

## 6B KEY TELEPHONE SYSTEM DIALOG\* INTERCOM SYSTEM

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**1. GENERAL**

**1.01** This section provides description, installation, connection, operation, and maintenance information for the 6B Key Telephone System (KTS).

**1.02** This section is reissued to add information on:

- New 554BMS and 2554BMS telephone sets
- New 324A adapter for external ringing in noisy locations
- Wiring modification of the following telephone sets for use with 6B KTS:

830/2830FM telephone sets

TOUCH-A-MATIC® (872-/2872-) telephone sets

TRIMLINE® telephones

Jack equipped CALL DIRECTOR® telephones.

**1.03** This issue of the section is based on SD-69946-01, Issue 1. If this section is to be used with equipment or apparatus reflecting later issues of the drawings, reference should be made to the SDs and CDs to determine the extent of the changes and the manner in which the section may be affected.

**2. DESCRIPTION**

**SYSTEM**

**2.01** The 6B KTS is a fully electronic intercom which has a capacity of four separate talking

paths (links) and 52 station codes. Up to eight CO/PBX calls can be answered, held, or transferred but CO/PBX calls cannot be originated using the 6B KTS.

**Note:** More than 52 stations can be installed by having stations share a code. Only two stations per code are permitted and only even numbered codes should be bridged. With this limitation, there can only be six sets served per station circuit (484A key telephone units [KTUS]).

**2.02** All required KTUs are mounted in a 572A1 key service unit (KSU). The KSU includes an integral 206A power supply, but 24-volt direct current (dc) and 10-volt alternating current (ac) and their associated grounds must be supplied from the associated key system or a separate power supply.

**2.03** All wiring, except power, is brought into the 572A1 KSU through connector cables plugged into the rear of the unit (Fig. 1). An optional 184C1 backboard has been developed as a terminal field for the 6B KTS, or existing blocks in the yellow field of a centralized key system can be used.

**2.04** The 6B KTS can be added as an adjunct to any KTS using A-lead control such as the 1A1 or 1A2 KTS. Only one button is required on key telephone sets (rotary dial or TOUCH-TONE® dial). Modification of the HOLD key wiring and a separate 10-volt ac buzzer are required in the telephone sets used with the 6B KTS. Nonkey sets which can be modified for A-lead control, may be used but they will not supply those features involving the HOLD key. A new 554/2554BMS wall telephone set has been introduced as an intercom only instrument for the 6B KTS. This set does not need modification of wiring as do all the other key and nonkey sets used with the 6B KTS. A 500/2500MM or a 502/2502BM telephone set may be used as an intercom only set where the wall set is not applicable.

**2.05** Loud or external ringers may be added to the 6B KTS with the use of the 324A adapter. Off-premises stations may be added to the 6B KTS but require a separately provided long-line circuit.

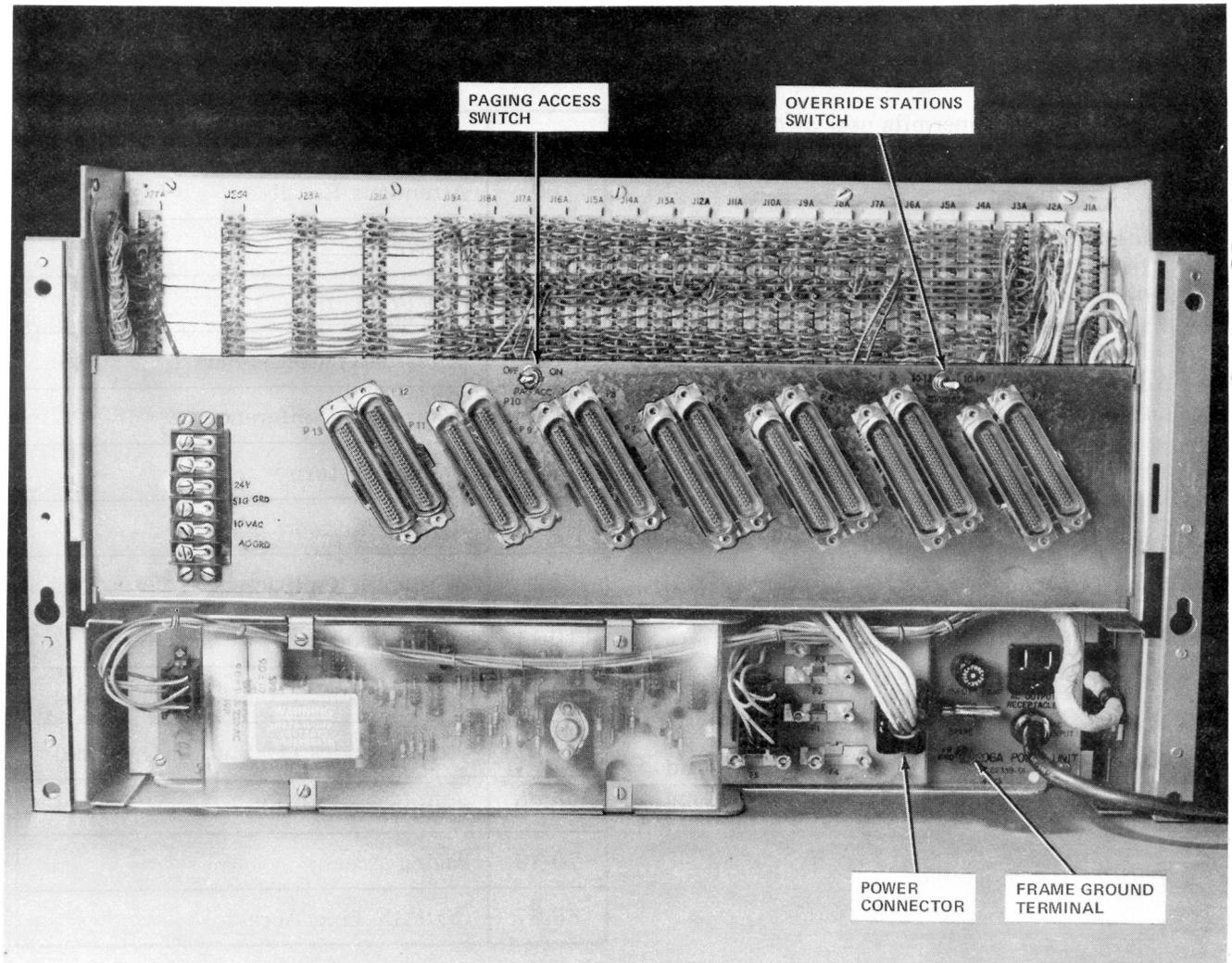


Fig. 1—572A1 KSU (Rear View)

2.06 The basic system provides the following features:

- Intercom call progress tones such as dial tone, ringback, error tone, etc
- Ringing—the intercom audible is blocked at stations busy on CO/PBX calls
- 3- or 4-party conferencing
- Do-not-disturb (DND)
- Call transfer
- Call add-on
- Station and consultation HOLD
- Two-link operation—the register is held during dialing only
- System busy indication
- Privacy—except when override is activated
- Single button appearance on key telephone sets
- Call forwarding

- Override—permits certain stations to bridge onto an established intercom connection or override DND
- Remote answer—permits user at one station to intercept and answer a call intended for a second station
- Automatic callback—enables a user who dials a busy station to program the system to call back when both stations are idle and a link is available.

**2.07** Additional features that can be supplied on an optional basis are:

- Additional links—to a maximum of four
- Paging access
- The CO/PBX line access when the line is in the ringing or hold state
- Attendant recall
- Hands-free answer on intercom (HFAI) and voice signaling using a separate station adjunct
- TOUCH-TONE service
- Off-premises stations
- External signaling.

**2.08** Features (standard and optional) are activated by operation of the station HOLD key, line switch flashing, or by dialing a specified code (Table A). Refer to Part 4 and 5 for complete operation information.

**2.09** Call progress tones, indicating that an action is required by the user or that the feature has been activated, are returned to the originator as required (Table B). Cancellation of dial-activated features, where required, is accomplished by dialing the code of the station that originally activated the feature. ***This must be done from the originating station.***

◆TABLE A◆

SYSTEM CODE ASSIGNMENTS

CODE	FUNCTION
00	Attendant Recall
01	Override
02	Call Forwarding
03	Three-Party Conference
04	Four-Party Conference
06	Do-Not-Disturb
07	Remote Answer
09	Automatic Callback
10-11	Station Codes (2-Station Override)
10-19	Station Codes (10-Station Override)
20-61	Station Codes (10-Station Override)*
20-69	Station Codes (2-Station Override)*
70-73	Paging Access*
80-87	CO/PBX Line Access

\* Codes 50-53 will not be available for station codes when paging access is provided. These codes become 70-73. See Fig. 39 for further details.

**572A1 KSU**

**2.10** The 572A1 KSU consists of:

- 727A panel equipped with connectors for 22 KTUs
- Plug-in KS-21651, L4 fuseboard
- Fourteen microribbon plugs (P0 is not used in this system)
- Terminal board for incoming power connections
- 206A power supply

**TABLE B**  
**CALL PROGRESS TONES**

TONE	SIGNAL HEARD	REMARKS
Intercom Dial Tone (IDT)	128 Hz continuous	
Intercom Audible Ringback (IAR)	256 Hz interrupted; 1 second on, 3 seconds off	If any station is equipped with a 2A HFAI unit, IAR consists of a single spurt (1 second) of 128-Hz time.
Intercom Busy Tone (IBT)	128 Hz interrupted at 1/2-second intervals	
Error Tone (ET)	256/512 Hz alter- nating at 1/2-second intervals	Tone heard when errors are made in setting up dial-activated features. Indicates procedure must be restarted.
Acknowledgment Tone (AT)	128 Hz for 250 ms	Tone heard when feature has been properly activated or canceled. Also heard on paging access calls.
Reminder Tone (RT)	128 Hz interrupted at 75 ms intervals for 1-1/4 seconds; then continuous 128 Hz	Tone heard at start of all calls, followed by dial tone at stations that have activated CFWD, ACBK, or DND as a reminder that feature is in effect.
Override Tone (OT)	128 Hz for 500 ms	Tone heard by both parties of a conversation when a station exercising OVER-RIDE is bridged on-line.
Hold Tone (HT)	Four bursts of 128-Hz tone	Tone heard when switchhook is flashed during a call. Hold tone is always followed by steady dial tone.

• ♦Two option switches:

Paging access

Override.♦

Twelve microribbon plugs (P1 through P12) on the rear of the KSU accept A25B connector cables which are routed to the 184C1 backboard or the yellow field of centralized key system installations. A P13 also accepts one A25B connector cable but is routed to pick up the incoming CO/PBX lines. The fuseboard on the KSU protects the 10-volt ac and 24-volt dc circuits (Table C). A light emitting diode (LED) on the board indicates operation of any fuse.

**2.11** The 206A power supply is mechanically linked to the 727A panel of the KSU. Interconnection is made through a cable from the panel which is plugged into the power supply.

**2.12** The 572A1 KSU mounts on 23-inch mountings and requires 13 inches of vertical space. It can be mounted in a 16C apparatus mounting with the center bar removed, or it can be rack-mounted. When mounted in a 16C apparatus mounting, a 117C cover can be provided.

**2.13** Refer to Fig. 2 for the location of the KTUs in the 572A1 KSU and the location of major components.

♦TABLE C♦

## FUSE ASSIGNMENTS—572A1 KSU

LOCATION	FUSE	TYPE	CAPACITY	FUNCTION
KS-21651L4 Fuseboard	1	70H	3/4 Ampere	10-volt ac—Station KTU in J6
	2			10-volt ac—Station KTU in J7
	3			10-volt ac—Station KTU in J8
	4			10-volt ac—Station KTU in J9
	5			10-volt ac—Station KTU in J10
	6			10-volt ac—Station KTU in J11
	7			10-volt ac—Station KTU in J12
	8			10-volt ac—Station KTU in J13
	9			10-volt ac—Station KTU in J14
	10			10-volt ac—Station KTU in J15
	11			10-volt ac—Station KTU in J16
	12			10-volt ac—Station KTU in J17
	13			10-volt ac—Station KTU in J18
	14	70G	1/2 Ampere	—24 volt dc—572A1 KSU
	15			Spare
206A Power Unit	1	24F	5 Ampere	—5 volt dc (Logic) for J1-J8
	2			—5 volt dc (Logic) for J9-J25
	3	24C	2 Ampere	—10 volt dc
	4			+10 volt dc
	5	24E	1/2 Ampere	RAM ground
		MDL 2 BUSSMAN	2 Ampere	110-volt ac input

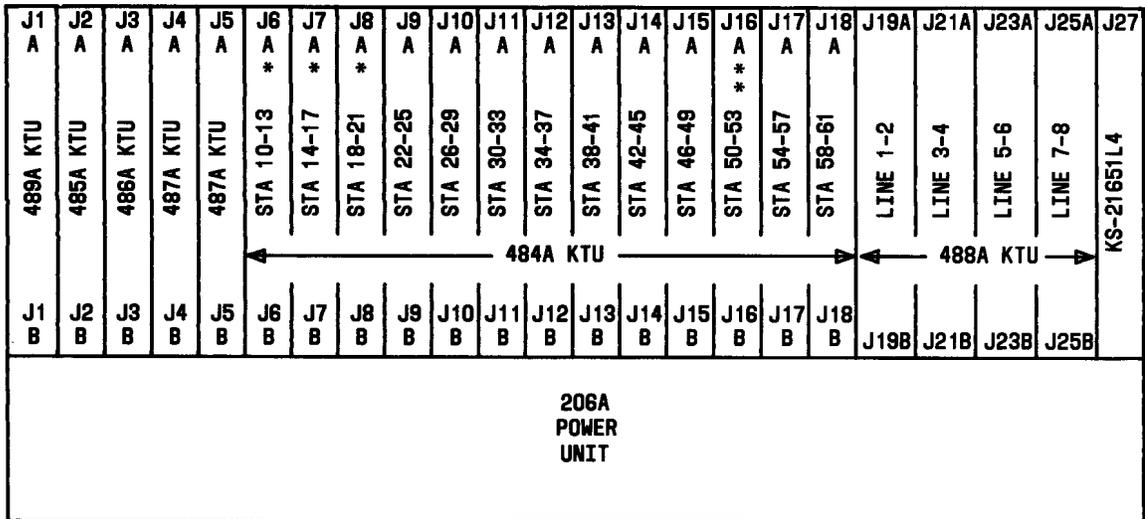
**KEY TELEPHONE UNITS**

**2.14** The KTUs employed in the 6B KTS are all 8-inch 80-contact boards. All but the 488A KTUs occupy a single-width (3/4 inch) position. The 488A KTUs require a double-width position.

The system options and method of application are shown in Table D.

**A. 484A KTU—Station Interface Circuit**

**2.15** The 484A KTUs are installed in jacks 6 through 18, depending on the station codes



484A KTU-STATION CIRCUIT  
 485A KTU-CONTROLLER CIRCUIT  
 486A KTU-SERVICE CIRCUIT  
 487A KTU-BATTERY FEED CIRCUIT

488A KTU-LINE INTERFACE CIRCUIT  
 489A KTU-TOUCH-TONE DECODER CIRCUIT  
 KS-21651L4-FUSEBOARD

- \* SEE PARAGRAPH 4.20 FOR OPTIONAL OVERRIDE STATION CODE ASSIGNMENTS
- \* SEE PARAGRAPH 5.08 FOR OPTIONAL PAGING ACCESS CODES

Fig. 2—572A1 KSU Circuit Pack Layout (Front View)

being installed. Each KTU contains the circuitry for four station codes. The 484A controls the station visual and audible signals from signals received over the H, B, and A leads, and also controls the station busy and station hold features. Control of the seized intercom link is also through the station circuit.

**Note:** Power interruptions greater than 1.7 seconds will release any calls in progress. Stations that are off-hook when the power is restored will be out of service until they go on-hook momentarily.

**B. 485A KTU—Controller Circuit**

2.16 The controller circuit processes the calls and features through the system. Contained on the board are the central processing unit, memory, timing circuits, and the -10 volt voltage regulator. The 485A KTU is installed in J2.

**C. 486A KTU—System Service Circuit**

2.17 The service circuit performs the following functions:

- Generates required system tones
- Switches the tones to the talking links
- Interfaces the control signals from the line and station circuits to the controller
- Switches the TOUCH-TONE receiver to the talking links as required
- The timing generator produces timing signals required by the system, such as lamp flash and lamp wink, and also sets other system timing standards.

Refer to Table B for an outline of the tones used in the 6B KTS. The 486A KTU is installed in J3.

◆TABLE D◆

6B KEY TELEPHONE SYSTEM OPTIONS

OPTION	KTU	OPTION PLUG OR SWITCH POSITION
T—Continuous Ring	484A (Note 1)	A-B (1st and 2nd stations) D-E (3rd and 4th stations)
V—Interrupted Ring		B-C (1st and 2nd stations) E-F (3rd and 4th stations)
W—Single-Spurt Audible Ringback	486A (Note 2)	A-B, D-E
X—Repeated Audible Ringback		B-C, E-F
Y—Fast Disconnect (CSBR)	488A	B-C, (1st circuit) E-F (2nd circuit)
Z—Slow Disconnect (ESS Office)		A-B (1st circuit) D-E (2nd circuit)
S—Without Paging Access	Paging Access Switch (Note 3)	Switch OFF (factory-provided)
R—With Paging Access		Switch ON
N—Two Station Override	Override Switch (Note 3)	“10-11” (factory-provided)
Q—Ten Station Override		“10-19”

*Note 1:* If hands-free answer on intercom (HFAI) is provided, install option T for station involved. If one of paired circuits has option T, other stations will have it.

*Note 2:* If any station has HFAI, system must have option W.

*Note 3:* The paging access and override option switches are located on the rear of the 572A1 KSU.

**D. 487A KTU—Battery Feed Circuit**

2.18 Each 487A KTU provides the dc voltages for two links. The KTU for the first two links is installed in J4; if a third and fourth link is provided, another KTU must be installed in J5. The 487A KTU also provides a LED for call supervision and dial pulse detection.

required for each two lines to perform the following functions:

- Isolate the 6B KTS from CO/PBX line potentials
- Detect and acknowledge supervisory signals from the line
- Transfer control information on the A and L leads from the CO/PBX line circuit to the controller circuit.

**E. 488A KTU—Line Interface Circuit**

2.19 The 488A KTU provides limited access to the CO/PBX lines. One 488A KTU is

The 488A KTUs are installed in jacks J19, J21, J23, and J25, as required. These KTUs occupy double-width jack positions.

**F. 489A KTU—TOUCH-TONE Decoder Circuit**

**2.20** The 489A KTU performs the function of interpreting the tone address signals from the station dial. The frequency detectors of the 489A KTU convert the information to bits which are processed by the controller circuit. The controller resets the TOUCH-TONE receiver after each dialed digit in preparation for subsequent dialing. The optional 489A KTU is installed in J1.

**184C1 BACKBOARD**

**2.21** The optional 184C1 backboard (Fig. 3) consists of a yellow backboard equipped with a 14A2-125 terminal block, providing terminations for eight CO/PBX lines and 20 stations (Fig. 4). Space is provided for the addition of two more terminal blocks which must be separately ordered. Addition of the second block adds capacity for 25 more stations. Addition of the third block adds the final stations. The 184C1 backboard offers a convenient method of grouping the 6B KTS terminations, but is not required if the yellow field of a centralized key system installation can be utilized.

**2.22** The 14A2-125 terminal blocks used with the 184C1 backboard consist of a 66-type connecting block wired to five microribbon plugs. The plugs accept A25B connector cables to provide connections between the backboard and the 572A1 KSU. The layout of the 184C1 backboard and the plugs to be used in connecting to the 572A1 KSU is shown in Fig. 4. All station connections and the A and lamp leads from the station side of the line circuits are made on the terminal blocks of the 184C1 backboard. Tip and ring of the CO/PBX lines (from ahead of the line circuit) are fed through a separate cable to P13 on the KSU.

**3. INSTALLATION****ORDERING GUIDE****A. Basic System**

- Unit, Key Service, 572A1—one required per system. Where desired, the 572A1 KSU can be mounted in a 16C apparatus mounting with a 117C cover. These items must be separately ordered.

- Backboard, 184C1—equipped with one 14A2-125 terminal block. Order one per system when yellow field of centralized system is not used. Has terminations for eight CO/PBX lines (A and L leads) and 20 stations.
- Block, Terminal, 14A2-125—order one to add additional 25 stations to 184C1 backboard. Order second block to extend number of stations over 45.
- Cable, Connector, A25B—order as required for connections between 572A1 KSU and 184C1 backboard or yellow field. Cables used with 184C1 backboard must be double-ended.
- Unit, Key Telephone, 484A (station circuit)—order as required. Each KTU has circuitry for four stations.
- Unit, Key Telephone, 485A (controller circuit)—order one per system.
- Unit, Key Telephone, 486A (service circuit)—order one per system.
- Unit, Key Telephone, 487A (battery feed circuit)—order one per system. The KTU provides battery for two links. Order second KTU if four links are provided.
- D-180852 Kit of Parts—order one for each telephone set used with 6B KTS. Kit contains a 533F diode, a 150A designation strip (feature cue card for rotary dial), a 74A faceplate (feature cue card for TOUCH-TONE dial), and a station user card.

**Note:** The 150A designation strip and 74A faceplate can be ordered separately for maintenance purposes.

**B. Optional Features**

- Unit, Key Telephone, 487A—order one to increase to three and four links.
- Unit, Key Telephone, 488A (line interface circuit)—order as required to access CO/PBX lines. One KTU required for each two CO/PBX lines.

