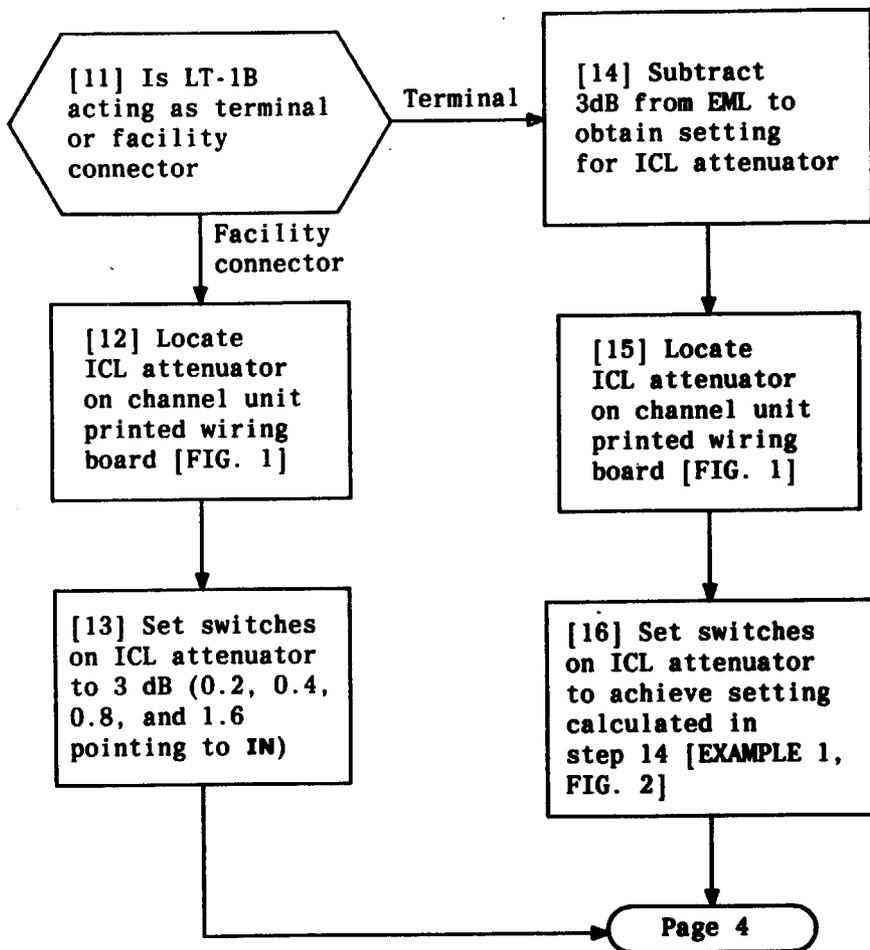


FIG. 2 - ICL Attenuator Set for 5.3 dB

EXAMPLE 1
 If EML = 8.3 dB, then required ICL setting is $8.3 \text{ dB} - 3 \text{ dB} = 5.3 \text{ dB}$. Therefore, the ICL switches pointing to IN should be 3.2, 1.6, 0.4, and 0.1 because $3.2 + 1.6 + 0.4 + 0.1 = 5.3 \text{ dB}$. The 0.8 and 0.2 switches should be pointing to OUT

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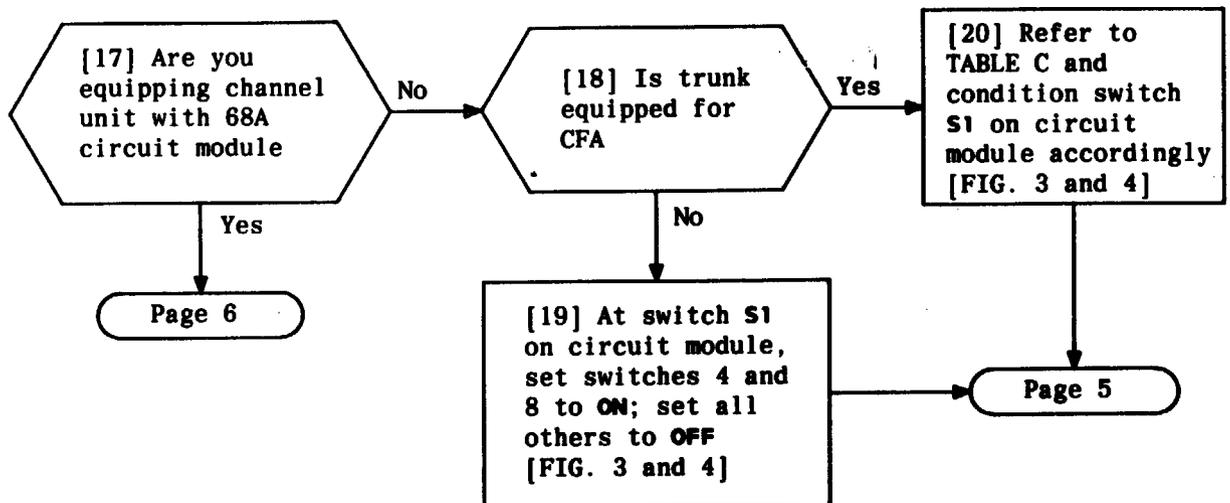


TABLE C CFA CONDITIONING (SWITCH S1)		
TRUNK TYPE	SWITCHES SET TO ON	SWITCHES SET TO OFF
2-way or 1-way out	1 and 5	2,3,4,6,7,8
1-way in	2 and 6	1,3,4,5,7,8
Special access - loop start	3 and 7	1,2,4,5,6,8
Trunks with no CFA	4 and 8	1,2,3,5,6,7

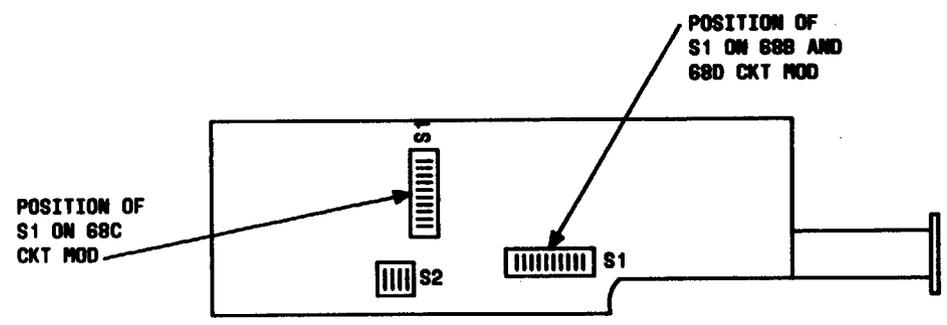
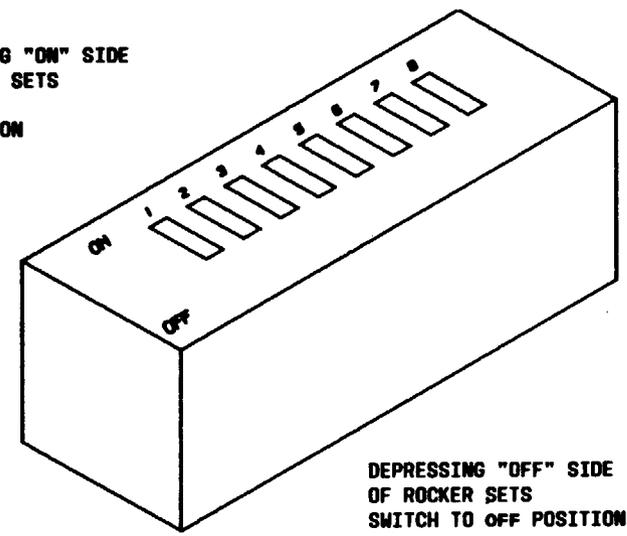


FIG. 3 - 68-Type Circuit Module Showing Location of CFA Conditioning Switch (S1) and Signaling Conditioning Switch (S2)

DEPRESSING "ON" SIDE OF ROCKER SETS SWITCH TO ON POSITION



DEPRESSING "OFF" SIDE OF ROCKER SETS SWITCH TO OFF POSITION

FIG. 4 - Setting of Rocker Switches on S1 and S2

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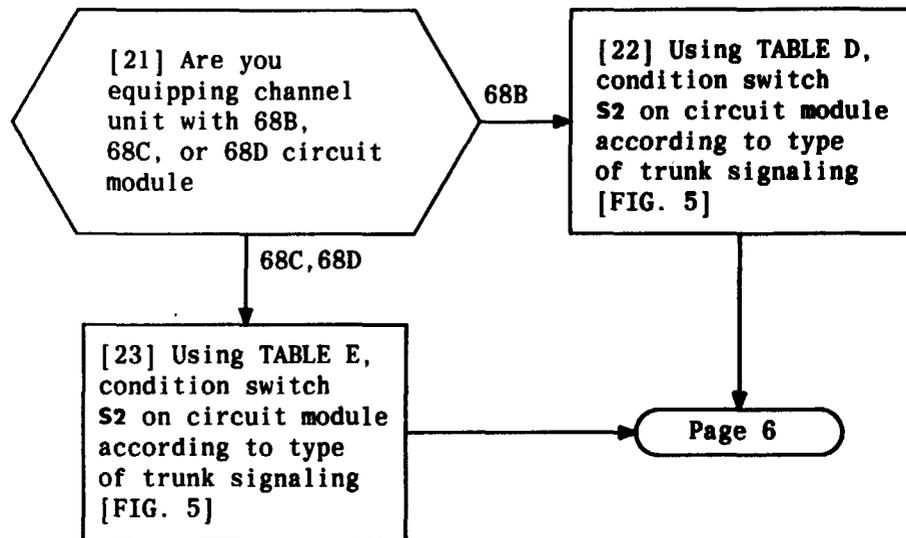


TABLE D 68B SIGNALING CONDITIONING (SWITCH S2)		
TRUNK SIGNALING	SWITCHES SET TO ON	SWITCHES SET TO OFF
DX, Loop, E and M, Ringdown	2	1,3,4
CCIS or No Trunk Signaling	3	1,2,4
Special Access - Loop Start Digital Station/Analog Office (Non-Step-By-Step Only)	2	1,3,4
Special Access - Loop Start Digital Office/Analog Station (Non-Step-By-Step Only)	1	2,3,4

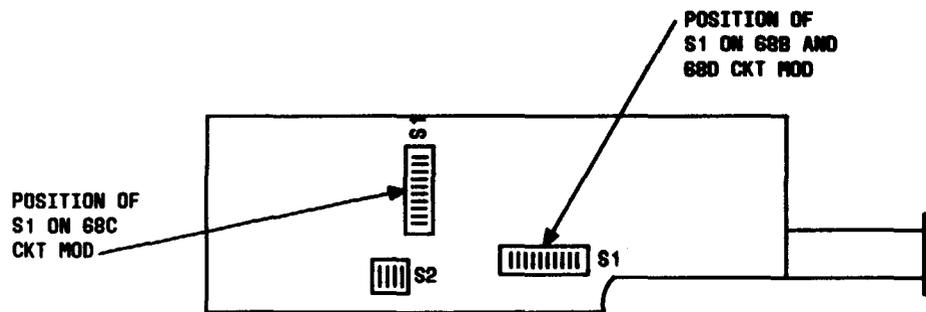


FIG. 5 - 68-Type Circuit Module Showing Location of CFA Conditioning Switch (S1) and Signaling Conditioning Switch (S2)

TABLE E 68C/68D SIGNALING CONDITIONING (SWITCH S2)		
TRUNK SIGNALING	SWITCHES SET TO ON	SWITCHES SET TO OFF
Special Access - Ground Start	1	2,3,4
Special Access - Loop Start	-	1,2,3,4
CCIS or No Trunk Signaling	3	1,2,4

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[24] Referring to FIG. 6,
assemble 68-type circuit
module to channel unit
printed wiring board

[25] Secure printed wiring
boards together using two
0.112-40x1/4 Phillips head
machine screws

[26] See FIG. 7. Locate and
identify correct shelf
position for each channel
unit

[27] Install channel units in
correct shelf positions
[DLP-515]

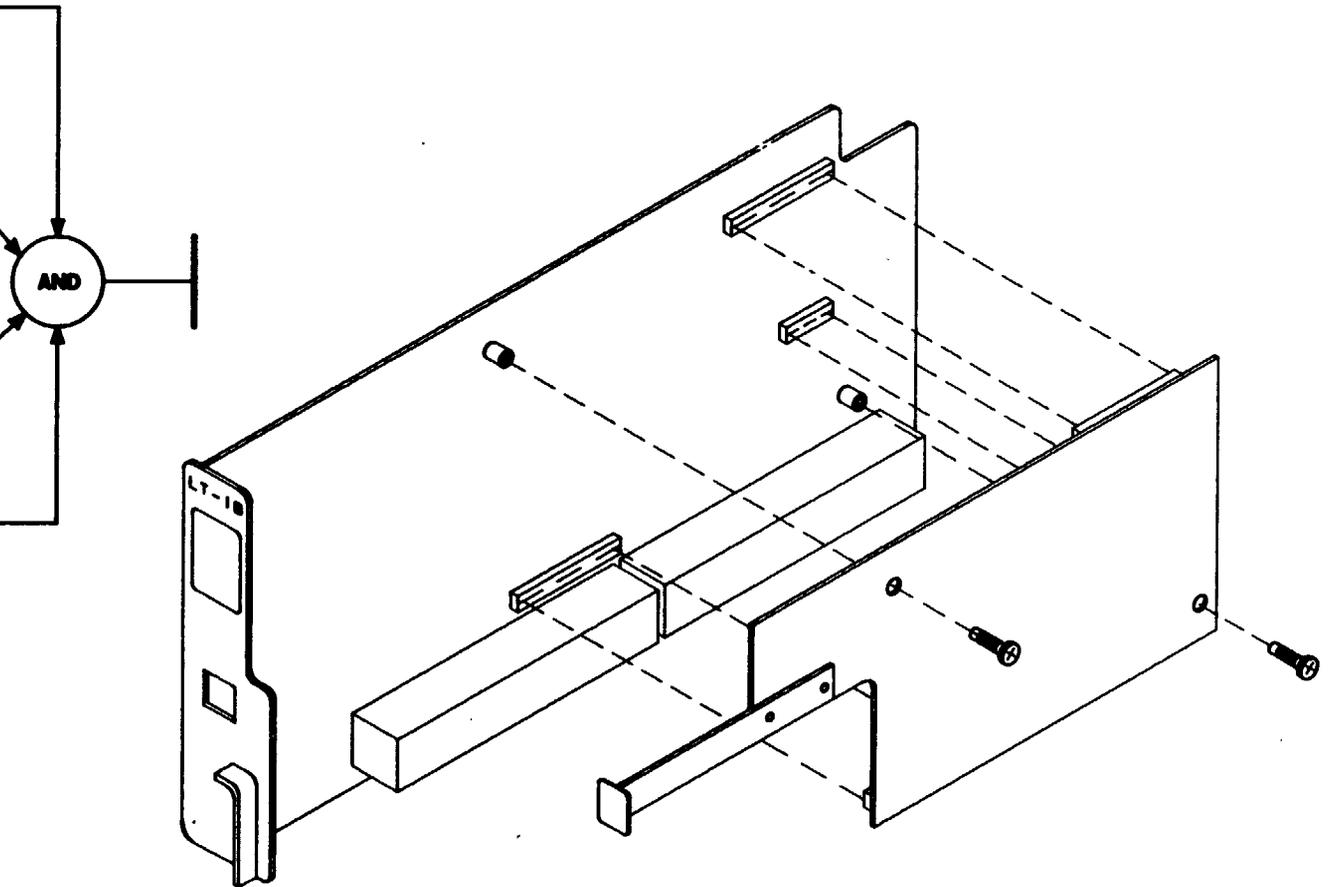


FIG. 6 - Circuit Module Assembly

CONDITION AND INSTALL CHANNEL UNIT PLUG-IN UNITS

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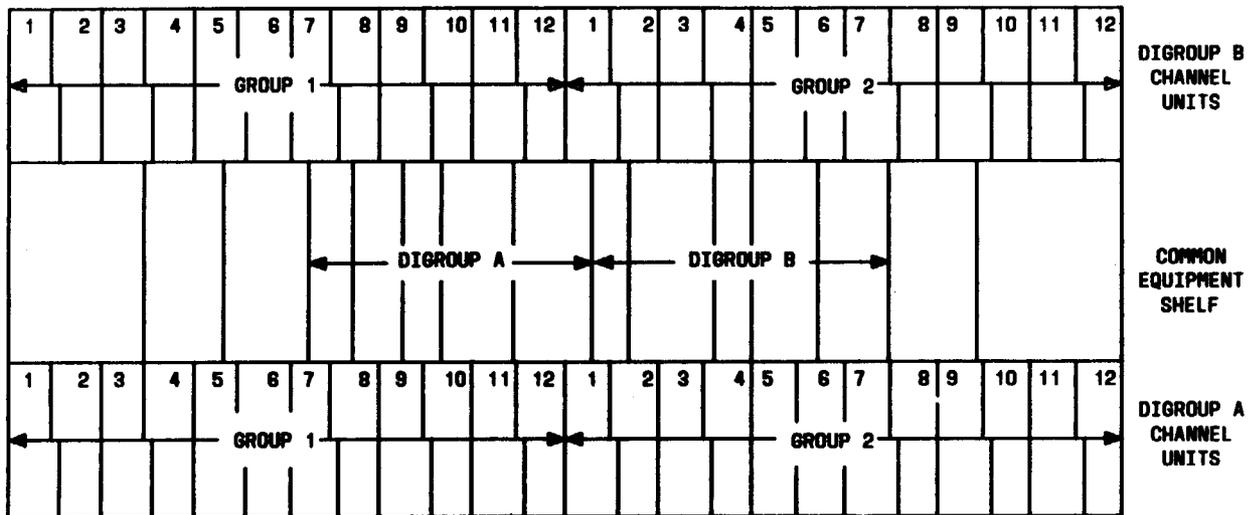
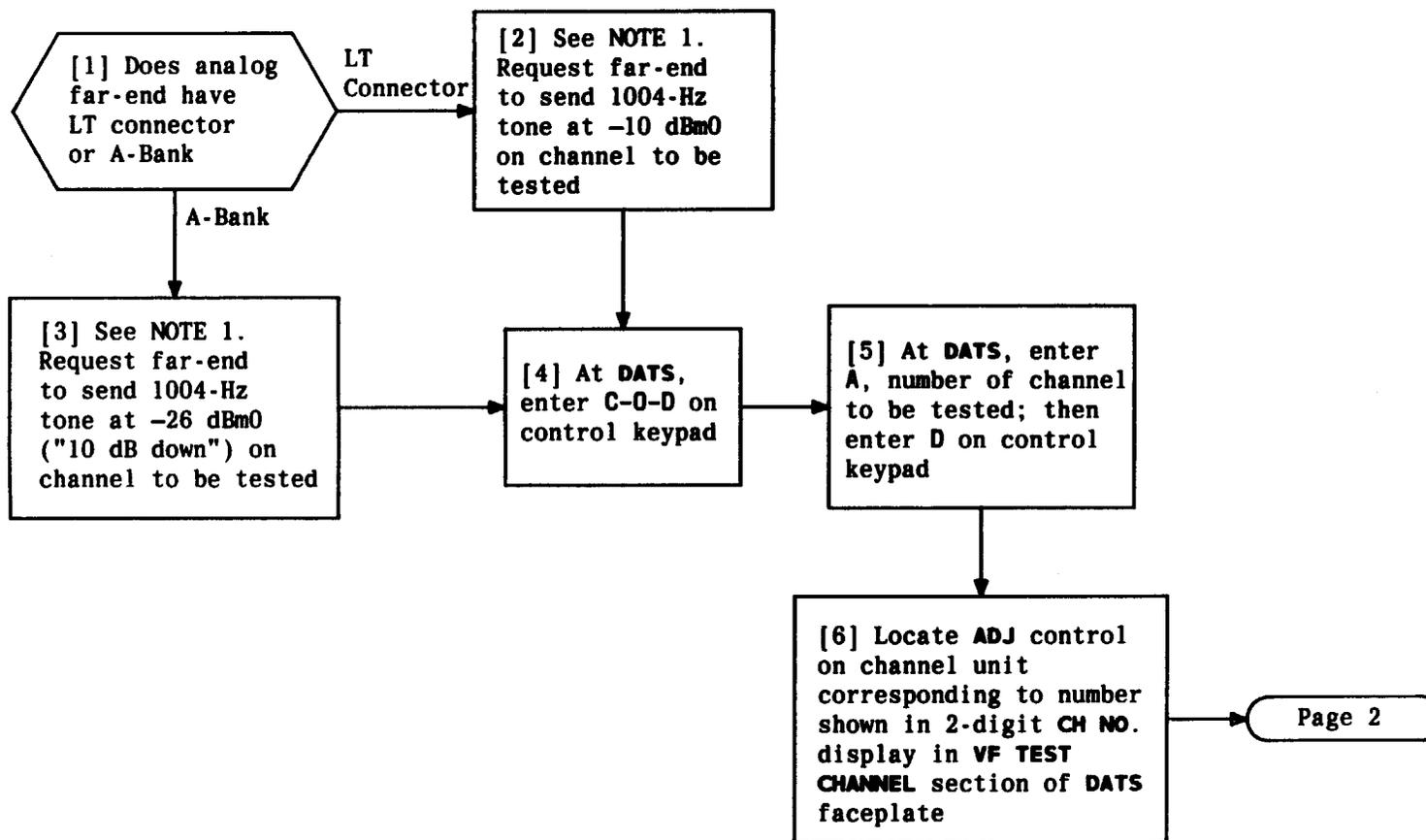


FIG. 7- Double Digroup Plug-In Locations

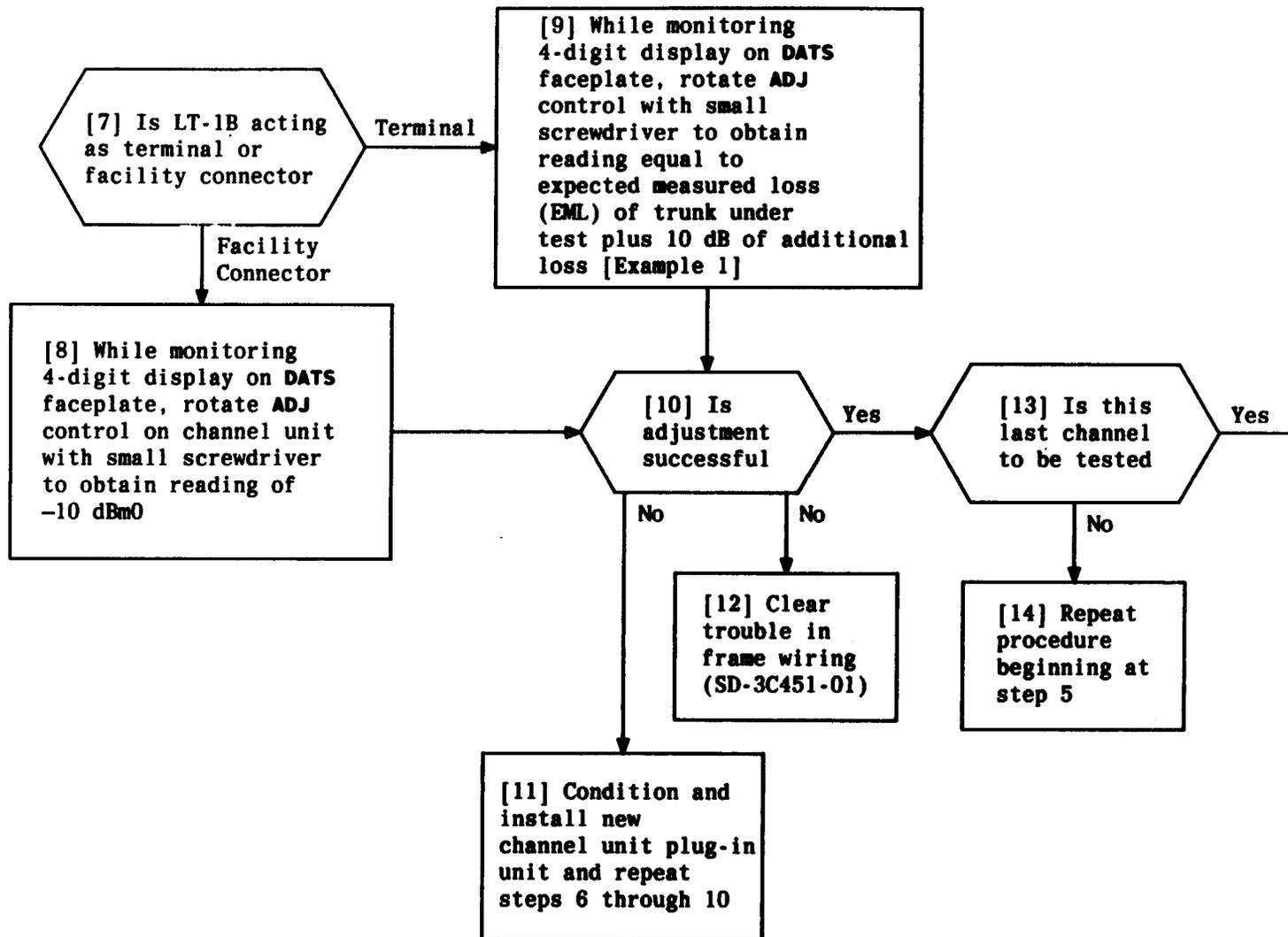
SUMMARY

Swap -10 dBm0, 1004-Hz tones with analog far-end office. Set VF amplifier gain on LT-1B channel units by rotating ADJ control on the unit while monitoring digital access time slot selector (DATS) 4-digit display for correct reading. Repeat procedure for each trunk to be tested.



NOTE 1
 If far-end office has trunks arranged in groups (12 channels) rather than digroups (24 channels), channels being tested are identified using numbers 1 through 12 as shown on shelf stamping above each channel unit. Having trunks arranged in groups avoids confusion for technician at far-end office. Numbers 1 through 24 (displayed on 2-digit CH NO. readout on DATS) apply to channel designations in digroups only

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EXAMPLE 1	
If EML equals 5.4 dB, required reading would be:	
-(5.4 dB + 10 dB) =	
-15.4 dB	
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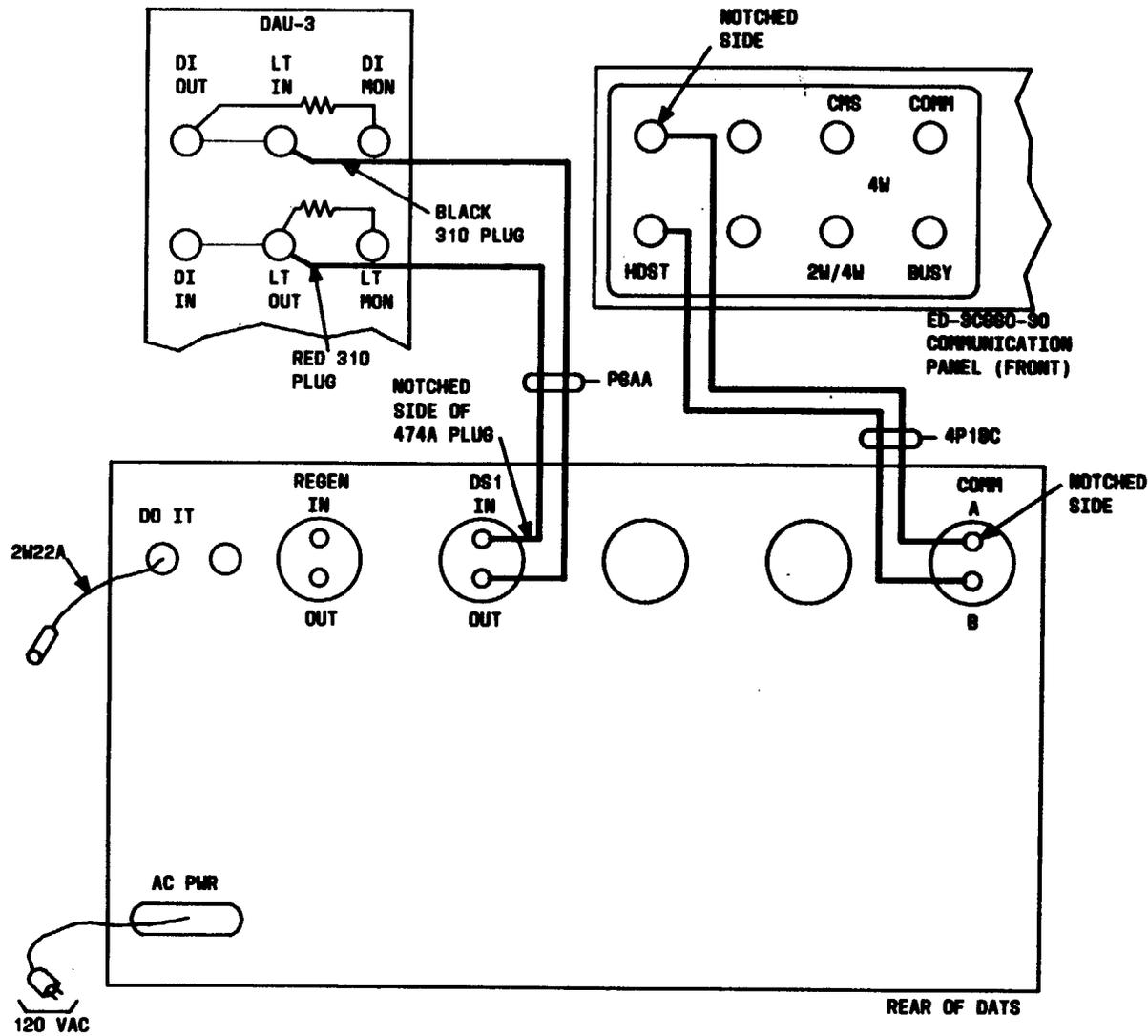


FIG. 1 - Test Connections Between LT-1B and DATS

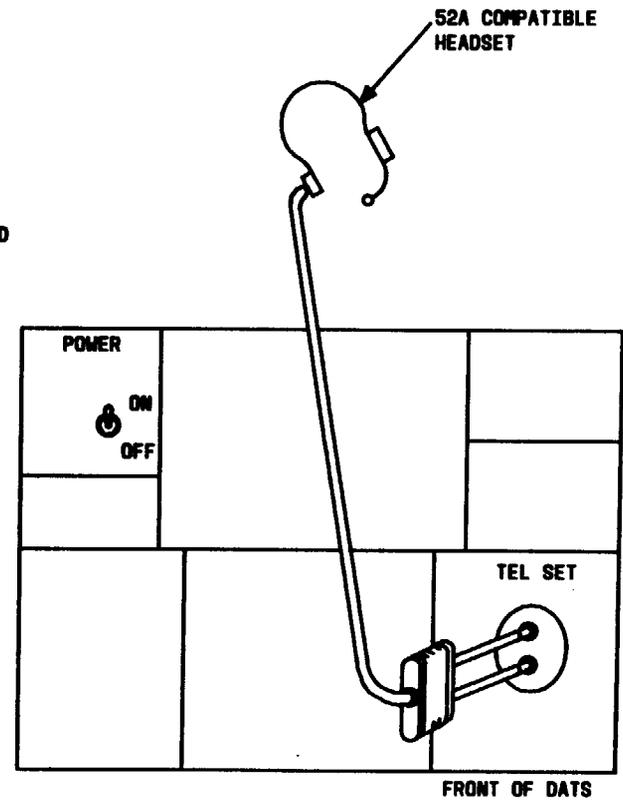


FIG. 2 - Headset Connection to DATS

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[1] Connect digital access time slot selector (DATS) power cord to 120-Vac source [FIG. 1]