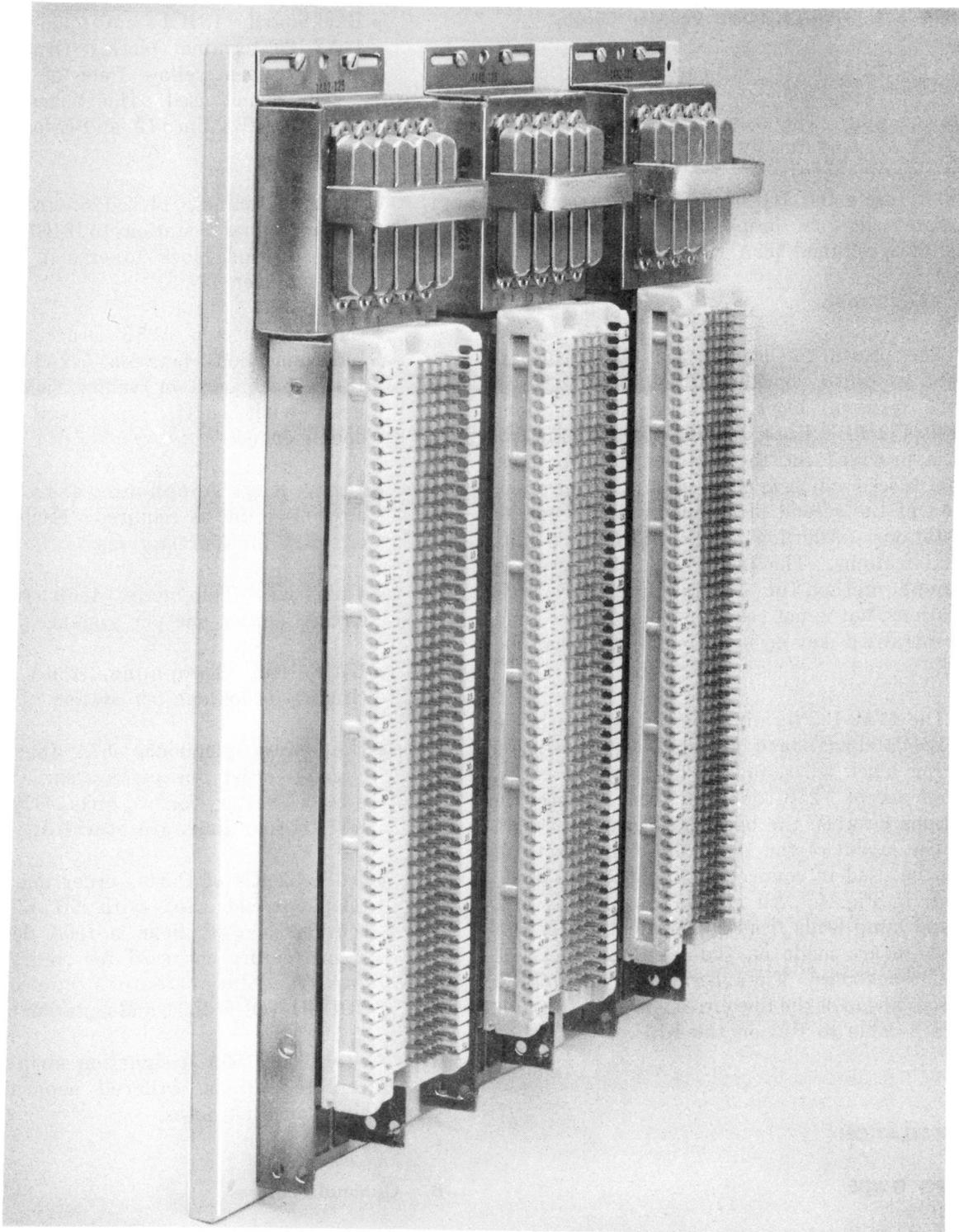
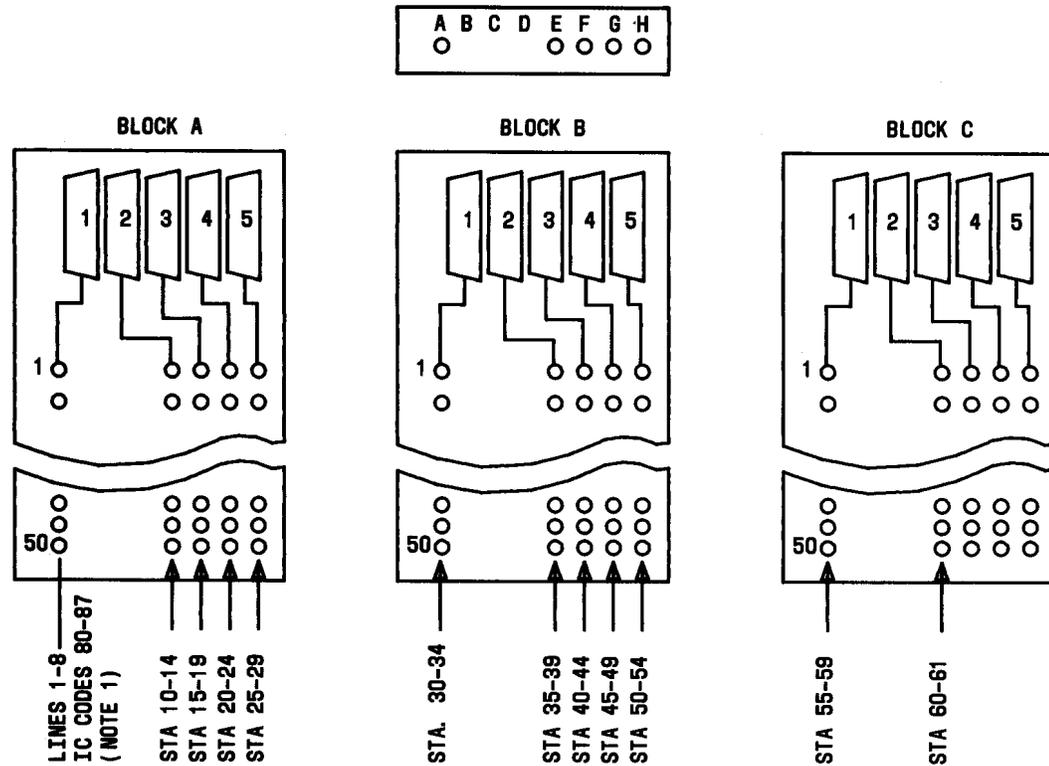


Fig. 3—▶184C1 Backboard Equipped With Three 14A2-125 Terminal Blocks◀



**NOTES:**

1. CONNECTOR 1 ON BLOCK A IS CONNECTED TO P12 ON REAR OF KSU.
2. CONNECTORS 2, 3, 4, 5 ON BLOCK A AND CONNECTORS 1, 2, 3, 4, 5 OF BLOCK B AND C SHOULD BE CONNECTED TO P1-P11 AS REQUIRED. SEE TABLE E FOR IC CODE TO 572A1 KSU PLUG ASSIGNMENT.
3. IN SMALL SYSTEMS USING ONLY BLOCK A AND HAVING PAGING, CONNECT CABLE FROM P9 OF KSU TO CONNECTOR 5 OF BLOCK A. IF BLOCK B IS LATER REQUIRED BECAUSE OF EXPANSION, CONNECT CABLE FROM P4 OF KSU TO CONNECTOR 5 OF BLOCK B TO ACCESS STATIONS 25-29. STATION CABLES FOR 25-29 MUST BE CUT DOWN ON BLOCK B.

**Fig. 4—Layout of 184C1 Backboard**

- Unit, Key Telephone, 489A (TOUCH-TONE decoder circuit)—order one per system.
- Unit, Power, 19- or 20-Type—order one per system when 24-volt dc and 10-volt ac cannot be obtained from associated KTS.

**Note:** The 6B KTS requires a maximum of 0.35 ampere at 24-volt dc and 0.17 ampere at 10-volt ac for the first six stations plus 0.04 ampere for each additional station. As a guideline for considering additional power requirements, installations under 25 stations should not require any supplementary power. Installations greater than 25 stations must be

treated on an individual basis depending on the spare power available from the associated key system.

- Adapter, 278A—order one per paging zone (maximum of three).
- Transmitter-Receiver, 2A—order one for each station equipped with HFAI. Also order one 2012D transformer for each transmitter-receiver.
- ♦Set, Telephone, 554BMS—order one for each rotary dial intercom-only wall telephone station.♦

- ♦Set, Telephone, 2554BMS—order one for each TOUCH-TONE intercom-only wall telephone station.
- Set, Telephone, 500MM—order one for each rotary dial intercom-only desk telephone station.
- Set, Telephone, 2500MM—order one for each TOUCH-TONE intercom-only desk telephone station.

**Note:** If 500/2500MM telephone sets are not available, 502/2502BM telephone sets may be ordered as replacement.♦

- Mounting, Apparatus, 110A—order one for each two off-premises stations.
- ♦Unit, Key Telephone, 420A—order one for each off-premises station.
- Adapter, 324A—order one for each two loud or external ringer stations.♦
- Diode, 518A—surge protection for off-premises station—order two per station.
- ♦Panel, 642A.
- Block, Connecting, 92A.
- Buzzer, KS-20419, L1.
- Pack, Circuit, HK-14.♦

**Note:** If 6B KTS system has off-premises extensions, ringing voltage must be supplied to the 110A apparatus mounting from the associated key system.

**572A1 KSU**

**3.01** The 572A1 KSU can be mounted in a 16C apparatus mounting, or in available space on a 23-inch relay rack or other suitable mounting. The KSU requires approximately 13 inches of vertical space. If the KSU is to be floor mounted in a 16C apparatus mounting, use a ED-95023-70 Group 10 floor stand. For information on other apparatus mountings, and associated mounting hardware, refer to Section 463-140-100. If a 117C cover is to be

used with the 16C apparatus mounting, install the bracket supplied with the cover as follows:

- (1) Position backboard of 16C apparatus mounting as desired and mark location of fasteners using double-ended keyhole slots. Gate can open to right or left.
- (2) Install fasteners, letting heads protrude about 1/4 inch.
- (3) Place mounting on fasteners.
- (4) Before tightening top two fasteners, slide cover bracket between backboard and the mounting surface. The slots in the bracket should engage the top fasteners.
- (5) Tighten all fasteners.

The center bar of the 16C apparatus mounting must be removed.

**3.02** Incoming CO/PBX line connections and the required leads to the stations are brought into the KSU using A25B connector cables plugged into the rear of the KSU. The number of cables required will depend on the number and codes of the stations to be installed. The wiring between the jacks on the front of the KSU and the plugs on the rear are shown in Fig. 35, 36, 37, and 38. The plugs are marked P0 through P13. The P0 is dedicated to future expansion and is not used in this application.

**3.03** The distant end of the connector cables from P1 through P12 can be terminated on the yellow field of a centralized key system distribution field; or a 184C1 backboard, which was designed for use with the 6B KTS, can be used. If the 184C1 backboard is used, these connector cables must have a connector at each end for connecting to the backboard and the KSU.

**3.04** The connector cable from P13 contains the tips and rings of the incoming lines *ahead* of the line circuits and is routed to access these leads instead of to the 184C1 backboard.

**3.05** Each connector cable from P1 through P10 of the 572A1 KSU contains the leads for five station codes—P11 contains the last two. Connector cables should be run between the KSU and the 184C1 backboard depending on the codes

required and as shown in Table E and Fig. 4. The one exception is when paging access is supplied. If the system is small enough, requiring only one connecting block *and* paging access is supplied, connect the cable from P9 of the KSU to connector 5 of block A (Fig. 39). Under this arrangement, station codes 25-29 cannot be used. If future expansion requires the addition of block B and the use of station codes 25-29, connect the cable from P4 of the KSU to connector 5 of block B. The cables from stations 25-29 must be cut down on column H of block B. If the original installation requires more than one block, the cables from the blocks to the KSU should be terminated as shown in Table E and Fig. 4.



*If override is furnished, the coding of stations 10 through 19 can vary. If the override toggle switch is in the "10-19" position, the codes will be 10 through 19. If the switch is in the "10-11" position, codes 12 through 19 become 62 through 69 and must be designated and dialed as such. See Table A for the system code assignments.*

**3.06** The 572A1 KSU requires 24-volt B battery, B ground, 10-volt lamp battery and lamp ground from an external power source. The power source can be the power unit for the associated key system, or if of insufficient capacity, a separately provided source. The 6B KTS will require a maximum of 0.35 ampere at 24-volt dc and 0.17 ampere at 10-volt ac for the first six stations plus 0.04 amperes for each additional station.

**Note:** As a guideline for considering additional power requirements, installations under 25 stations should not require any supplementary power. Installations greater than 25 stations must be treated on an individual basis depending on the spare power available from the associated key system.

**3.07** Power is connected to the 572A1 KSU using the terminal block on the rear of the unit. Earlier production KSUs were equipped with a 6-terminal block. The top two terminals were marked "-5V" and "GRD." No connection should be made to these terminals. Current production KSUs will not have these terminals stenciled. The "SIG GRD" terminal in the KSU should be connected directly to the power supply SIG GRD (B ground)

*only.* Likewise, the "AC GRD" terminal in the KSU should be connected to the 10-volt ac power supply ground *only.* The gauge of wire used is dependent on the distance between the power unit and the KSU as follows:

0-6 feet, use 18 gauge

6-10 feet, use 16 gauge

10-15 feet, use 14 gauge

15-25 feet, use 12 gauge.

**3.08** The power unit frame is grounded through the green wire of the ac power cord and plug. The 206A power unit plug must be mated to a 3-prong ac outlet which is properly connected to the power supply service ground. When a properly grounded 3-wire outlet is not available, connect a No. 12 gauge ground wire to the FRAME GRD terminal on the rear of the 206A power unit and route it to the closest acceptable ground point. Refer to Fig. 1 for the location of the FRAME GRD terminal. For additional information on key system grounding, refer to Section 518-010-105.

#### KEY TELEPHONE UNITS

**3.09** The KTUs should be installed in the designated jacks as shown in Fig. 2. Options are made using factory-supplied option plugs on the KTUs except for paging access and override stations which require positioning a toggle switch on the rear of the KSU. The system options and the method of application are shown in Table D.

#### TELEPHONE SETS

**3.10** Any key telephone set that can be wired for A-lead control (except special purpose CALL DIRECTOR sets) can be used with the 6B KTS. Only one button appearance is required on the key telephone set, even though a maximum of four links may be available. Ten leads are required between each key telephone set and the KSU. The A1 lead is not required if it already appears in the set. Five of these leads (T, R, A, LG, and L) are associated with the button assigned to the 6B KTS. Two spare leads are required—one becomes the H lead and the other the B lead. A diode is installed in the B lead in the same manner as for station busy lamp. The B lead can be the lead normally used as the BL or any other spare



TABLE E

## 572A1 KSU PLUG AND 184C1 BACKBOARD CONNECTOR ASSIGNMENTS

PLUG ON 572A1 KSU	184C1 BACKBOARD			LEADS INVOLVED
	BLOCK A	BLOCK B	BLOCK C	
P0				Not Used
P1	Connector 2			Stations 10-14*
P2	Connector 3			Stations 15-19*
P3	Connector 4			Stations 20-24
P4	Connector 5			Stations 25-29
P5		Connector 1		Stations 30-34
P6		Connector 2		Stations 35-39
P7		Connector 3		Stations 40-44
P8		Connector 4		Stations 45-49
P9		Connector 5		Stations 50-54†
P10			Connector 1	Stations 55-59
P11			Connector 2	Stations 60-61
P12	Connector 1			A and L Leads for eight CO/PBX Lines
P13		See Note		Incoming T and R for CO/PBX Lines

*Note:* Cable from P13 is routed to access point for incoming CO/PBX lines—not to 184C1 backboard.

\* If override switch on rear of 572A1 KSU is in "10-11" position, codes 12-19 become 62-69.

† If paging access switch on rear of 572A1 KSU is operated to ON position, codes 50-53 become 70-73.

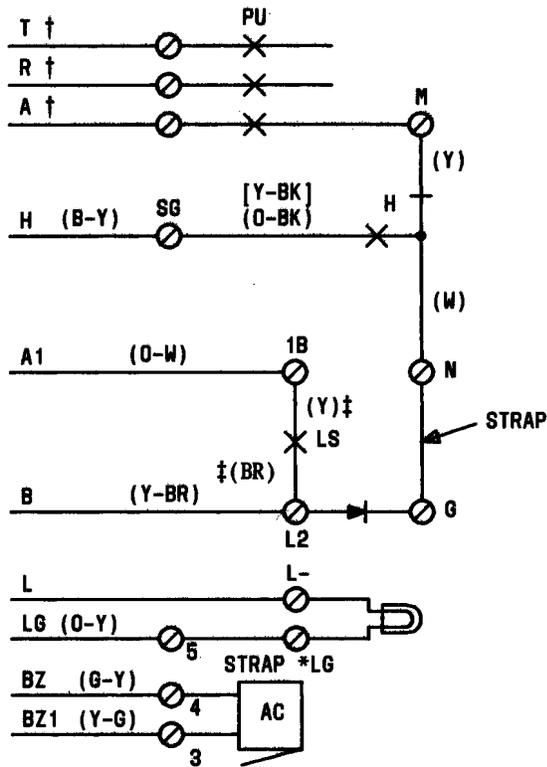
lead. The last two leads required are the BZ and BZ1 which are connected to a 10-volt ac buzzer. If the key telephone set is not equipped with a separate 10-volt ac buzzer, one must be separately ordered and installed. The set ringer cannot be used as the 6B KTS audible signal unless used with a 324A adapter.

**3.11** The telephone sets used with the 6B KTS (except the 554/2554BMS sets) must be modified to connect the normally open contact on the HOLD key to the H lead and a diode added

and connected in the same manner as for the busy lamp feature. In CALL DIRECTOR sets, the set of HOLD key contacts normally used for 1A KTS are substituted for those factory wired. The factory-wired contacts are then insulated and stored. The general purpose key sets and CALL DIRECTOR sets as modified are shown in Fig. 5. Refer to Section 502-110-102 for conversion of wall telephone sets.

**3.12** If nonkey telephone sets are required (intercom only), 554/2554BMS wall telephone sets have

564HD (MD), HK (MD), HL TELEPHONE SETS



6B KTS MODIFICATION OF 564HD (MD), HK (MD), HL TEL SETS			
UNIT	LEAD	FROM	TO
HOLD KEY	[Y-BK] (O-BK)	N	SG
LINE SWITCH	(BR)	N	L2
LAMP ASSEMBLY	STRAP	COMMON	LG-5*
TERMINALS	STRAP	-	N-G
533F DIODE		-	L2 → G

LEGEND:  
 LS - LINE SWITCH  
 HS - HEADSET JACKS  
 CS - CHAINING SWITCH  
 H - HOLD KEY

\* ON THESE TEL SETS, THE LAMP GRD MUST BE SEPARATED FROM THE COMMON LAMP GRD., AND RUN SEPARATELY ON THE O-Y (SPARE) LEAD

† ON THE 564HD (MD) TEL SET, THE FIRST LINE PU KEY MUST BE USED FOR THIS MODIFICATION

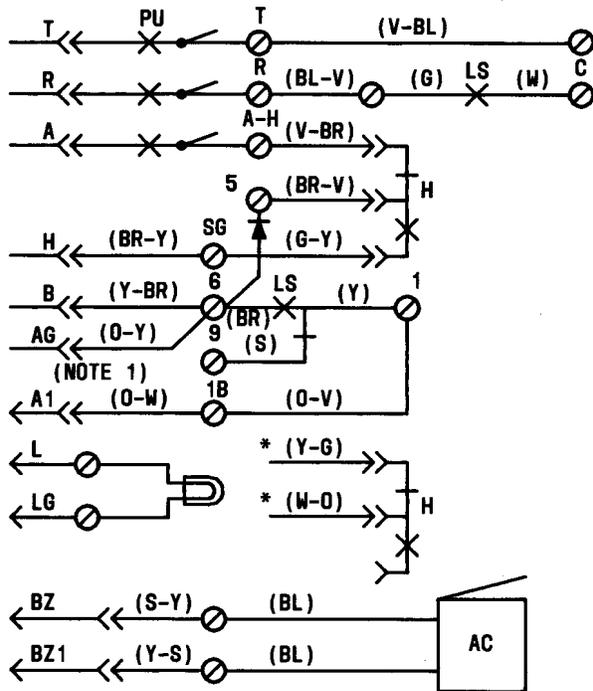
‡ THESE COLORS ARE FOR LATE MODEL 564HK (MD) AND HL SETS, EARLY MODEL HK (MD), HL AND 564HD (MD) SETS USED (S-W) IN PLACE OF (Y) AND (S-G) IN PLACE OF (BR)

[ ] COLOR OF LEAD IN 564HD (MD)

Fig. 5—Modification of Key Telephone Sets for Use With 6B Key Telephone System (Sheet 1 of 6)

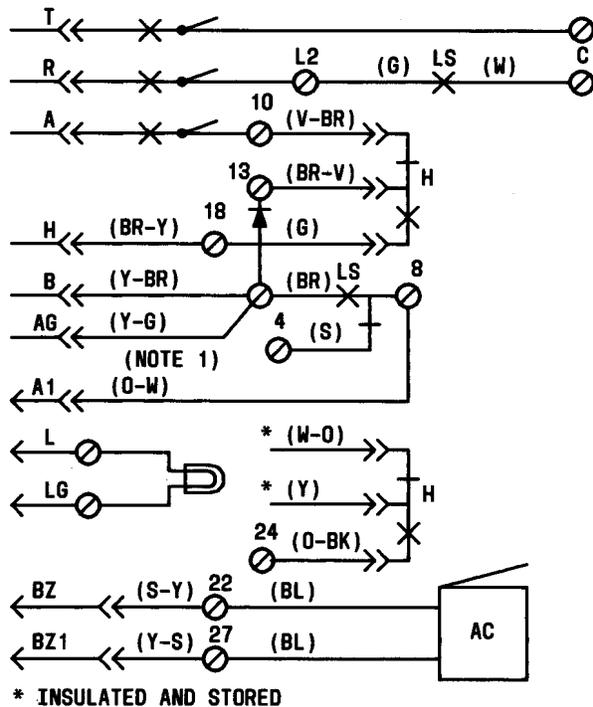


630D, 631D, 2630D, 2631D TELEPHONE SETS



6B KTS MODIFICATION OF 630D, 631D, 2630D, 2631D		
LEAD	FROM	TO
Y-G	A-H	INSULATE & STORE
W-O	5	INSULATE & STORE
V-BR	SPARE	A-H
BR-V	SPARE	5
GR-Y	A-H	SG
BR	5	6
533F DIODE	-	6 → 5
BK	3	INSULATE & STORE
BUZZER	-	SPARE TERMINALS
O-Y	SPARE	6

630DAM, 631DAM, 2630DAM, 2631DAM TELEPHONE SETS

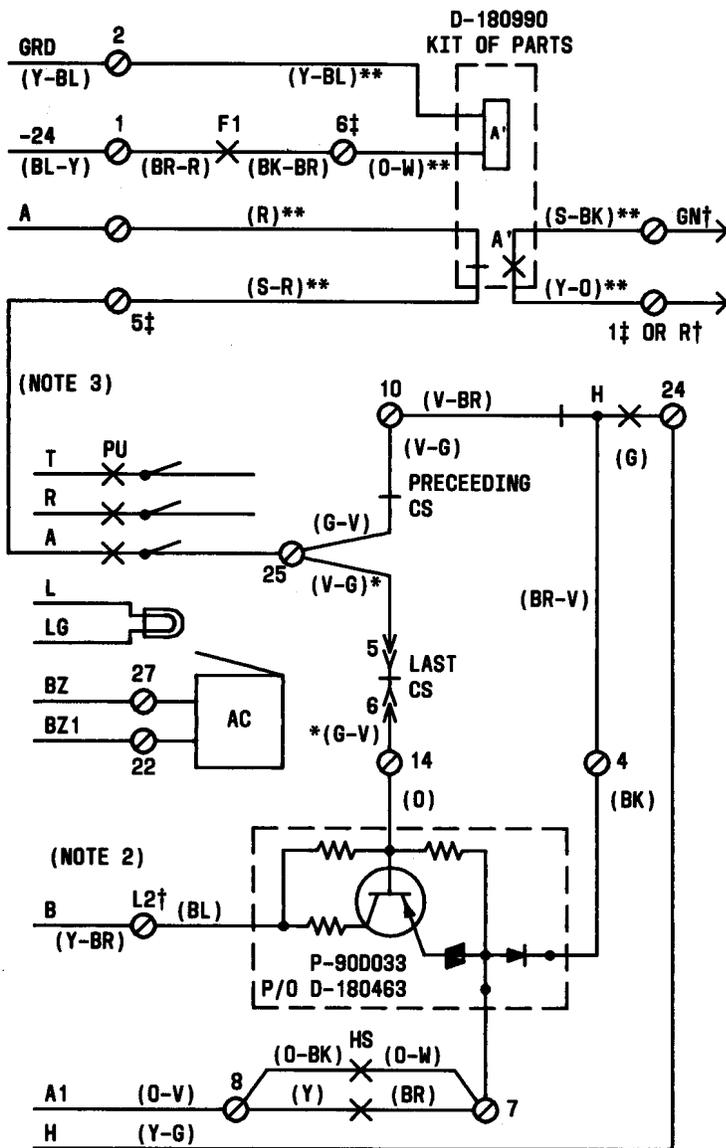


6B KTS MODIFICATION OF 630DAM, 631DAM, 2630DAM, 2631DAM		
LEAD	FROM	TO
W-O	7	INSULATE & STORE
Y	10	INSULATE & STORE
Y-BR	L2	7
R1 AND R2	13	L2
G	13	L2
G	10	18
V-BR	SPARE	10
BR-V	SPARE	13
Y-GR	SPARE	7
533F DIODE	-	7 → 13
BUZZER	-	22 AND 27

\* INSULATED AND STORED

Fig. 5—Modification of Key Telephone Sets for Use With 6B Key Telephone System (Sheet 3 of 6)

636/2636CA, CAM, AND 637, 2637DA, DAM TEL SETS



NOTES:

2. B LEAD FOR 6B KTS ONLY, IF A STATION BUSY CONSOLE IS USED. A SECOND D-180463 KIT OR PARTS MUST BE INSTALLED IN PARALLEL WITH THE FIRST EXCEPT FOR THE BLUE LEAD ONE BLUE LEAD WOULD GO TO THE STATION BUSY CONSOLE AND THE OTHER TO THE 6B KTS.
3. FOR THIS MODIFICATION, 6B KTS MUST BE ON P.U. KEY 5 OF FIRST MODULE OR P.U. KEY 5 OR 6 ON SECOND THRU FIFTH MODULES.
4. FL KEY IS CONNECTED TO 1† ON 636/637 SETS AND TO R† ON 2636/2637 SETS.

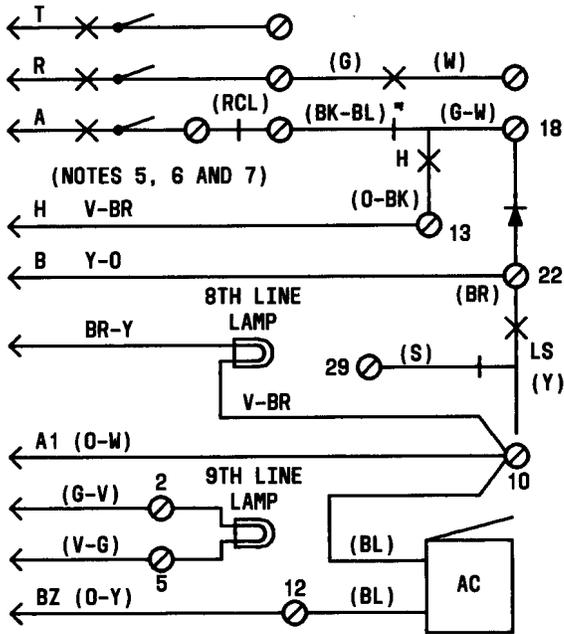
LEGEND:

- P.U. - PICK UP KEY
- FL - FLASH KEY
- LS - LINE SWITCH
- HS - HEADSET JACKS
- CS - CHAINING SWITCH
- H - HOLD KEY
- \* - 840361836 PLUG ASSEMBLY LEADS. P/O D-180463 KIT OR PARTS
- \*\* - SPADE TIP LEADS FROM D-180990 KIT OF PARTS
- † - NETWORK TERMINALS
- ‡ - AMPLIFIER BOARD TERMINALS

6B KTS MODIFICATION OF 636/2636 CA, CAM, AND 637/2637 DA, DAM TEL SETS			
UNIT	LEAD	FROM	TO
HOLD KEY	(W-O)	7	INSULATE STORE
HOLD KEY	(Y)	10	INSULATE STORE
HOLD KEY	(O-BK)	24	INSULATE STORE
HOLD KEY	(V-BR)	SPARE	10
HOLD KEY	(BR-V)	SPARE	4
HOLD KEY	(G)	10	24
PLUG #1	(Y-G)	SPARE	24
ASSIGNED P.U. KEY	A	TERM	5‡
FL KEY	(BR-R)	1‡/R†	1
FL KEY	(BK-BR)	GN†	6‡
D-180463 KIT OF PARTS			
P-90D033	(BK)	-	4
"	(Y)	-	7
"	(BL)	-	L2†
"	(O)	-	14
840361836 PLUG ASS. LEAD	(V-G)	CS5 TO 25	
" " "	(G-V)	CS6 TO 14	
D-180990 KIT OF PARTS			
A' WINDING	(Y-BL)**	-	2
A' WINDING	(O-W)**	-	6‡
A' BREAK	(R)**	-	A LEAD TERMINAL
A' BREAK	(S-R)**	-	5‡
A' MAKE	(S-BK)**	-	GN†
A' MAKE	(Y-O)**	-	1‡/R†
			NOTE 4

Fig. 5—Modification of Key Telephone Sets for Use With 6B Key Telephone System (Sheet 4 of 6)†

830, 2830, 831, 2831 TELEPHONE SETS (EXCEPT DM-TYPE)



6B KTS MODIFICATION OF 830, 2830, 831, 2831, (EXCEPT DM)		
LEAD	FROM	TO
G-W	22	18
553F DIODE		22 → 18
B (Y-O)	14	22
H (V-BR)	4	13
BUZZER	12 AND 14	12 AND 10
LG (V-BR) LINE 8	4	10

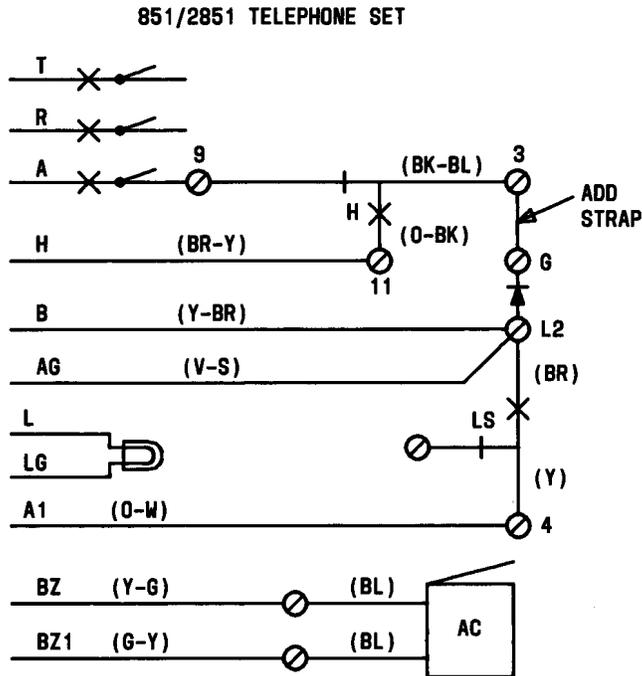
NOTES:

- FOR THIS MODIFICATION, 6B KTS MUST BE ON 9TH P.U. KEY.
- IF SPEAKERPHONE POWER (4A) IS SUPPLIED FROM ASSOCIATED KEY SYSTEM, USE SPARE PAIR OTHER THAN (Y-O) (O-Y) AND CONNECT THEM TO THE (R-G) (G-R) IN THE M16C CORD USING SPARE TERMINALS OR D-161488 CONNECTORS.
- RECALL CONTACT IN "A" LEAD IS ONLY IN FM TYPE SETS.

LEGEND:

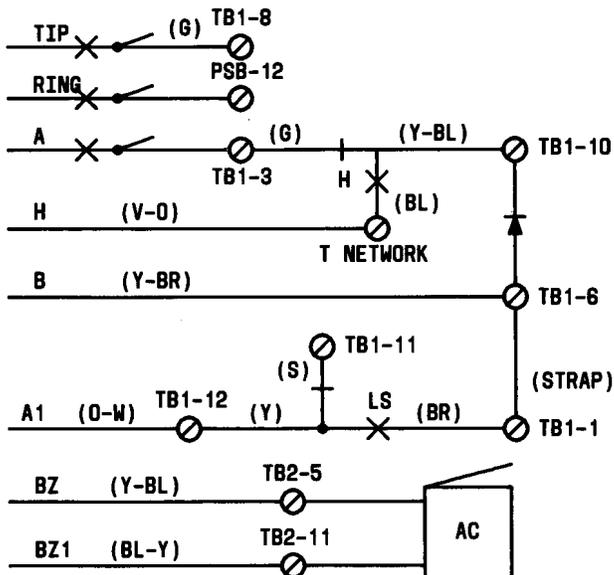
- LS - LINE SWITCH
- HS - HEADSET JACKS
- CS - CHAINING SWITCH
- H - HOLD

Fig. 5—Modification of Key Telephone Sets for Use With 6B Key Telephone System (Sheet 5 of 6)



6B KTS MODIFICATION OF 851/2851 TEL SET		
LEAD	FROM	TO
A (G-W)	3	9
(O-BK)	3	11
AG (V-S)	3	L2
(BR)	3	L2
(BK-BL)	9	3
STRAP	-	3 TO G
DIODE	-	L2 → G

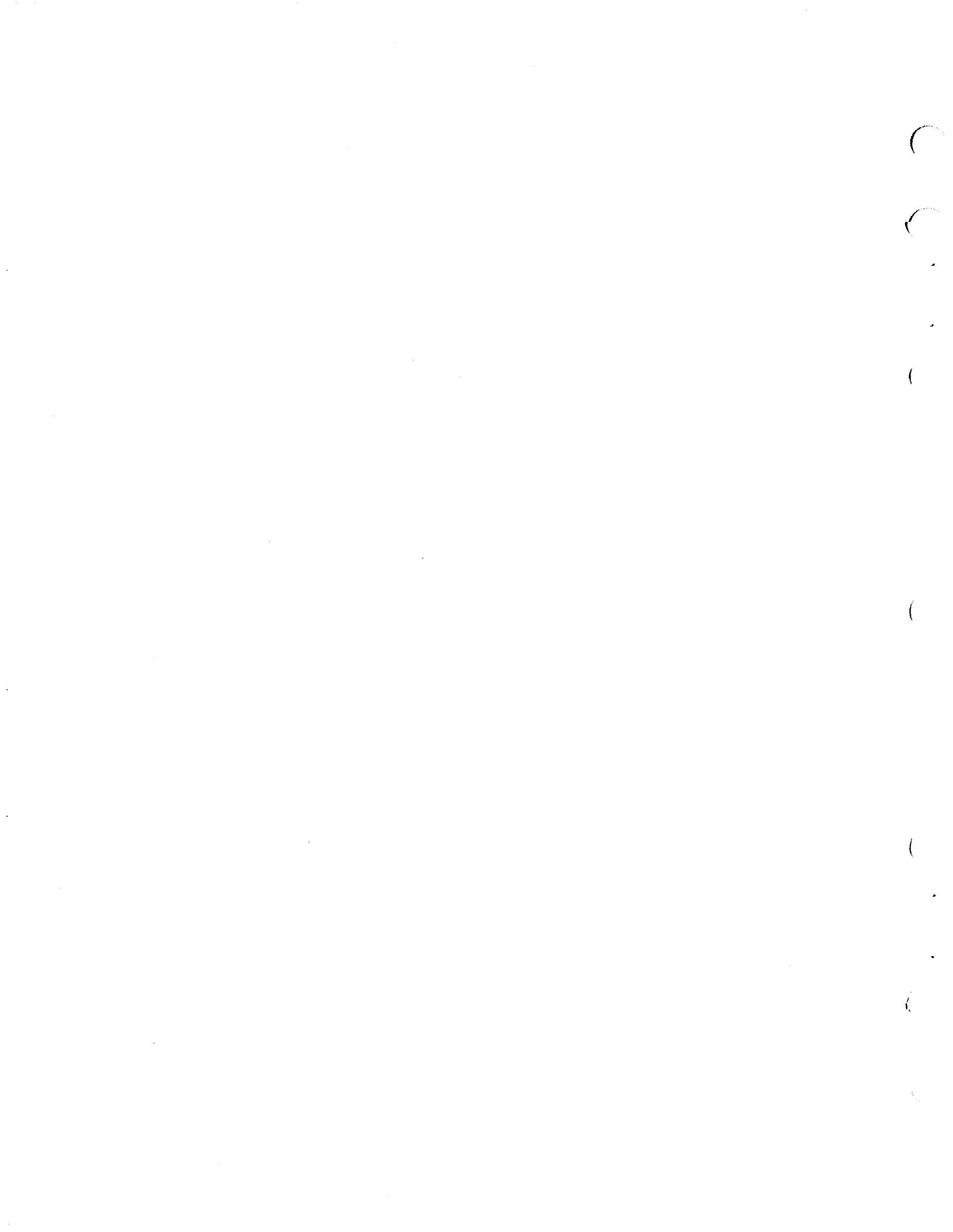
872A1M, 2872A1M, 2872A2M TELEPHONE SETS (NOTE 8)



**NOTE:**  
8. NOT COMPATIBLE WITH ONE-TOUCH CALLING FEATURE

6B KTS MODIFICATION OF 872A1M, 2872A1M, OR 2872A2M TEL SET		
LEAD	FROM	TO
Y-BL	TB1-3	TB1-10
G	TB1-1	TB1-3
STRAP	-	TB1-6 TO TB1-1
BL	SPARE	T (NETWK)
BUZZER	-	TB2-5 TB2-11

Fig. 5—Modification of Key Telephone Sets for Use With 6B Key Telephone System (Sheet 6 of 6)



been developed especially for 6B KTS and need no modification. If a nonkey desk-type telephone set is required (intercom only), the 500/2500MM set with six conductor (D6AM) mounting cords, the 502/2502BM telephone set, or the TRIMLINE telephone may be modified per Fig. 6 for use with the 6B KTS. The 10-volt ac buzzer must be separately ordered and installed. Wiring of the 554BMS telephone set is shown in Fig. 7 and the wiring of the 2554BMS telephone set is shown in Fig. 8.

**3.13** The station lead cutdown for the 184C1 backboard is shown in Fig. 36, 37, and 38. The variation of wiring for paging access is shown in Fig. 39.

**3.14** TOUCH-TONE telephone sets can be equipped with a 74A faceplate and rotary sets with a 150A designation strip. The 74A faceplate is a clear plastic overlay that fits over the buttons of a TOUCH-TONE dial (Fig. 9). The 150A designation strip is a stick-on label to be located on a rotary set housing between the switchhook plungers (Fig. 9) or on the breakover of the housing beneath the dial. The lettering on the faceplates or designation strips is associated with the buttons or finger holes according to the code to be dialed for dial-activated features. The desired code must be preceded by a digit 0. For instance, to activate call forwarding, the code 02 is dialed. Refer to Table A for system code assignments.

**3.15** Stations having the HFAI feature must be equipped with a 2A transmitter-receiver adjunct. The cord of the adjunct can be wired directly to the telephone set terminals or to a separately supplied 66E8-25 connecting block. The intercom buzzer must be disconnected. A 2012D transformer may be used to power each adjunct. Typical adjunct to telephone connections is shown in Fig. 10. For further information on the 2A transmitter-receiver, refer to Section 518-010-115.

**Note:** Tip and ring to the adjunct must be reversed for proper operation of S HOLD.

**Caution:** The 2A transmitter-receivers, used with the 6B KTS, must bear a manufacture date of May 1978 or later. Earlier manufactured models will cause customer complaints of low volume.

## OFF-PREMISES EXTENSIONS

**3.16** Off-premises extensions from the 6B KTS can be provided using a 420A KTU (long-line circuit). The maximum station conductor loop is 500 ohms. A separate mounting must be provided for the 420A KTU(s). For one or two circuits, use a 110A apparatus mounting—for a larger number of circuits use a 642A panel. The necessary voltages can be obtained from the associated key system if sufficient capacity is available. Connections for an off-premises station are shown in Fig. 40.

**3.17** If power source for 642A panel is a 19-, 20-, 29-, or 30-type power unit, the installer should use a 92A connecting block as shown in Section 518-215-419.

## EXTERNAL SIGNALING OR LOUD RINGING BELLS

**3.18** External signaling or loud ringing bells in the station set may be provided in the 6B KTS with the addition of a 324A adapter. The 324A adapter is a wall-mounted unit approximately 2-5/8 inches wide, 5-1/2 inches high, and 3-inches deep. It consists of two power relays and a terminal strip assembled on a metal plate, which in turn, is mounted on an insulating base and has a plastic screw down cover. Each power relay will service one station. The relays are operated with 10 volts at 60 Hz and have a single-make contact. Connections are shown in Fig. 41.

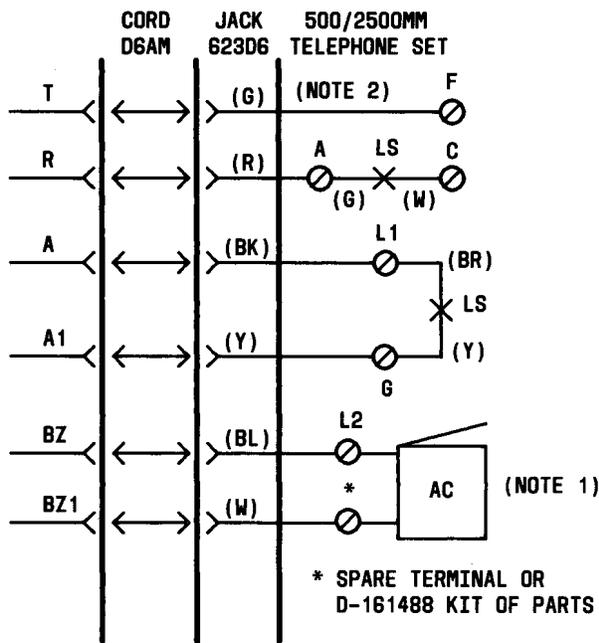
## 4. OPERATION—STANDARD FEATURES

### INTERCOM LINE PICKUP AND HOLD

**4.01** Intercom calls are originated by depressing the designated button on the telephone set. Only one button appearance is required in either single link or multilink systems. Only the calling and called stations enter into an intercom call, unless special features such as conferencing, call add-on, or override are used. Intercom calls are processed through the controller circuit (485A KTU) with tones supplied by the service circuit (486A KTU) and talk battery by the battery feed circuit (487A KTU).

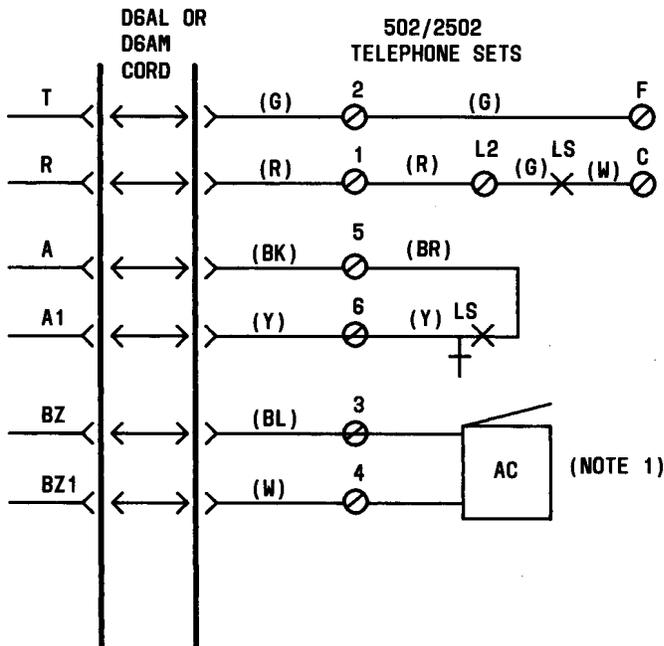
**4.02** To make a station-to-station intercom call:

- (1) Depress line pickup button associated with intercom.