[2] Operate POWER switch on DATS front panel to ON position [FIG. 2]. Ignore DATS indicators

[3] Connect P6AA test cord (474A dual plug) to DS1 IN and DS1 OUT jacks on DATS rear panel. Notched side of plug must be up [FIG. 1]

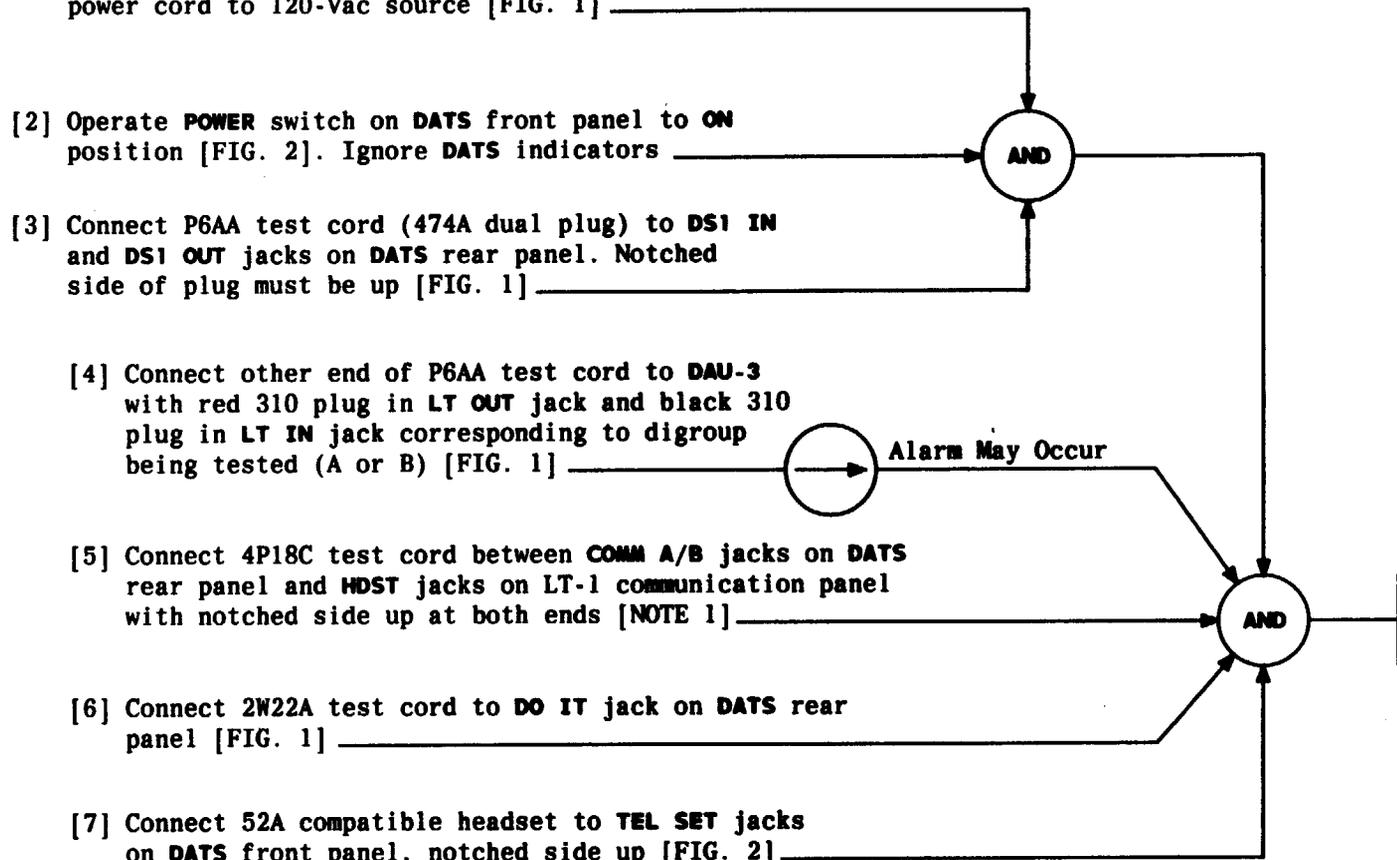
[4] Connect other end of P6AA test cord to DAU-3 with red 310 plug in LT OUT jack and black 310 plug in LT IN jack corresponding to digroup being tested (A or B) [FIG. 1]

[5] Connect 4P18C test cord between COMM A/B jacks on DATS rear panel and HDST jacks on LT-1 communication panel with notched side up at both ends [NOTE 1]

[6] Connect 2W22A test cord to DO IT jack on DATS rear panel [FIG. 1]

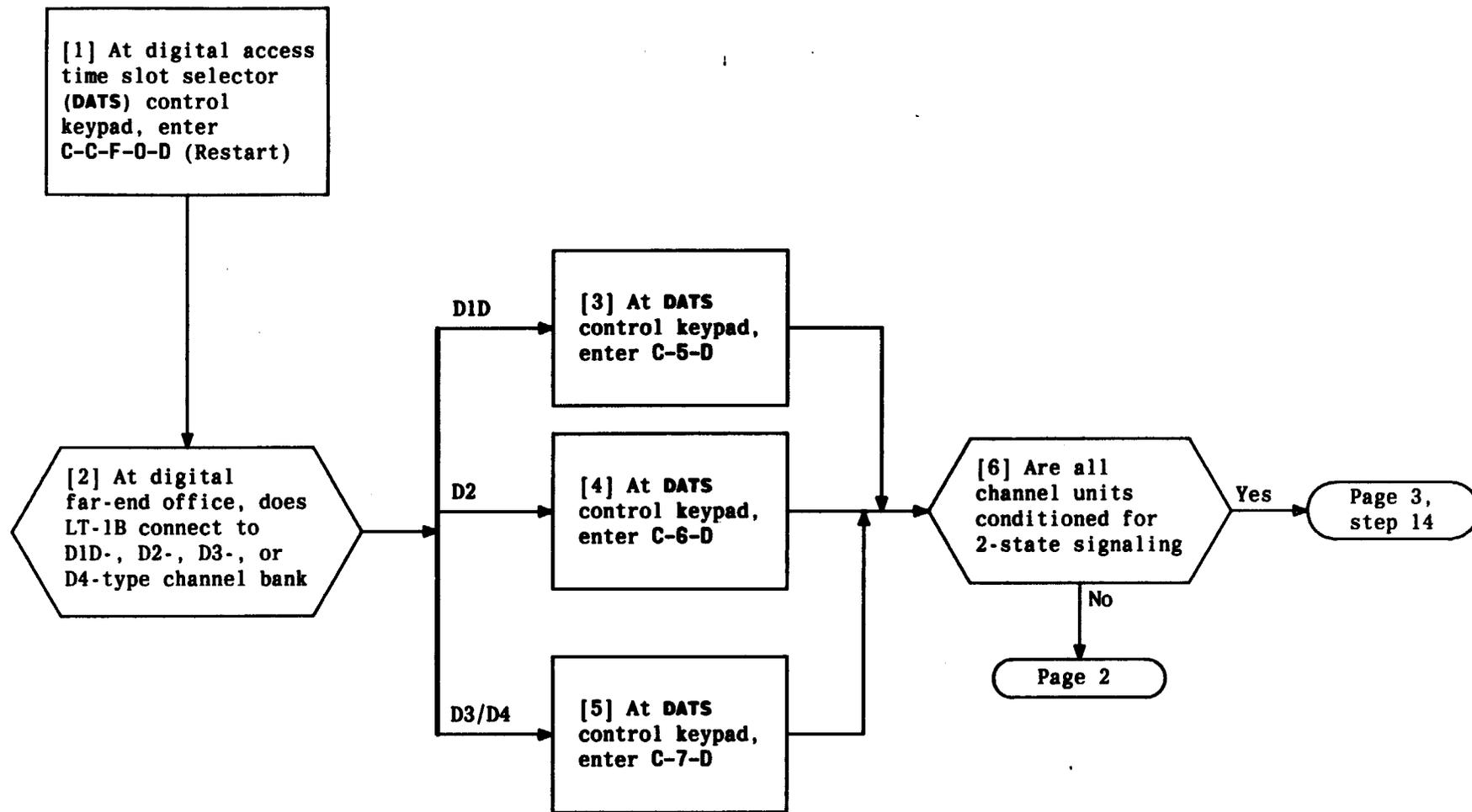
[7] Connect 52A compatible headset to TEL SET jacks on DATS front panel, notched side up [FIG. 2]

Alarm May Occur



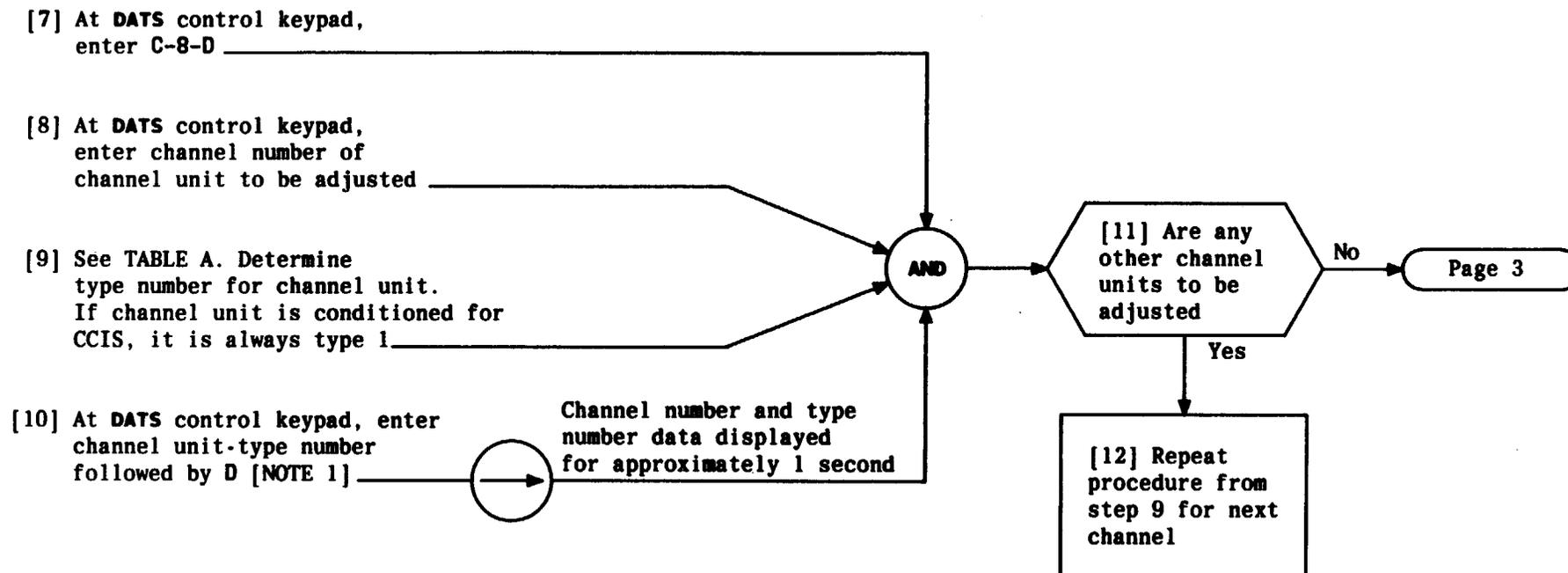
NOTE 1	
If there is not a communication panel in the LT-1B frame at which you are working, one should be in another frame in the aisle	
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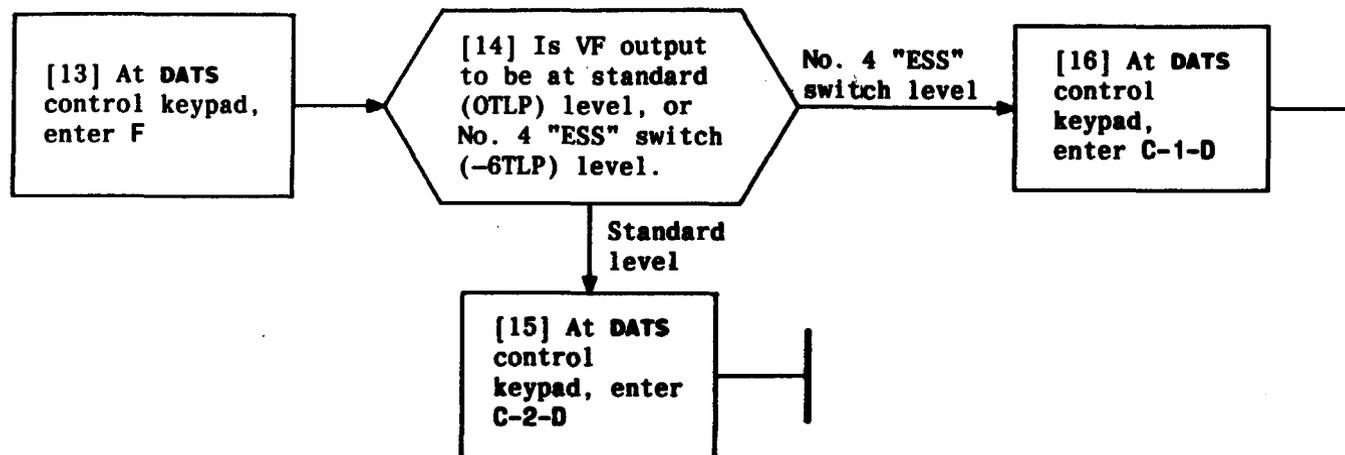
PROGRAM DATS FOR CHANNEL UNIT SIGNALING CONFIGURATION

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CHANNEL UNIT SIGNALING CONFIGURATION	CHANNEL UNIT TYPE NUMBER
CCIS (68A, 68B, 68C, 68D)	1
2-State (68B)	2
SPECIAL ACCESS - LOOP START (68D)	3
SPECIAL ACCESS - GROUND START (68D)	4
SPECIAL ACCESS - LOOP START (68C)	5
SPECIAL ACCESS - GROUND START (68C)	6

NOTE 1	
Mistakes may be corrected by repeating entry per steps 8, 9, and 10	
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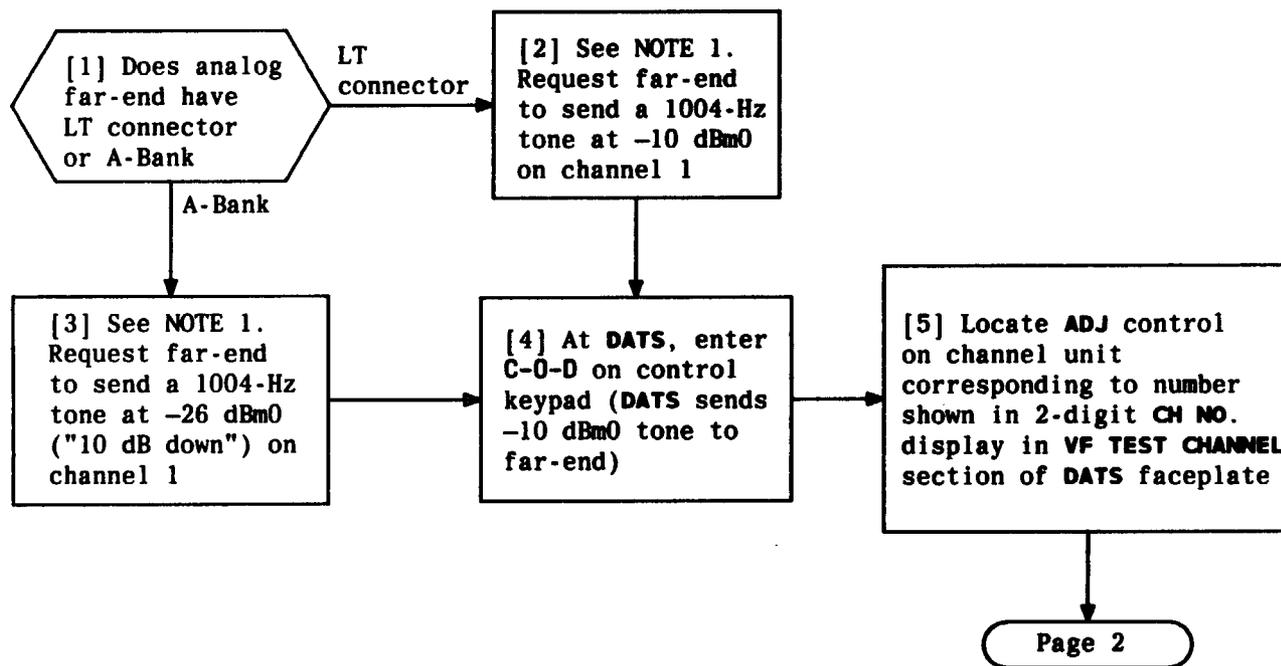
PROGRAM DATS FOR CHANNEL UNIT SIGNALING CONFIGURATION

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SUMMARY

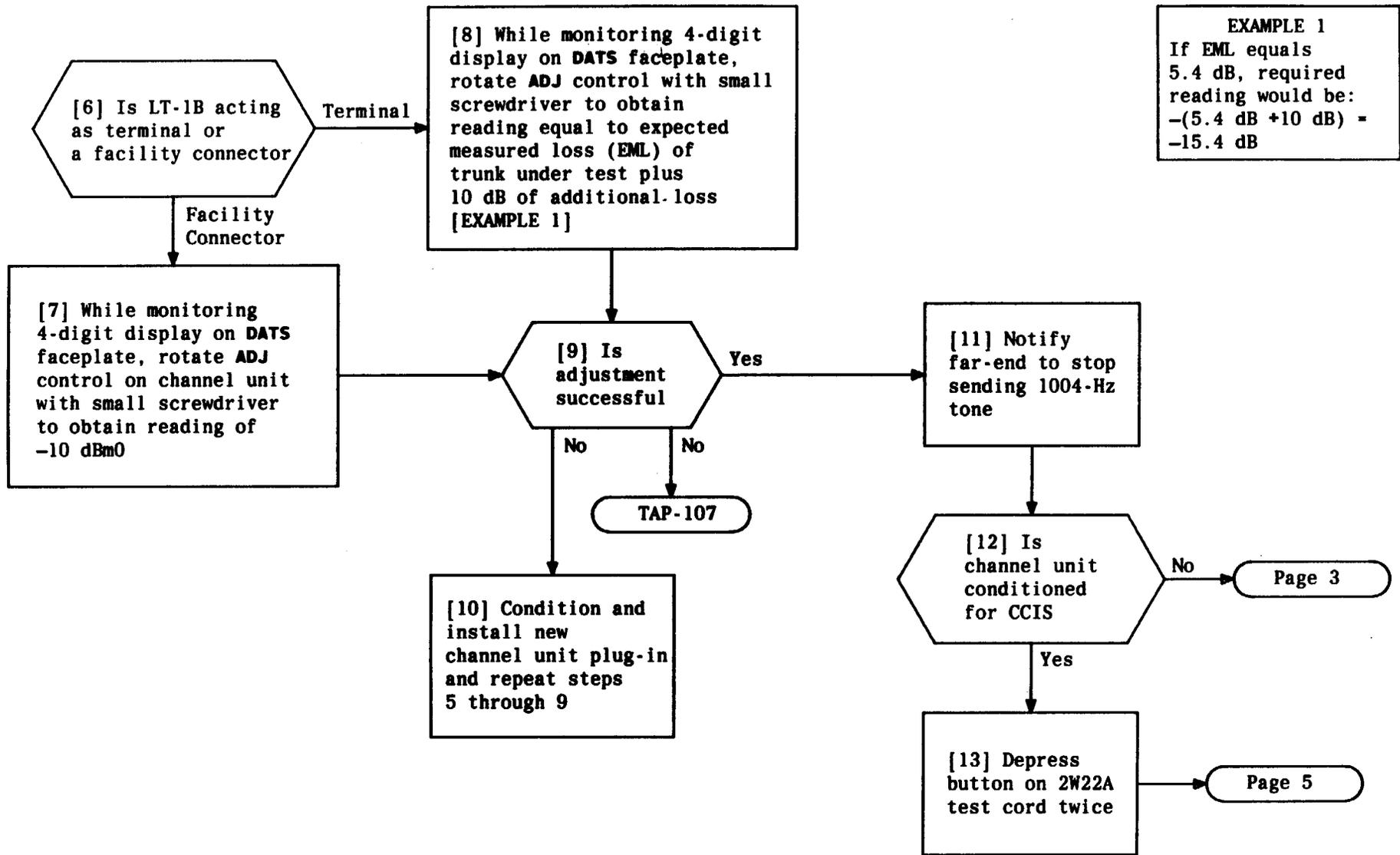
Swap 1004-Hz tones with analog far-end office. Set VF amplifier gain on LT-1B channel units by adjusting ADJ control on LT-1B channel unit while monitoring digital access time slot selector (DATS) 4-digit display for correct reading

of -10 dBm0. For trunks using E- and M-type signaling, swap on-hook and off-hook supervision with far-end while monitoring E RCV A and E RCV B lamps on DATS (lamps light for on-hook). Conduct talk test with analog far-end on trunk under test. Repeat procedure for each trunk to be tested.



NOTE 1
 If far-end office has trunks arranged in groups (12 channels) rather than digroups (24 channels), channels being tested are identified using numbers 1 through 12 as shown on shelf stamping above each channel unit. This avoids confusion for technician at far-end office. Numbers 1 through 24 (displayed on 2-digit CH NO. readout on DATS) apply to channel designations in digroups only

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EXAMPLE 1
 If EML equals 5.4 dB, required reading would be:
 $-(5.4 \text{ dB} + 10 \text{ dB}) = -15.4 \text{ dB}$

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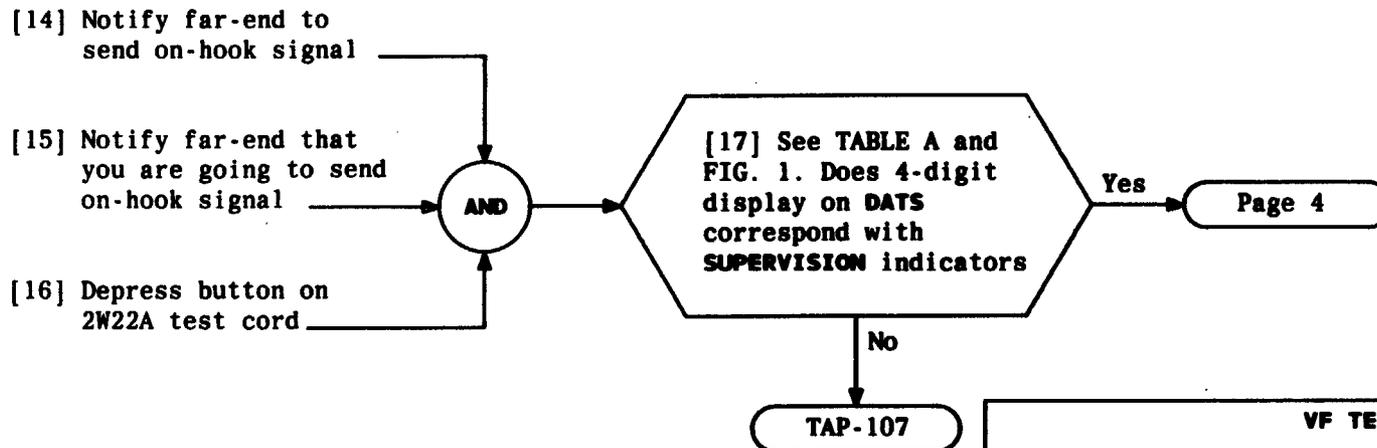


TABLE A	
IF 4-DIGIT DISPLAY INDICATES	CORRESPONDING SUPERVISION INDICATORS SHOULD BE
1	LIGHTED
0	OFF
BLANK	DOES NOT MATTER; INDICATOR COULD BE LIGHTED OR OFF

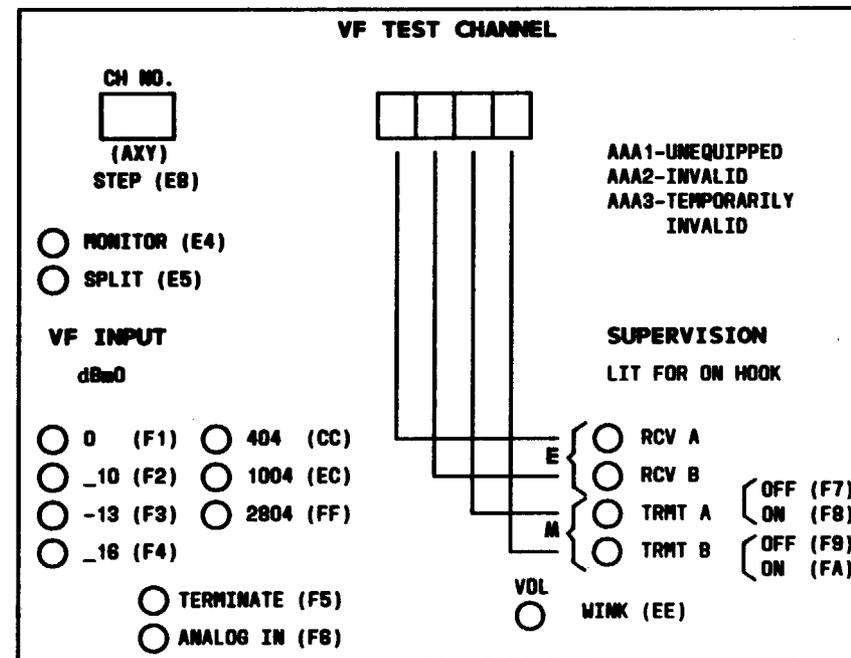
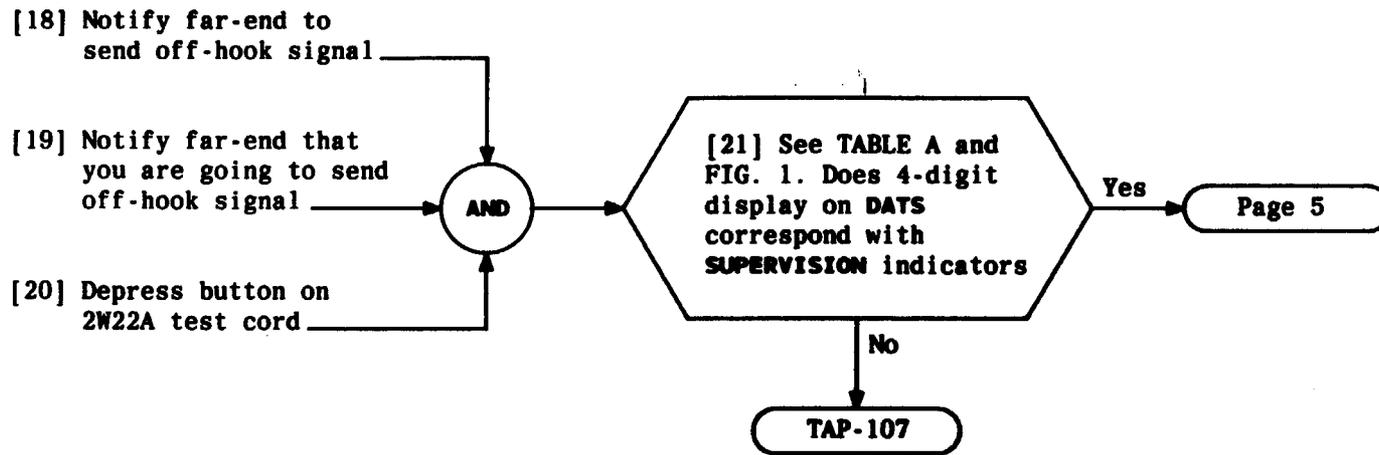
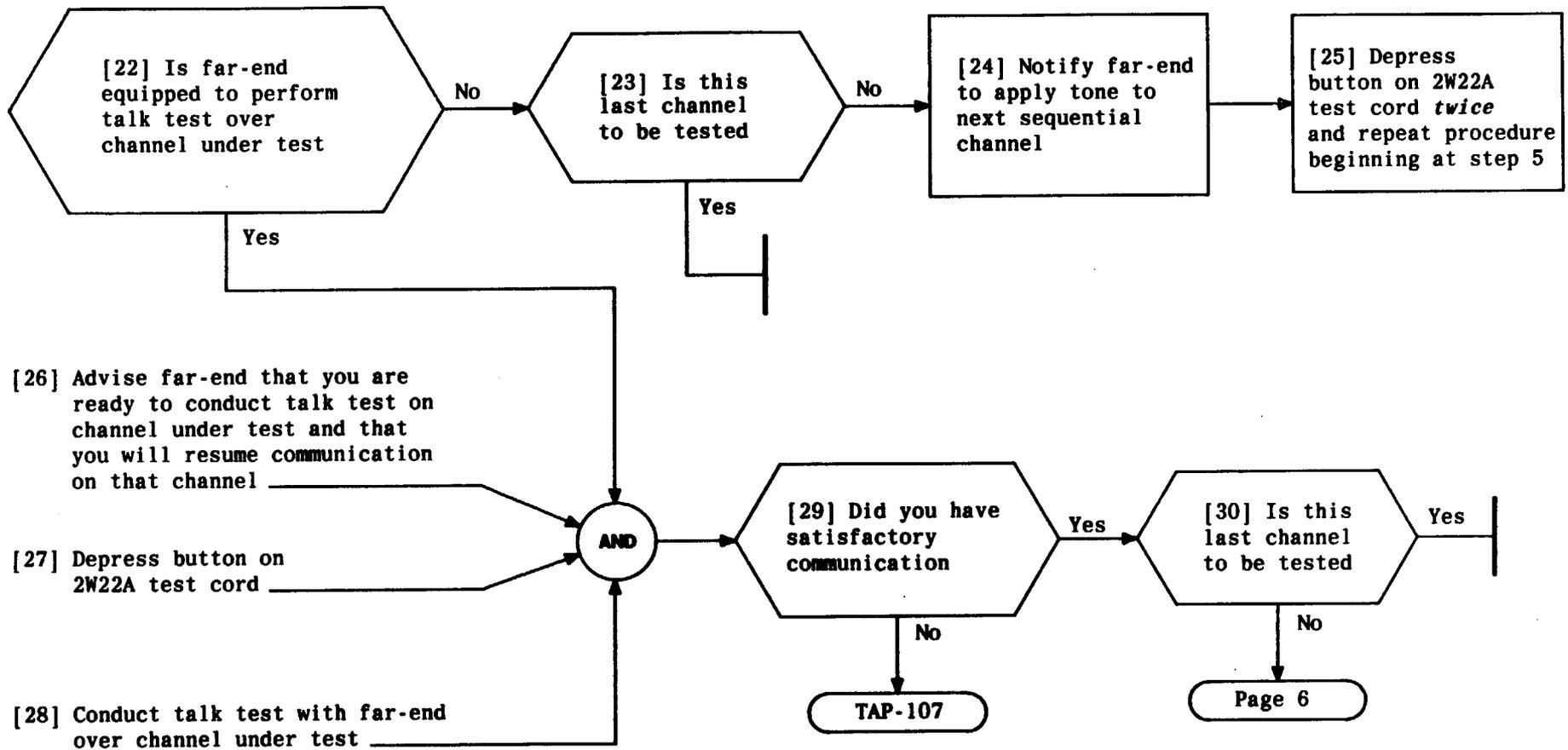