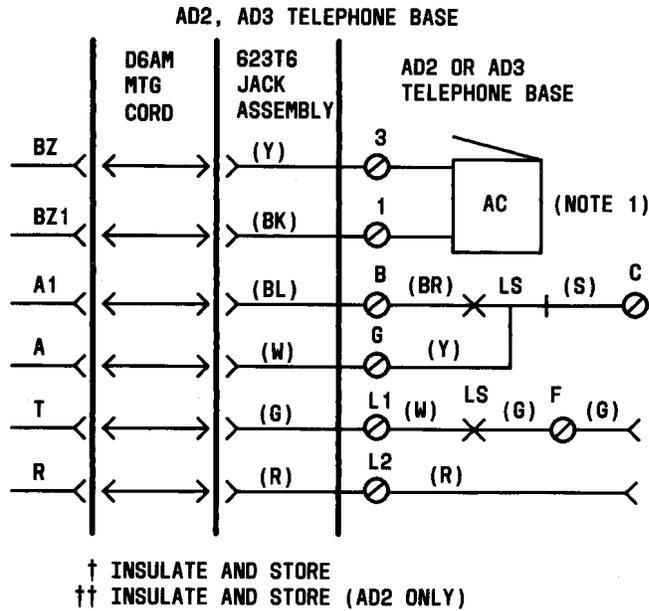
6B KTS MODIFICATION OF 500/2500MM TEL SETS		
LEAD	FROM	TO
BL	SPARE	L2
W	SPARE	D-161488
BUZZER	ORDER	L2 AND *
BK	F	INSULATE STORE
R	K	INSULATE STORE

- NOTES:
- 10V AC BUZZER MUST BE ORDERED SEPARATELY
  - REPLACE MODULAR JACK WITH 62306 JACK IF NOT FURNISHED



6B KTS MODIFICATION OF 502/2502 TEL SETS		
LEAD	FROM	TO
BK	2	INSULATE & STORE
S	1	INSULATE & STORE
BK	L1	INSULATE & STORE
Y	L2	INSULATE & STORE
BUZZER	ORDER	3 AND 4

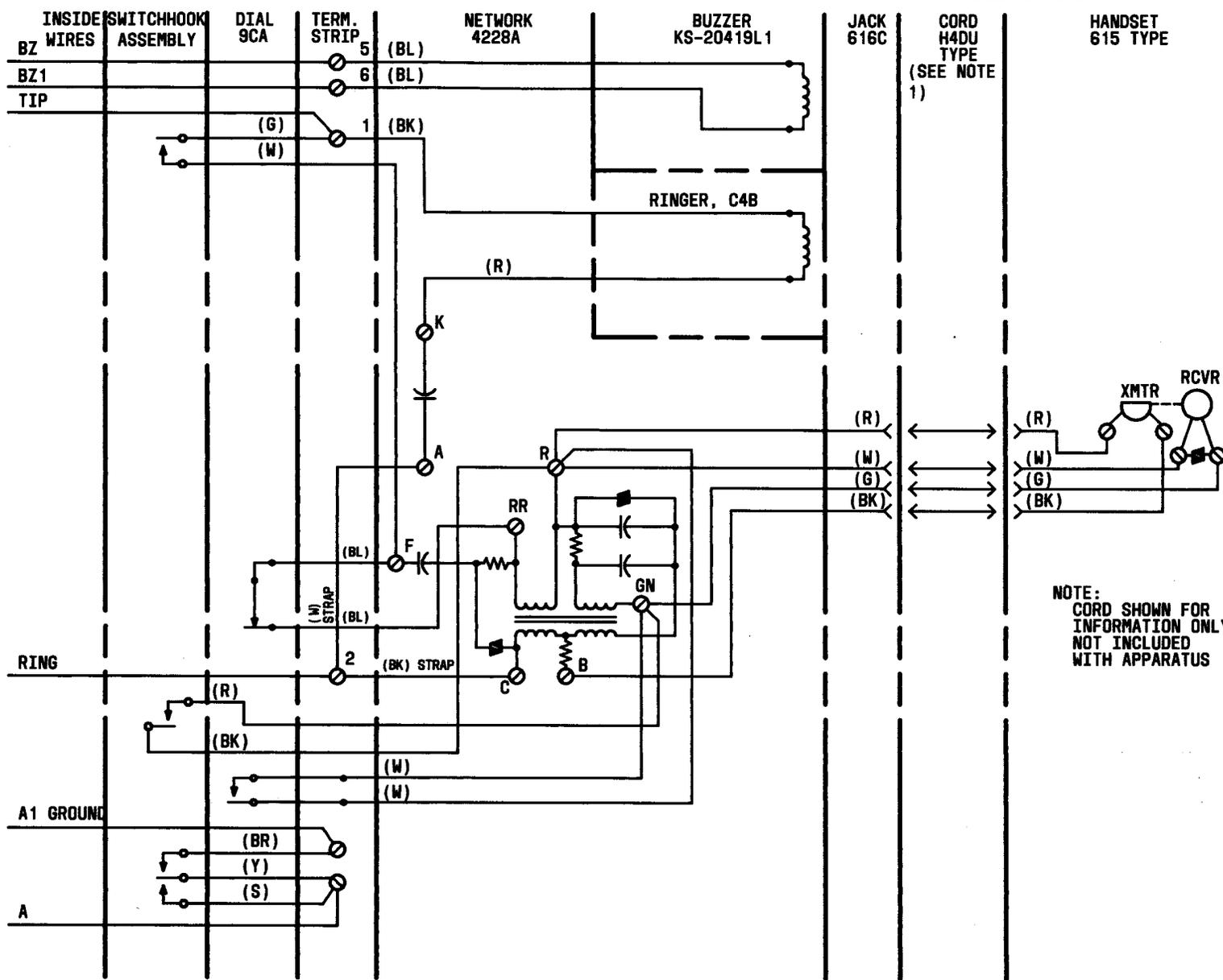
Fig. 6—Modification of Nonkey Telephone Sets for Use With 6B Key Telephone System (Sheet 1 of 2)



6B KTS MODIFICATION OF AD2 AND AD3 BASES				
WRITE OR LEAD	LEAD DESIG	COLOR	BASE TERMINAL BOARD	
			REMOVE FROM	CONNECT TO
623TG JACK (NOTE)	RING	R		L2
	TIP	G		L1
	BZ	Y		3
	BZ1	BK		1
	A1	BL		B
	A	W		G
LINE SWITCH	A1	BR	C	B
	A	Y	L2	G
		S	A	C
		BL	1	†
RINGER		S	B	†
		S-R	G	†
STRAP		BK	A	L2
HANDSET CORD JACK IN BASE		R	C	L2
		W	B	††
DIAL LAMP		Y	3	†
BUZZER				1 & 3

Fig. 6—Modification of Nonkey Telephone Sets for Use With 6B Key Telephone System (Sheet 2 of 2)†

554BMS TELEPHONE SET-SHALL NOT BE CONNECTED DIRECTLY TO PUBLIC SWITCHED NETWORK



NOTE:  
CORD SHOWN FOR  
INFORMATION ONLY;  
NOT INCLUDED  
WITH APPARATUS

Fig. 7—Wiring of 554BMS Telephone Set

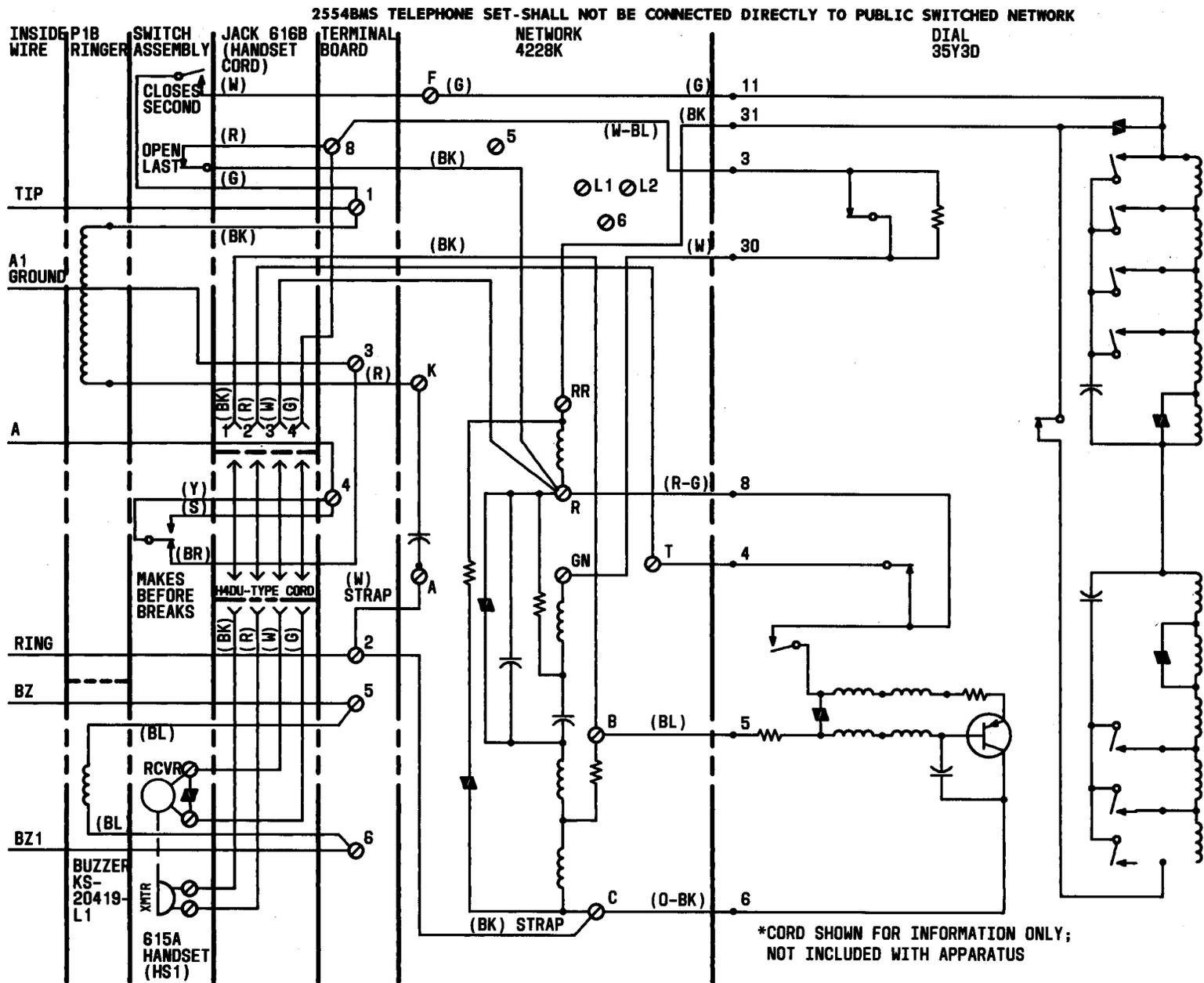
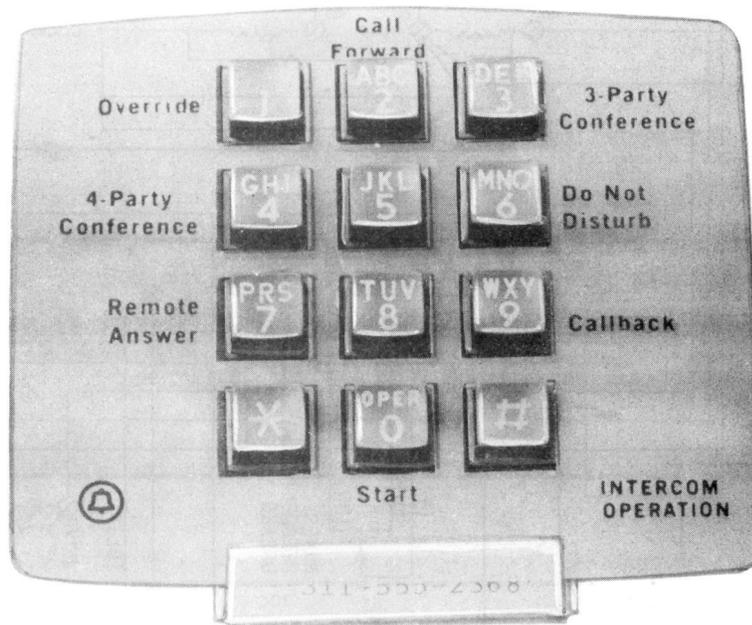


Fig. 8—Wiring of 2554BMS Telephone Set

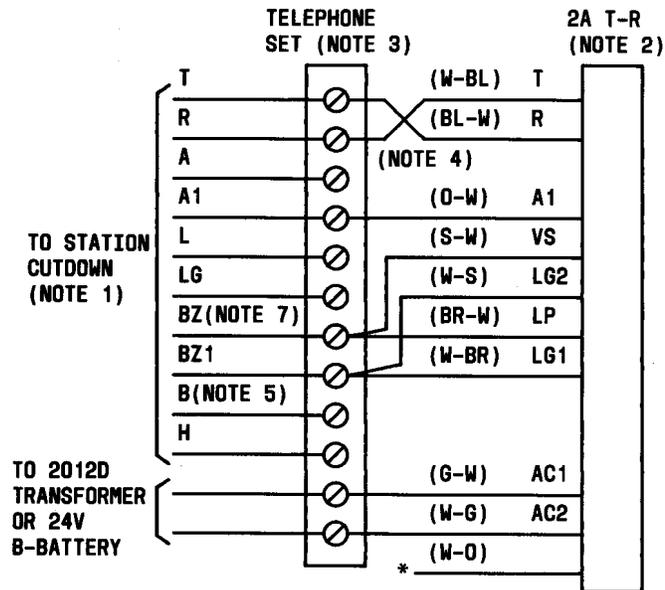


150A DESIGNATION STRIP



74A FACEPLATE

Fig. 9—Application of 150A Designation Strip and 74A Faceplate



\* INSULATE AND STORE

NOTES:

1. TERMINATE ON TERMINALS FOR STATION CODE ASSIGNED ON 184C1 BACKBOARD OR YELLOW FIELD.
2. IF TELEPHONE SET IS EQUIPPED WITH SCREW TERMINALS, D10W CORD FROM 2A TRANSMITTER-RECEIVER CAN BE TERMINATED DIRECTLY IN SET. WHERE SCREW TERMINALS ARE NOT AVAILABLE, SUCH AS IN CALL DIRECTORS, USE 66E3-25 OR 66E8-25 CONNECTING BLOCK TO ACCESS PROPER LEADS.
3. T, R, LP, AND LG ARE LEADS ASSOCIATED WITH PICKUP BUTTON ASSIGNED TO 6B INTERCOM.
4. T AND R TO 2A TRANSMITTER - RECEIVER MUST BE REVERSED.
5. DISCONNECT B LEAD FOR OPERATION OF HFAI UNIT WHEN STATION IS OFF-HOOK ON CO/PBX LINE
6. ADD CONTINUOUS RING OPTION TO 484A KTU.
7. REMOVE BUZZER FROM TEL SET.
8. ADD SINGLE-SPURT AUDIBLE RINGBACK OPTION TO 486A KTU.

Fig. 10—Connections Between 2A Transmitter-Receiver and Telephone Set for HFAI

**Note:** Button should be dark—if lit steady, system is busy and no links are available.

- (2) Lift telephone handset. Lamp should light steady and intercom dial tone heard. Refer to Table B for call progress tones.
- (3) Dial desired 2-digit station code. Lamp associated with intercom at called station will flash and 10-volt ac audible signal will operate. Audible ringback is heard at the calling station.

**Note:** If the called station is busy on intercom (handset off-hook), the calling station will hear the busy signal. If the called station is busy on a CO/PBX call (handset off-hook) the calling party will hear audible ringback and the called station will have a flashing intercom lamp. The intercom audible signal at the called station will be blocked.

- (4) When called station answers, the flashing lamp goes steady and the audible signal is

## SECTION 518-411-100

silenced. Two-way private conversation is now possible.

- (5) When both stations restore their handsets, the link returns to normal and both lamps go dark.

**4.03** With a talking circuit established as in paragraph 4.02(4), the intercom call can be placed on station hold (S HOLD) by depressing the HOLD key on the telephone set. The lamp at the holding station will wink and the associated pickup button will restore. The S HOLD cannot be activated by the following:

- Calling stations before the called station answers
- Called station in consultation hold (C HOLD)
- Intercom-only stations
- Paging calls.

### SUPERVISORY FLASH FEATURES

**4.04** Consultation hold (C HOLD), call add-on (CADD), and call transfer (XFER) are features activated by breaking the calling party A lead using the line switch. The flash must take place with the intercom call in the talk mode with the duration of the flash from 275-ms to 1.5 seconds. If the flash is too short, no action will take place, and if too long, disconnect will occur.

**4.05** To activate supervisory flash features:

- (a) Assume station 20 is talking to station 30 and station 20 flashes (either station could initiate flash). Station 30 is put on hold (C HOLD) and hold tone followed by dial tone is returned to station 20.
- (b) Station 20 may now dial a third station (assume station 40) for consultation. Station 30 does not hear the conversation.
- (c) At this point:
  - (1) Station 20 may flash a second time to return to the original connection with station 30. Station 40 leaves the call by going on-hook.

- (2) Either 20 or 40 can flash a second time to add 30 to the conversation (CADD), or

- (3) Station 20 may disconnect from call by going on-hook, leaving 30 connected to 40 (XFER).

Supervisory flash cannot be used to activate paging, flexible conferencing, or remote answer of intercom call.

**Note:** If the station originating C HOLD hangs up before the third station answers, the 6B KTS calls the originating station back. This prevents the held station being accidentally forgotten. Dial-activated features should not be invoked while in supervisory flash mode.

### DIAL-ACTIVATED FEATURES

**4.06** The 6B KTS can furnish both standard and optional features activated by dialing a 2-digit access code (Table A) and, where required, the station code(s) to which the feature is directed. The standard dial-activated features are flexible dial conferencing (FLEX), do-not-disturb (DND), call forwarding (CFWD), automatic callback (ACBK), remote answer (REAN), and override (OVRD).

**Note:** Dial-activated features should not be invoked while in the switchhook flash mode.

#### A. Flexible Dial Conferencing

**4.07** Conferencing on intercom of either three or four parties (including originator) can be set up by any 6B KTS station. To set up a conference call of two stations plus the originating station (assume station 20 wants to conference with stations 30 and 40):

- (1) Depress intercom button (button should be dark)
- (2) When first dial tone is received, dial access code 03
- (3) When second dial tone is received, dial code of one station to be conferenced (30)
- (4) When third dial tone is received, dial code of other station to be conferenced (40)

- (5) Audible ringback will be heard by station 20 and audible signals will operate at 30 and 40
- (6) When conference stations answer, talk path is established to all parties.

**Note:** If either of the conference stations do not answer, the audible signal will time out after approximately 12 seconds. However, the lamp will continue to flash at the unanswered station for the duration of the conference call. The unanswered station may enter the call at any time while the lamp is flashing.

If a busy station (off-hook) is encountered while setting up a conference call, busy tone will be returned to the originator and the call procedure terminated. Only station codes (10 through 69) can be dialed in setting up conferences. If a feature, paging, or CO/PBX access code is dialed, error tone will be returned when the invalid code is dialed.

**4.08** The procedure for setting up a 4-party conference call is the same as covered in paragraph 4.07 except that the access code is 04. One additional dial tone will be received to permit dialing the fourth station before all stations are rung.

**4.09** No cancellation of this feature is required. The circuit returns to normal when all parties go on-hook.

## B. Do-Not-Disturb (DND)

**4.10** With the DND feature in effect, all 6B KTS audible signals at the station activating the feature are silenced. On incoming calls, the lamp on the intercom button will flash as an indication that the feature is in effect. All stations can originate DND. The automatic callback feature cannot be used while a called station is in DND.

**4.11** Operation of DND is as follows:

- (1) The feature is put into effect by dialing the access code 06 from the station desiring the feature. Acknowledgment tone is returned to the user to indicate the feature is in effect. The station can then hang up or switchhook flash to originate another call.

- (2) Incoming calls to a DND station will be indicated by a flashing lamp at the DND station. The calling station will hear busy tone. The DND station can elect to answer the flashing lamp or ignore it.

**Note 1:** Station codes 10 through 19 have the capability to override the DND feature upon receiving the busy tone. Refer to the override feature.

**Note 2:** If a station activates DND after it becomes an alternate station for the call forwarding feature (see paragraph 4.12) it will receive forwarded calls in a normal manner, but if the code of the station is dialed directly, the calling station will hear busy tone.

- (3) To cancel the feature, the station code of the station originating DND must be dialed **from the originating station**. For example, if station 20 has DND in effect, to cancel DND, 20 is dialed from station 20. Acknowledgment tone is heard at the station to indicate the feature is canceled.

**Note:** Selective cancellation is not possible, ie, if a station has more than one dial-activated feature in effect, cancellation of one feature will cancel all others in effect for that station.

## C. Call Forwarding

**4.12** With this feature, calls intended for a user's station can be routed to an alternate station. The audible and lamp signals will operate at both the originating and alternate stations but the originating station can answer the call with the feature in effect. All calls for the originating station will be forwarded. If the alternate station is busy, the calling station will receive a busy signal even though the originating station is idle. Calls for the originating station will be forwarded to the alternate even if the alternate activates DND after call forward is activated. **A station cannot be set up for call forwarding and automatic callback at the same time.** An attempt to activate one with the other in effect will result in error tone. Up to 16 call forwarding indications can be handled by the 6B KTS. Additional attempts will result in error tone. More than one connection can go to the same alternate station. The system will not forward to more than one alternate, ie, station 20 cannot have calls forwarded

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to both stations 30 and 40 at the same time. Also, calls for station 20 can be forwarded to 30, station 30 can forward to 40 but station 20 will not forward to 40.

**4.13** Assuming station 20 wants to forward calls to station 30, the sequence is as follows:

- (1) Station 20 goes off-hook on the intercom, receives first dial tone, and dials 02.
- (2) When second dial tone is received, station 20 dials 30.

**Note:** If originating station is already in CFWD, the system will update to the new alternate. If the alternate station is in DND, station 20 will receive busy tone. If alternate selected is not a working station or a nonstation code is dialed (such as a feature code), error tone will be returned.

- (3) Station 20 hears acknowledgment tone indicating feature is in effect.
- (4) With CFWD in effect, when station 20 is dialed, the call is terminated at station 30. The audible and visual signals will operate at both stations. The audible signal at the call-forwarding station will time out after 12 seconds.
- (5) To cancel CFWD, the station code of the call-forwarding station must be dialed **from the originating station**.

### D. Call Forwarding—Do-Not-Disturb

**4.14** When these two features are put into effect in sequence, calls will be forwarded as described, but no signals will be received at the call-forwarding station. With CFWD alone, audible and lamp signals are received at both stations. To affect, activate CFWD as shown in paragraph 4.12 then DND as shown in paragraph 4.10. Canceling either feature will cancel the other.

### AUTOMATIC CALLBACK (ACBK)

**4.15** Automatic callback (ACBK), when activated by a user who has dialed a busy station, will automatically attempt to establish the connection when both stations become idle and a link is available. For instance, if station 20 receives a

busy in calling station 30 and if station 20 activates ACBK, the system will call back station 20 when station 30 becomes idle, then ring station 30. The system can process up to eight requests for ACBK. The ninth request will result in busy tone indicating memory is unavailable. A station can originate only one ACBK call at a time, but the called party can receive more than one ACBK call. An attempt to originate more than one ACBK call at a time will result in error tone.

**4.16** The called station in an ACBK connection cannot be a station in the DND mode, a paging access code, or a CO/PBX access code (results in error tone). If the **calling** station has activated call forwarding to another station in addition to ACBK, the ACBK call will still go to the **calling** station. If the **called** station is call forwarding, the ACBK call will be forwarded to the alternate station.

**4.17** Once originated, the ACBK feature stays in effect until (a) the callback call is completed, (b) the feature is canceled by the originating station, or (c) the system attempts ACBK and the originating station does not answer in approximately 16 seconds.

**4.18** The automatic callback feature operates as follows:

- (1) Assume station 20 is calling station 30 and receives a busy tone.
- (2) Station 20 flashes the switchhook to obtain dial tone again, dials 09, and when a second dial tone is received, then dials 30. Acknowledgment tone will be heard by station 20, indicating the feature is in effect.

**Note:** If station 30 becomes idle while ACBK is being effected, the system will complete the call by ringing station 30 and returning audible ringback to station 20. The ACBK feature will not be put into effect.

- (3) When both stations are idle and a link is available, the system will attempt to complete the call. Station 20 will be rung first and when it answers, station 30 will be rung. Station 20 will hear ringback as an indication that the ACBK call is being attempted.
- (4) If during callback, station 30 becomes busy again before station 20 answers, **callback**

**will be suspended** and the system will attempt completion again when both stations are idle.

(5) If it is desired to cancel ACBK before the system has completed the call, station 20 must go off-hook and dial its own code **from station 20**. Acknowledgment tone will be returned to station 20 to indicate the feature is canceled.

#### CALL SCREENING

**4.19** Where desired, station 20 can also activate DND (see paragraph 4.10) after ACBK to selectively screen incoming calls; ie, with DND in effect, all incoming calls to station 20 will receive busy tone, but the ACBK call will be completed. Once ACBK has been completed, DND can be canceled to permit other incoming calls.

#### OVERRIDE (OVRD)

**4.20** This feature permits selected stations to bridge onto other stations that are in a busy status, ie, engaged in conversation or in the DND mode. Override (OVRD) is available in two versions depending on the location of the toggle switch on the rear of the 572A1 KSU (Fig. 1). With the switch in one position, station codes 10 and 11 have override capability (factory-provided) in the other position, codes 10 through 19 are override stations. With the override switch in the 10-19 position, the station codes are as shown in Fig. 2. With the override switch in the 10-11 position, station codes associated with J6 become 10, 11, 62, 63; station codes associated with J7 become 64-67; and station codes associated with J8 become 68, 69, 20, 21. The OVRD cannot be effected to the following stations or codes:

- A station in consultation hold
- A paging access code
- A CO/PBX access code.

Any of the preceding conditions will result in error tone being returned to the station attempting override.

**4.21** Assuming station 10 encountered a busy in calling station 20 and wishes to override, the sequence is as follows:

- (1) Station 10 flashes to obtain system dial tone and dials 01.
- (2) When second dial tone is heard, station 10 dials station code 20.
- (3) If station 20 is busy in a conversation, override tone (128 Hz for 500-ms) will be heard by the talking parties before the executive station is bridged onto the conversation. The overriding station does not hear the tone.
- (4) If station 20 is in the DND mode, or had become idle while OVRD is being activated, station 10 will hear ringback and station 20 will be rung.
- (5) If station 20 was being called, ie, by station 30 but has not answered, station 30 will hear the override tone while 10 will enter the connection and hear ringback. When station 20 answers, the three parties will be connected.

#### REMOTE ANSWER (REAN)

**4.22** Remote answer (REAN) permits one station to answer any incoming intercom calls intended for another station while the call is in the ringing state. Calls cannot be remotely answered under the following conditions:

- A call to a station that has answered
- Calls to a nonstation code such as paging access or CO/PBX line access unless CO/PBX call is in the ringing or hold state
- A call-forwarded call where the call has been answered by the alternate station
- While in supervisory flash mode.

Call intercepts attempted under the above will be routed to error tone.

**4.23** The REAN is accomplished as follows:

- (1) If station 20 is in the ringing state and station 10 wishes to answer the call, station 10 dials 07; and after the second dial tone is

received, dials 20—the code of the station to be answered.

(2) If the feature is properly activated, station 10 will be immediately connected to the calling party. At station 20, the intercom lamp will flash the same as for a regular call and station 20 can enter the call at any time. No audible signal is received at station 20 after station 10 answers call.

(3) The REAN feature is on a one-call basis, ie, only the one incoming call in progress will be intercepted, therefore, the feature does not have to be canceled.

## 5. OPERATION—OPTIONAL FEATURES

### FOUR LINKS

5.01 The basic 6B KTS is furnished as a two-link system. To add the third and fourth link, a second 487A KTU must be separately ordered and installed in J5.

### TOUCH-TONE SETS

5.02 TOUCH-TONE sets require the addition of a 489A KTU to the system installed in J1. With the 489A KTU installed, the system will recognize either rotary signal or TOUCH-TONE signal.

### HANDS-FREE ANSWER ON INTERCOM (HFAI)

5.03 This feature requires the addition of a 2A transmitter-receiver unit at each station desiring the feature. The HFAI permits a calling station to voice signal a HFAI-equipped station and also allows the HFAI station to answer without going off-hook. In addition to equipping the desired stations with the 2A transmitter-receiver unit, the continuous ring option (option T) must be installed on the 484A KTUs involved and the single-spurt audible ringback option (option W) installed on the 486A KTU (service circuit). If HFAI is removed from a station, the 484A KTU should be changed back to the interrupted ring option (option V) provided the other station on the unit is not a HFAI station.

**Note:** If any station in the system has HFAI, all stations will have single-spurt audible alerting tone since option W is on a system

basis. In addition, the station associated on the station circuit KTU with the HFAI station will have continuous ring since each option plug on the 484A KTU is for two stations.

For example, if station 20 has HFAI, station 21 will have continuous alerting tone.

The 2A transmitter-receiver is connected to the station as shown in Fig. 10. Additional information on the 2A transmitter-receiver can be found in Section 518-010-115.

### 5.04 Stations with HFAI operate as follows:

(1) When a HFAI station is dialed, the microphone in the adjunct is turned on as indicated by the MIC-ON LED, and a single 1/2-second tone burst is heard at both stations.

(2) After hearing the tone burst, the calling party can voice signal the HFAI station. The HFAI station may answer without going off-hook via the mike in the adjunct.

(3) If the HFAI station does not want local conversation or noise to be heard, the MIC-OFF button must be depressed, during which time the LED will turn off. In this condition, incoming calls can be received but cannot be answered. The called station may return to HFAI by releasing the MIC-OFF button.

### 5.05 The following conditions apply to HFAI calls:

(a) If a HFAI station is called on a dial conference call, it must go off-hook within 16 seconds of the first called station going off-hook to prevent the possibility of a conference call being broadcast at an unattended HFAI station. After 16 seconds the HFAI feature will time-out but the lamp at the HFAI station will continue to flash. The HFAI station can enter the conference while the lamp is flashing but only using the handset.

(b) A station in HFAI cannot be added as the third party in call add-on. The station can be called and can converse while in HFAI but to be added on, must go to handset operation before the calling station operates the switchhook a second time to return to the original connection. Failure to go to handset will cause the HFAI station to be dropped.

- (c) Calls cannot be transferred to a station in the HFAI mode without going off-hook before the transfer. As in add-on, the HFAI station will be dropped.
- (d) The HFAI stations can be placed on station hold but not consultation hold. This prevents a HFAI station being connected to a CO/PBX line for transmission reasons.
- (e) Two HFAI stations called on a dial conference call will not be able to communicate with each other and must go to their handsets.
- (f) Calls cannot be originated in HFAI.

**5.06** The 2A transmitter-receiver adjunct is equipped with a DND button which operates separately from the system DND. Station DND is operated by depressing the DND button which locks down. To allow incoming calls, the DND button must be depressed again, releasing it. If the station DND and system DND are activated at the same time, or if just the system DND is activated, the calling station will hear the system tone (busy signal). If only the station DND is activated, both stations will hear a double tone burst from the adjunct.

#### PAGING ACCESS

**5.07** This feature permits the 6B KTS stations to access a customer-owned and maintained (COAM) or telephone company-provided amplifier and loudspeaker for paging. Up to three paging zones, plus one all-page zone, can be provided. When paging access is provided, the number of station codes is reduced by four since the 484A KTU in J16 becomes dedicated to paging. These leads appear in J9 on the rear of the KSU. Each paging zone (except all page) requires a 278A adapter as an interface between the 6B KTS and the amplifier (Fig. 11). A separate amplifier should be supplied for each zone. If desired, a separately supplied music source can be connected to the 278A adapter(s) as background music through the amplifiers to the paging speakers. If background music is connected, *one* 278A adapter must be strapped to present an 8-ohm load to the music source. The adapters must be separately mounted from the KSU and require -24 volts dc and ground which must be supplied from a separate source.

**5.08** The codes assigned to paging addresses are 71, 72, and 73. If all page is desired, the code is 70. When paging access is provided, station codes 50 through 53 are converted to use as 70 through 73 and, therefore, are not available as station codes. The conversion is accomplished by operating the toggle switch marked PAG ACC to the ON position. The switch is located on the rear of the 572A1 KSU just above the connectors for the incoming cables. As factory provided, the switch is in the OFF position. The 484A KTU for codes 50 through 53 must be converted for the continuous ring option (option A). ♦Cabling methods, when paging access is provided, are shown in Fig. 39.♦

**5.09** Any 6B KTS station can make a paging call as follows:

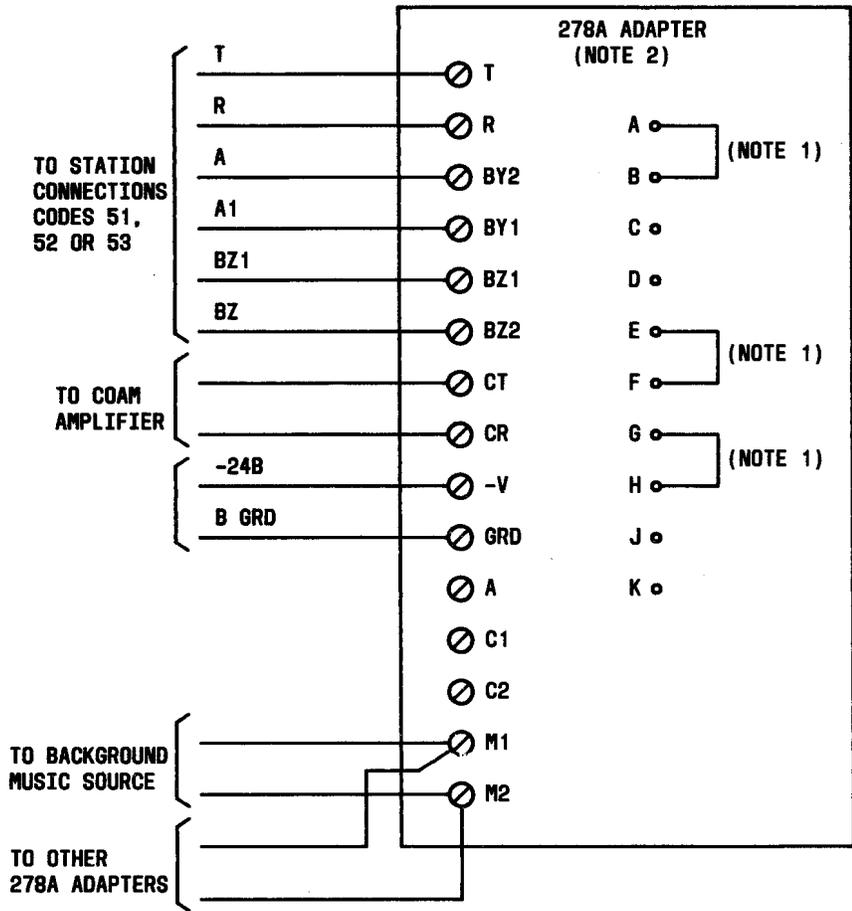
- (1) Paging station goes off-hook and dials 71, 72, 73 for desired paging zone or code 70 if all zones are to be paged.
- (2) The 278A adapter associated with the zone(s) will disconnect the background music if provided and connect the paging station to the amplifier. ♦A muted♦ alerting tone will be sent through the speakers and the paging station will hear acknowledgment tone.
- (3) Paging station can now make announcement to speakers using telephone handset.

#### CO/PBX LINE ACCESS

**5.10** All 6B KTS stations can access up to eight CO/PBX lines under the following conditions only:

- While ringing is applied to the line
- If the line has been placed on hold through the associated key system line circuit.

Access cannot be made when the line is idle or in the talk mode; therefore, outgoing calls cannot be made through the 6B KTS. The CO/PBX line must be terminated in a 1A1 or 1A2 line circuit having A-lead control. The line circuit is required to determine whether the CO/PBX line is ringing, idle, busy, or on hold. Access to the lines in the proper state is made by dialing a 2-digit code. Once an incoming call has been answered and put



- NOTES:**
1. OPTION PLUGS MUST BE POSITIONED IN E-F AND G-H ON ONE ADAPTER ONLY - LEAVE PLUGS STORED ON SECOND AND THIRD ADAPTER. POSITION PLUG IN A-B ON ALL ADAPTERS
  2. ADD CONTINUOUS RING OPTION TO ASSOCIATED 484A KTU.

Fig. 11—278A Adapter Connections for Paging Access

on hold, the call can be transferred to another station or a station can be added on.

5.11 Incoming CO/PBX calls are handled by intercom stations as follows:

- (1) When line is called, associated line circuit will provide flash indication.
- (2) Answering station accesses line by dialing a 2-digit CO/PBX access code (80 through 87) assigned to line.

(3) The answering station can then either:

- (a) Handle the call and disconnect by going on-hook
- (b) Pass the call to another intercom station by flashing the switchhook to place call on hold, dialing the other station and, when they have answered, disconnecting
- (c) Add another station by flashing the switchhook to place call on hold, dialing the other station and, when they have answered,

flashing a second time to reenter the original connection.

The previous procedure is for 6B KTS stations and does not prevent the CO/PBX line being picked up in a normal manner on key system sets if it appears.

#### ATTENDANT RECALL

**5.12** To recall the attendant on a PBX call that is connected through the 6B KTS, the answering station must flash the switchhook which will return intercom dial tone. The station then dials 00 which will send a timed flash to the PBX line which will alert the PBX operator. This feature should not be used with PBX lines that return dial tone on a switchhook flash or on a CO line as it will result in a lost call.

### 6. MAINTENANCE

**6.01** Maintenance information pertaining specifically to the 6B KTS is provided in three forms:

- Feature sequence charts (Tables F through O)
- Trouble analysis charts (Fig. 13 through 22)
- Diagnostic test sequences (Fig. 23 through 34).

#### A. Feature Sequence Charts

**6.02** These charts provide a method of testing for the proper sequence of each feature. No equipment failure indications are given.

#### B. Trouble Analysis Charts

**6.03** This series of charts provide an analysis of the probable trouble causes depending on the more likely trouble reports. Some results may require further testing using the Diagnostic Test Sequences.

### C. Diagnostic Test Sequences

**6.04** These tests require the use of the optional HK-14 circuit pack (Fig. 12) and a 1013-type hand test set. Maintenance operations involving the HK-14 circuit pack should be performed by 2nd-tier maintenance personnel only. Using the test sequences, the status of the major signaling busses and the system power for all links can be tested. Visual signals are provided on the circuit pack and audible tones heard in the hand test set.

**6.05** The HK-14 circuit pack must be plugged into J6 in place of the first 484A KTU. As soon as it is plugged in, the stations associated with the first 484A KTU will get a system busy indication, ie, the intercom lamp will light steadily at the stations. Connect hand test set in talk mode to terminals at bottom of HK-14 circuit pack. When the ON switch is operated, all stations will see a system busy and the system will be taken out of service until the switch is turned *off*.

**6.06** To start the sequence after the switch is turned to ON, 05 must be dialed on the hand test set. The circuit pack will then test each link for each test. For instance, after 05 is dialed, the digit 1 will be displayed and link 1 tested for dial tone, then link 2 and if provided, links 3 and 4. The craftsperson must listen for dial tone as well as look at the "PASS" LED. The test will then be repeated unless the STEP switch is depressed or the circuit pack turned off. If the STEP switch is depressed, the circuit pack will make the next test of each link in sequence. The test being made is displayed visually (Fig. 12). If it is desired to make a particular test, the circuit pack must be stepped until the proper digit or letter is displayed. Refer to Table P and Fig. 23 through 34 for the circuit pack preparation sequence and the individual test sequences.

**6.07** The voltages used in the system are monitored continuously as soon as the circuit pack is plugged in.

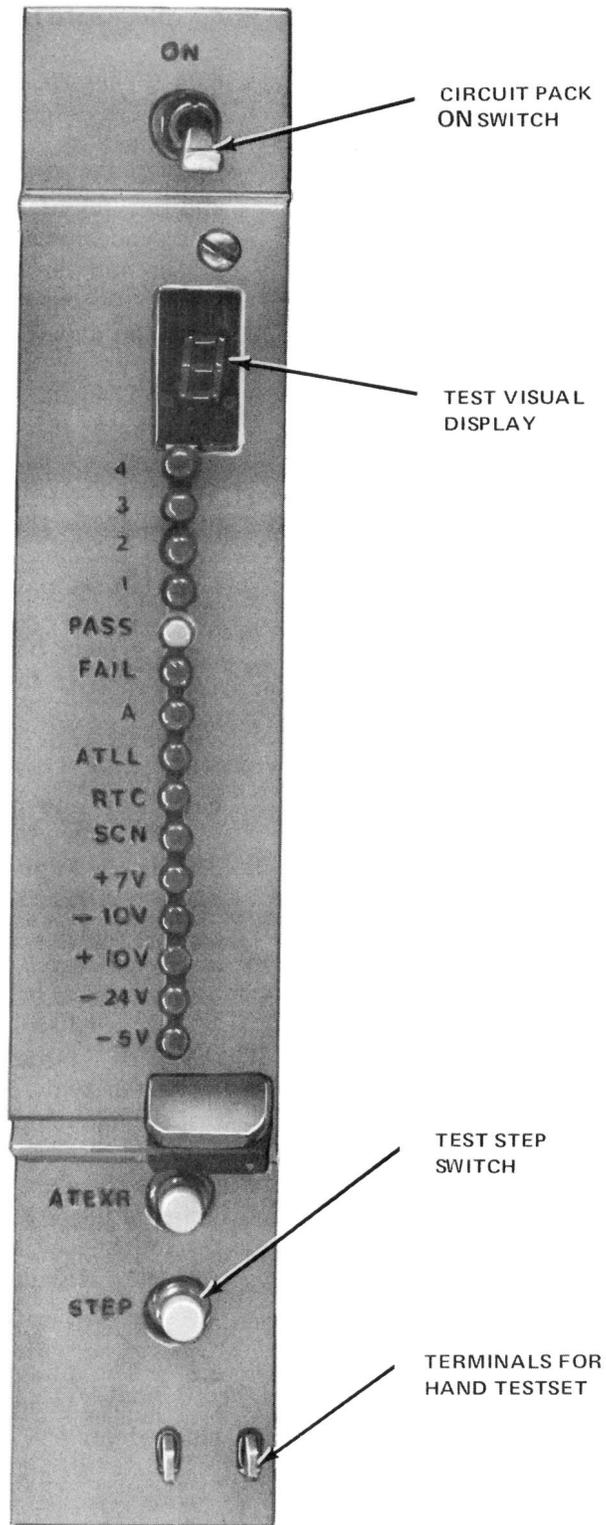
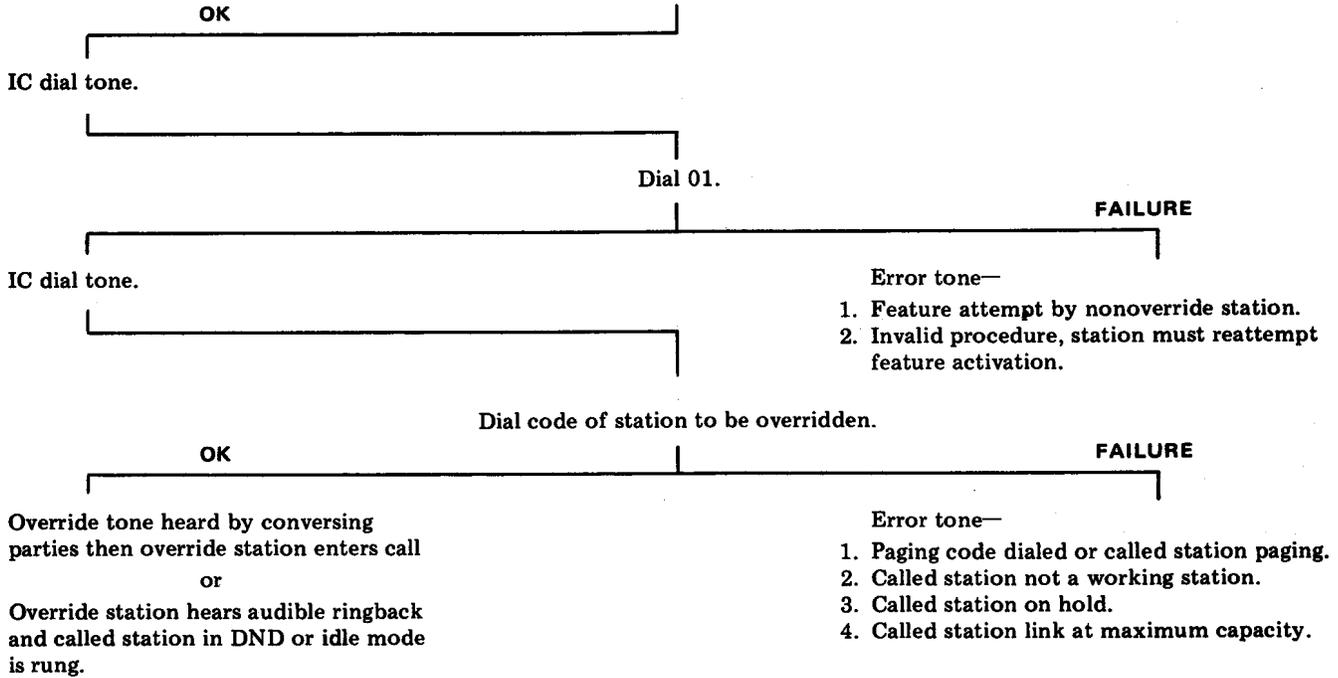


Fig. 12—HK-14 Circuit Pack Faceplate

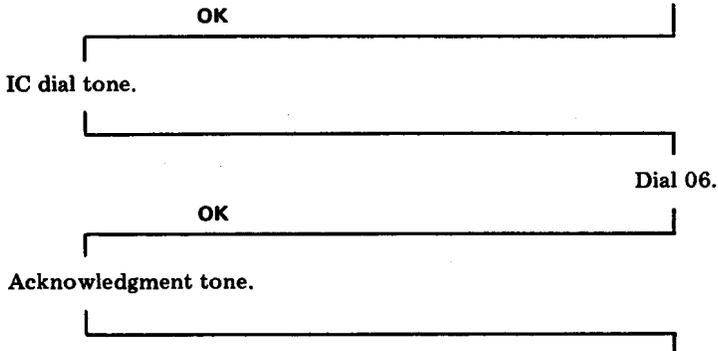
**TABLE F**  
**VERRIDE**  
**(OVRD)**

At override station, depress IC button, go off-hook.