FIG. 1 - P/O DATS Faceplate Showing Correlation Between 4-Digit Display and SUPERVISION Indicators



CONDUCT LEVEL ADJUSTMENT TEST

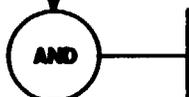
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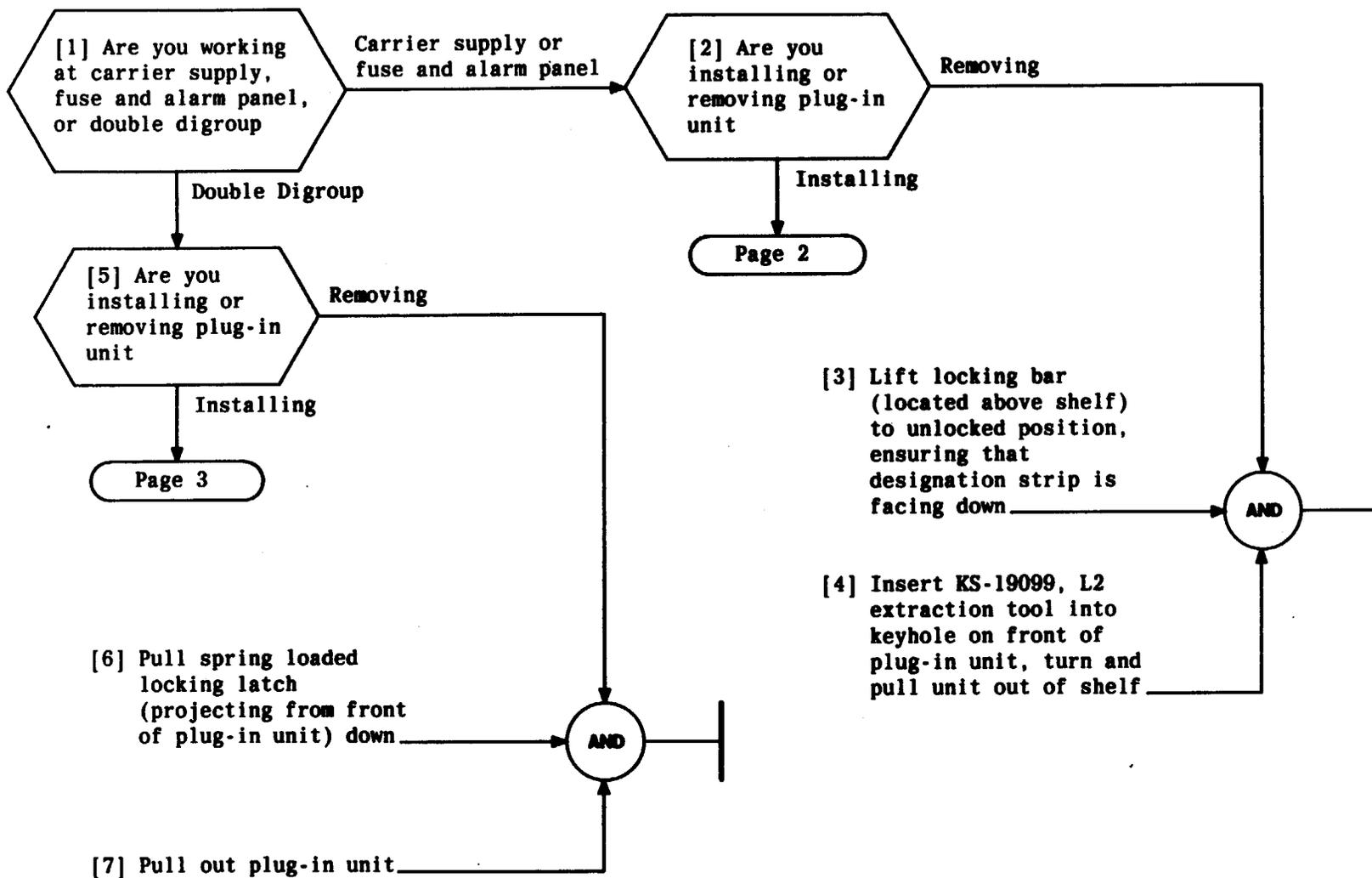
[31] Notify far-end to return
to communication channel and
to apply tone to next sequential
channel _____



[32] Depress button on 2W22A test
cord and repeat procedure
beginning at step 5 _____

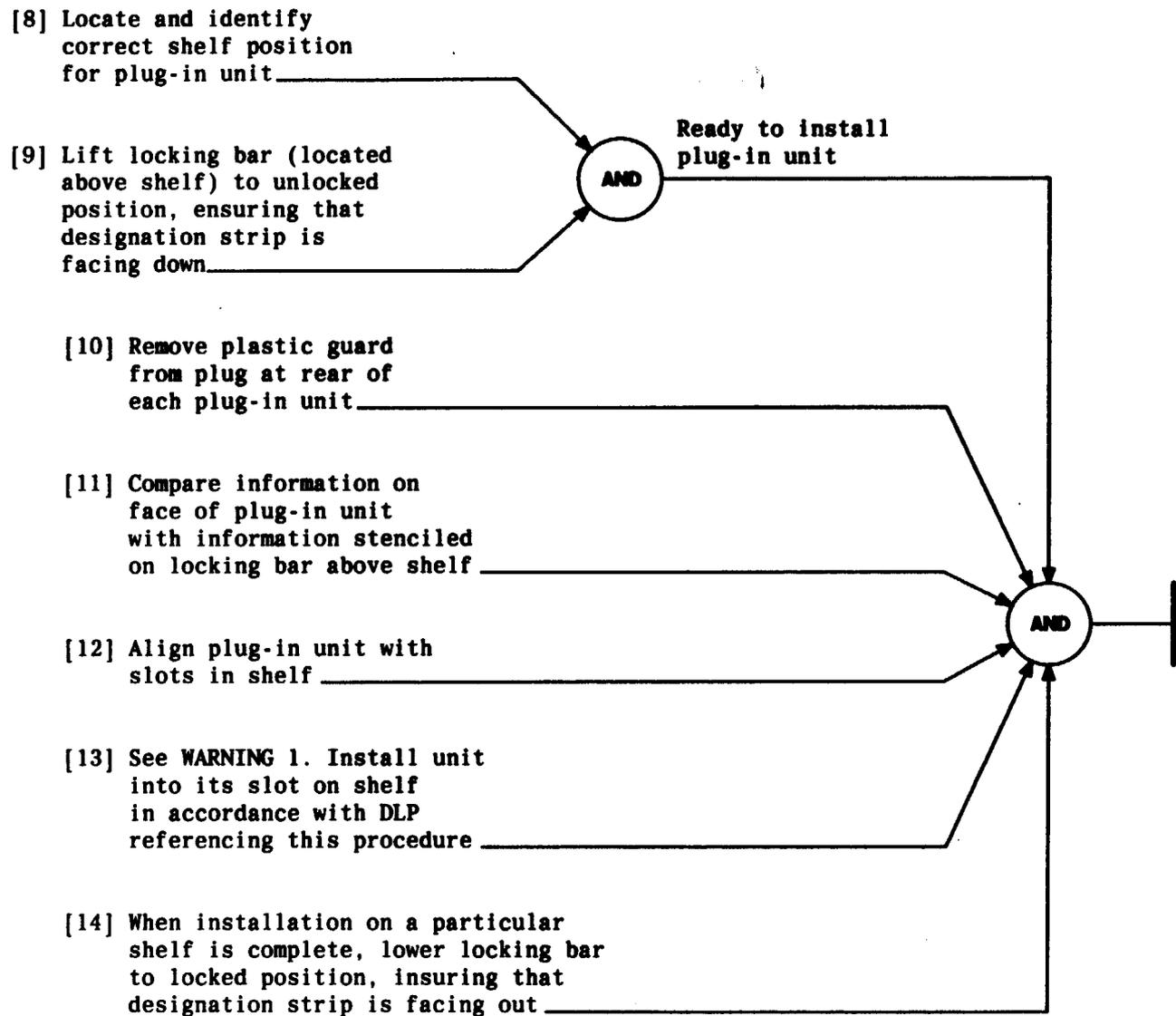
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INSTALL OR REMOVE PLUG-IN UNITS

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WARNING 1	
<i>Devices mounted on the apparatus board can be damaged if jammed against the sides of the position</i>	
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INSTALL OR REMOVE PLUG-IN UNITS

[15] Locate and identify
correct shelf position
for plug-in unit.

[16] Remove plastic guard(s)
from plug(s) at rear of
each plug-in unit.

[17] Compare information on
face of plug-in unit
with information stenciled
above shelf.

[18] Align plug-in unit with
slots in shelf.

[19] See WARNING 2. Install unit
into its slot on shelf
until latch catches and
locks.



INSTALL OR REMOVE PLUG-IN UNITS

WARNING 2 <i>Devices mounted on the apparatus board can be damaged if jammed against the sides of the position</i>	
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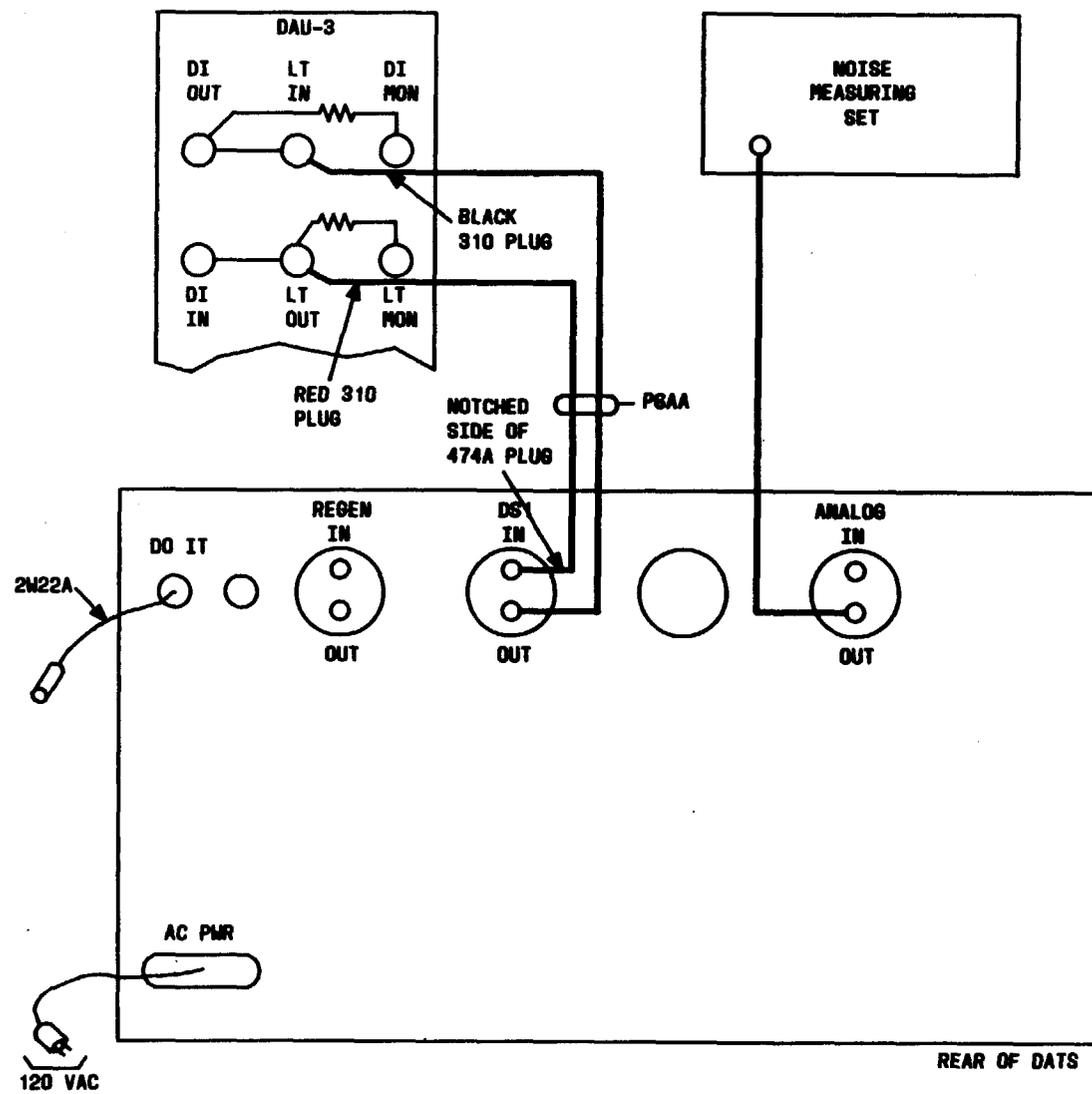


FIG. 1 - Test Connections Between LT-1B, DATS, and Noise Measuring Set

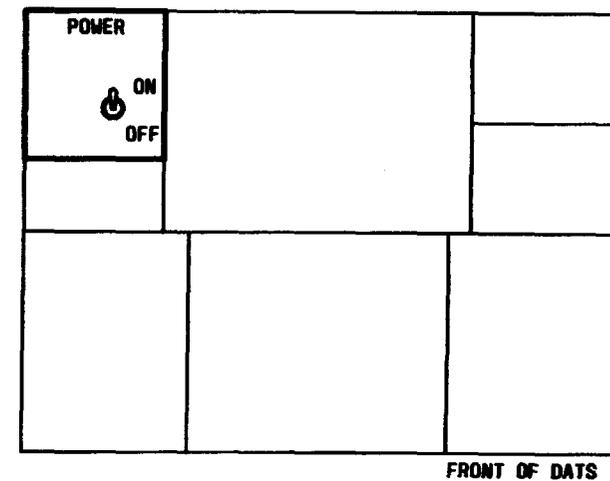


FIG. 2

CONNECT AND CONDITION DATS FOR LOOPBACK NOISE TEST

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[1] Connect digital access time slot selector (DATS) power cord to 120-Vac source [FIG. 1]

[2] Operate POWER switch on DATS front panel to ON position [FIG. 2]. Ignore DATS indicators

[3] Connect P6AA test cord (474A dual plug) to DS1 IN and DS1 OUT jacks on DATS rear panel. Notched side of plug must be up [FIG. 1]

[4] Connect other end of P6AA test cord to DAU-3 with red 310 plug in LT OUT jack and black 310 plug in LT IN jack corresponding to digroup being tested [FIG. 1]

[5] Connect 2W22A test cord to DO IT jack on DATS rear panel [FIG. 1]

[6] Condition noise measuring set for C-message noise weighting at 600-Ω impedance

[7] Connect noise measuring set to ANALOG OUT jack on DATS rear panel [FIG. 1]

AND

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At DATS control keypad:

[8] Enter C-C-F-0-D (restart)

[9] Enter C-2-D (standard level)

[10] Enter C-7-D (D3 seq. coding)

[11] Enter E-2-D (all other chans, split on-hook)

[12] Enter E-5-D (split test channel)

[13] Enter F-5-D (terminate test channel)

[14] Enter F-7-D (test channel, off-hook)

AND

[15] Is LOOP indicator lighted

No

Yes

[16] Enter E-F-D on DATS keypad

[17] Is LOCK indicator lighted

Yes

No

[18] Enter F-E-D on DATS keypad

CONNECT AND CONDITION DATS FOR LOOPBACK NOISE TEST

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[1] Remove two Phillips head screws from channel unit assembly [FIG. 1]

[2] Separate circuit module from channel unit printed wiring board

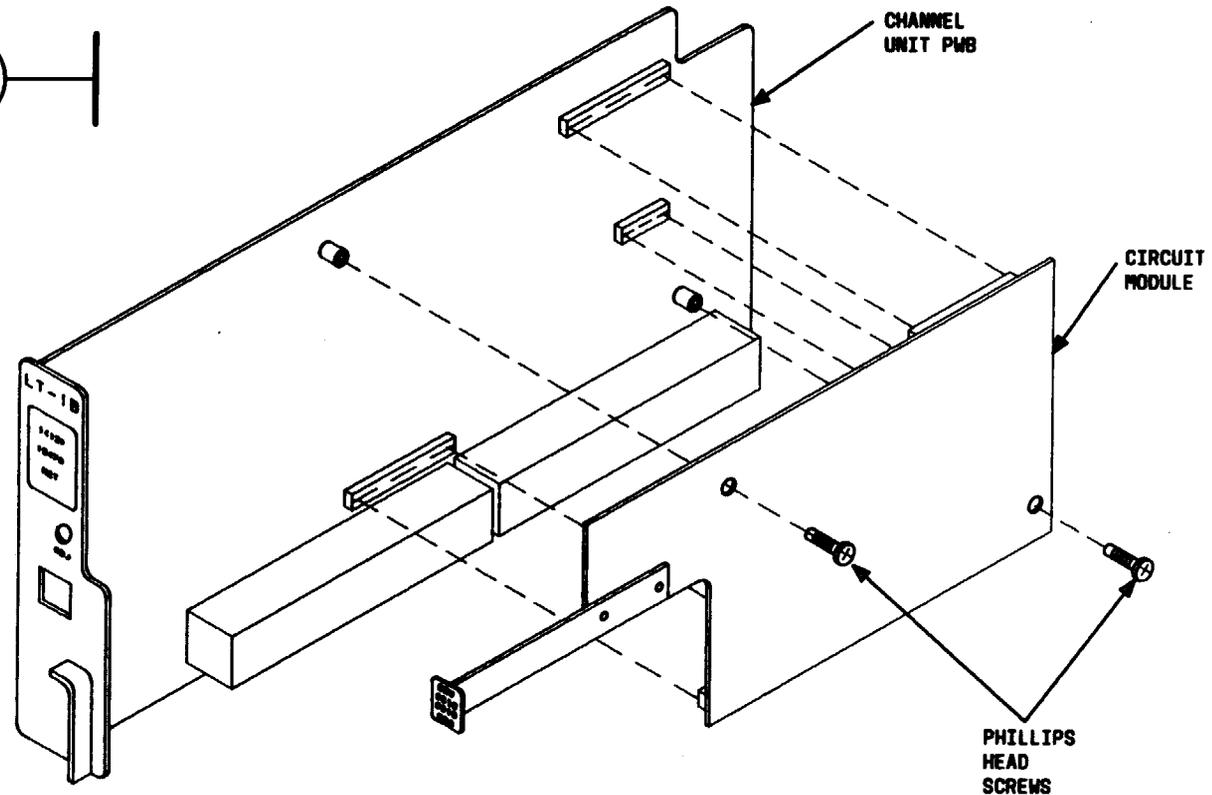
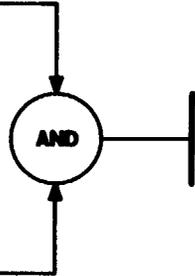


FIG. 1

DISASSEMBLE CIRCUIT MODULE FROM CHANNEL UNIT PRINTED WIRING BOARD

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[1] See FIG. 1. Remove 1025AL
ALM UNIT from carrier
supply shelf [DLP-515]

[2] See FIG. 1. Remove both existing
4-KHZ GENs from carrier supply
shelf [DLP-515]

[3] See FIG. 1. Install both new
4-KHZ GENs into carrier
supply shelf [DLP-515]

[4] Reinstall 1025AL ALM UNIT
removed in step 1 [DLP-515]

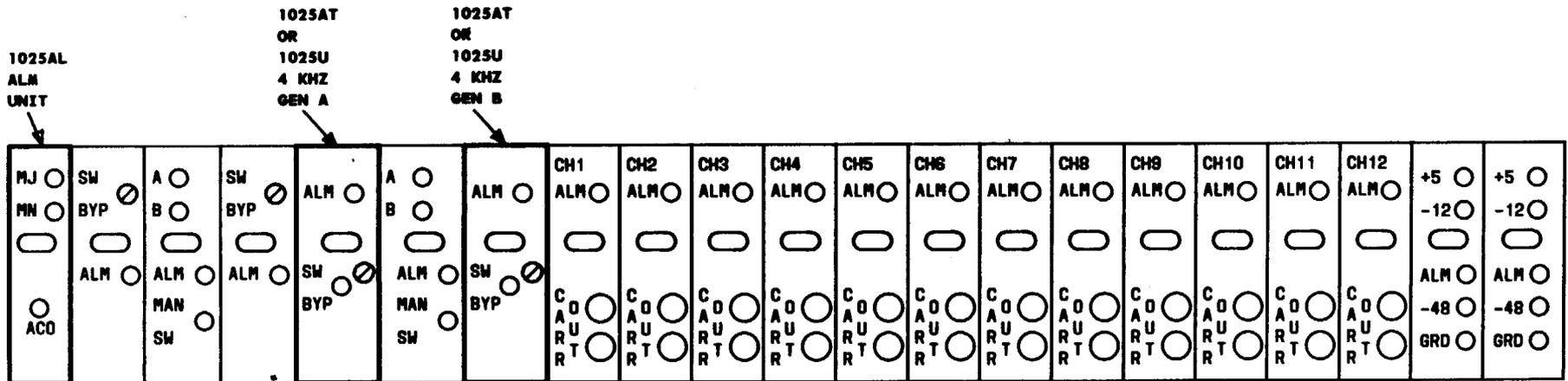
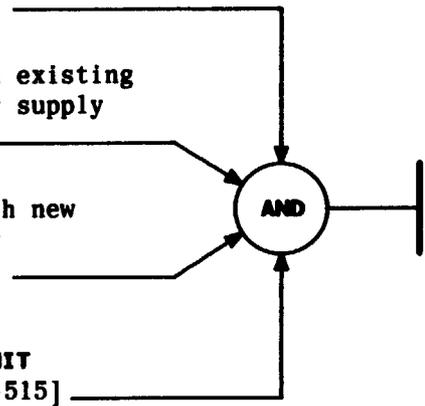


FIG. 1

CHANGE 4-KHZ GENERATORS

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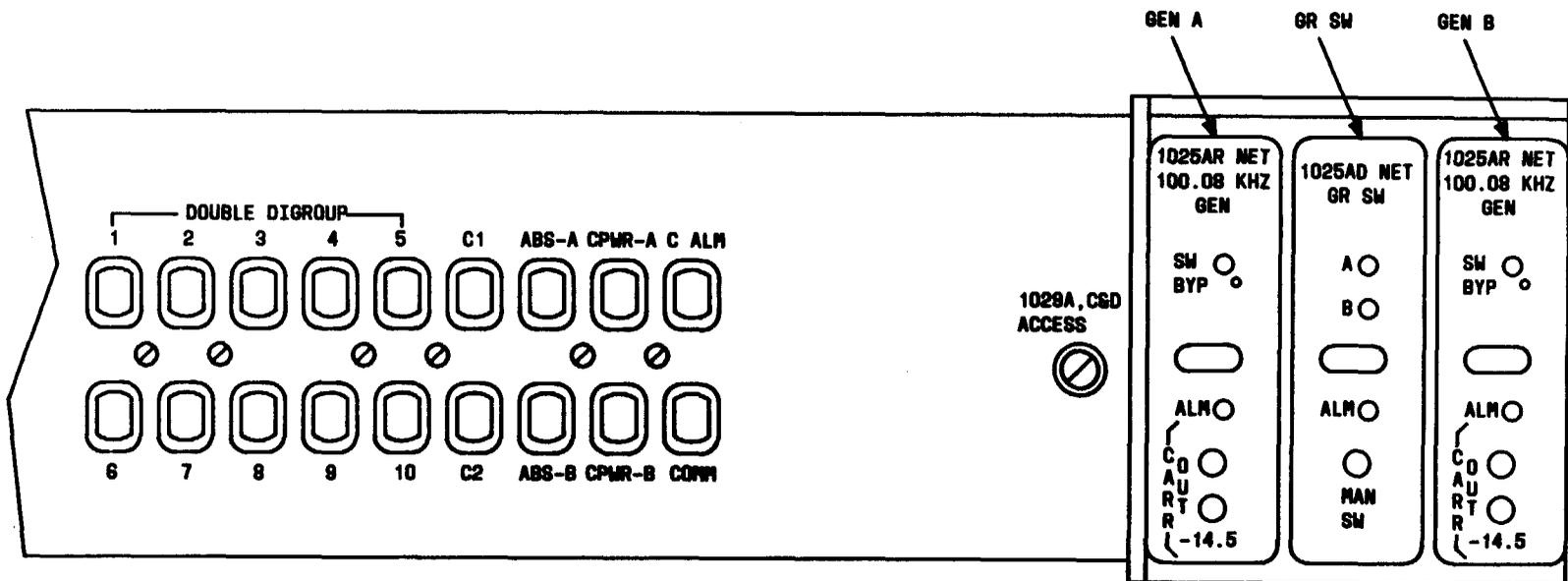


FIG. 1 - Front View of Fuse and Alarm Panel

INSTALL AND TEST 100.08-KHZ GENERATORS AND GROUP SWITCH

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SUMMARY

Install 100.08-KHZ generators with SW BYP off (counterclockwise). Operate SW BYP on each generator and ensure SW BYP lamp lights. Install group switch (GR SW). Test manual switching function with MAN SW button. Test

automatic switching function by removing working generator (A and B lamps indicate working generator). Removal of one generator causes a minor alarm. Test ALM on GR SW by removing both generators (major alarm). Reinstall both generators at completion of tests.

[1] Obtain two 1025AR 100.08-KHZ GENs and one 1025AD GR SW

[2] Locate and identify shelf position for each plug-in unit [FIG. 1]

[3] Turn SW BYP switch on both 1025AR 100.08-KHZ GENs to the off position (counterclockwise)

[4] Install generators in correct shelf position [FIG. 1 and DLP-515]

AND

[5] Is ALM lamp on either 100.08-KHZ GEN lighted

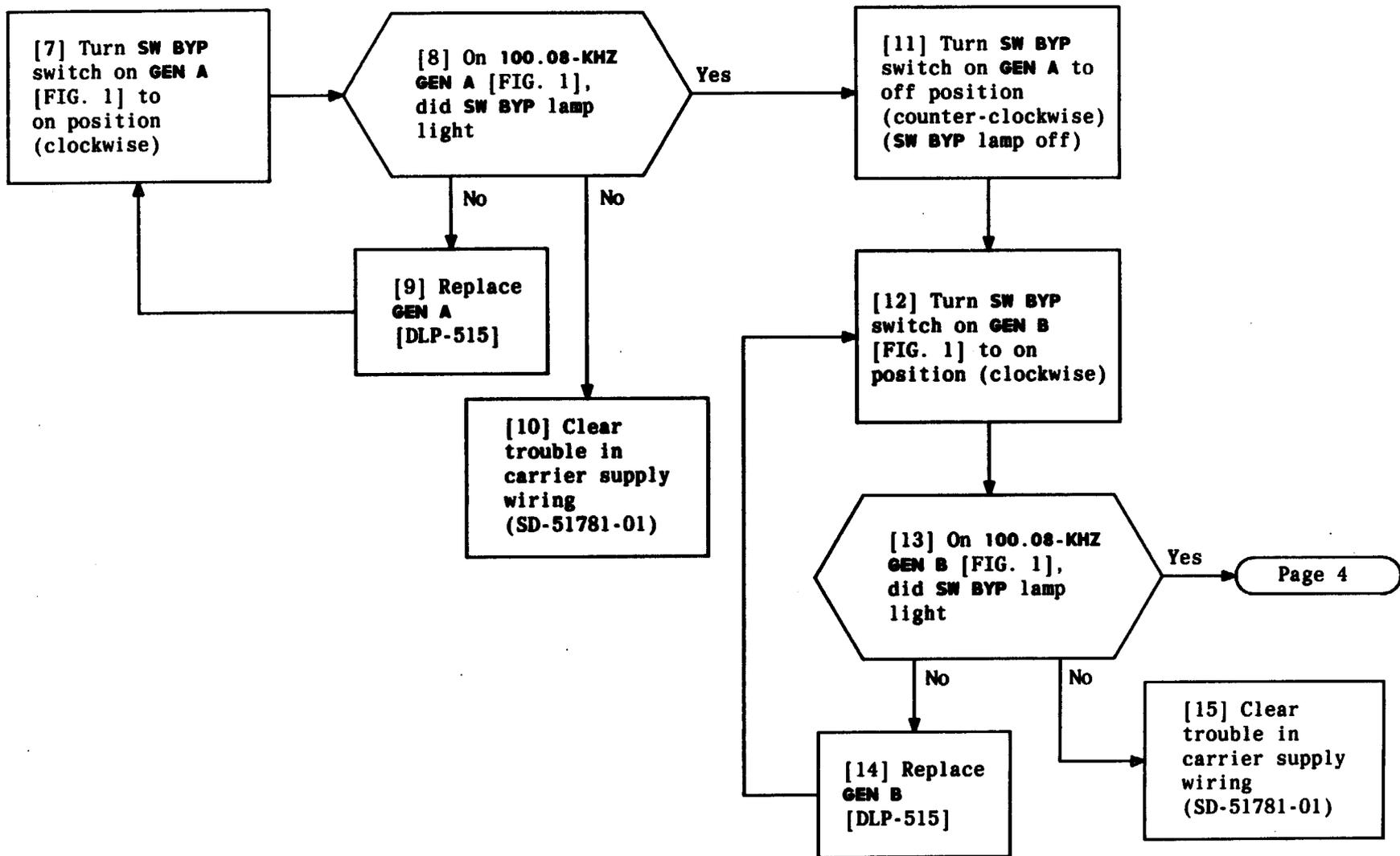
No

Page 3

Yes

[6] Replace defective 100.08-KHZ GEN [DLP-515]

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INSTALL AND TEST 100.08-KHZ GENERATORS AND GROUP SWITCH

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[16] Turn SW BYP switch on GEN B to off position (counter-clockwise)

SW BYP lamp off

AND

[17] Install 1025AD GR SW [FIG. 1 and DLP-515]

[18] On GR SW, is either A lamp or B lamp lighted (not both)

Yes

[21] Press MAN SW button on GR SW

No

No

[22] On GR SW, is opposite lamp lighted (not both) (ie; if A lamp was lighted, is B lamp now lighted)

Yes

[24] Repeat steps 21 and 22 for other lamp, and go to step 25

[20] Clear trouble in carrier supply wiring (SD-51781-01)

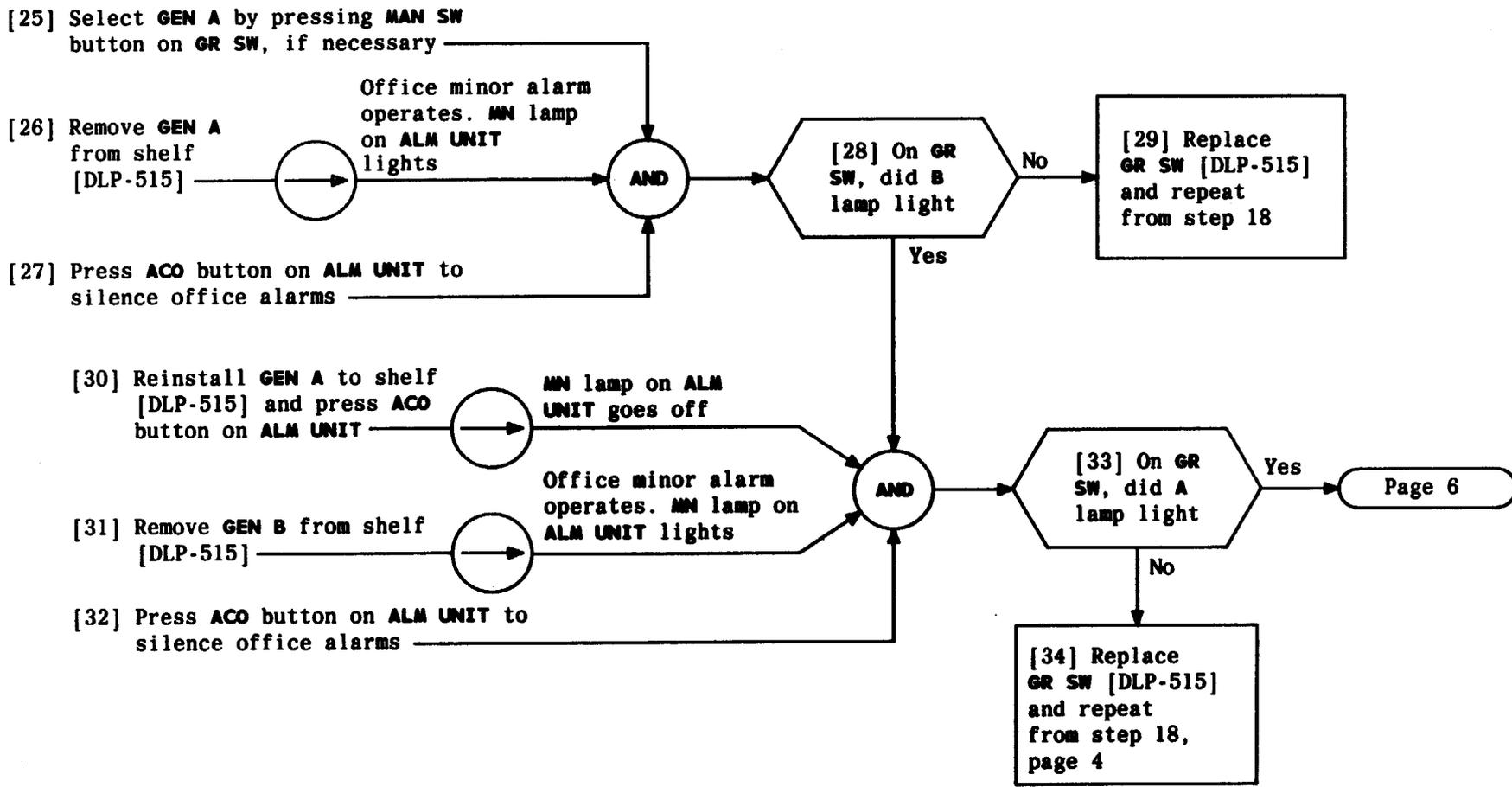
No

No

[19] Replace GR SW [DLP-515]

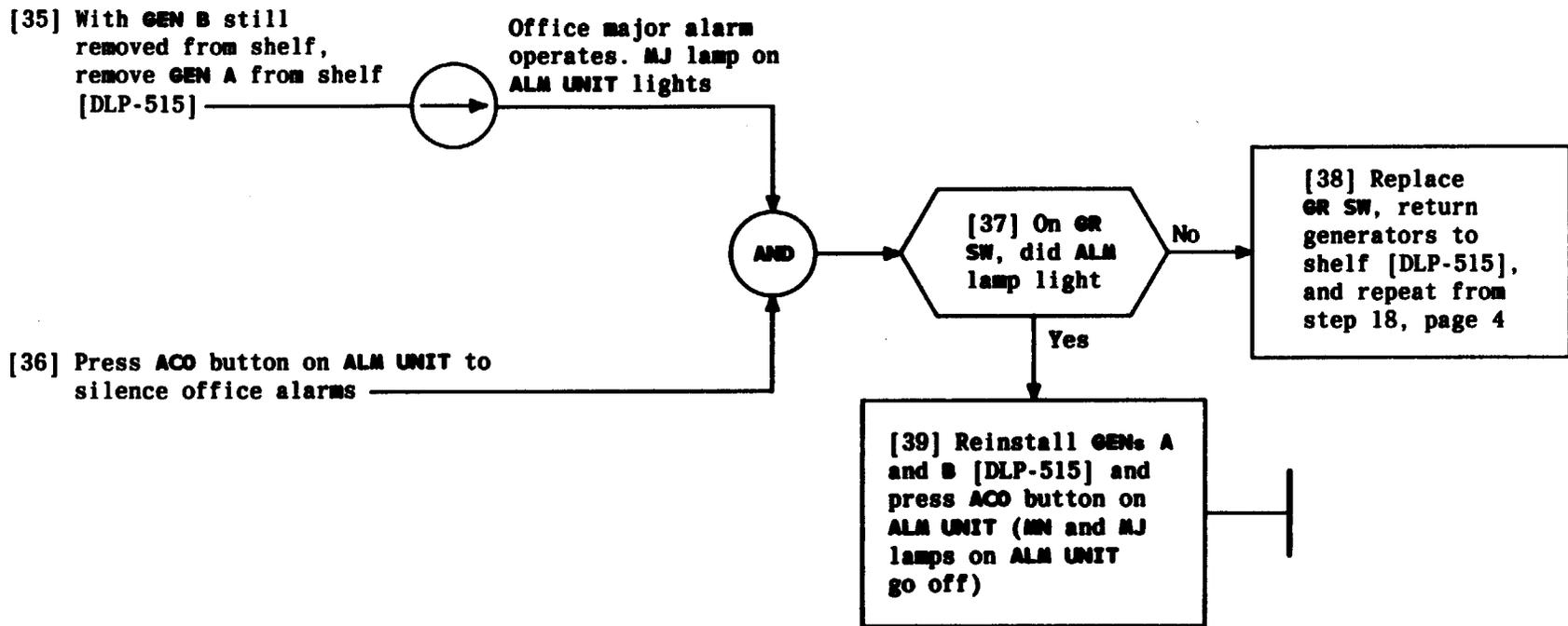
[23] Clear trouble in carrier supply wiring (SD-51781-01)

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INSTALL AND TEST 100.08-KHZ GENERATORS AND GROUP SWITCH



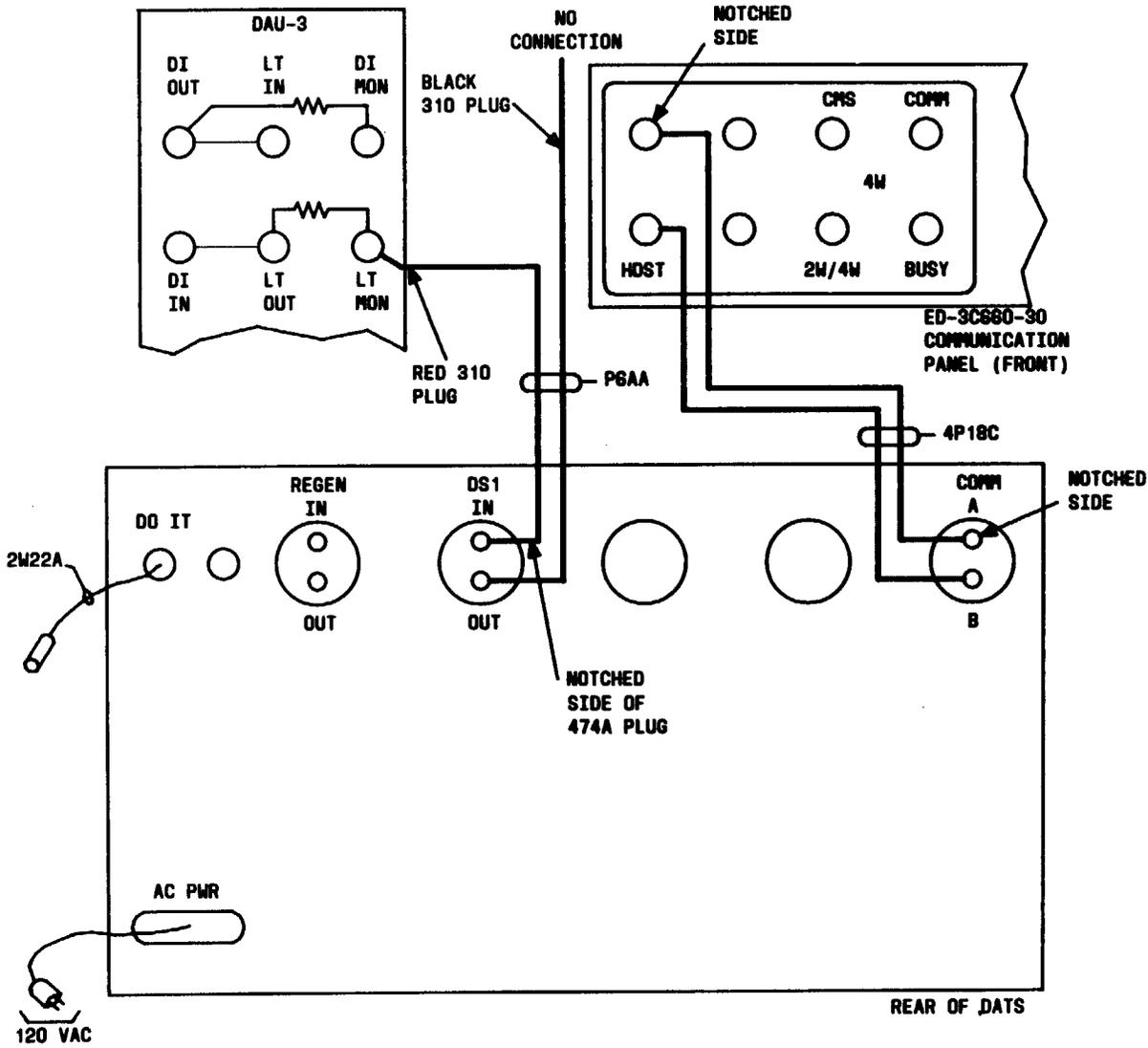


FIG. 1 - Test Connections Between LT-1B and DATS

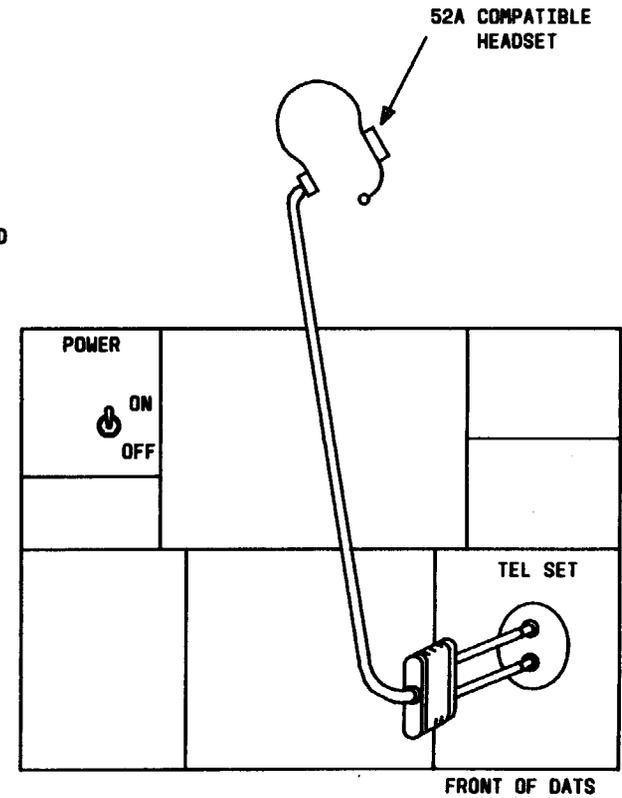
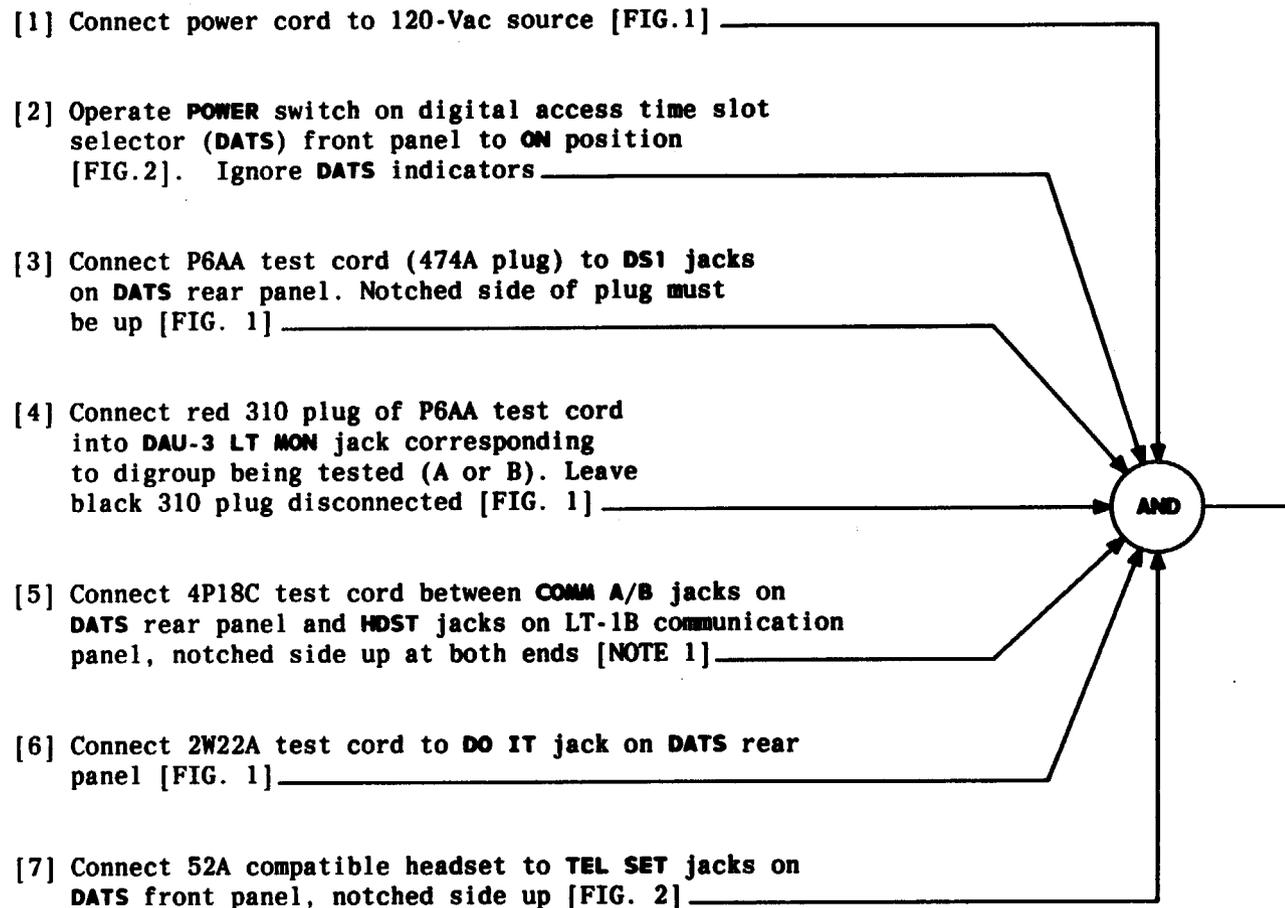


FIG. 2 - Headset Connection to DATS

CONNECT AND CONDITION DATS FOR MONITORED LEVEL ADJUSTMENT TEST

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NOTE 1	
If there is not a communication panel in the LT-1B frame at which you are working, one should be in another frame in the aisle	
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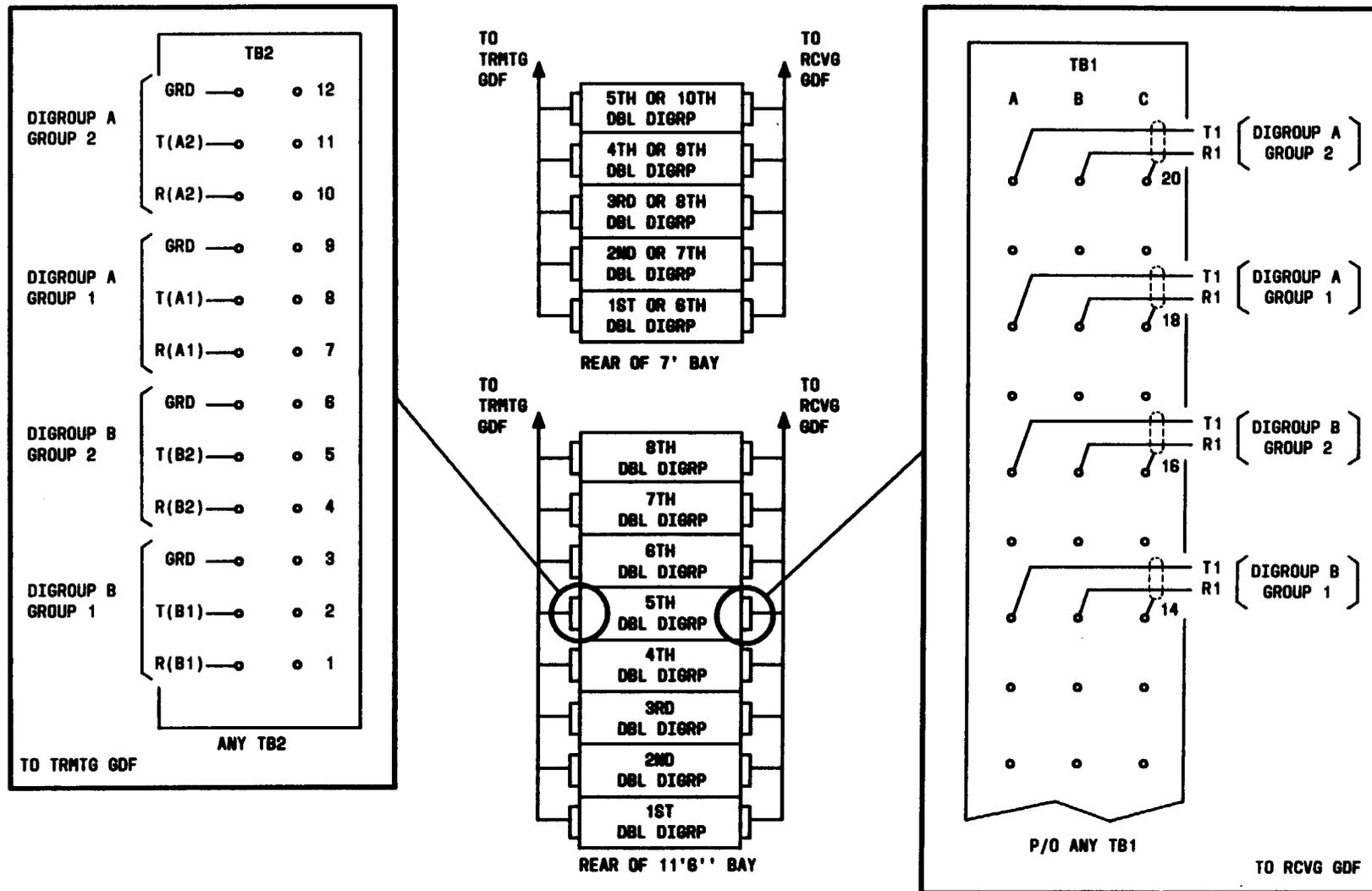
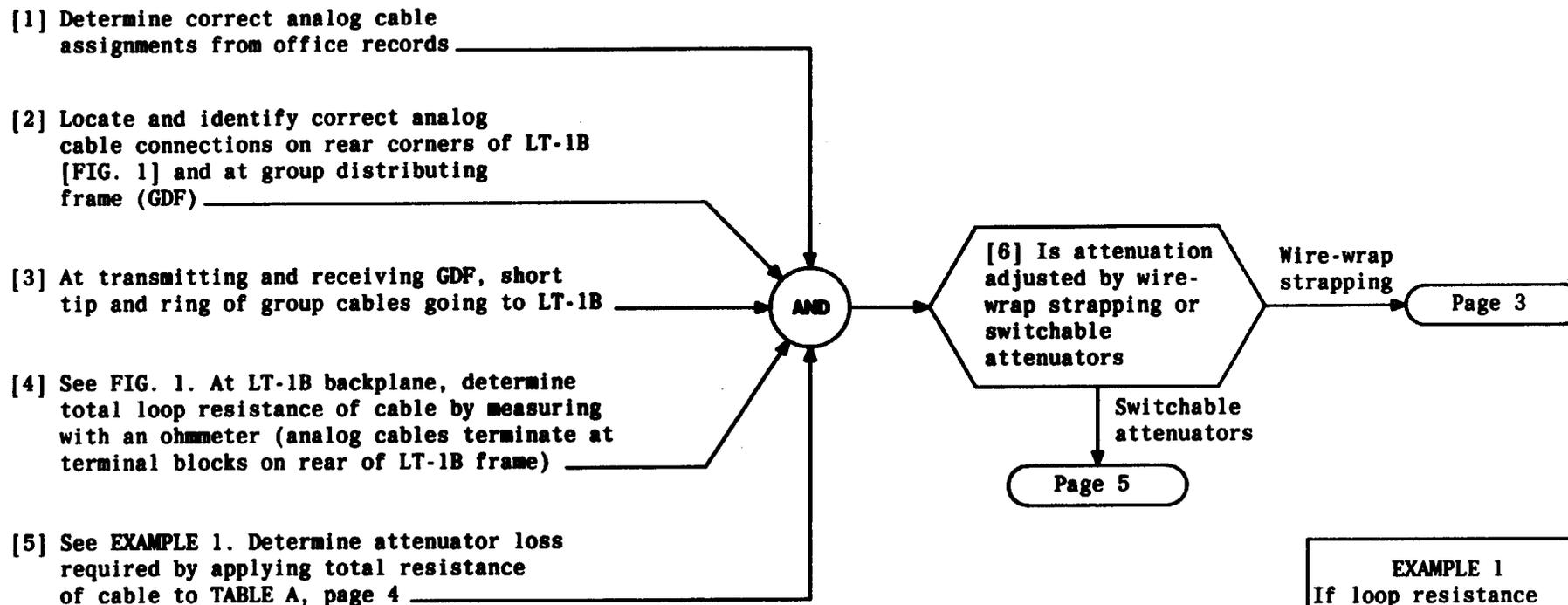


FIG. 1 - Rear Of Bays Showing Locations Of Terminal Boards
And Pin Assignments On Terminal Boards

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EXAMPLE 1
 If loop resistance is 25.7 Ω , look at TABLE A to find that 25.7 Ω indicates a cable length of 451-550 feet; thus a 0.50-dB loss is required. The strapping connections required (from TABLE A) are as follows:
 Terminals A to D
 Terminals E to H
 Terminals J to M
 Terminals N to S

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[7] Using a wire-wrapping tool and 24-gauge wire, make strapping connections between terminals on combine and split printed wiring board [FIG. 2] in accordance with TABLE A to achieve required loss (AT1 is on transmit side; AT2 is on receive side)

[8] On combine and split printed wiring board, ensure that TRMT CFA PLT plug is positioned as shown in FIG. 3. If necessary, remove plug and reposition so that arrows oppose

[9] Ensure that two combine and split units are conditioned for each digroup being established

[10] At GDF, remove tip and ring shorts from cable

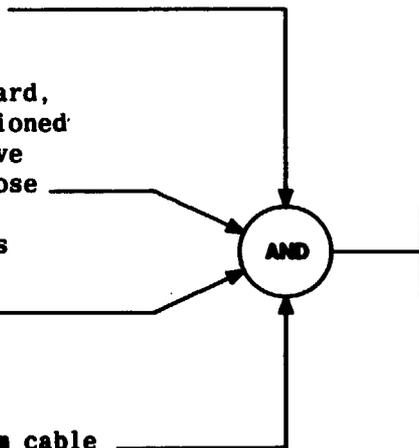


TABLE A COMBINE AND SPLIT UNIT LINE BUILD-OUT ATTENUATOR STRAPPING			
LOOP RESISTANCE (Ω)	DISTANCE FROM LT-1 TO GDF (FT.)	LOSS (DB)	STRAPPING CONNECTIONS
0 to 2.567	0-50	1.75	A-B, C-D, E-F, G-H J-K, L-M, N-P, R-S
2.568 to 7.701	51-150	1.50	A-D, E-F, G-H J-M, N-P, R-S
7.702 to 12.835	151-250	1.25	A-B, C-F, G-H J-K, L-P, R-S
12.836 to 17.969	251-350	1.00	A-F, G-H J-P, R-S
17.970 to 23.103	351-450	0.75	A-B, C-D, E-H J-K, L-M, N-S
23.104 to 28.237	451-550	0.50	A-D, E-H J-M, N-S
28.238 to 33.371	551-650	0.25	A-B, C-H J-K, L-S
33.372 to 35.938	651-700	0	A-H J-S

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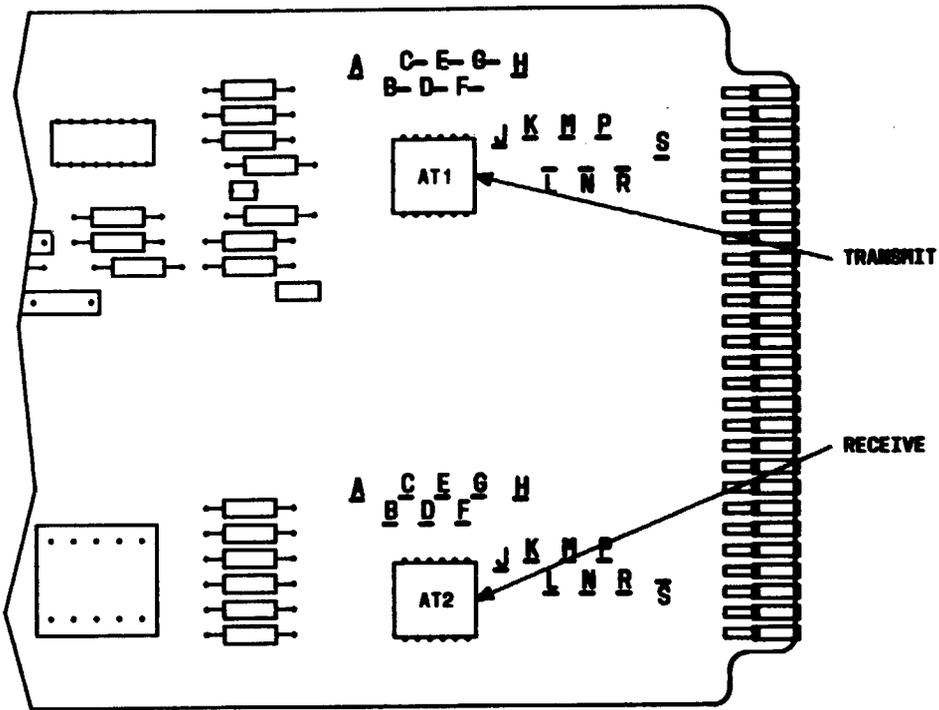


FIG. 2 - Partial View of Combine and Split Circuit Board

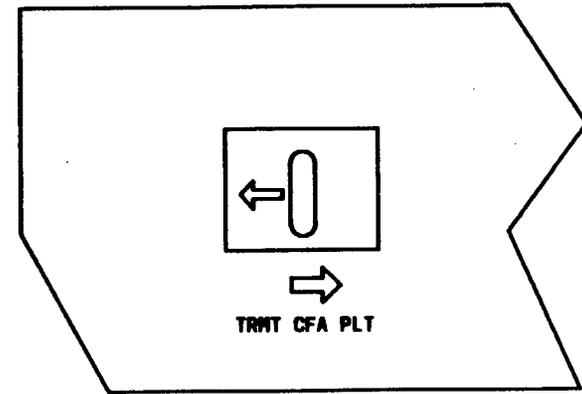


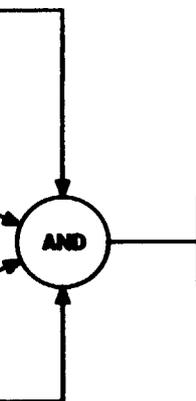
FIG. 3

[11] On combine and split printed wiring board, set attenuator switches in accordance with TABLE B and FIG. 4 to achieve required loss. Both switches adjacent to pad value on the attenuator must be set as specified (AT1 is on transmit side; AT2 is on receive side)

[12] On combine and split printed wiring board, ensure that TRMT CFA PLT plug is positioned as shown in FIG. 3. If necessary, remove plug and reposition so that arrows oppose

[13] Ensure that two combine and split units are conditioned for each digroup being established

[14] At GDF, remove tip and ring shorts from cable



CONDITION 1030E COMBINE AND SPLIT UNIT

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TABLE B COMBINE AND SPLIT UNIT LINE BUILD-OUT ATTENUATOR SWITCH SETTINGS				
LOOP RESISTANCE (Ω)	DISTANCE FROM LT-1 TO GDF (FT.)	LOSS (DB)	SWITCHES SET TO IN	SWITCHES SET TO OUT
0 to 2.567	0-50	1.75	0.25, 0.5, 1.0	NONE
2.568 to 7.701	51-150	1.50	0.5, 1.0	0.25
7.702 to 12.835	151-250	1.25	0.25, 1.0	0.5
12.836 to 17.969	251-350	1.00	1.0	0.25, 0.5
17.970 to 23.103	351-450	0.75	0.25, 0.5	1.0
23.104 to 28.237	451-550	0.50	0.5	0.25, 1.0
28.238 to 33.371	551-650	0.25	0.25	0.5, 1.0
33.372 to 35.938	651-700	0	NONE	0.25, 0.5, 1.0