**TABLE G**  
**DO-NOT-DISTURB**  
**(DND)**

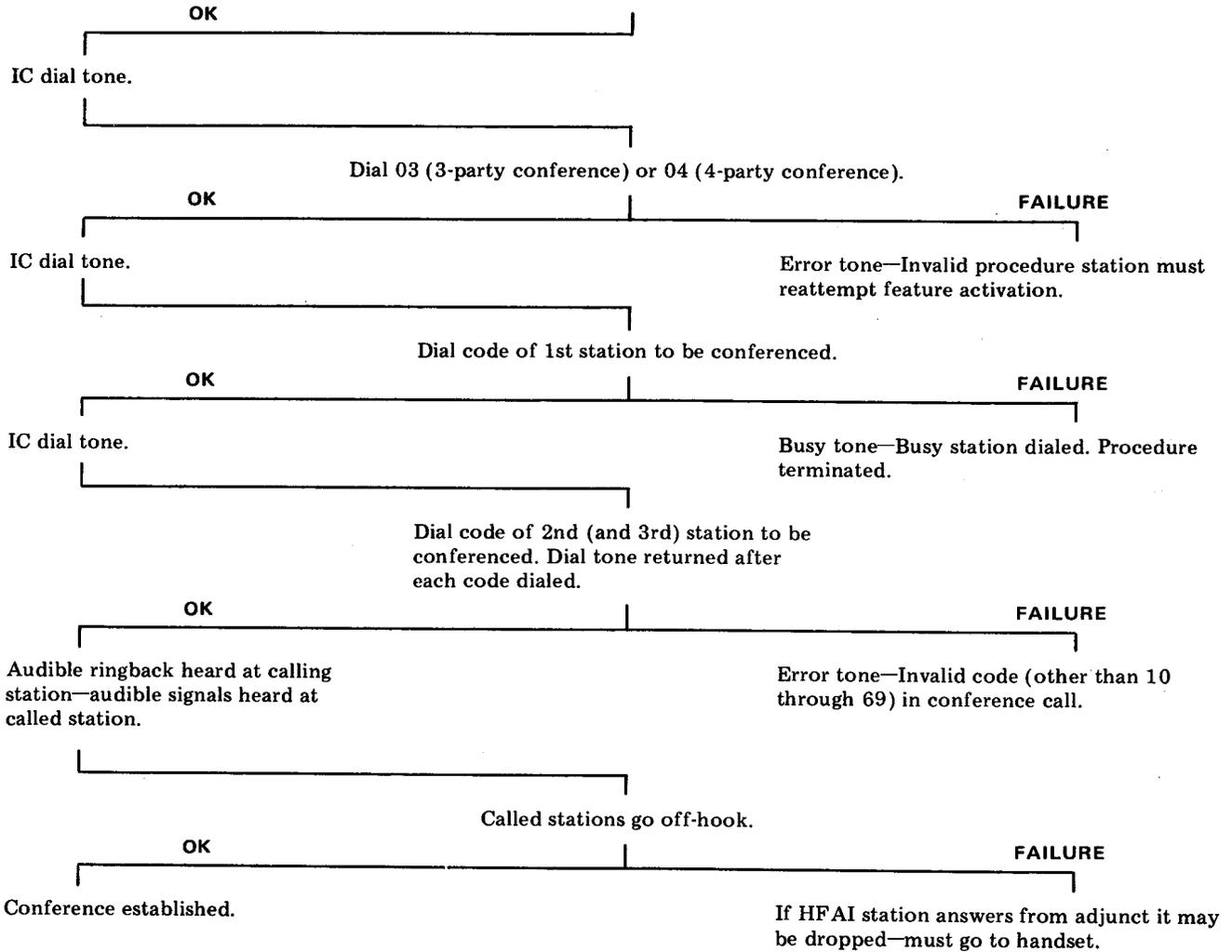
At any station, depress IC button, go off-hook.



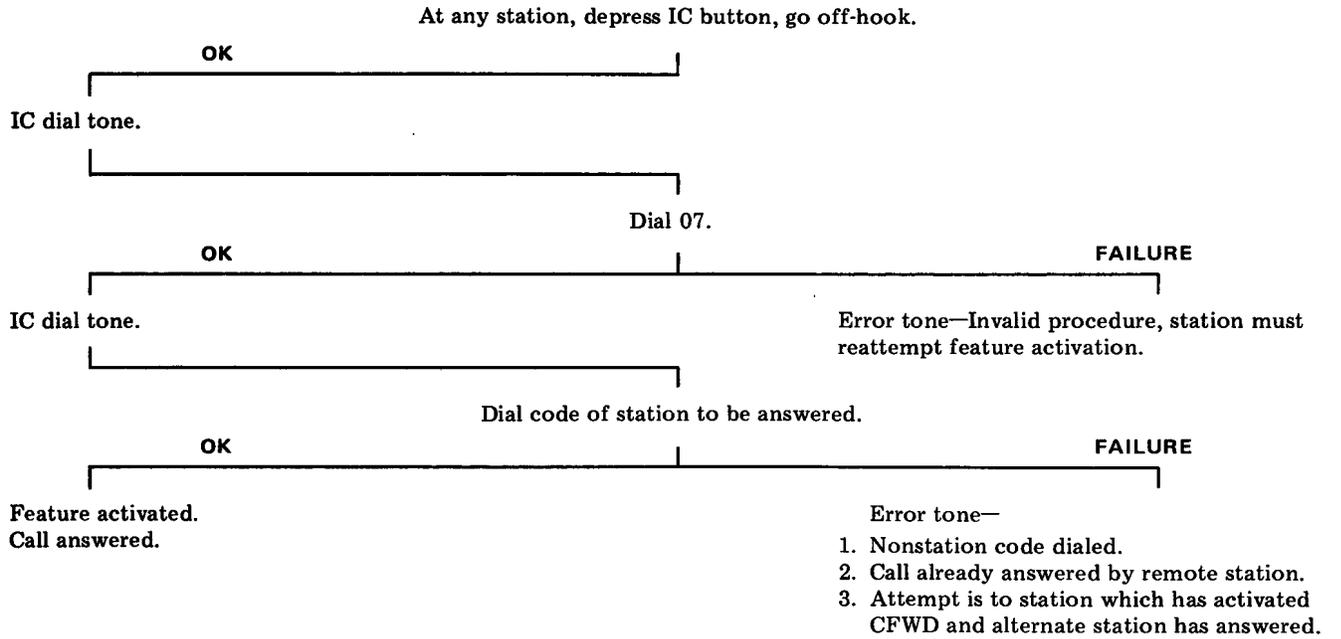
Calling stations receive busy tone. Lamp will flash at DND station but audible signal is silenced. Call can be answered or ignored.

**TABLE H**  
**CONFERENCING**  
**(FLEX)**

At any station, depress IC button, go off-hook.

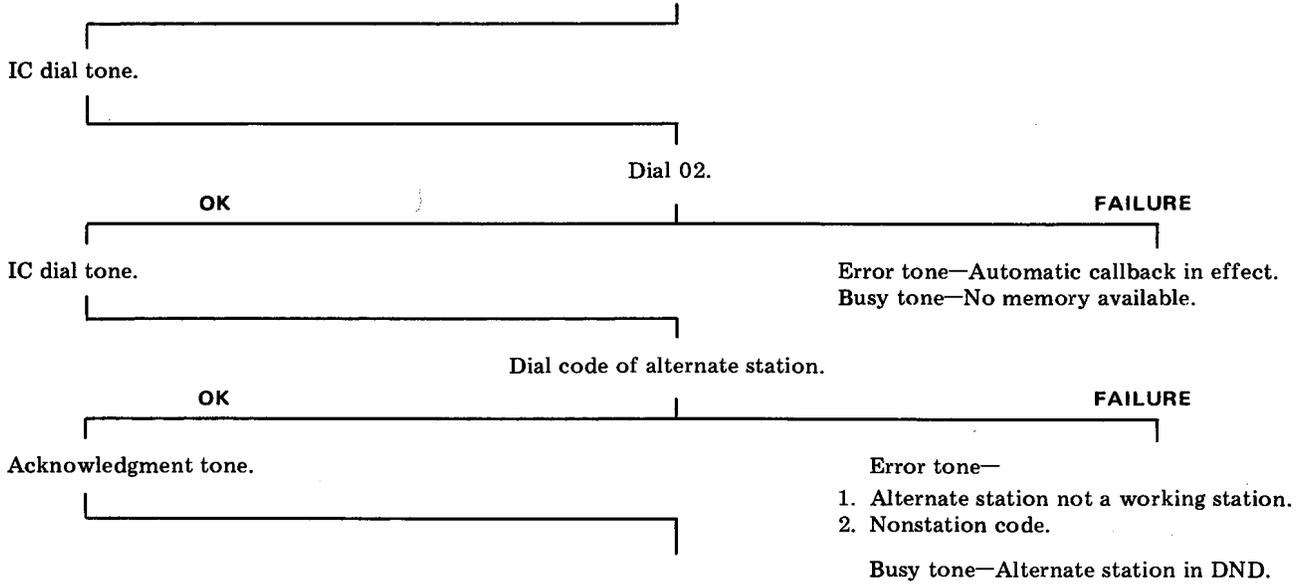


**TABLE I**  
**REMOTE ANSWER**  
**(REAN)**



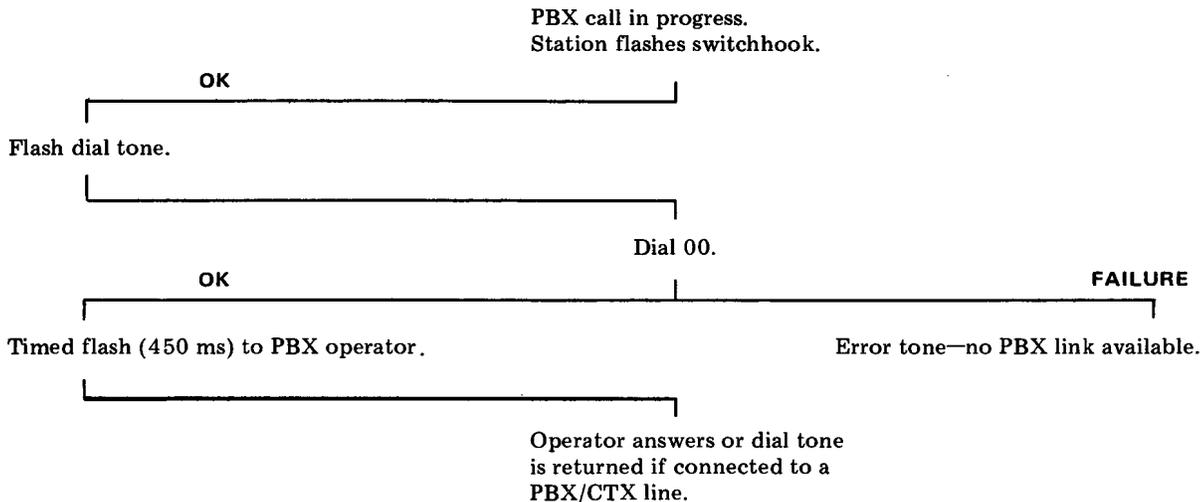
**TABLE J**  
**CALL FORWARDING**  
**(CFWD)**

At any station, depress IC button, go off-hook.

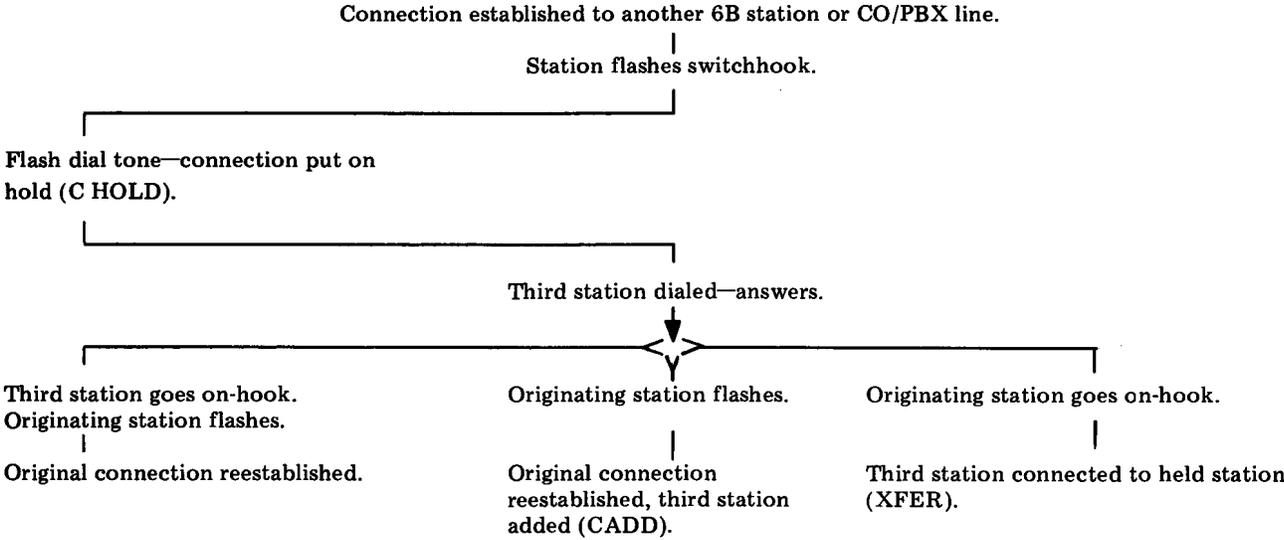


Audible and lamp signals operate at both stations on calls to originating station. Calls can be answered at either station. Signals time-out at originating station after 12 seconds.

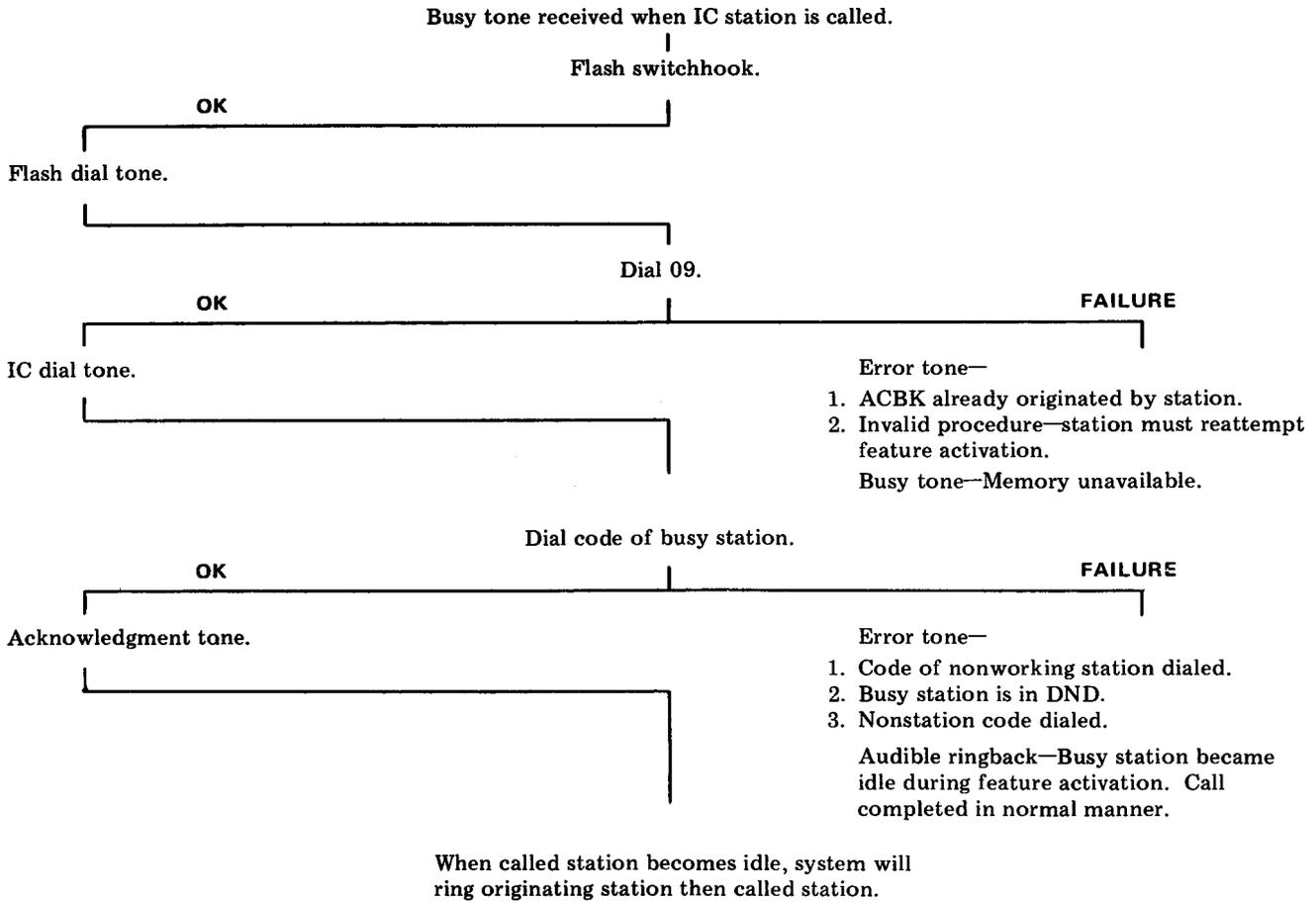
**TABLE K**  
**PBX OPERATOR RECALL**



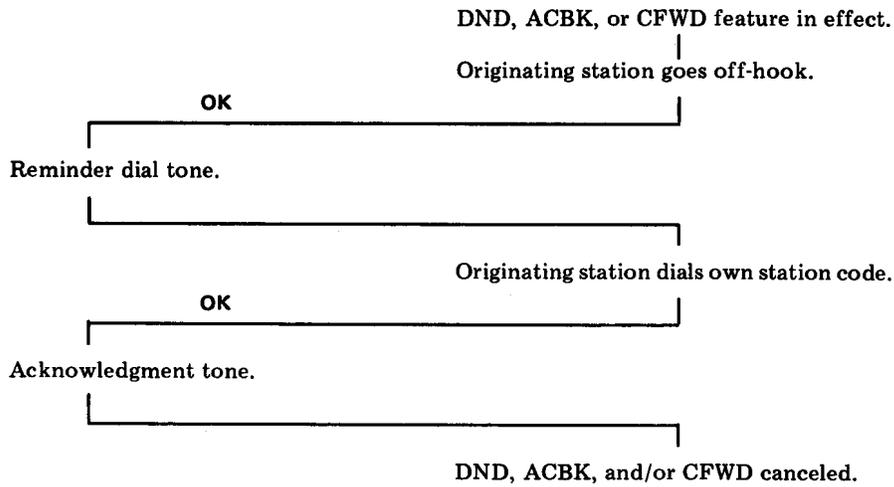
**TABLE L**  
**SUPERVISORY FLASH FEATURES**  
**(C HOLD, CADD, XFER)**



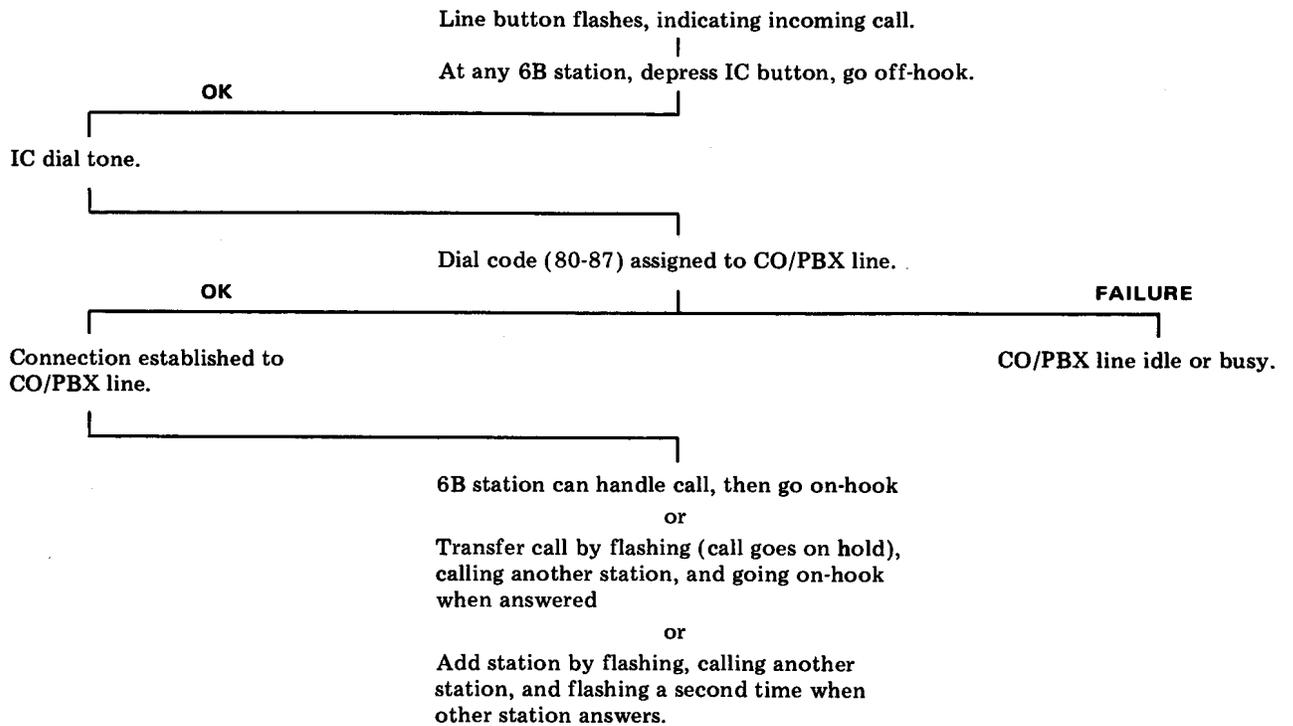
**TABLE M**  
**AUTOMATIC CALLBACK**  
**(ACBK)**