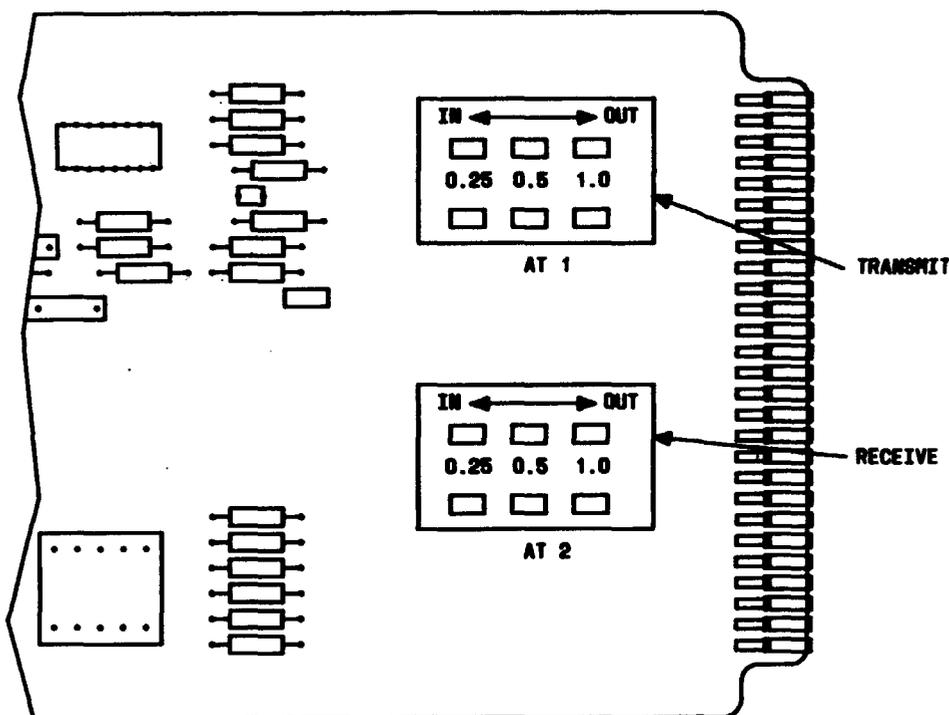


FIG. 4 - Partial View of Combine and Split Circuit Board

CONDITION 1030E COMBINE AND SPLIT UNIT

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[1] If not already removed,
remove 1025AL ALM UNIT
from carrier supply shelf
[FIG. 1, DLP-515]

[2] Remove 1025T 4-KHZ SW
from carrier supply
shelf [FIG. 1, DLP-515]

[3] See NOTE 1. On 4-KHZ GEN A,
turn SW BYP switch to on
position (clockwise)

[4] On 4-KHZ GEN B, turn SW BYP
switch to off position
(counterclockwise)

NOTE 1
SW BYP switch is
a flat-head screw
with a standard
screwdriver slot

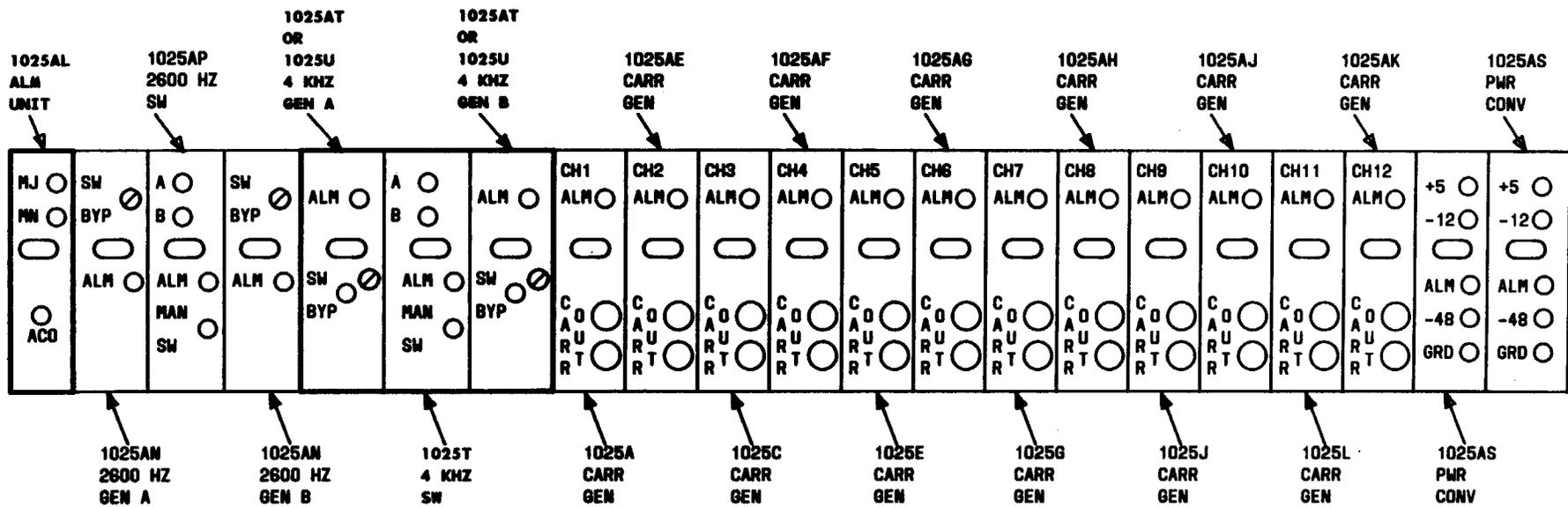
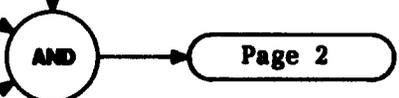
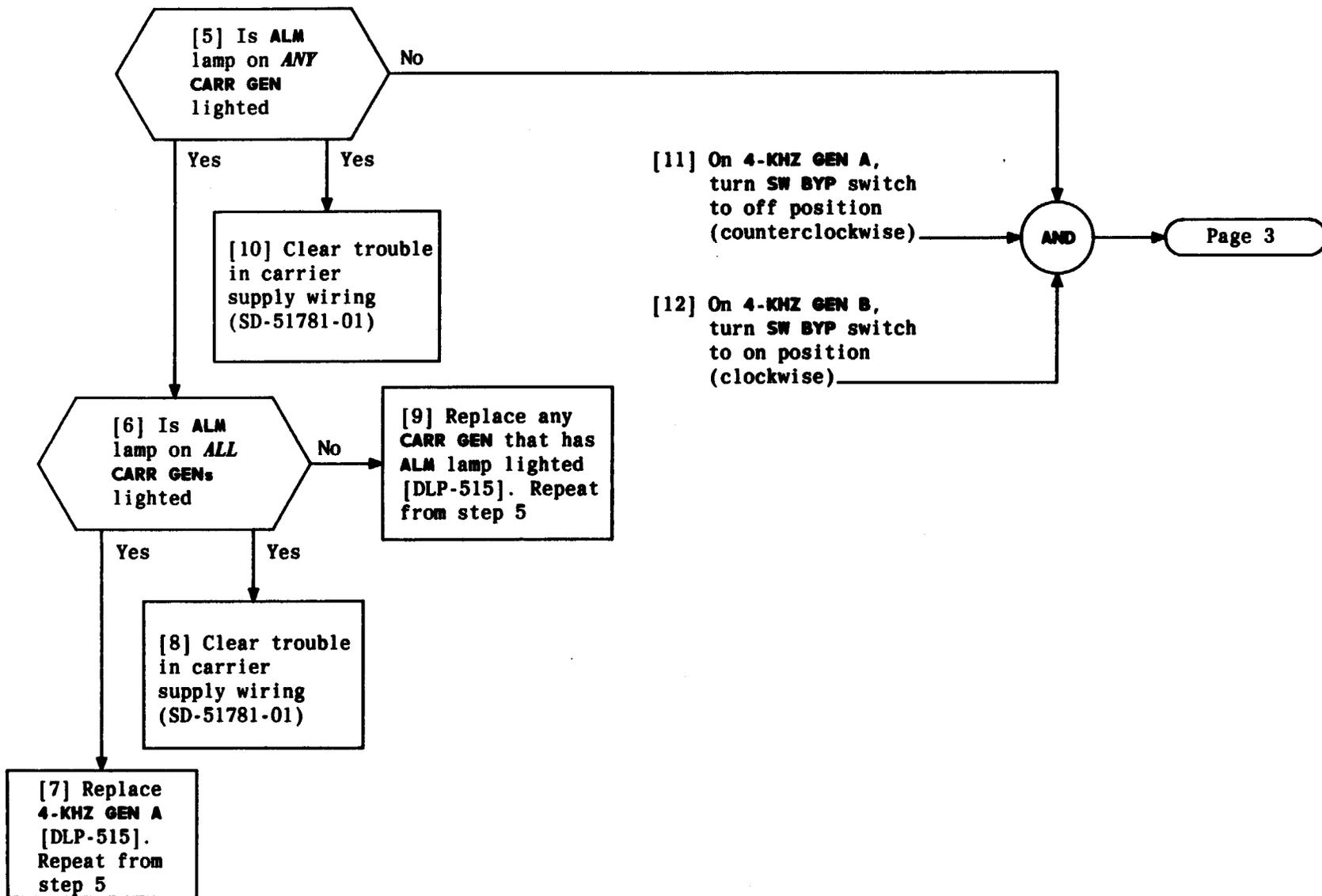


FIG. 1

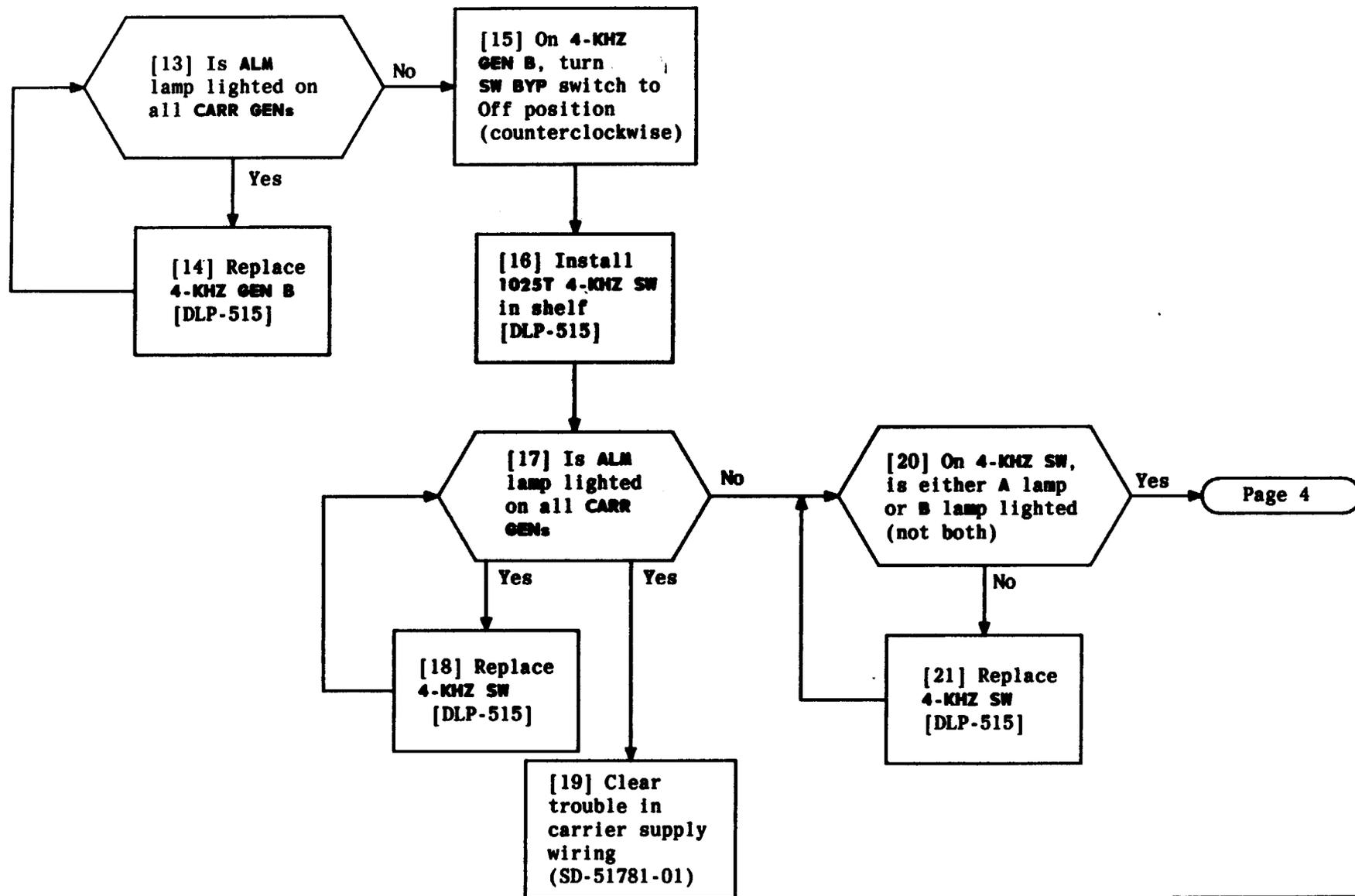
TEST 4-KHZ GENERATORS

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TEST 4-KHZ GENERATORS

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TEST 4-KHZ GENERATORS

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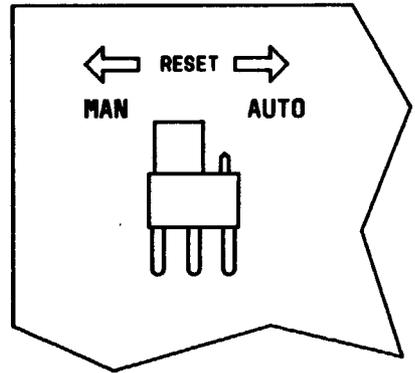
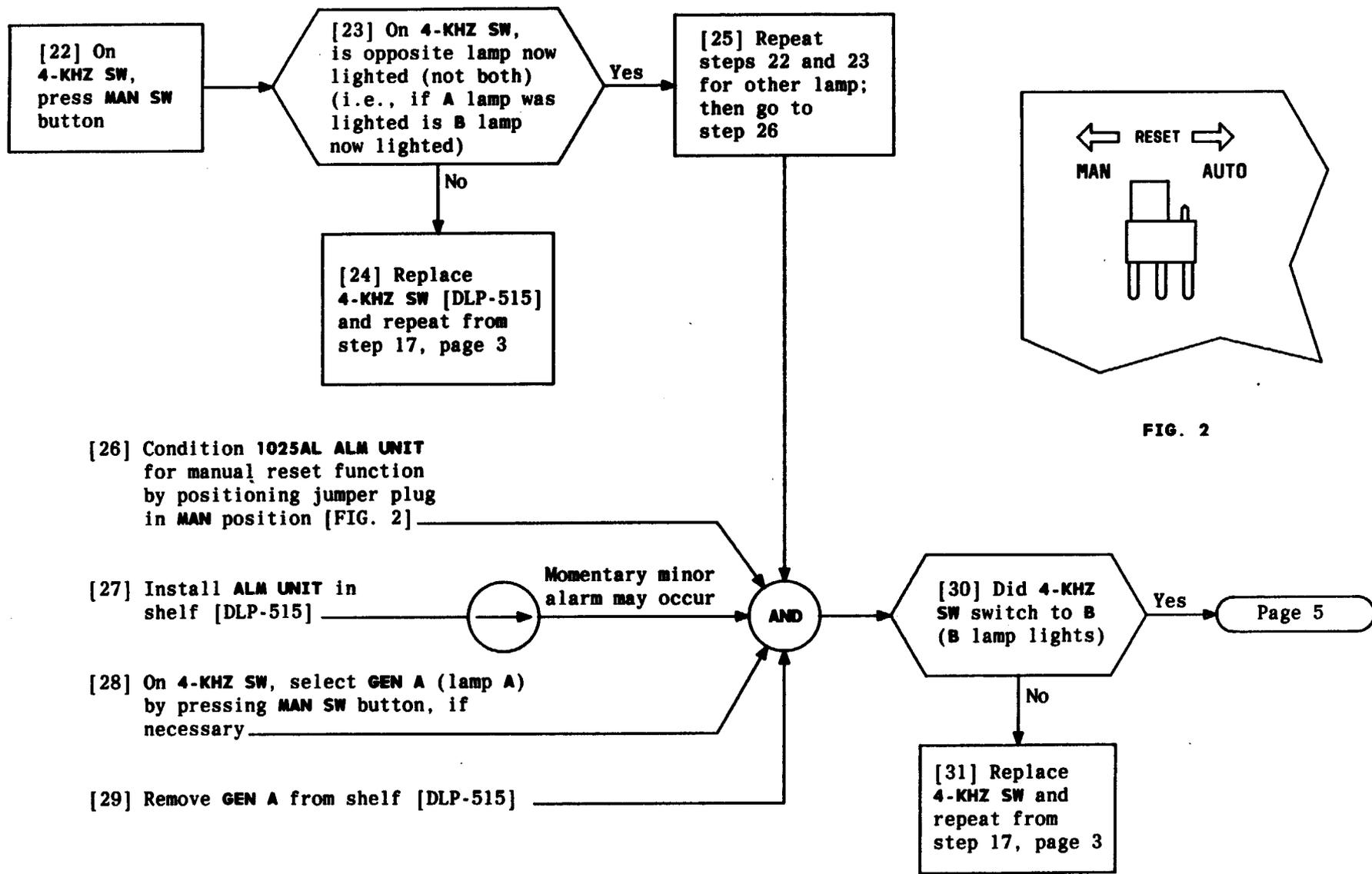


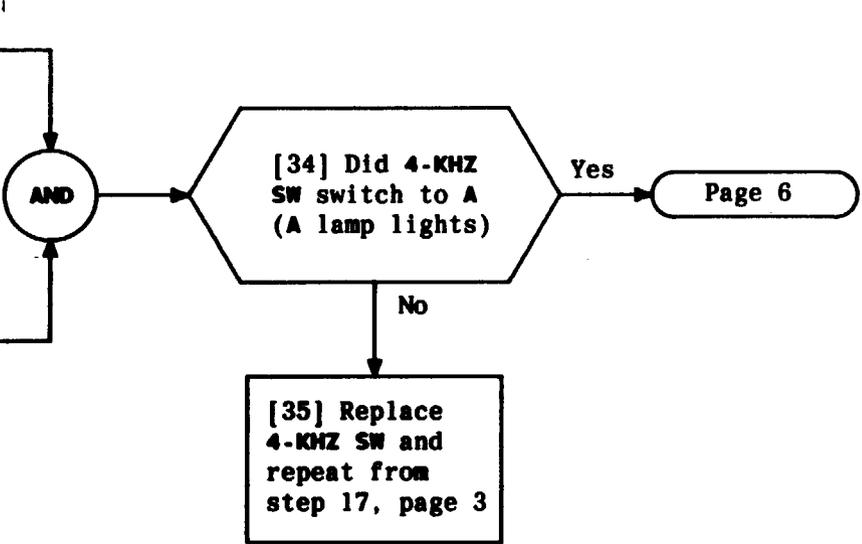
FIG. 2

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[32] Reinstall GEN A [DLP-515] and press ACO button on ALM UNIT

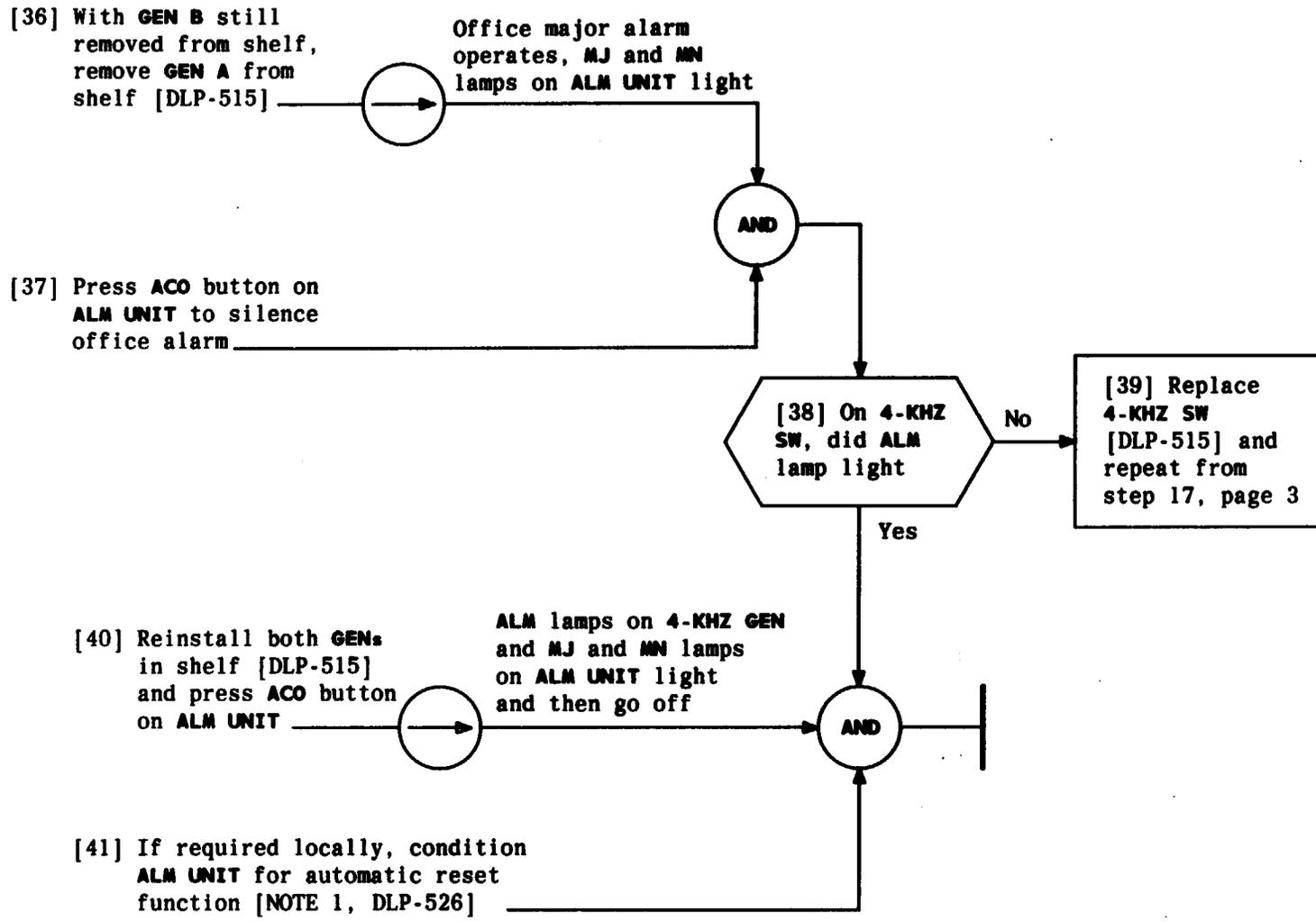
ALM lamp on GEN A and MN lamp on ALM UNIT light and then go off

[33] Remove GEN B from shelf [DLP-515]



TEST 4-KHZ GENERATORS

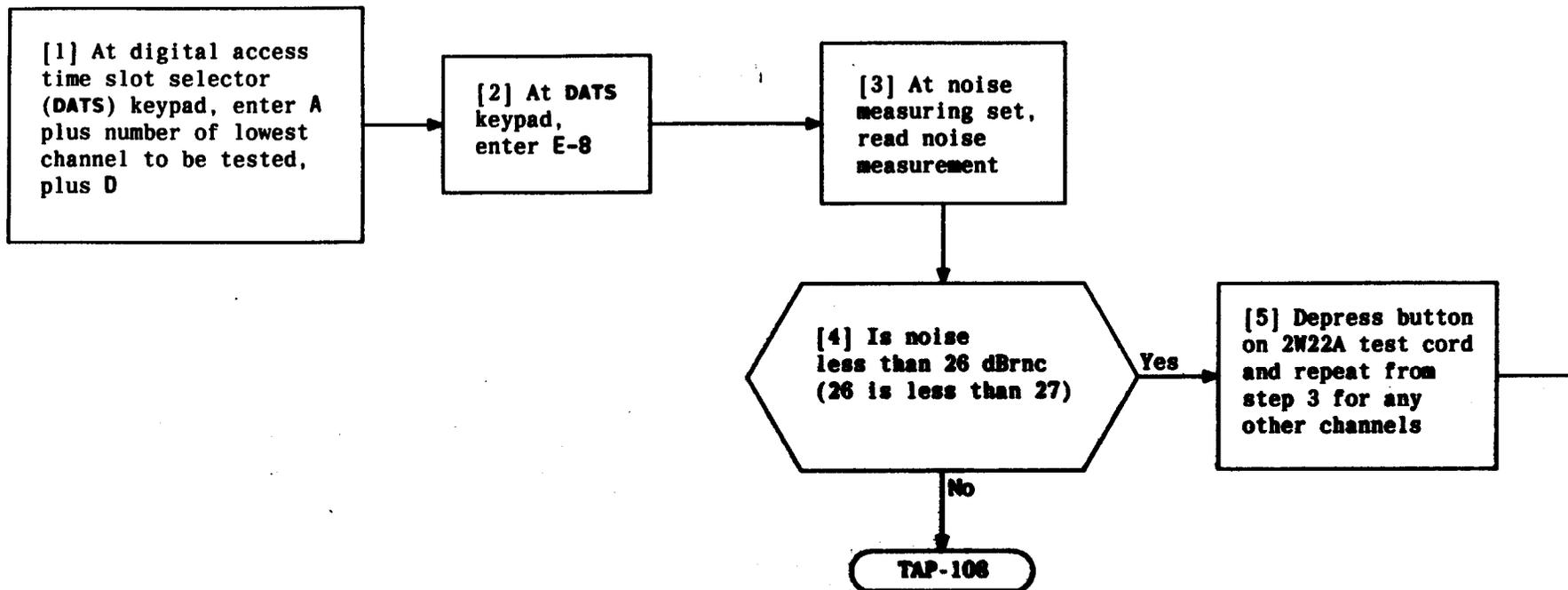
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NOTE 1
 If ALM UNIT is conditioned to reset manually (MAN), the alarms will latch upon detection of a carrier supply alarm condition and must be reset by pressing ACO button. If ALM UNIT is conditioned to reset automatically (AUTO), the alarms will *not* latch upon detection of a carrier supply alarm condition and will alarm only as long as alarm condition exists. Upon clearing of alarm condition, ALM UNIT will automatically ACO alarms and reset itself

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TEST 4-KHZ GENERATORS



CONDUCT LOOPBACK NOISE TEST ON ENTIRE GROUP

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[1] See FIG. 1. At fuse and alarm panel, loosen 1029A,C,& D ACCESS thumb screw

[2] Open access panel (hinged on left side)

[3] See FIG. 2. Locate defective circuit pack

[4] Remove defective circuit pack from shelf

[5] Install replacement circuit pack into same position on shelf

[6] Close access panel

[7] Tighten 1029A,C,& D ACCESS thumb screw

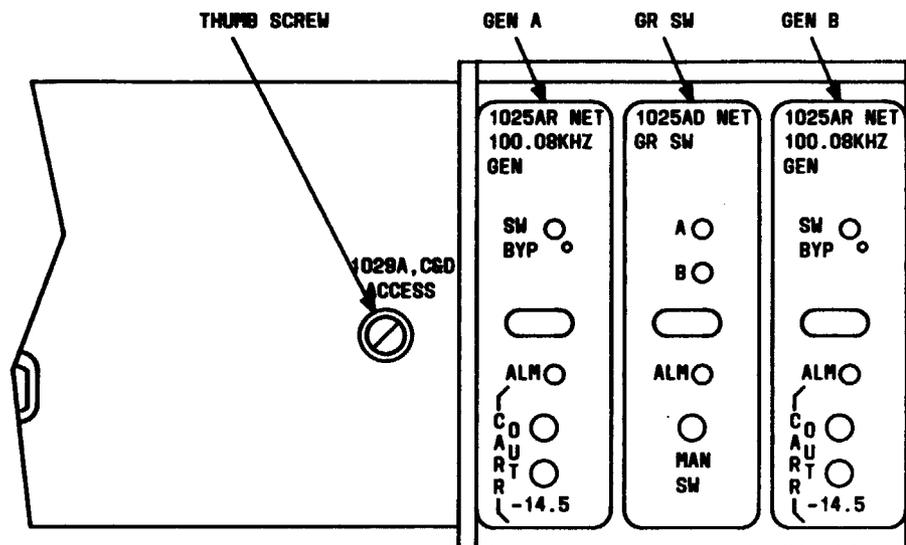
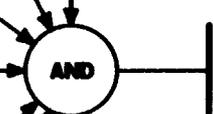


FIG. 1 - Front View of Fuse and Alarm Panel

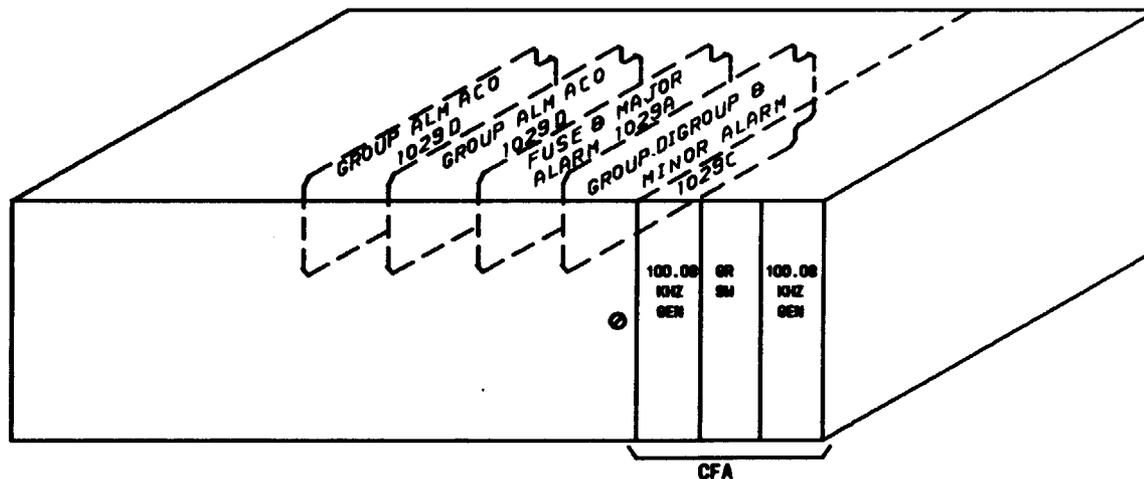


FIG. 2 - Fuse and Alarm Panel Showing Location of 1029A,C,& D Circuit Packs

REPLACE 1029A, 1029C, AND 1029D CIRCUIT PACK

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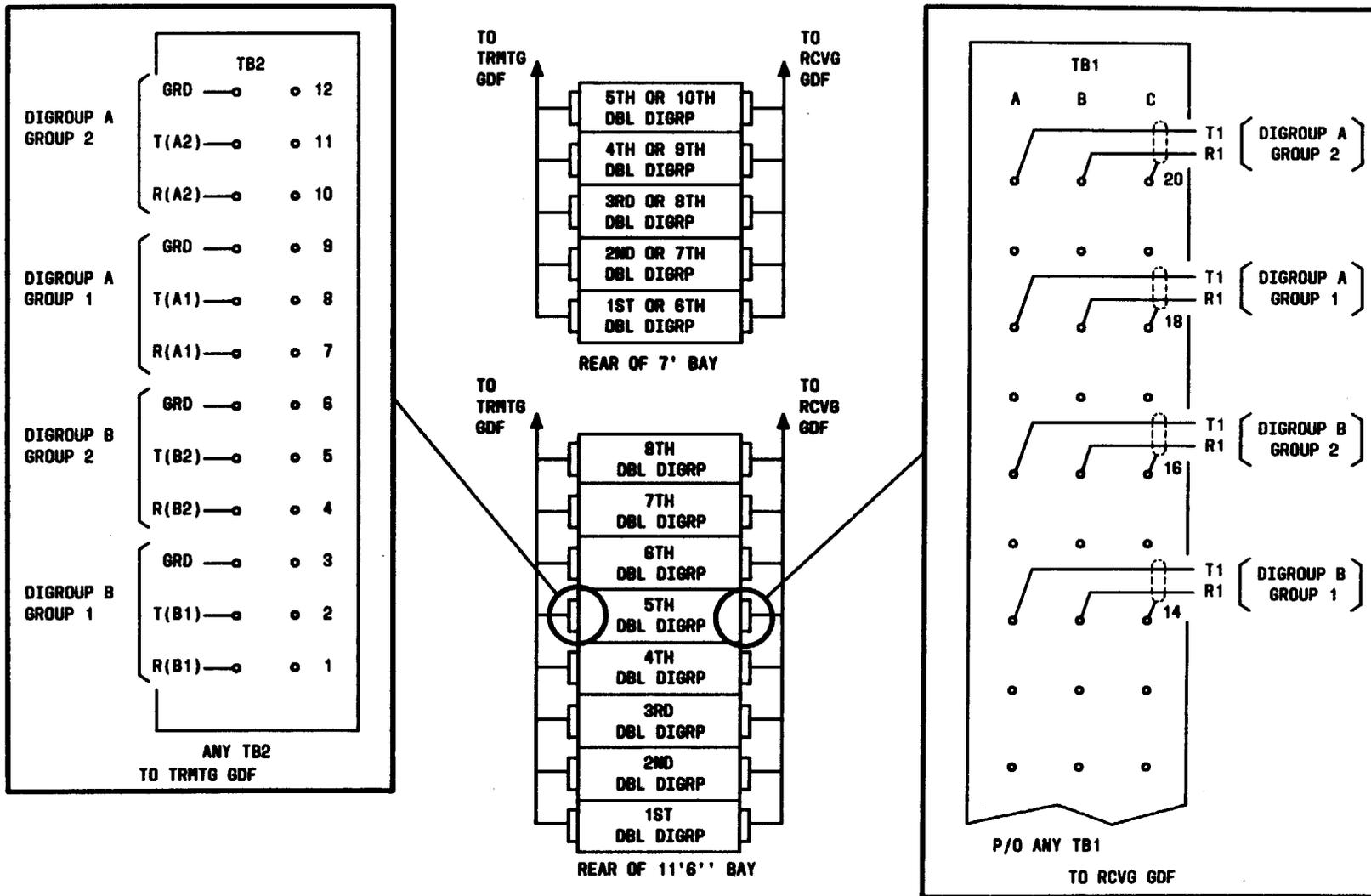


FIG. 1 - Rear Of Bays Showing Locations Of Terminal Boards
And Pin Assignments On Terminal Boards

SUMMARY

Loop analog cable toward LT-1B at group distributing frame (GDF) and determine total loop resistance by measuring at rear of LT-1B frame with ohmmeter having 0.1- Ω resolution.

Using TABLE A, determine line build-out loss required and conditioning necessary to achieve that loss. Set attenuator switches to satisfy requirements in TABLE A.

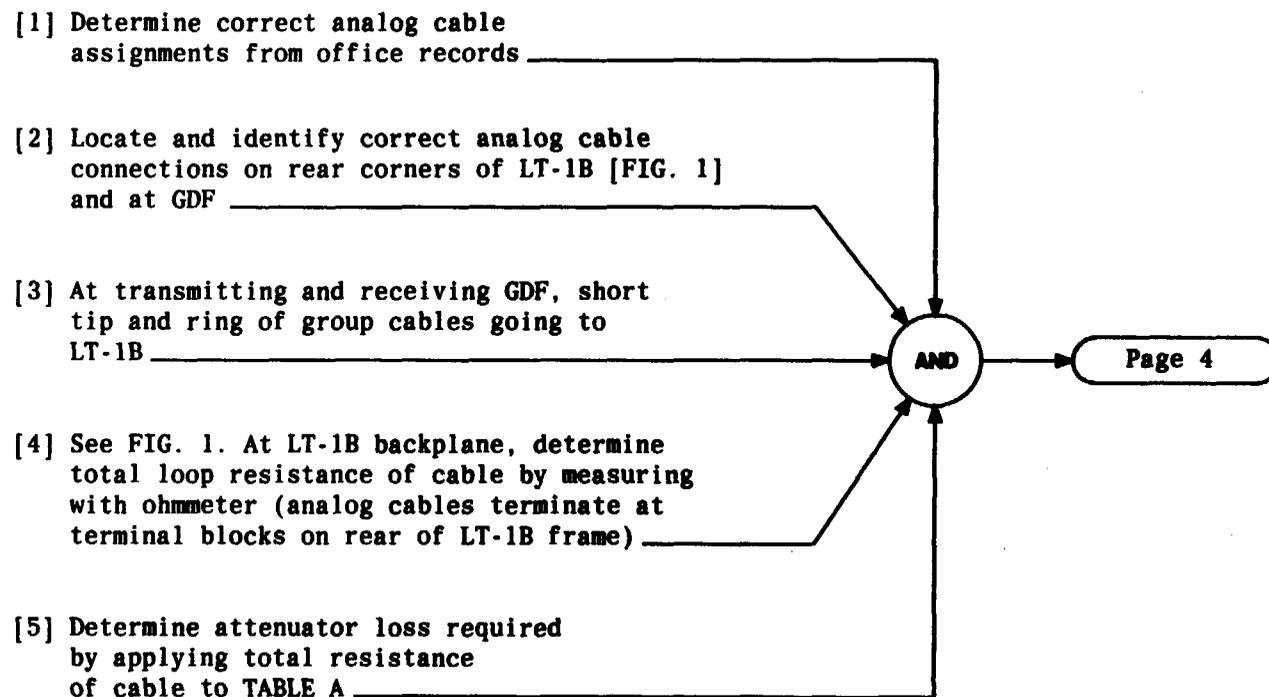
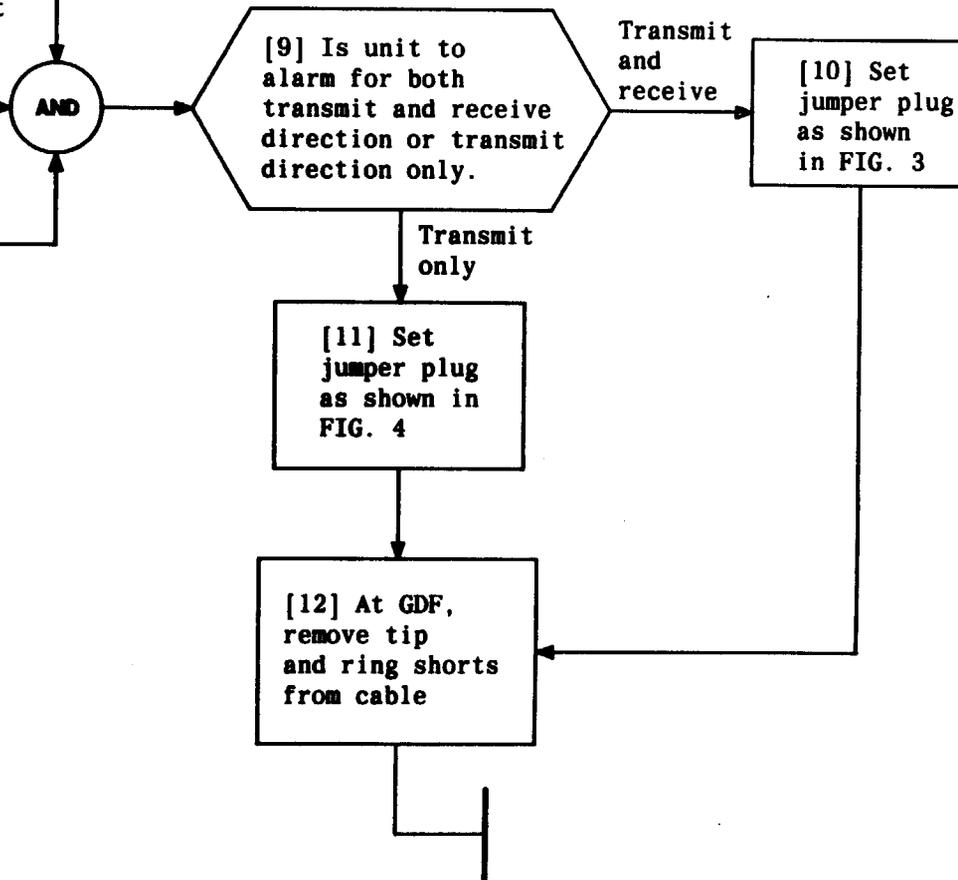


TABLE A COMBINE AND SPLIT UNIT LINE BUILD-OUT ATTENUATOR SWITCH SETTINGS				
LOOP RESISTANCE (Ω)	DISTANCE FROM LT-1 TO GDF (FT.)	LOSS (DB)	SWITCHES SET TO IN	SWITCHES SET TO OUT
0 to 2.567	0-50	1.75	0.25, 0.5, 1.0	NONE
2.568 to 7.701	51-150	1.50	0.5, 1.0	0.25
7.702 to 12.835	151-250	1.25	0.25, 1.0	0.5
12.836 to 17.969	251-350	1.00	1.0	0.25, 0.5
17.970 to 23.103	351-450	0.75	0.25, 0.5	1.0
23.104 to 28.237	451-550	0.50	0.5	0.25, 1.0
28.238 to 33.371	551-650	0.25	0.25	0.5, 1.0
33.372 to 35.938	651-700	0	NONE	0.25, 0.5, 1.0

[6] On combine and split printed wiring board, set attenuator switches in accordance with TABLE A and FIG. 2 to achieve required loss. Both switches adjacent to pad value on the attenuator must be set as specified (AT1 is on receive side; AT2 is on transmit side)

[7] On combine and split printed wiring board, ensure that CFA/NO CFA plug is positioned as shown in FIG. 2. If necessary, remove plug and reposition so that arrow points toward CFA

[8] Ensure that two combine and split units are conditioned for each digroup being established



CONDITION 1030F COMBINE AND SPLIT UNIT

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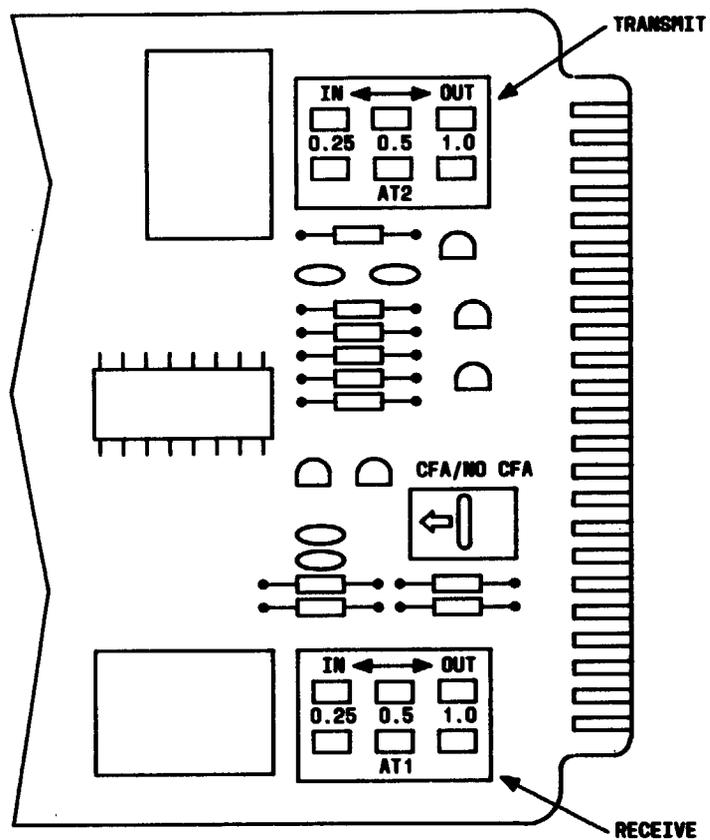


FIG. 2

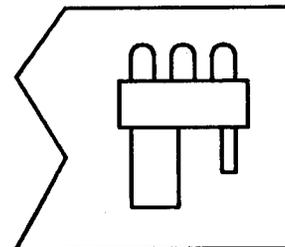


FIG. 3 - Transmit and Receive Position (Located on Circuit Module)

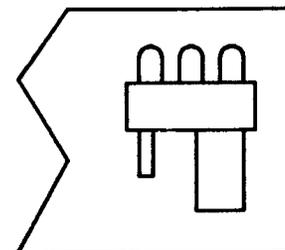


FIG. 4 - Transmit-Only Position (Located on Circuit Module)

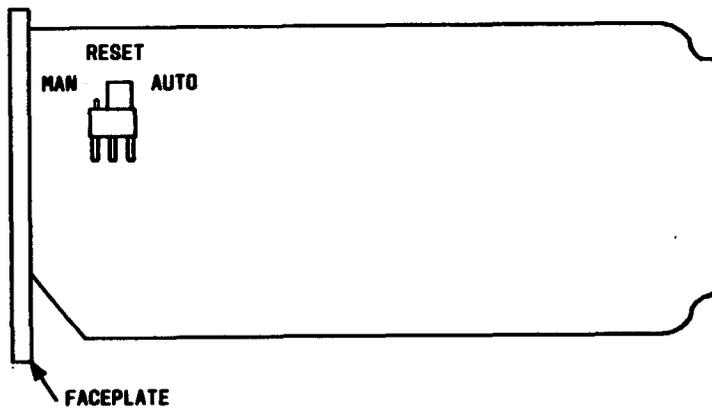
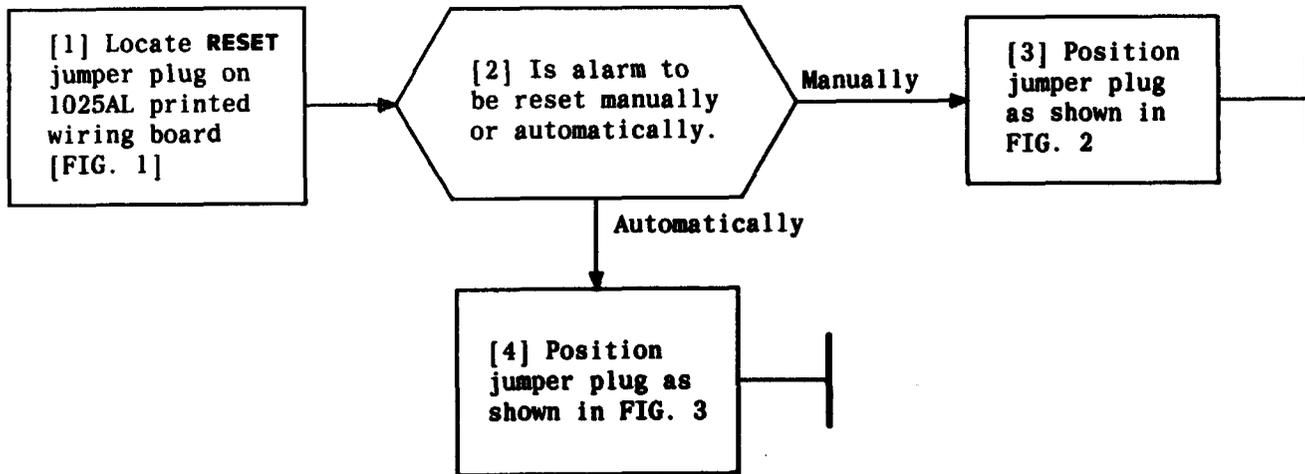


FIG. 1 - Location of RESET Jumper Plug

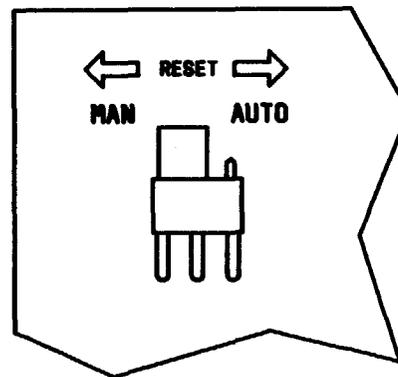


FIG. 2

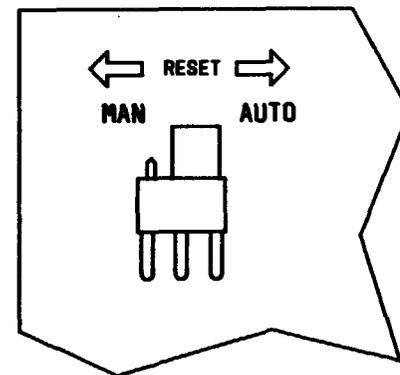
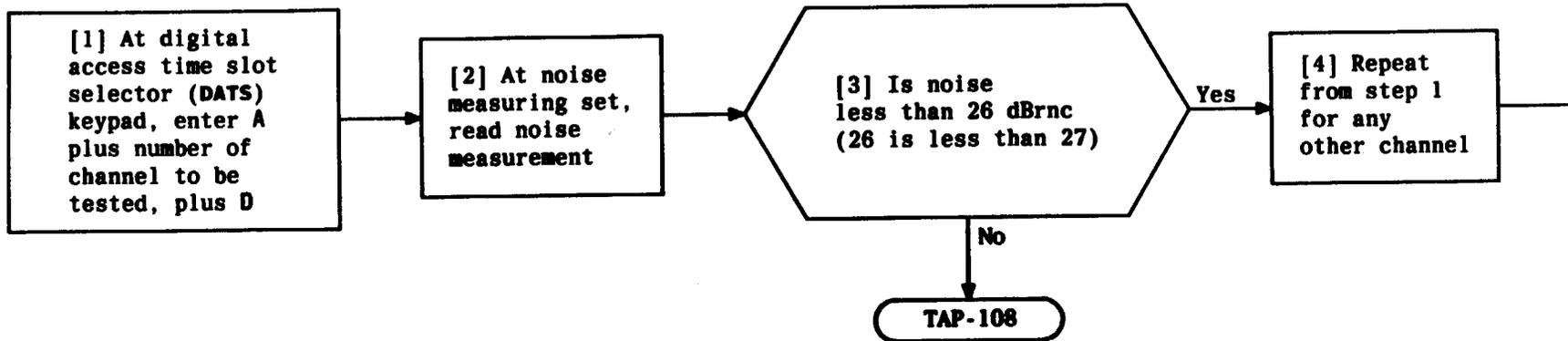


FIG. 3

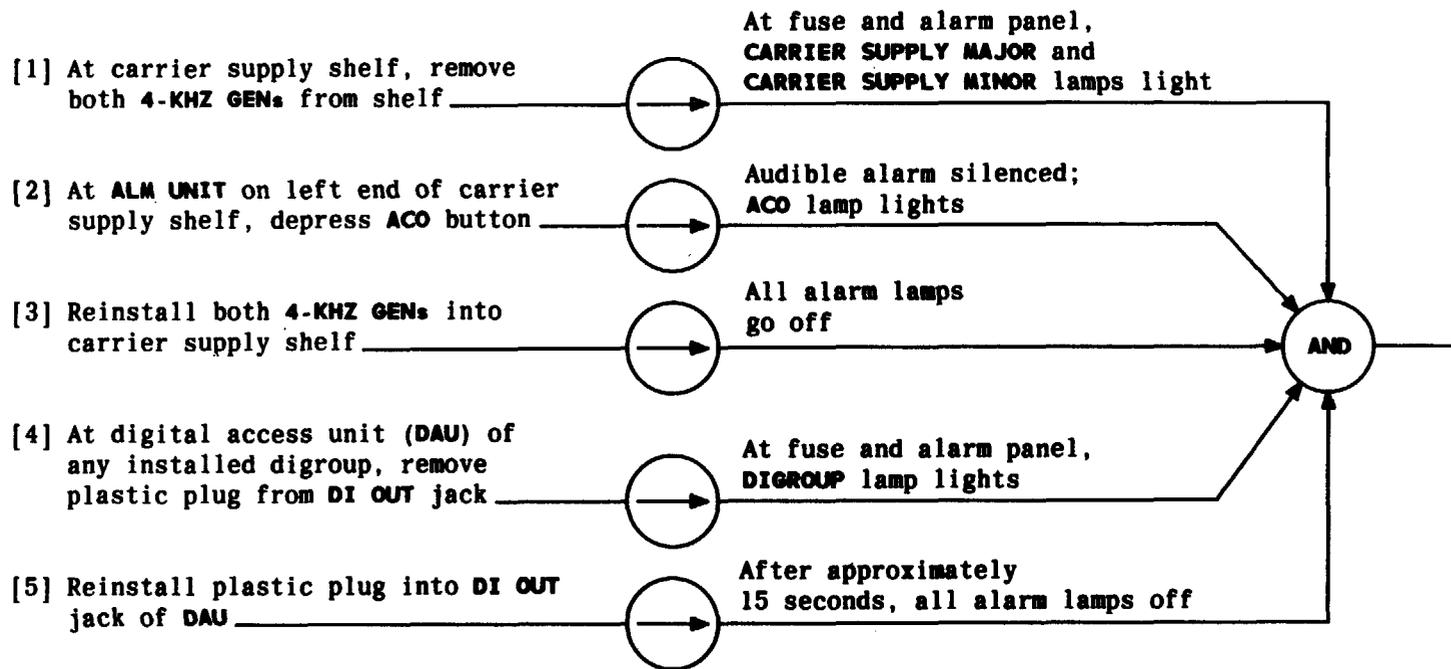
CONDITION 1025AL ALARM UNIT

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CONDUCT LOOPBACK NOISE TEST ON INDIVIDUAL CHANNELS

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TEST OPERATION OF ALARM CIRCUITS AND VISUAL INDICATORS WITH PLUG-IN UNITS INSTALLED

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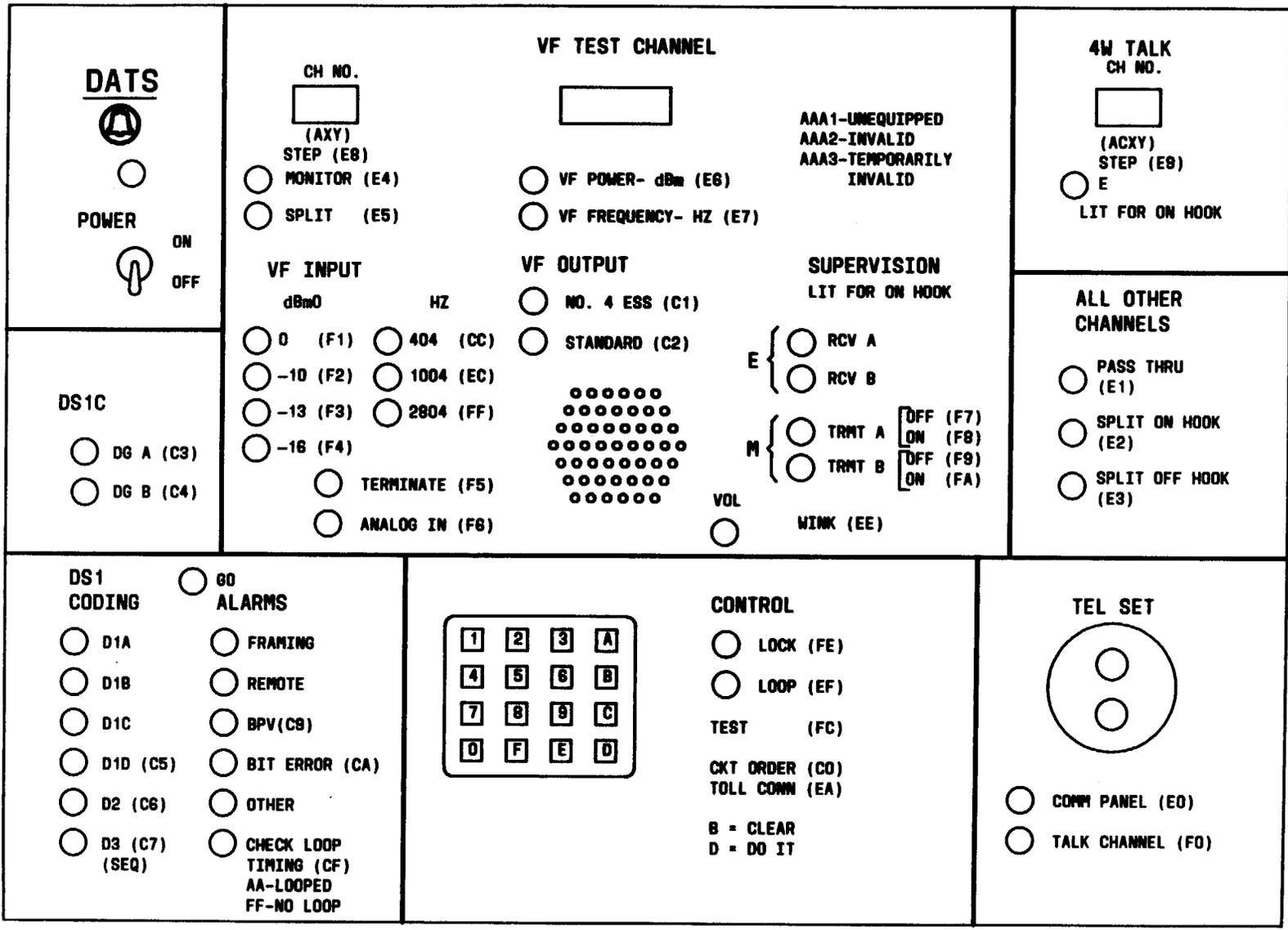


FIG. 1 - J1C140A Digital Access Timeslot Selector

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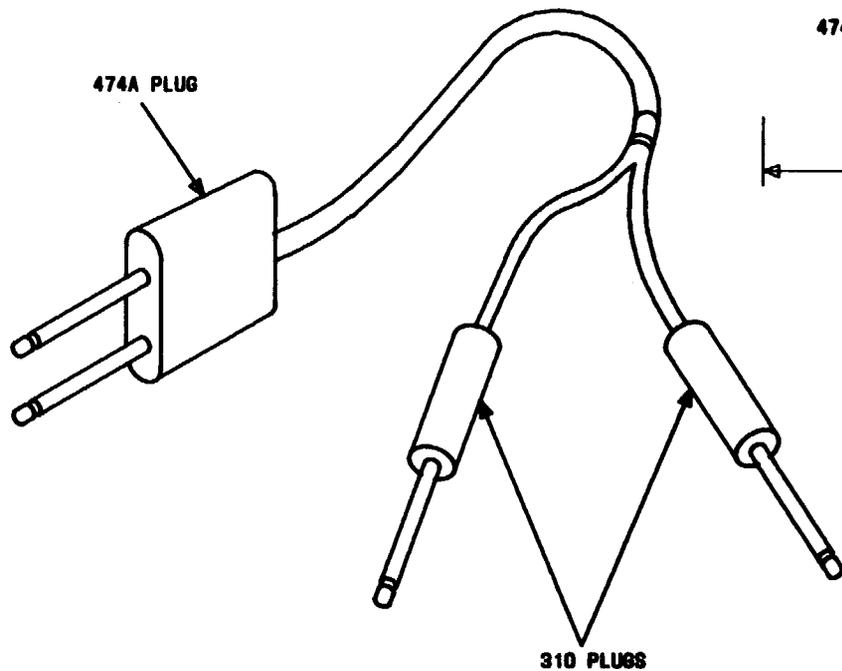