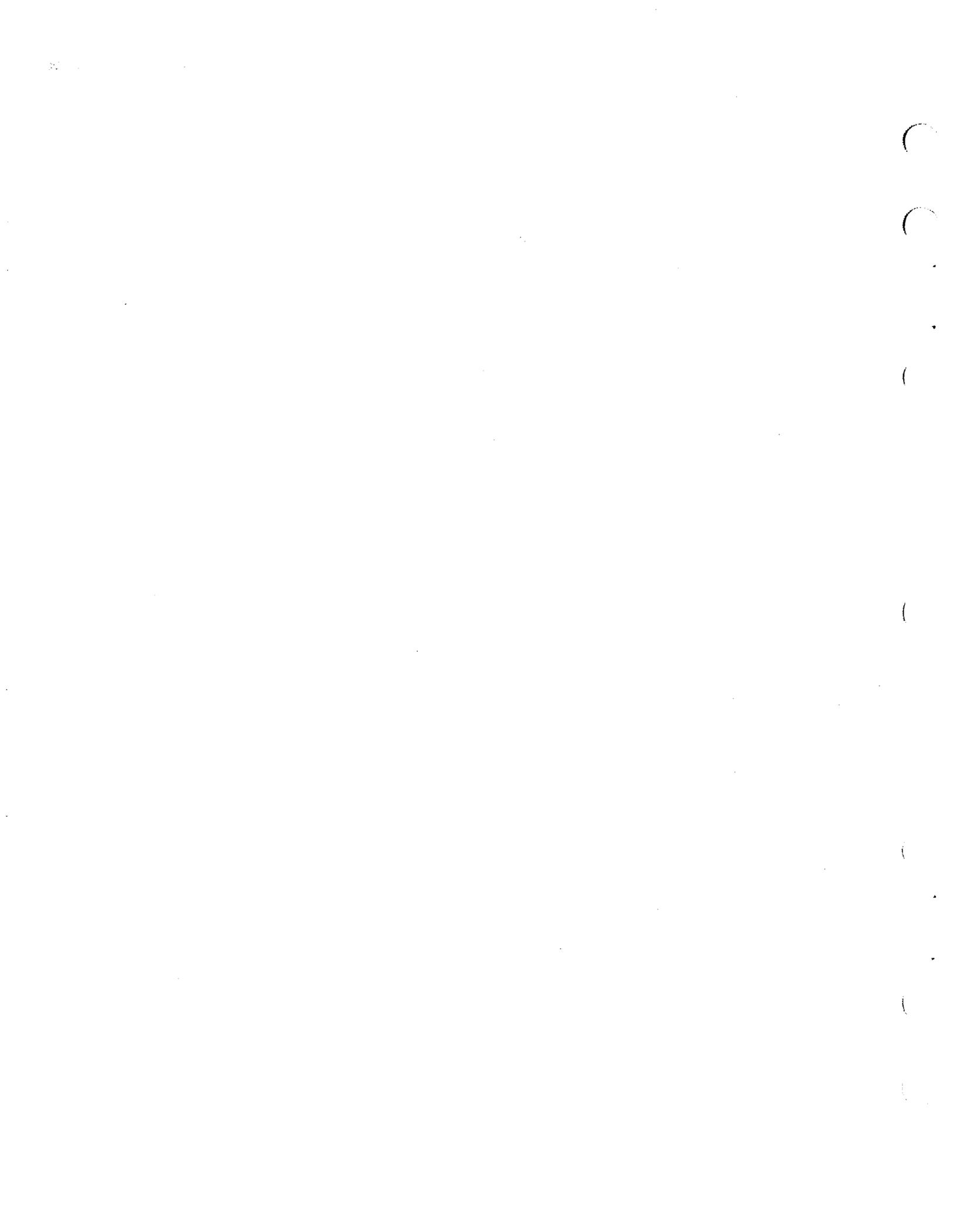


**TABLE N**  
**FEATURE CANCELLATION**



**TABLE O**  
**CO/PBX LINE ACCESS**





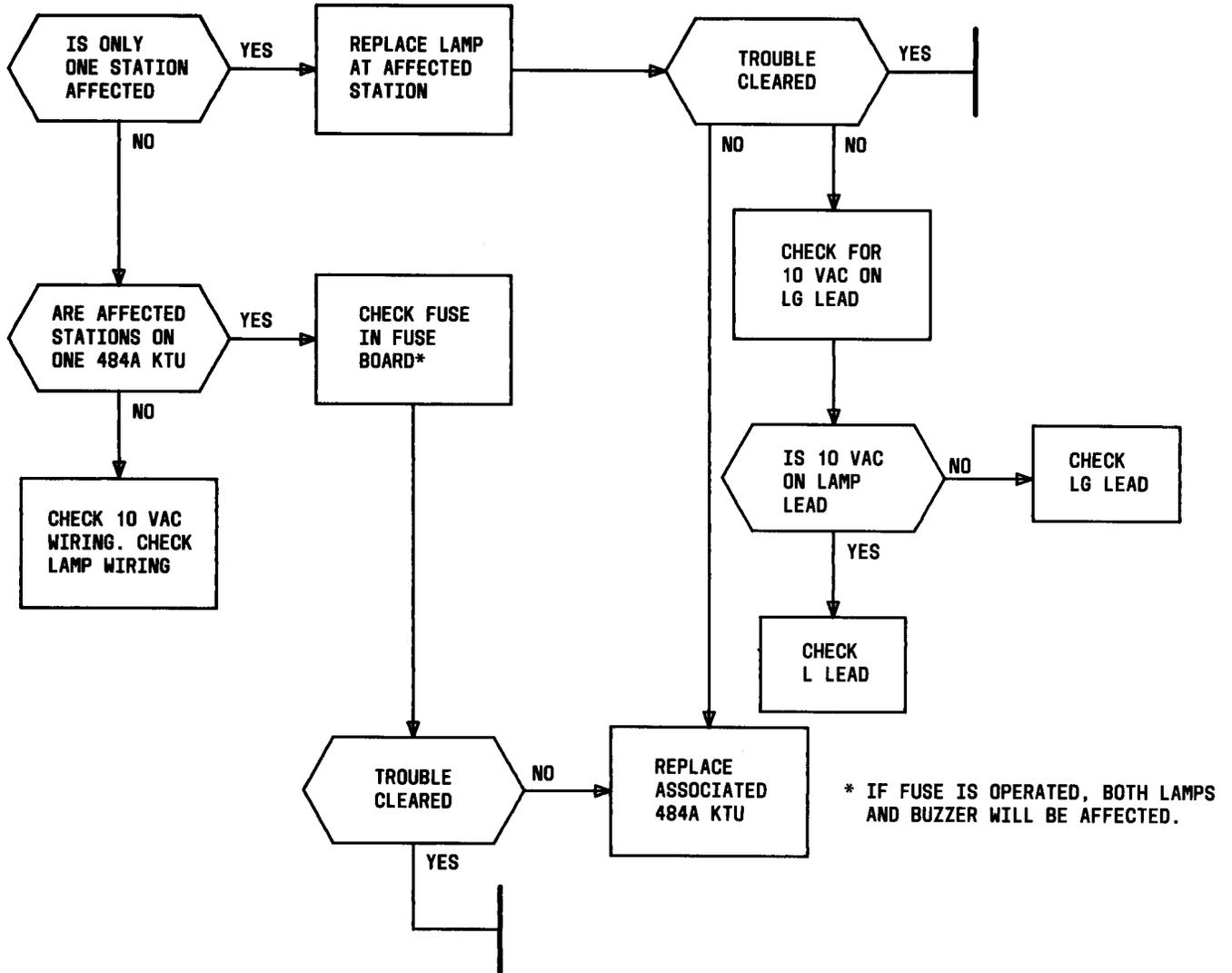


Fig. 13—Intercom Lamp Does Not Light

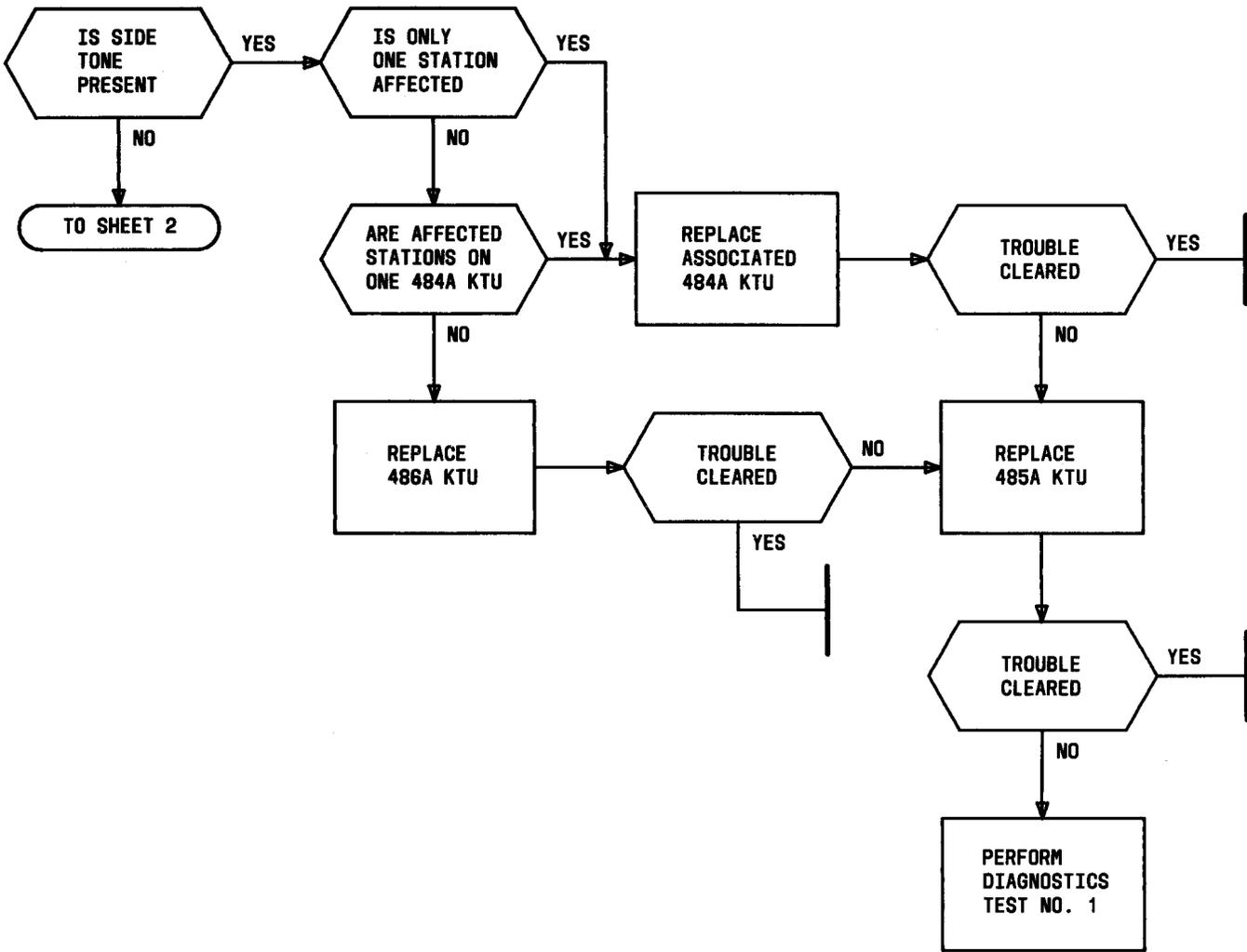


Fig. 14—No Dial Tone (Sheet 1 of 2)

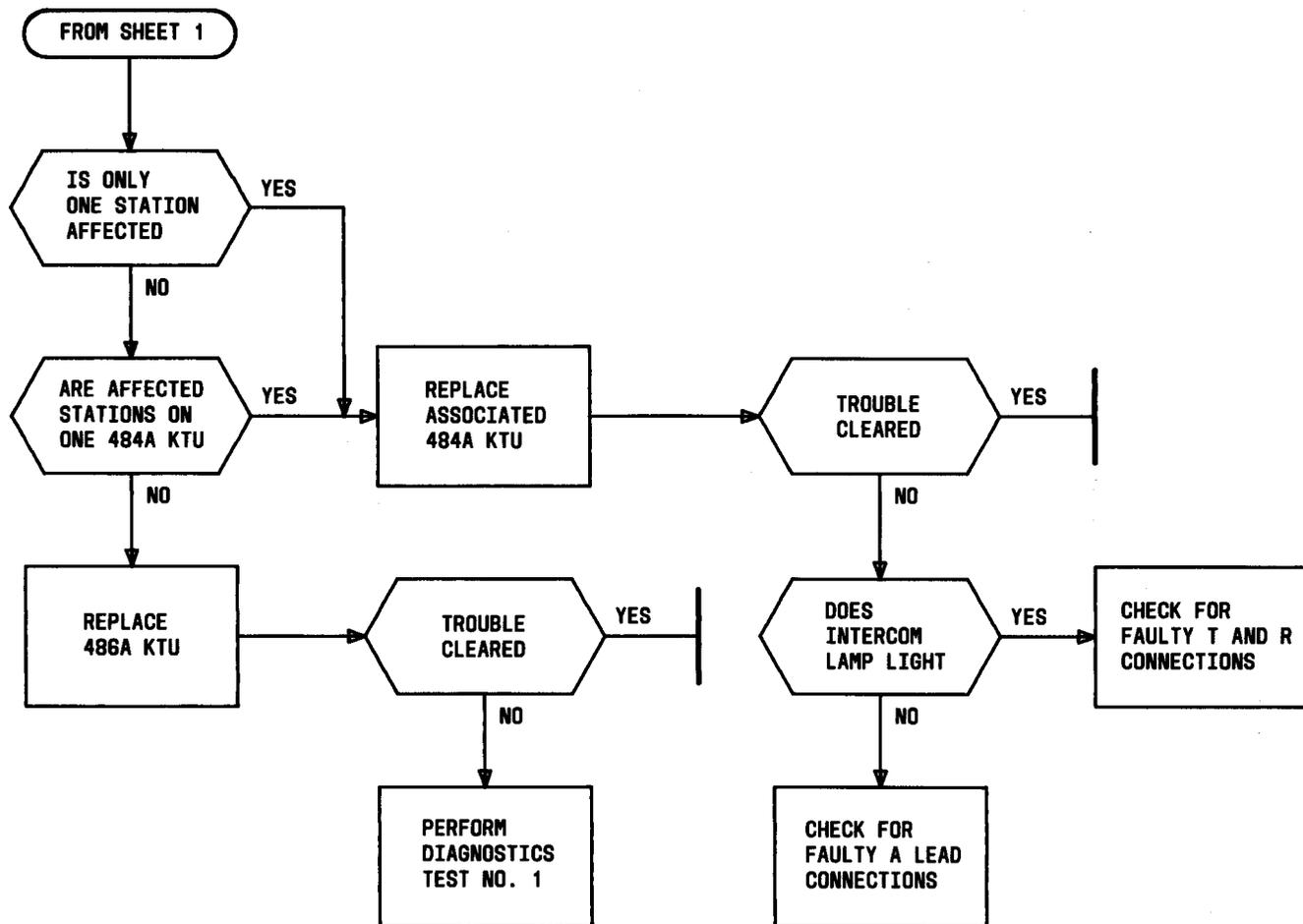


Fig. 14—No Dial Tone (Sheet 2 of 2)