FIG. 2 - P6AA Test Cord-Physical Appearance

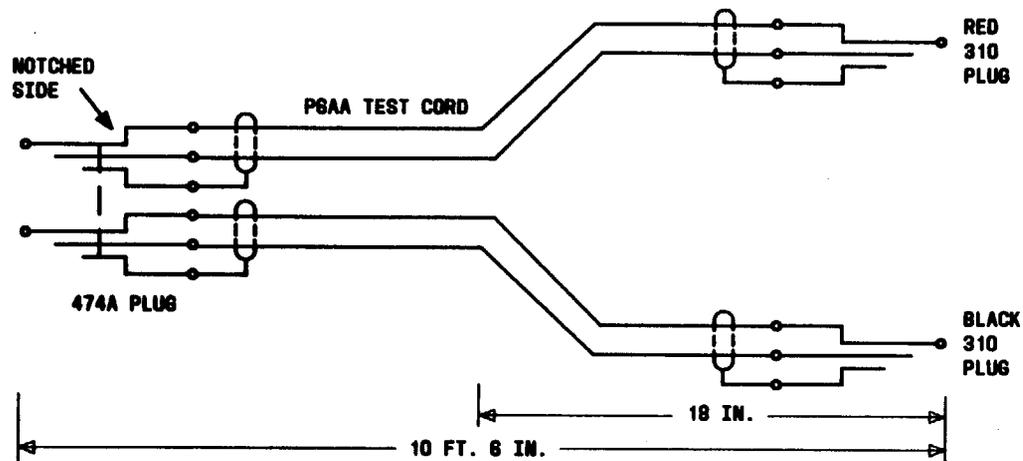


FIG. 3 - P6AA Test Cord-Schematic Diagram

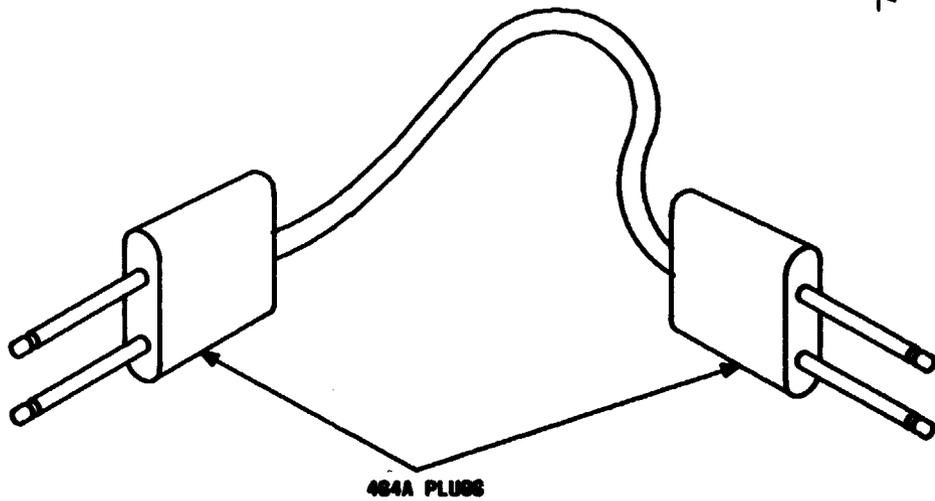


FIG. 4 - 4P18C Test Cord-Physical Appearance

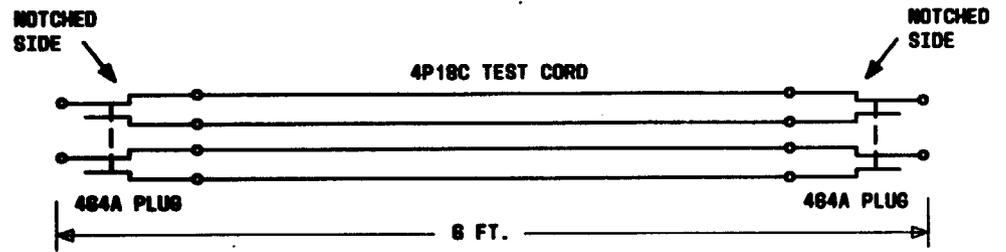


FIG. 5 - 4P18C Test Cord - Schematic Diagram

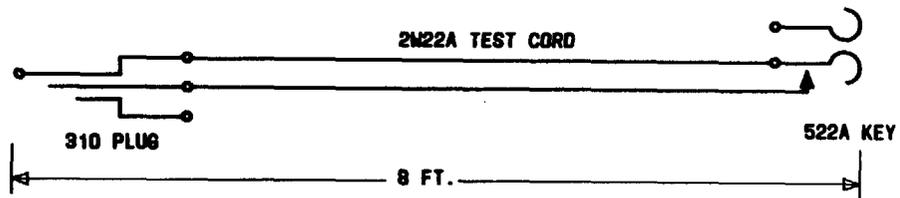


FIG. 7 - 2W22A Test Cord-Schematic Diagram

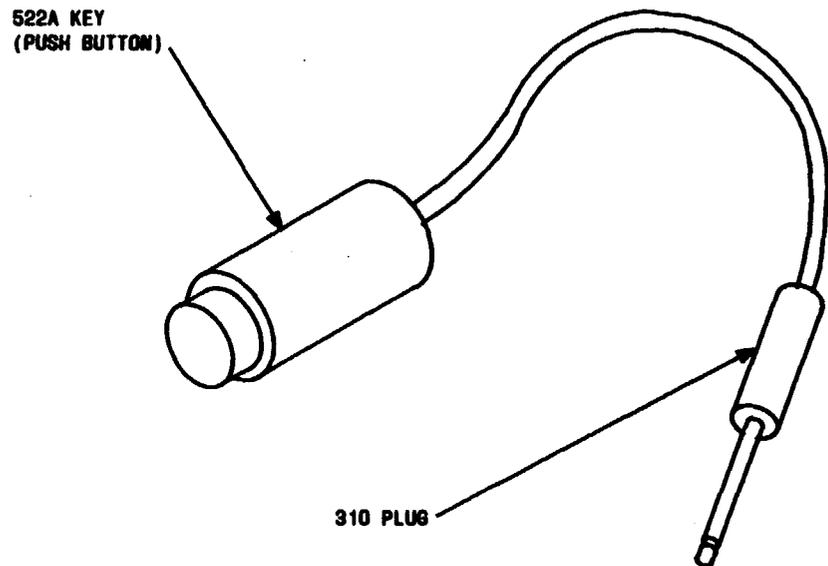


FIG. 6 - 2W22A Test Cord-Physical Appearance

SUPPORT APPARATUS IDENTIFICATION

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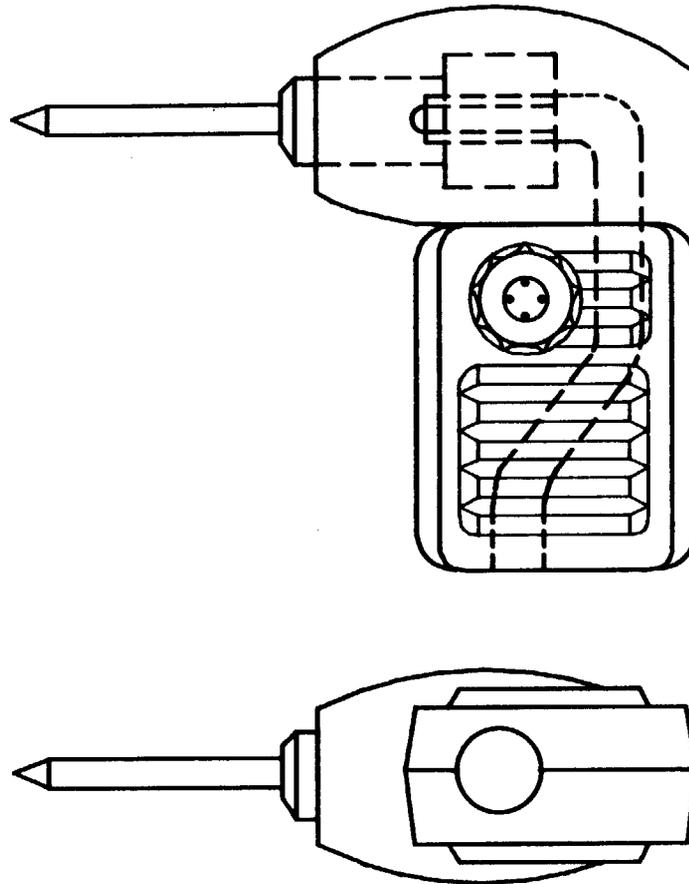


FIG. 8 - KS-19531-L() Pin Plug

[1] Install Line Interface Unit-T1C into LIU position in double digroup common equipment shelf [FIG. 1]

[2] Remove blank insert from SU position in double digroup common equipment shelf [FIG. 1]

[3] Install Syndes Unit into SU position in double digroup common equipment shelf [FIG. 1]

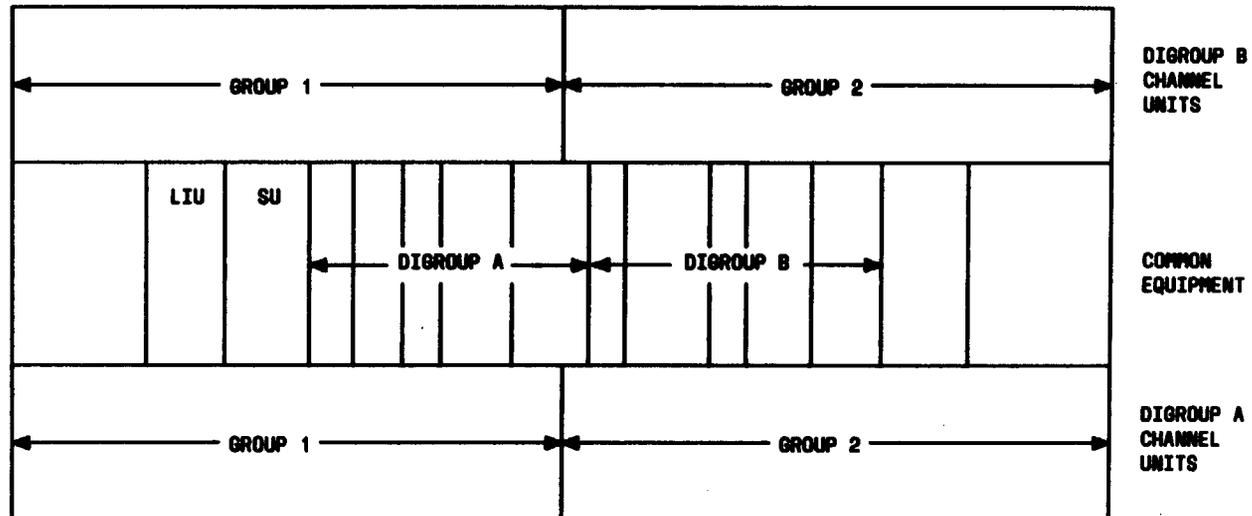
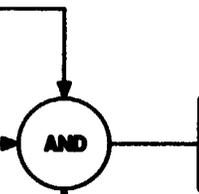


FIG. 1 - Front View of Double Digroup

INSTALL LINE INTERFACE UNIT-T1C AND SYNDES UNIT INTO DOUBLE DIGROUP

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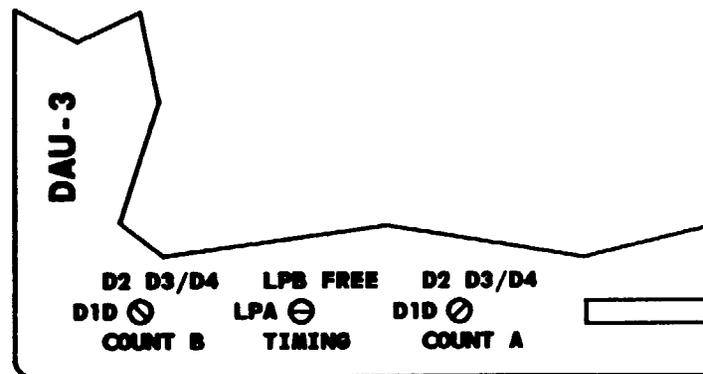
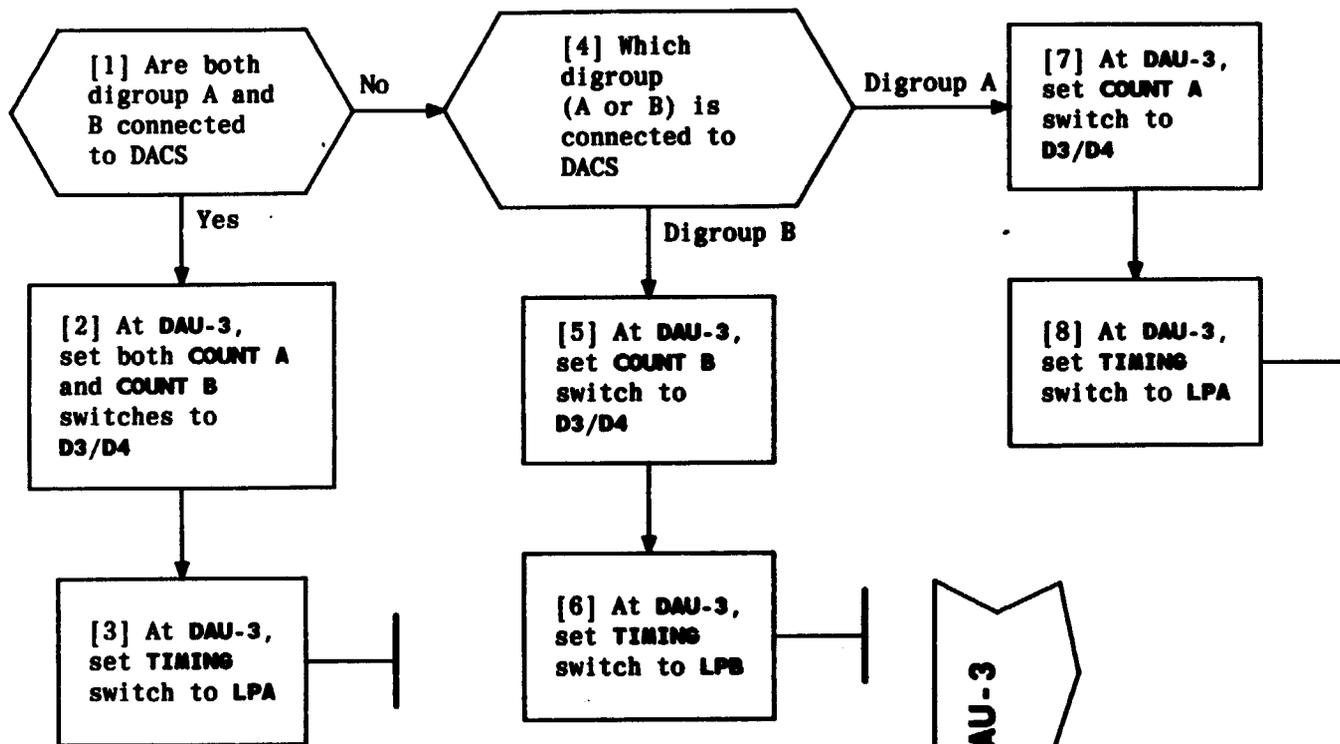


FIG. 1 - P/O DAU-3 Faceplate Showing Location of COUNT A, COUNT B, and TIMING SWITCH

SUMMARY

Equip DAU-3 with proper equalizer based on cable length per TABLE A. Set COUNT A switch based on type of D bank at digital end of facility. Set TIMING switch to conform with timing requirements of digital office.

[1] Determine cable distance between LT-1B and DSX-1C cross-connect frame by checking office records

[2] Determine proper equalizer by applying cable length to TABLE A

[3] Insert proper equalizer into TB1 per FIG. 1 [TB2 (Digroup B) is above TB1 (Digroup A)]

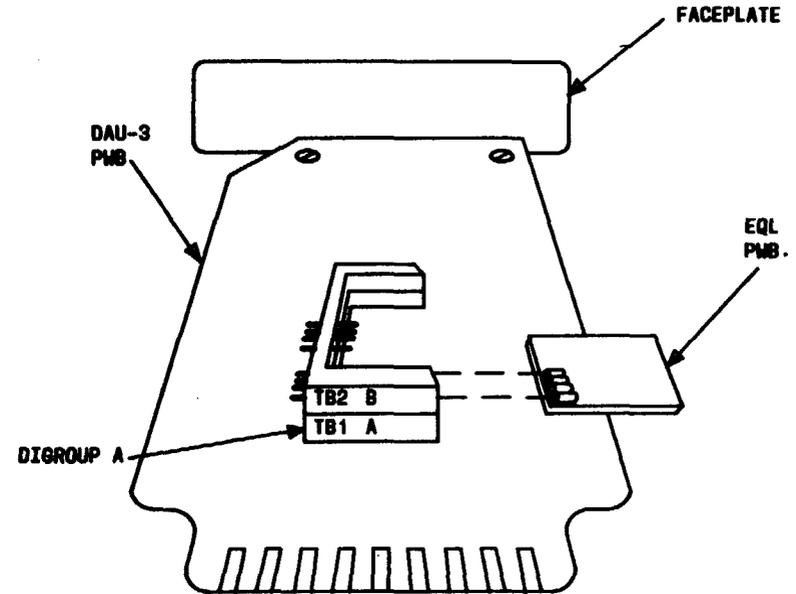
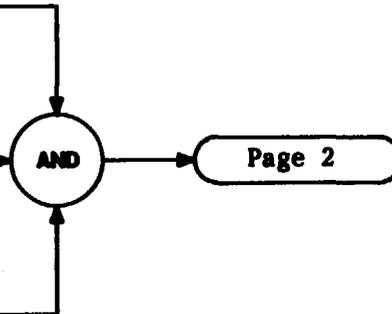


FIG. 1

TABLE A	
DISTANCE FROM LT-1B TO DSX-1 (FT.)	EQUALIZER
0 to 133	ED-3C655-31G6
133 to 267	ED-3C655-30G2
267 to 400	ED-3C655-30G3
400 to 533	ED-3C655-30G4
533 to 655	ED-3C655-30G5

CONDITION DAU-3 FOR T1C OPERATION

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[4] Determine from office records, at what type of D-bank each digroup terminates; ie, D1D, D2, or D3/D4

[5] At DAU-3 faceplate, locate screwdriver - slotted switch designated COUNT A

[6] With small screwdriver, align slot to point toward designation of D-bank type determined in step 4 [FIG. 2]

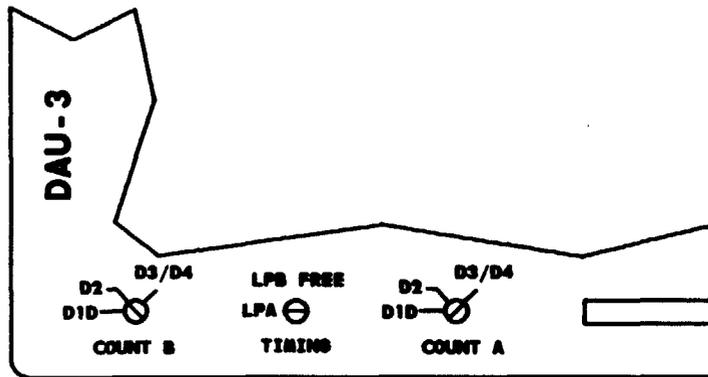
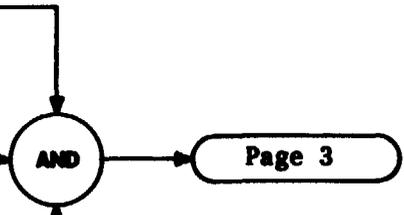


FIG. 2 - P/O DAU-3 Faceplate Showing Digroup A Set for D3/D4 Counting Sequence

CONDITION DAU-3 FOR TIC OPERATION

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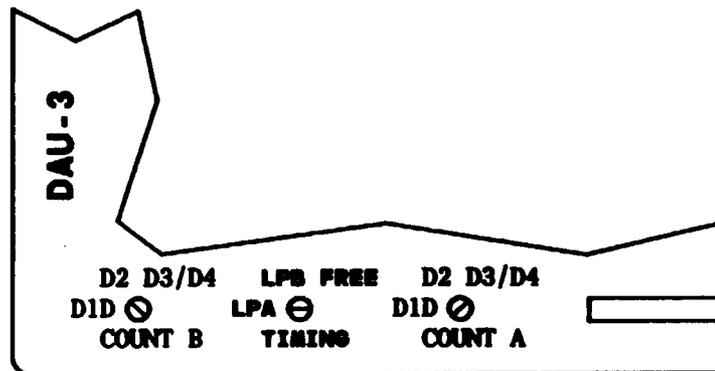
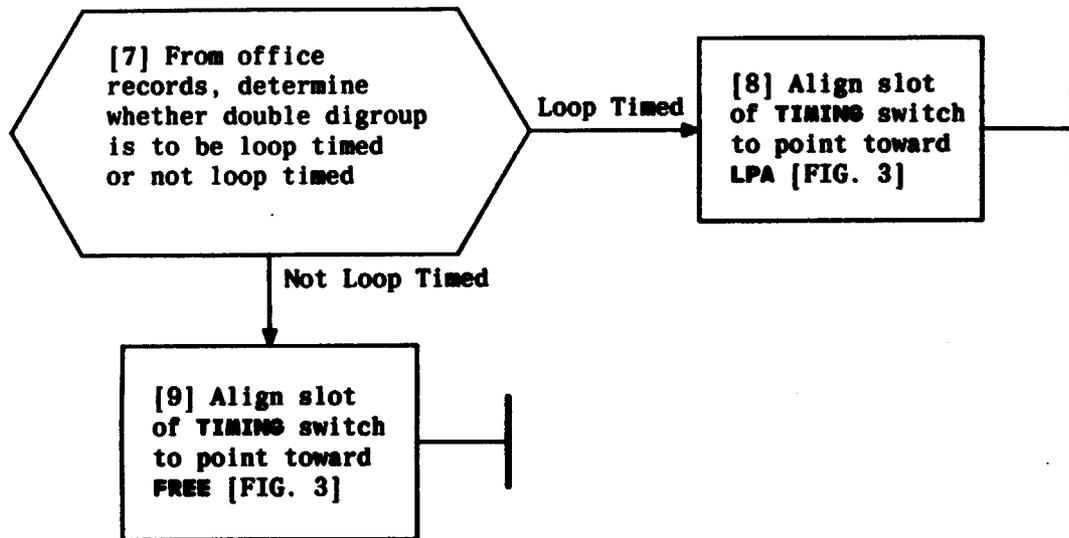


FIG. 3 - P/O DAU-3 Faceplate Showing TIMING Switch Set to LPA

CONDITION DAU-3 FOR TIC OPERATION

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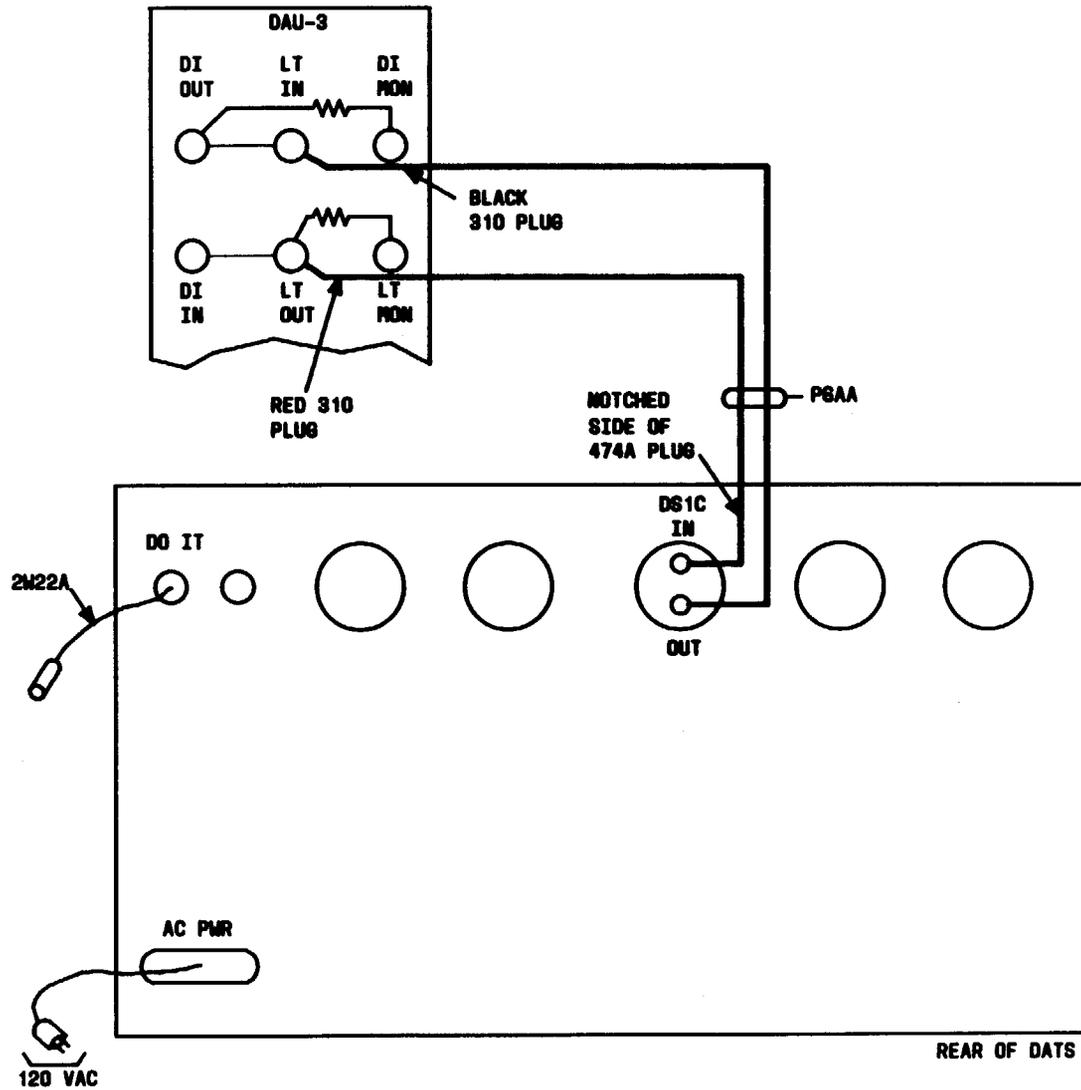
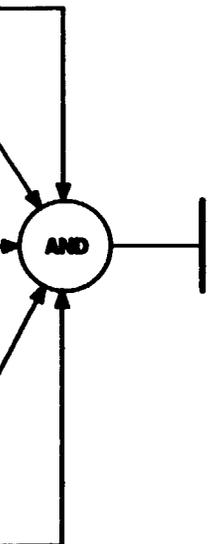


FIG. 1 - Test Connections Between LT-1B and DATS

CONNECT AND CONDITION DATS FOR TIC LEVEL ADJUSTMENT TEST

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- [1] Connect digital access time slot selector (DATS) power cord to 120-Vac source [FIG. 1] _____
- [2] Operate **POWER** switch on DATS front panel to **ON** position. Ignore **DATS** indicators _____
- [3] Connect P6AA test cord (474A dual plug) to **DS1C IN** and **DS1C OUT** jacks on DATS rear panel. Notched side of plug must be up [FIG. 1] _____
- [4] Connect other end of P6AA test cord to **DAU-3** with red 310 plug in **LT OUT** jack and black 310 plug in **LT IN** jack corresponding to digroup being tested [FIG. 1] _____
- [5] Connect 2W22A test cord to **DO IT** jack on DATS rear panel [FIG. 1] _____



CONNECT AND CONDITION DATS FOR TIC LEVEL ADJUSTMENT TEST

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At DATS control keypad:

[1] Enter C-C-E-9-D (T1C jack)

[2] Enter C-2-D (standard level)

[3] Enter C-0-D (Circuit order macro)

[4] Enter E-8 (step preliminary)

AND

[5] Does DATS
4-digit display
indicate between
-9.9 dBm and
-10.1 dBm

No

TAP-107

Yes

[6] Is this
last channel
to be tested

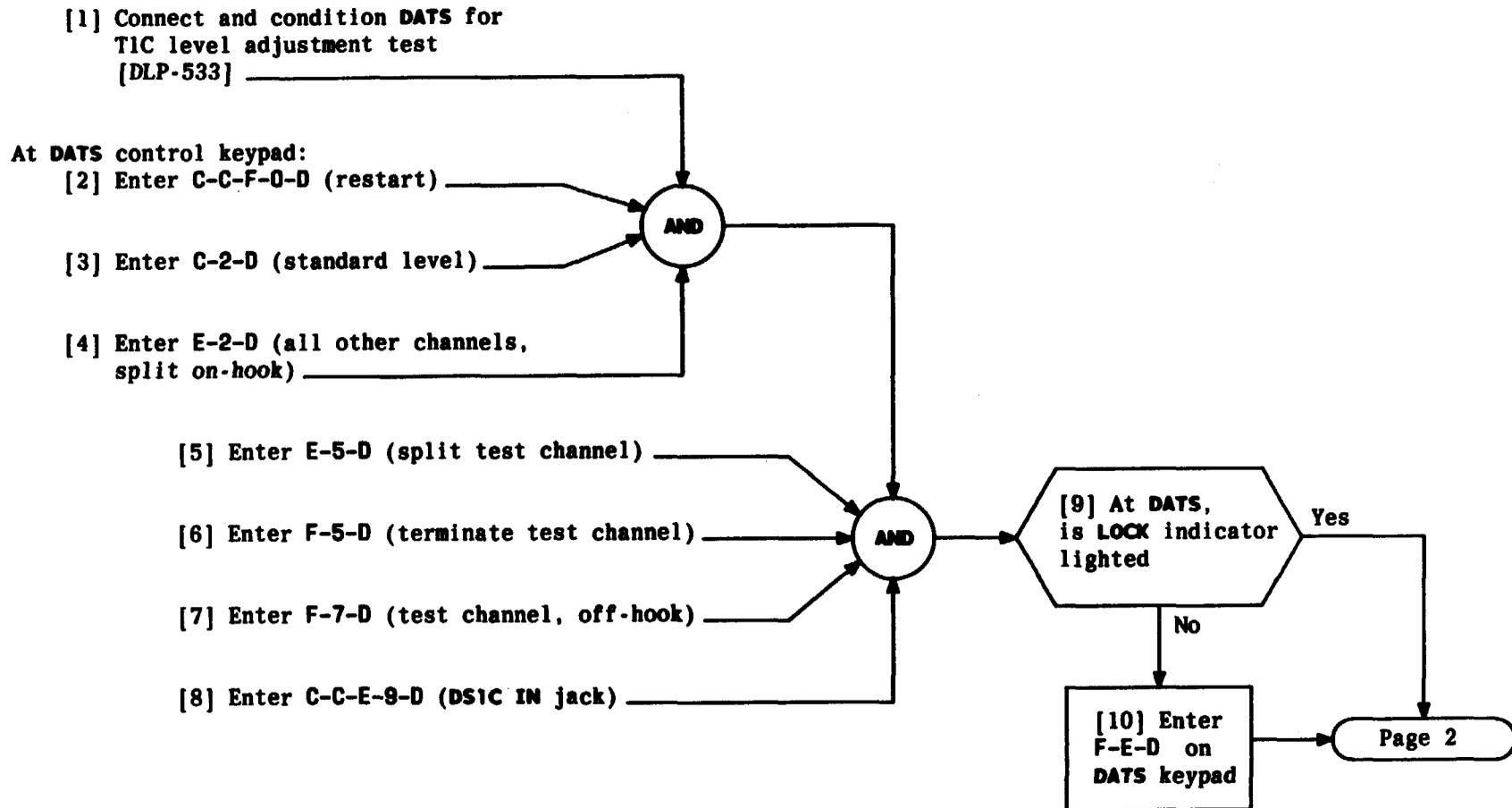
Yes

No

[7] Depress button
on 2W22A test cord
and repeat procedure
beginning at Step 5
for remainder of
digroup

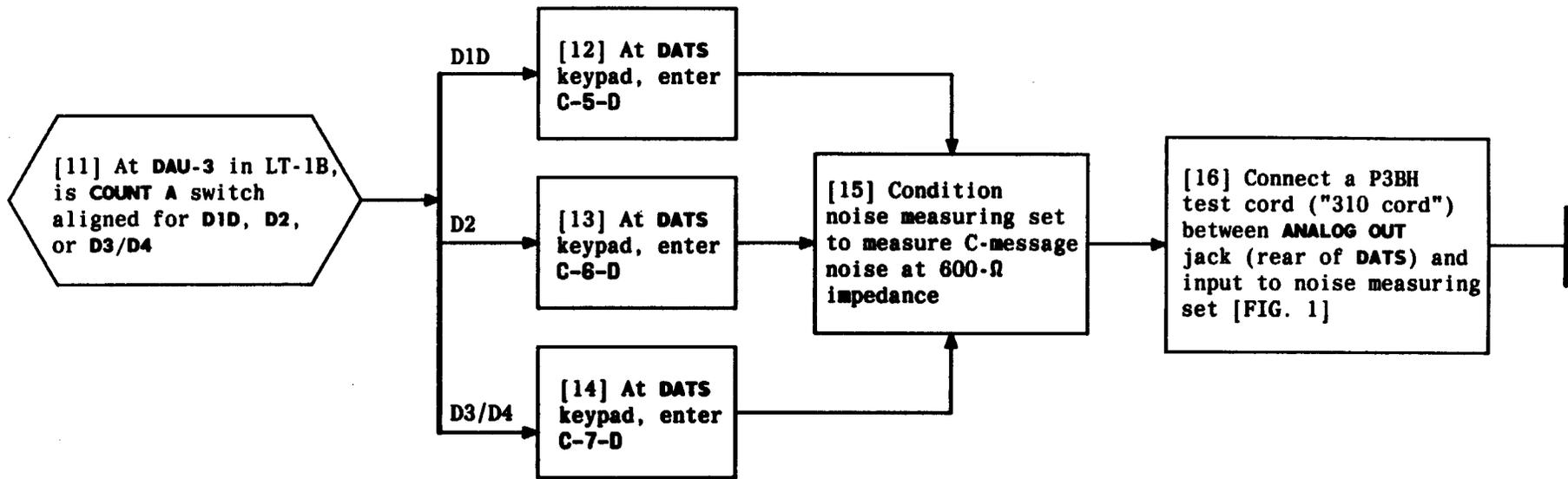
CONDUCT T1C LOOPBACK TRANSMISSION TEST

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CONNECT AND CONDITION DATS FOR TIC LOOPBACK NOISE TEST

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CONNECT AND CONDITION DATS FOR TIC LOOPBACK NOISE TEST

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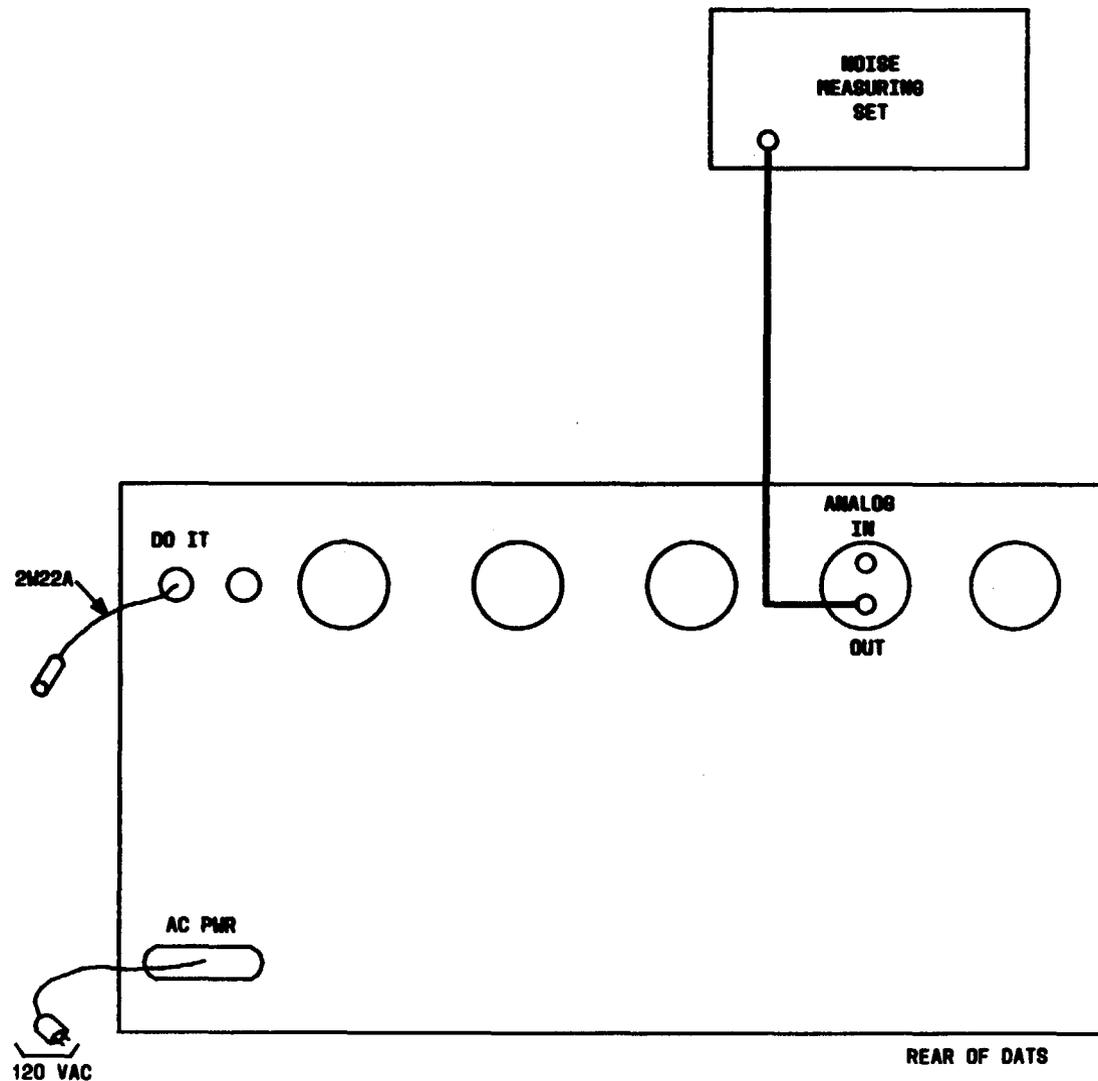
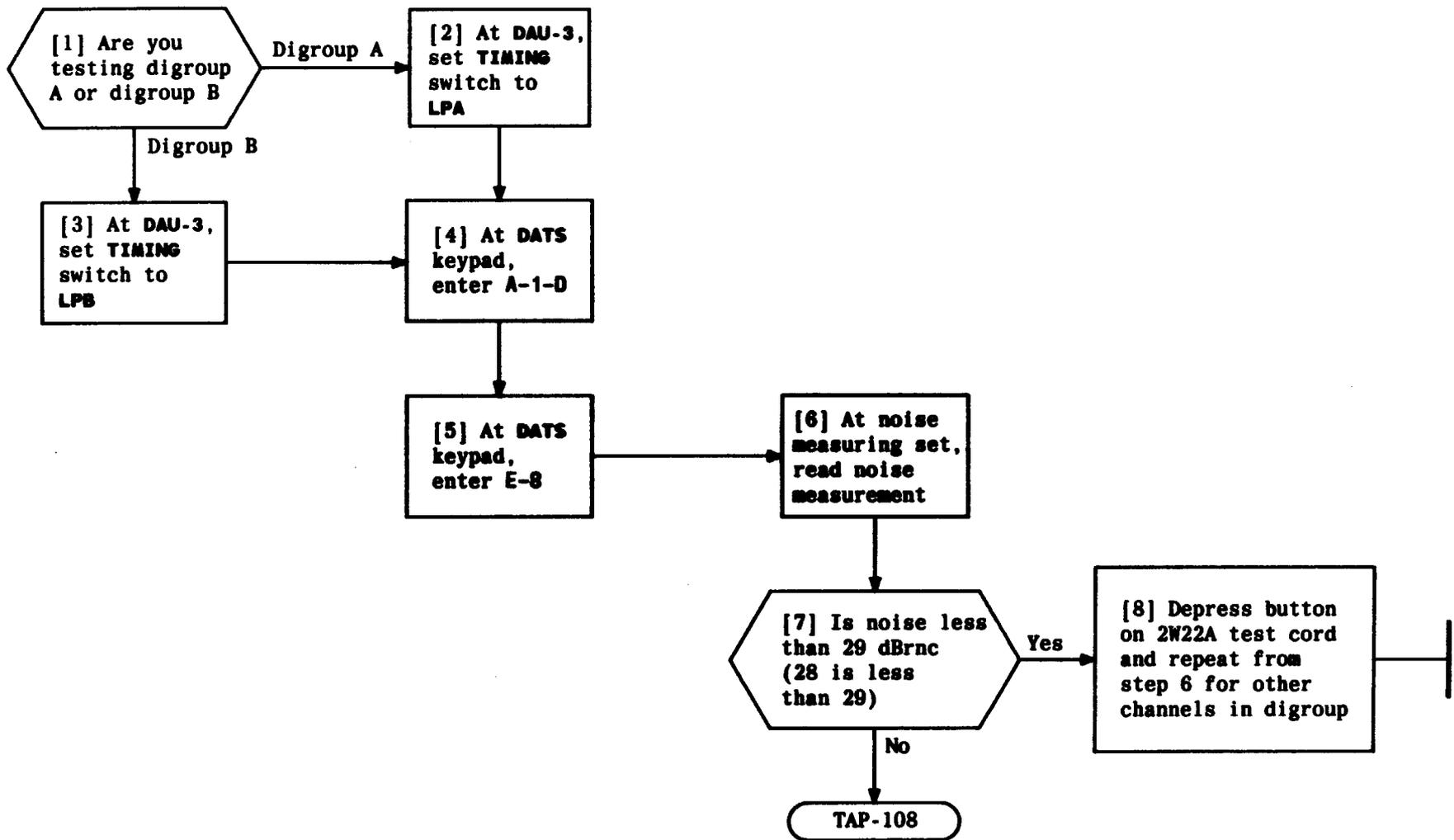


FIG. 1 - Test Connections Between LT-1B, DATS, and Noise Measuring Set

CONNECT AND CONDITION DATS FOR TIC LOOPBACK NOISE TEST

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CONDUCT T1C LOOPBACK NOISE TEST

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At DATS keypad:

[1] Enter C-0-D (circuit order macro)

[2] Enter C-2-D (standard level)

[3] Enter A-(channel number)-D (select test channel)

[4] At channel unit selected in step 3, rotate ADJ control to obtain -10 dBm0 on DATS 4-digit display

AND

[5] Is adjustment successful

Yes

[7] At DATS, enter E-8-D and repeat procedure for next channel from step 4

No

[6] Condition and install spare channel unit and repeat procedure from step 4

CONDUCT LOOPBACK LEVEL ADJUSTMENT TEST

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ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
• IXL-001 NTP-002 NTP-003 NTP-004 • NTP-005		• DLP-509 • DLP-510 DLP-511 DLP-512 DLP-513									
NTP-006 NTP-007 NTP-008 NTP-009 NTP-010		DLP-514 DLP-515 DLP-516 DLP-517 DLP-518									
NTP-011 NTP-012 NTP-013 NTP-014 NTP-015		DLP-519 DLP-520 DLP-521 DLP-522 DLP-523									
TAD-100 TAP-101 TAP-102 • TAP-103 TAP-104		DLP-524 DLP-525 DLP-526 DLP-527 DLP-528									
TAP-105 TAP-106 TAP-107 • TAP-108 • TAP-109		DLP-529 • DLP-530 DLP-531 • DLP-532 DLP-533									
• TAP-110 DLP-500 DLP-501 DLP-502 DLP-503		DLP-534 • DLP-535 DLP-536 • DLP-537 • CKL-891									
• DLP-504 • DLP-505 DLP-506 DLP-507 • DLP-508		TNG-893 DPL-895									

• REVISED OR ADDED ITEM

CANCELED ITEM

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CHECKLIST

This book is called a Task Oriented Practice or "TOP". It is a special type of Bell System Practice (BSP). It is a programmed document that gives step-by-step instructions to enable you to do a job (or task). A TOP can be a very useful aid in doing your everyday work if you use it correctly.

An important thing to remember about TOP is that it is a programmed document giving step-by-step instructions to do a job. Since the instructions are given in the order that they must be done, you cannot enter a procedure except at the beginning. You *must* do the step-by-step instructions in the order given. Failure to follow the instructions in the proper order may cause service interruptions.

Another thing to remember about TOP is that it contains all the instructions that you need to do a job. If you are experienced on a particular job, TOP will provide you with just that information you need to do the job. If you are doing the job for the first time, you will be given step-by-step instructions with enough detail so that you will not have to guess or remember where to find the necessary details. Remember that TOP can provide you with just that information you need regardless of your experience in doing a job.

The work that you do can be classified into two broad job categories - *Trouble Clearing* and *Non Trouble Clearing*. This is how TOP defines these two types of work:

Trouble Clearing

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 or in responding to an office alarm, a trouble report, or an abnormal TTY printout, etc.

Non Trouble Clearing

Non trouble clearing is simply what it says - that work you do which is not connected with trouble clearing. This type is work that you do to accept a system after it has been installed, turn up a system for service, maintain a system according to a controlled maintenance plan, etc.

Now glance briefly at the front cover. In the upper right corner is a 9-digit number. This number is the BSP number for the volume. Near the center is the title of the volume which tells you something about the contents, such as the system (or subsystem) name and perhaps what kind of jobs are included in the volume. Next is the decision-action-logic diagram which directs you either to this training package or to 001 depending on your ability to use TOP.

Now turn to FIG. 1 which shows a typical page of 001. In the lower left is the title, "TASK INDEX LIST" which tells you something about this list, such as it is a listing of tasks arranged in alphabetical order. This list is actually a listing of the tasks included in the volume. The tasks are listed in alphabetical order and permuted on key words to simplify locating a task. On the right side of the page is a column of reference numbers under the heading "THEN GO TO." To use this list, locate the job to be done and turn to the reference number in the "THEN GO TO" column.

Now assume that you have been assigned the task of performing a system test on a system covered by a TOP. On 001 in FIG. 1, locate the job "System Test." Notice that this entry tells you to go to NTP-016 under the "THEN GO TO" column. Next you will have to locate the procedure, NTP-016. All procedures in a TOP are arranged in numerical sequence. In actual use of TOP, you would simply turn to

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Alert; External - Horn, Ringer, Etc. - Remove	NTP-028
Amplifiers; Channel - Recorded Announcement Frame - Test	NTP-009
AR03 PWR ALM RA bb - bb = 16-30	TAP-105
BRDG LED - Does Not Light - Correct	TAP-117
Bridging Controller; Trunk - J1C015MB - Replace	DLP-572
Channel Amplifiers - Recorded Announcement Frame - Test	NTP-009
Drum Wiper - Common Systems Recorded Announcement Frame - Inspect	NTP-010
Extended Station Capability - Nonkey Set Only - Reported Failure	TAP-123
External Alert - Horn, Ringer, Etc. - Remove	NTP-028
Interchange Two Working Station Numbers	NTP-081
LED; BRDG - Does Not Light - Correct	TAP-117
Loudspeaker Paging - Add	NTP-059
Loudspeaker; SPOKESMAN - Remove	NTP-006
SPOKESMAN Loudspeaker - Remove	NTP-006
Station Capability; Extended - Nonkey Set Only - Reported Failure	TAP-123
System Test - Perform	NTP-016
Trunk Bridging Controller - J1C015MB - Replace	DLP-572
TTY Printout - AR03 PWR ALM RA bb - bb = 16-30	TAP-105
Wiper; Drum - Common Systems Recorded Announcement Frame - Inspect	NTP-010
TASK INDEX LIST (Contd)	Issue 1 DEC 1980
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	PAGE 2 of 2 001

FIG. 1

HOW TO USE TOP

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the procedure. Look over the following example which shows a typical page of NTP-016. Note that the items are numbered in the left column. They *must* be completed in that order. You will also note that in item 2 there are some lettered (A, B, C) items. These lettered items are optional ways to do an item, that is you only have to do one of the lettered items.

Remember that this procedure gives you all the items that must be done and the order in which they must be done to complete the job. If you know how to do an item, you

should go ahead and do it without going to the referenced details in the "FOR DETAILS, GO TO" column. If, on the other hand, you need additional details on how to do the item, then you should turn to the procedure listed in the "FOR DETAILS, GO TO" column. In either case, after completing an item, you should continue with the next item.

A TOP is designed so that you have to read only what is necessary to get your job done. If you know how to do an item, look no further for the "how to" information - just

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO						
1	Obtain Support Apparatus Listed Below: • Hewlett-Packard 3531A Transmission Measuring Set • 2P4C Patching Cord	-						
2	Place SEC/SEB in Off-Line Mode	-						
	A. If in On-Line Mode, Change System From On-Line to Off-Line	DLP-509						
	B. If Powered Down, Condition System for Off-Line Operation as Follows:	-						
	1. Power up Minicomputer	DLP-503						
	2. Power up Line Printer	DLP-528						
	3. Power up Maintenance Terminal	DLP-510						
7	Run Computer Display Terminal Test for All Positions	DLP-513						
8	Mount Tape	DLP-500						
PERFORM SYSTEM TEST		<table border="1"> <tr> <td>Issue 1</td> <td>DEC 1980</td> </tr> <tr> <td>123-456-789</td> <td>NTP</td> </tr> <tr> <td>PAGE 1 of 4</td> <td>016</td> </tr> </table>	Issue 1	DEC 1980	123-456-789	NTP	PAGE 1 of 4	016
Issue 1	DEC 1980							
123-456-789	NTP							
PAGE 1 of 4	016							

HOW TO USE TOP

	TNG
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do the item and go on to the next item. This idea is called "bypassing" in TOP. In addition to not having to look further for details, three other ways of "bypassing" are provided in TOP to help you bypass reading information you already know (see FIG. 2):

Summary Statement

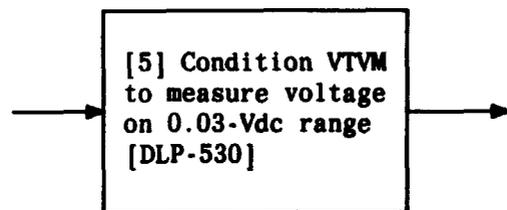
A summary statement is used with a procedure to tell you briefly how to do the procedure and what type measurement or result can be observed. If you can do the procedure after reading the summary, go ahead and do it without reading any further. Simple procedures may not have summaries.

Result Statement

A result statement may be used in a flow-charted procedure along with the AND symbol. If, after reading the results statement, you know how to do the action indicated, go ahead and do it without reading the steps associated with the AND symbol.

Support Procedures

When you see the following kind of reference in TOP it refers to a support procedure:

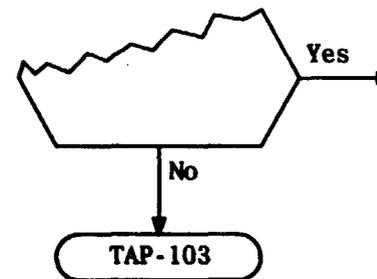


HOW TO USE TOP

The support procedure [DLP-530] provides the information on how to operate the VTVM. Here again, if you already know how to operate the VTVM, go ahead and do it without looking up any further information.

Now assume that you are doing a system test on a system covered by a TOP. In the process of doing this test you are instructed to mount a tape. For the purposes of this example, assume that you do not know how to mount the tape and must look up additional details. Figure 2 on Page 5 shows you examples of bypassing that can be used. Take a few moments to examine this figure and make sure you understand the techniques of bypassing.

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



This reference to TAP-103 indicates that the equipment is not operating correctly, and that you should refer to TAP-103 and clear this trouble condition. After clearing the trouble, you should reenter the flowchart at the beginning (Step 1).

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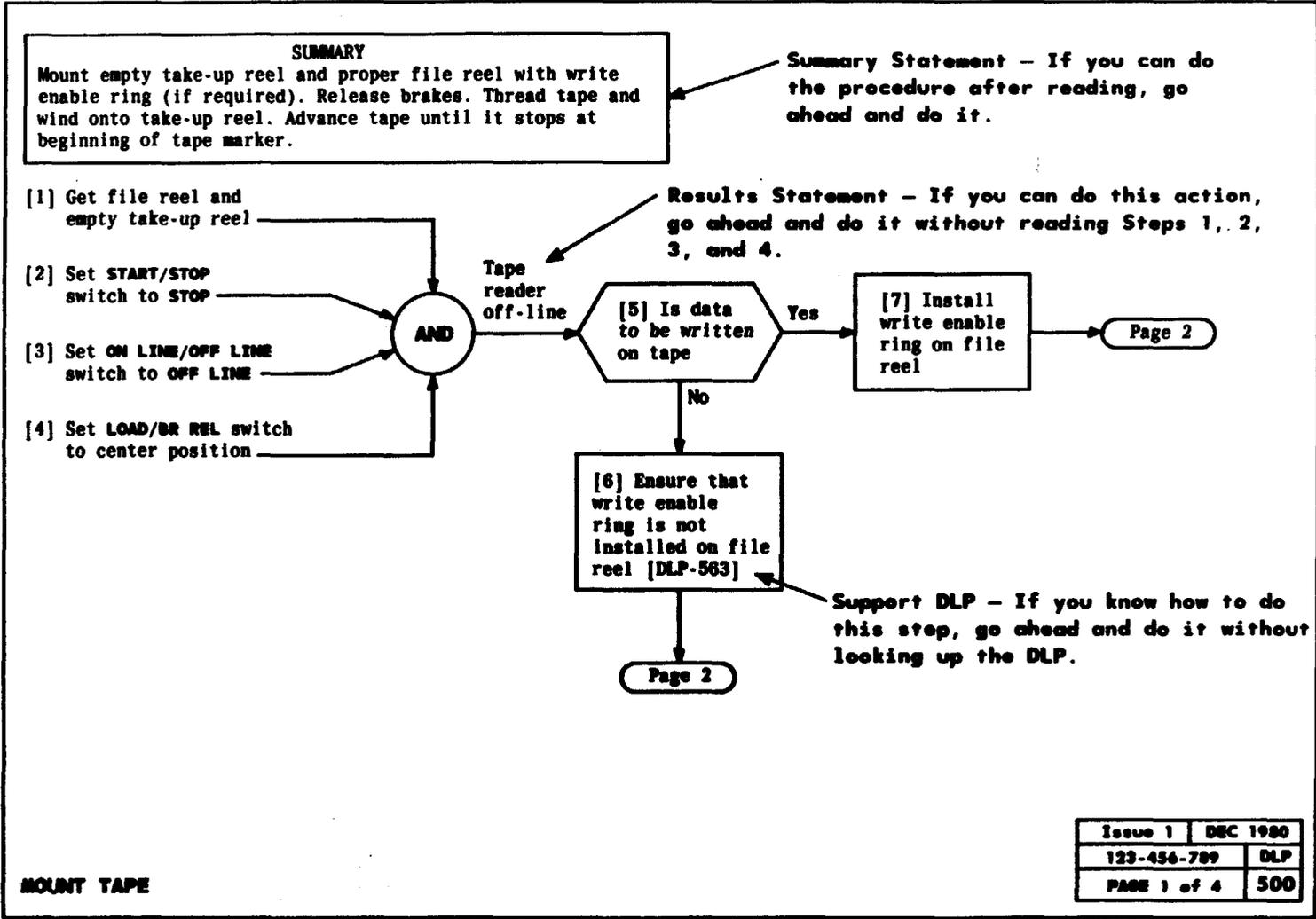
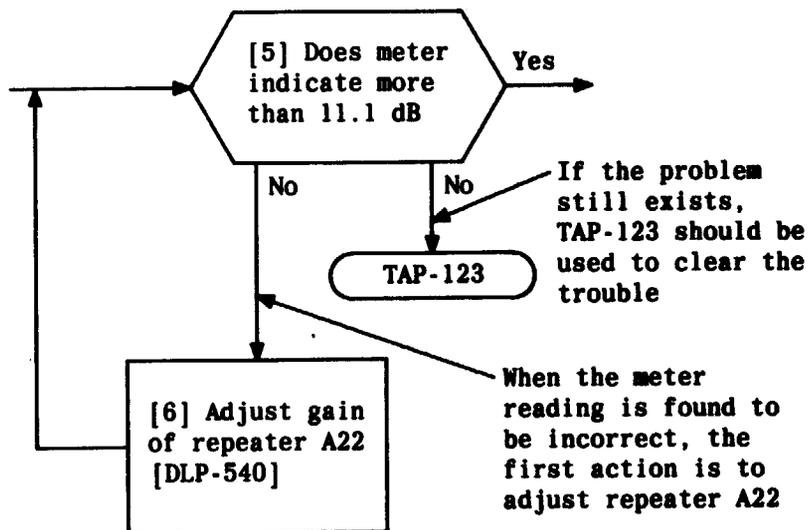


FIG. 2

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

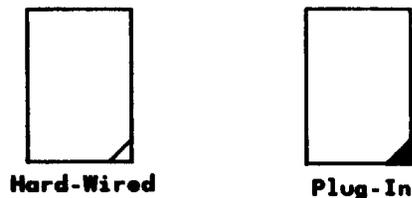


Trouble-clearing information in TOP is used basically the same way as non trouble-clearing information. When an alarm or trouble report requires you to troubleshoot a system covered by a TOP, the TASK INDEX LIST (IXL-001) is the place to start. After locating your job on IXL-001 you will be referenced to a Trouble Analysis Procedure (TAP) to find the information to aid in the location of the trouble. The TAP may reference to other information, such as Trouble Analysis Data (TAD) or Isolation Diagram (ISD) as an aid in the trouble-clearing process.

Now assume that you have to clear a major alarm on a terminal in a system covered by a TOP. Figure 3 on Page 7 shows how to access and how to use trouble-clearing information.

HOW TO USE TOP

A TOP shows hard-wired and plug-in units on Isolation Diagrams (ISD) in the following manner:



Always do a job safely. Below are three things you should heed in TOP:

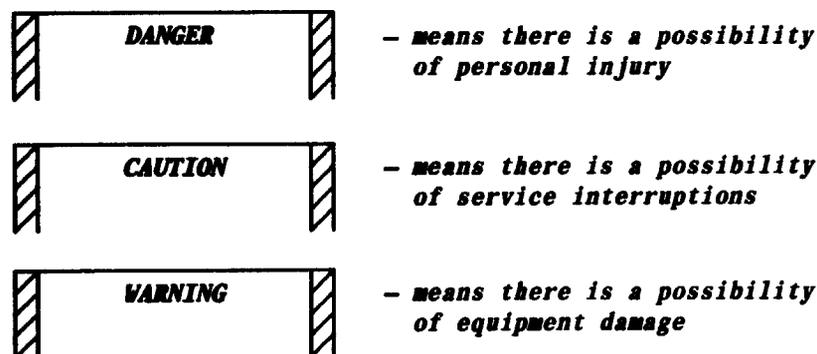


TABLE A on Page 8 shows some of the more important symbols and definitions.

While using TOP, if you find errors, or if a procedure is inadequate or missing, call the TOP HOTLINE number shown on the front cover. Your comments are greatly needed to help prepare better documentation. Comments may also be forwarded using form E3973 which is available through your company.

Now that you know how to use TOP, return to IXL-001 and find the job you need to do.

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FIND YOUR JOB IN THE LIST BELOW THEN GO TO						
Alert; External - Horn, Ringer, Etc. - Remove	NTP-028						
Alarm - Major - Clear	TAP-109						
TTY Printout - AR03 PWR ALM RA bb - bb = 16-30	TAP-105						
Wiper; Drum - Common Systems Recorded Announcement Frame	NTP-010						
<table border="1"> <tr> <td>Issue 1</td> <td>DEC 1980</td> </tr> <tr> <td>123-456-789</td> <td>IXL</td> </tr> <tr> <td>PAGE 2 of 2</td> <td>001</td> </tr> </table>		Issue 1	DEC 1980	123-456-789	IXL	PAGE 2 of 2	001
Issue 1	DEC 1980						
123-456-789	IXL						
PAGE 2 of 2	001						
TASK INDEX LIST (Contd)							

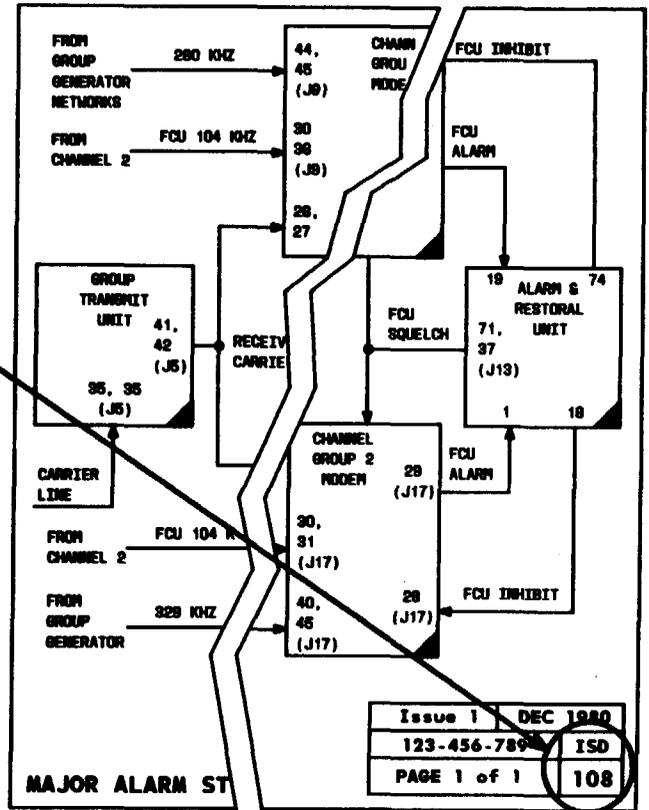
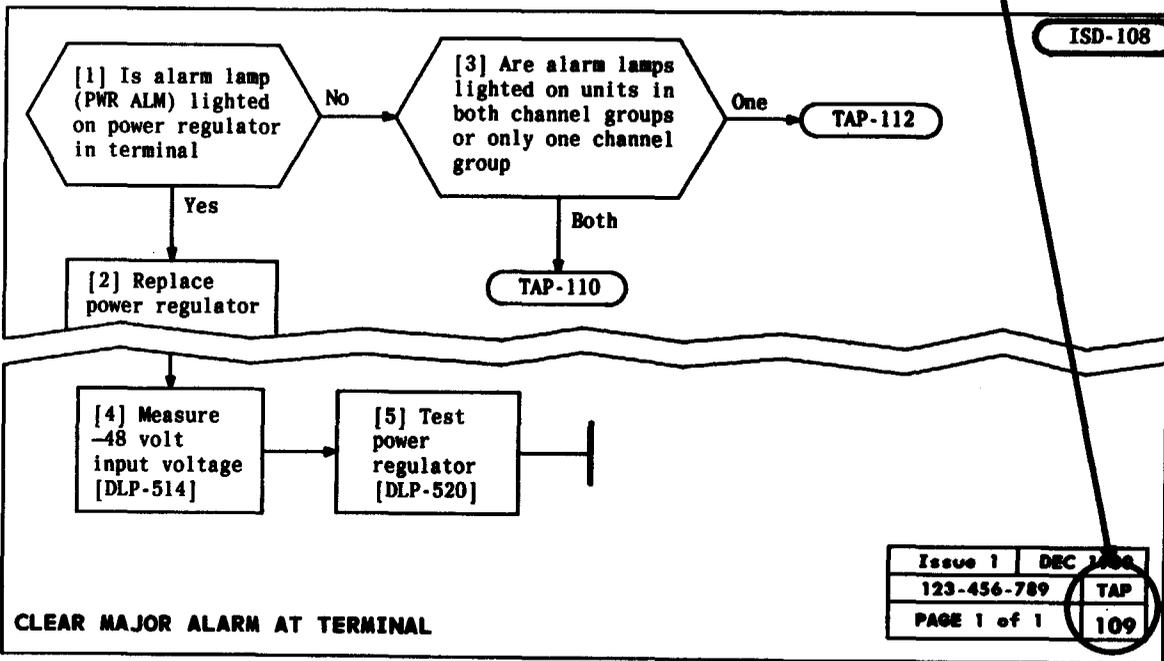
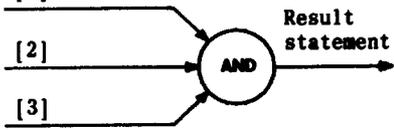
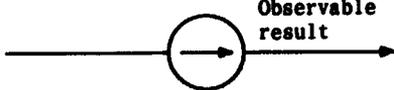


FIG. 3

**TABLE A
IMPORTANT TOP SYMBOLS AND DEFINITIONS**

SYMBOL	DEFINITION
	<p>The AND operation symbol is used where the successful completion of a group of instructions accomplishes a meaningful result that can be defined. The symbol indicates that each input instruction must be performed in the order given to accomplish the output (result statement). In instances where results cannot be defined, results statements are not provided.</p>
	<p>The flow-through symbol relates graphically a single instruction to the expected observable result(s).</p>
	<p>The end-of-procedure symbol denotes that the procedure has been completed.</p>
	<p>The reference bubble symbol indicates an exit from a page (either to a continuation page or to trouble-clearing data) or indicates the starting point of a procedure.</p>
<p>Acceptance (NTP-002)</p>	<p>Acceptance gives an overview of the acceptance techniques and facilities.</p>
<p>Maintenance Philosophy (TAD-100)</p>	<p>The maintenance philosophy, when provided, gives an overview of the considerations designed into the trouble-clearing procedures.</p>
<p>Checklist (CKL-891)</p>	<p>The checklist reflects the volume content (inventory) at any given time, the issue identifier of each data element therein, those data elements revised and/or added, and those data elements deleted from a previous issue.</p>
<p>Documentation Plan (DPL-895)</p>	<p>The documentation plan gives a bird's-eye view of all the TOP volumes covering a system. This plan can help you to quickly determine the correct volume.</p>

**LT-1B CONNECTOR
TOP DOCUMENTATION PLAN**

**J98736A-1
or
J98736B-1
LT-1B FRAME**

DOCUMENTATION PLAN

	DPL
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