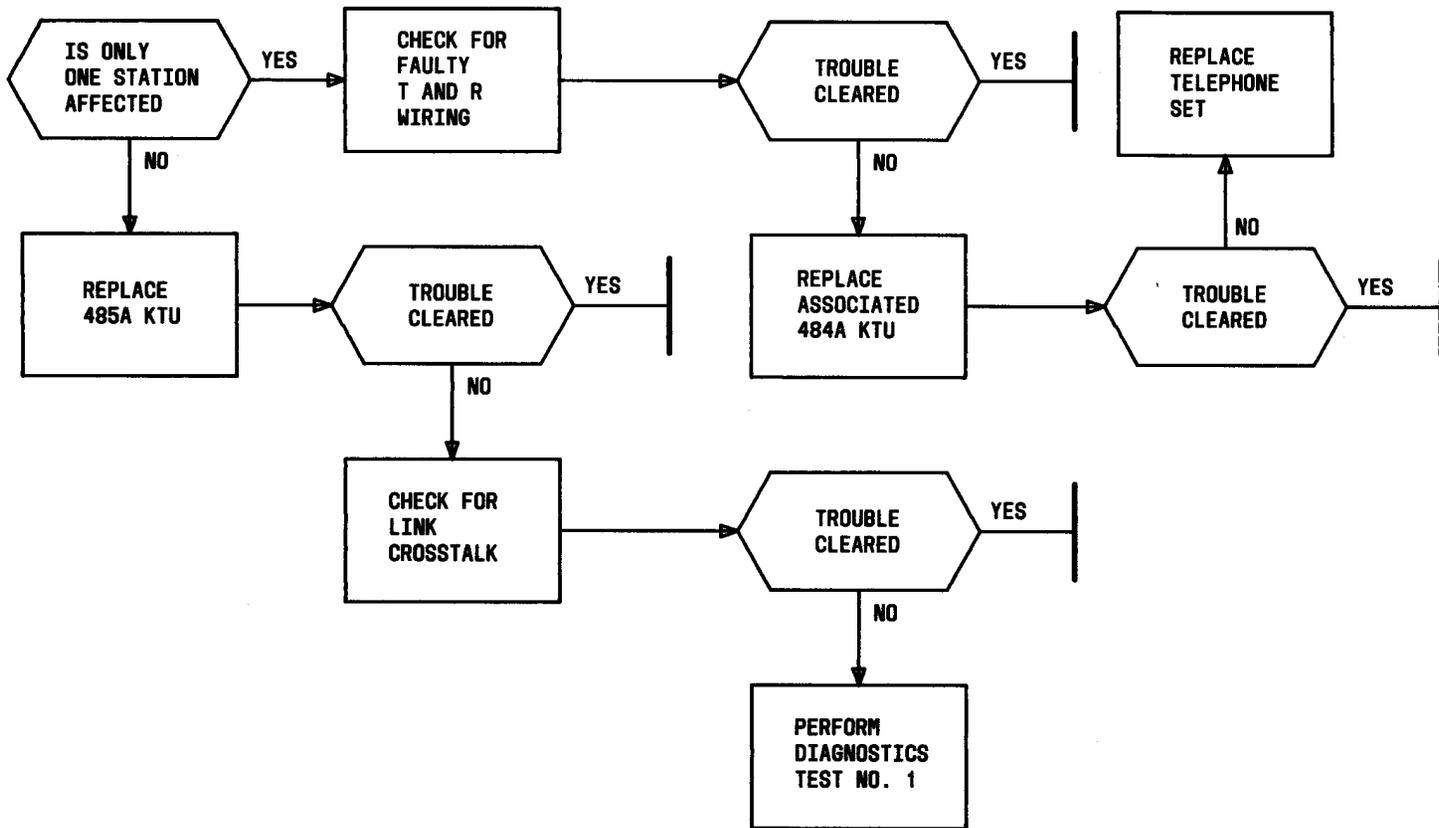


Fig. 15—Cannot Dial From Rotary Dial Telephone Set

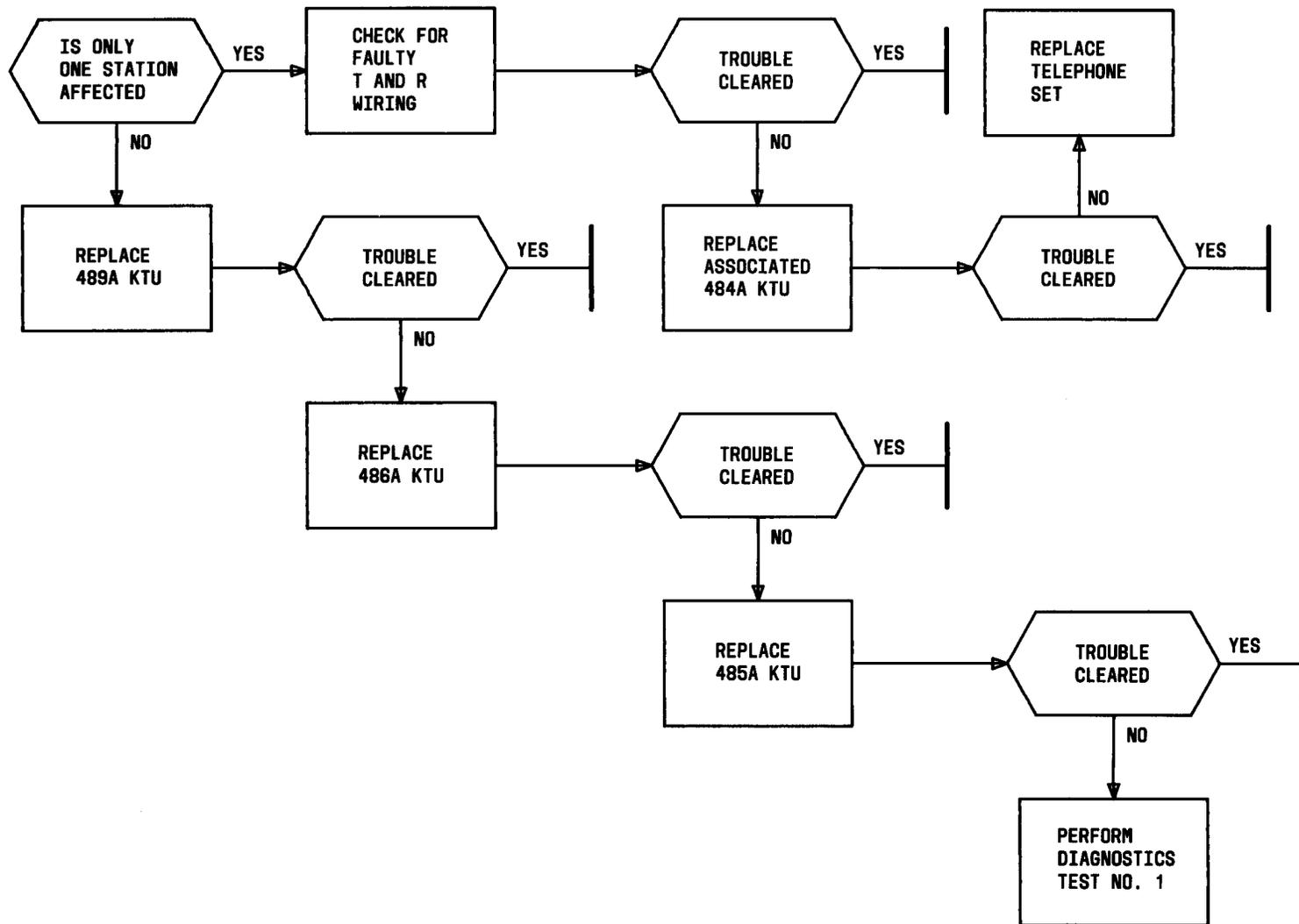


Fig. 16—Cannot Dial From TOUCH-TONE Telephone Set

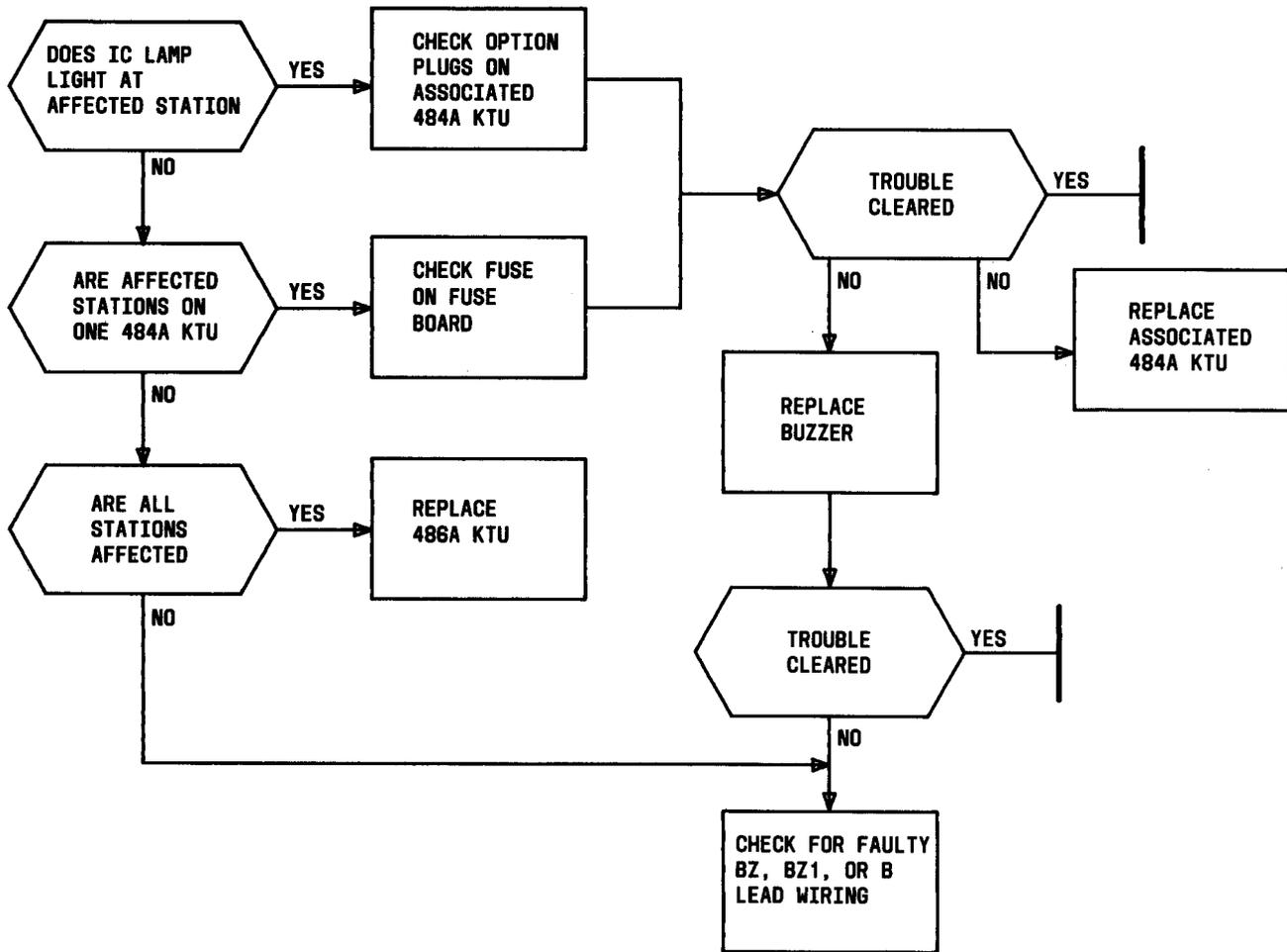


Fig. 17—Intercom Buzzer Does Not Operate

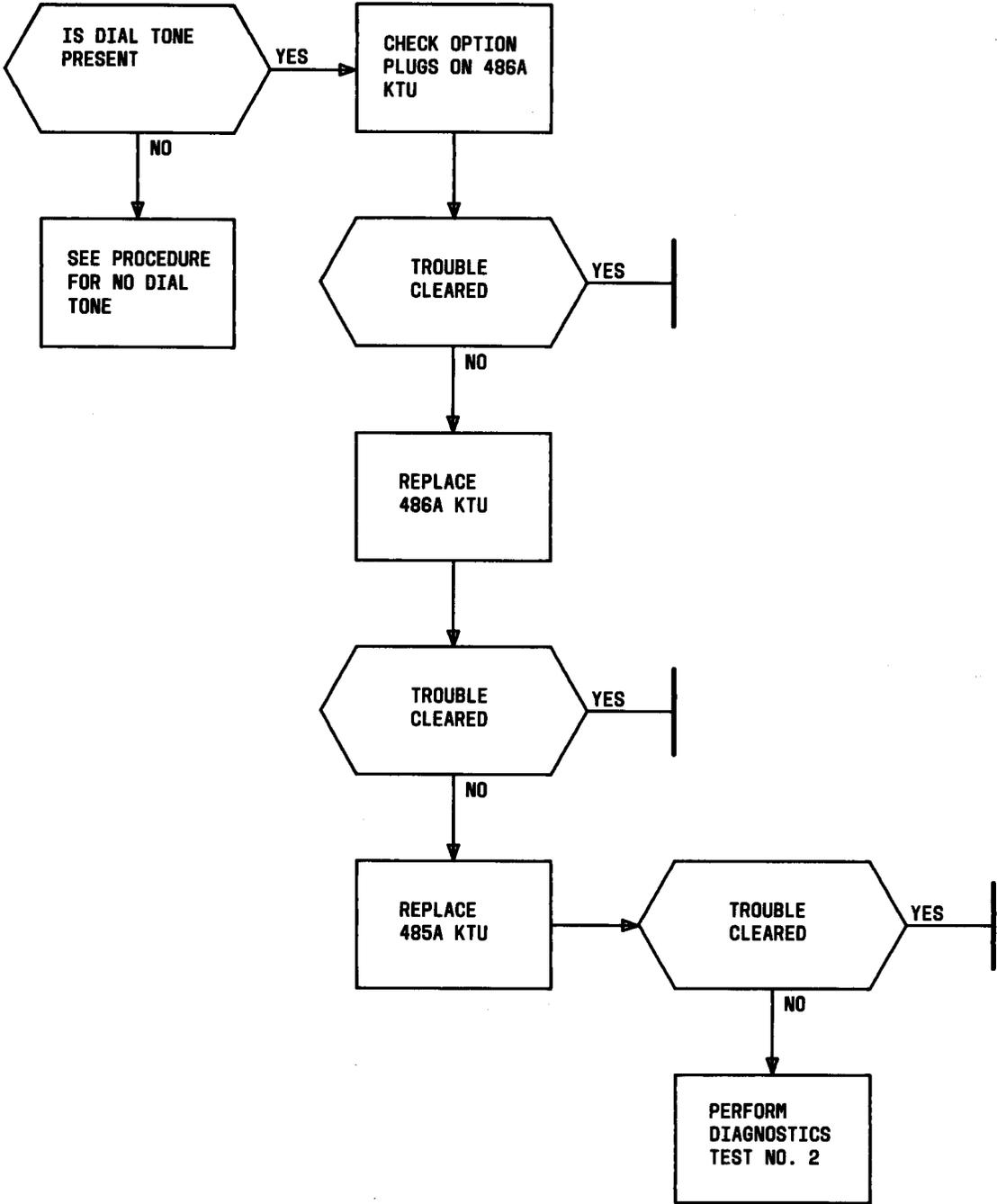


Fig. 18—No Audible Ringback

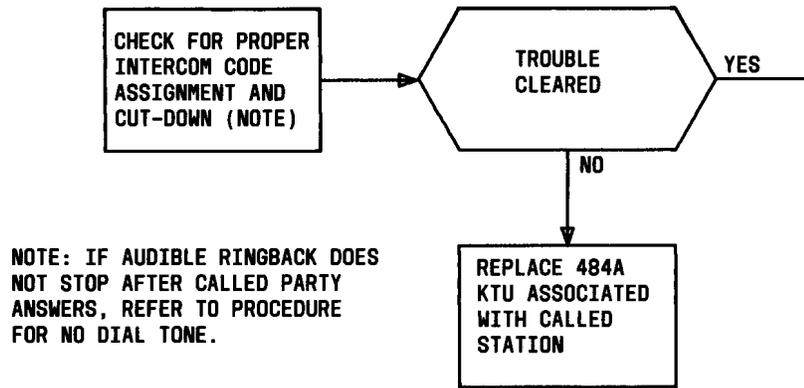


Fig. 19—Cannot Call Specific Station—Audible Ringback Heard

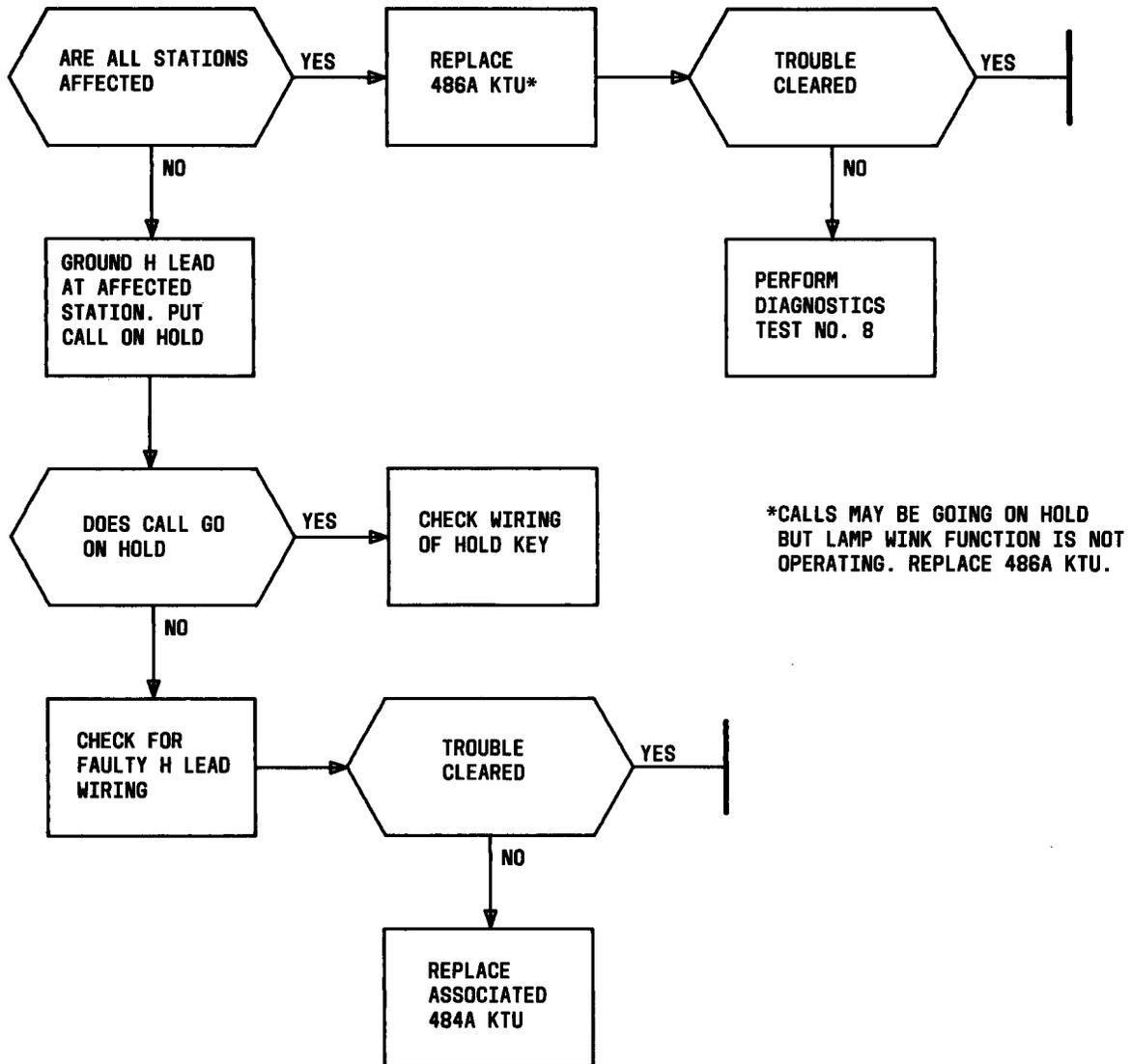


Fig. 20—Cannot Place Intercom Call On Hold

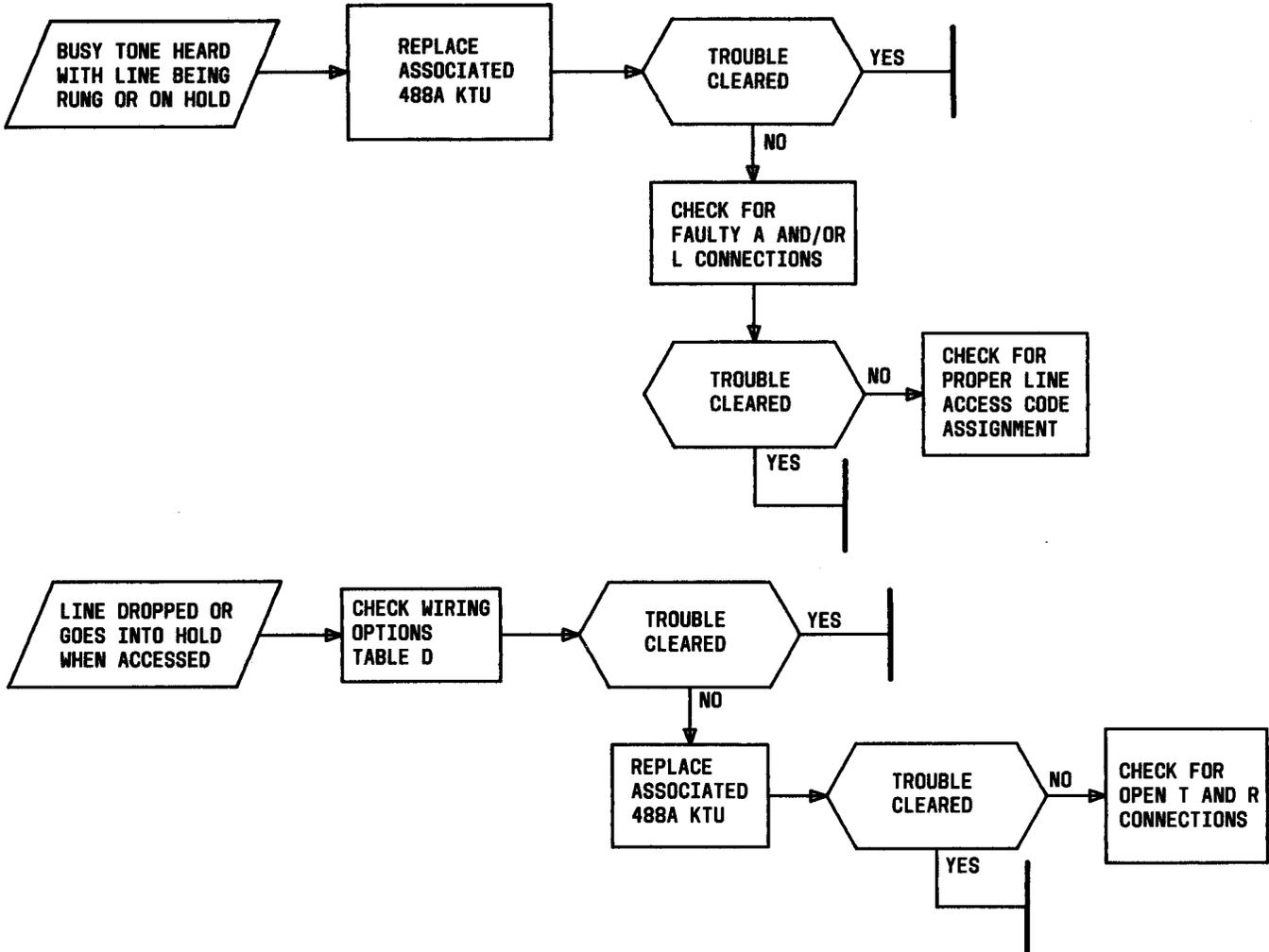


Fig. 21—Cannot Access CO/PBX Line in Ringing State or On Hold

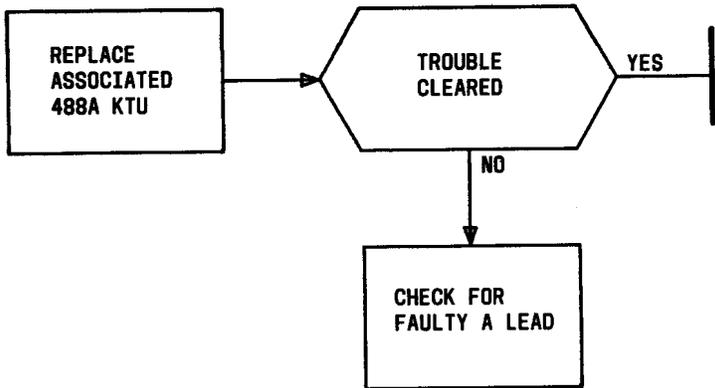


Fig. 22—Cannot Release From Answered CO/PBX Line

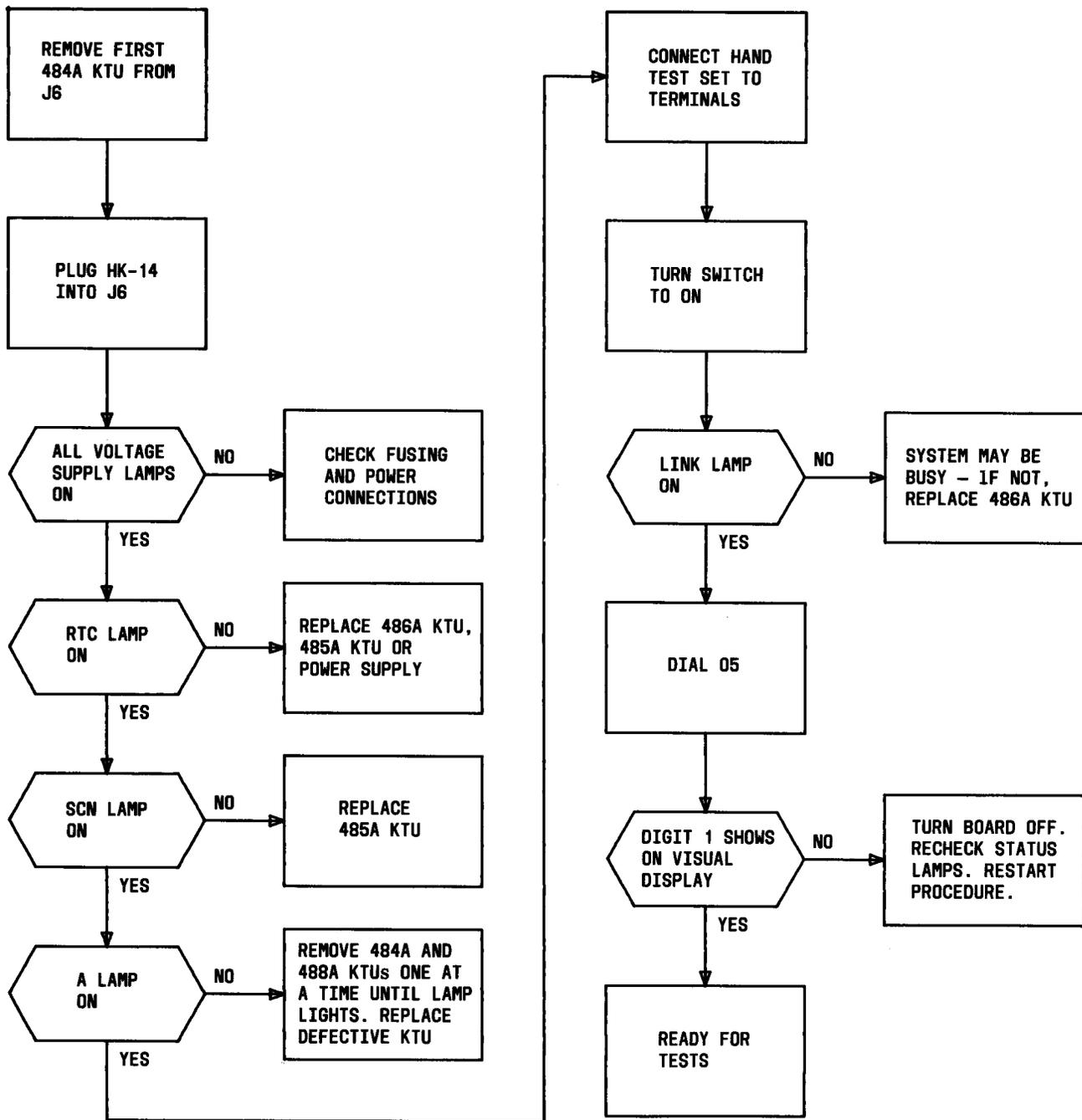


Fig. 23—HK-14 Diagnostic Circuit Pack Preparation

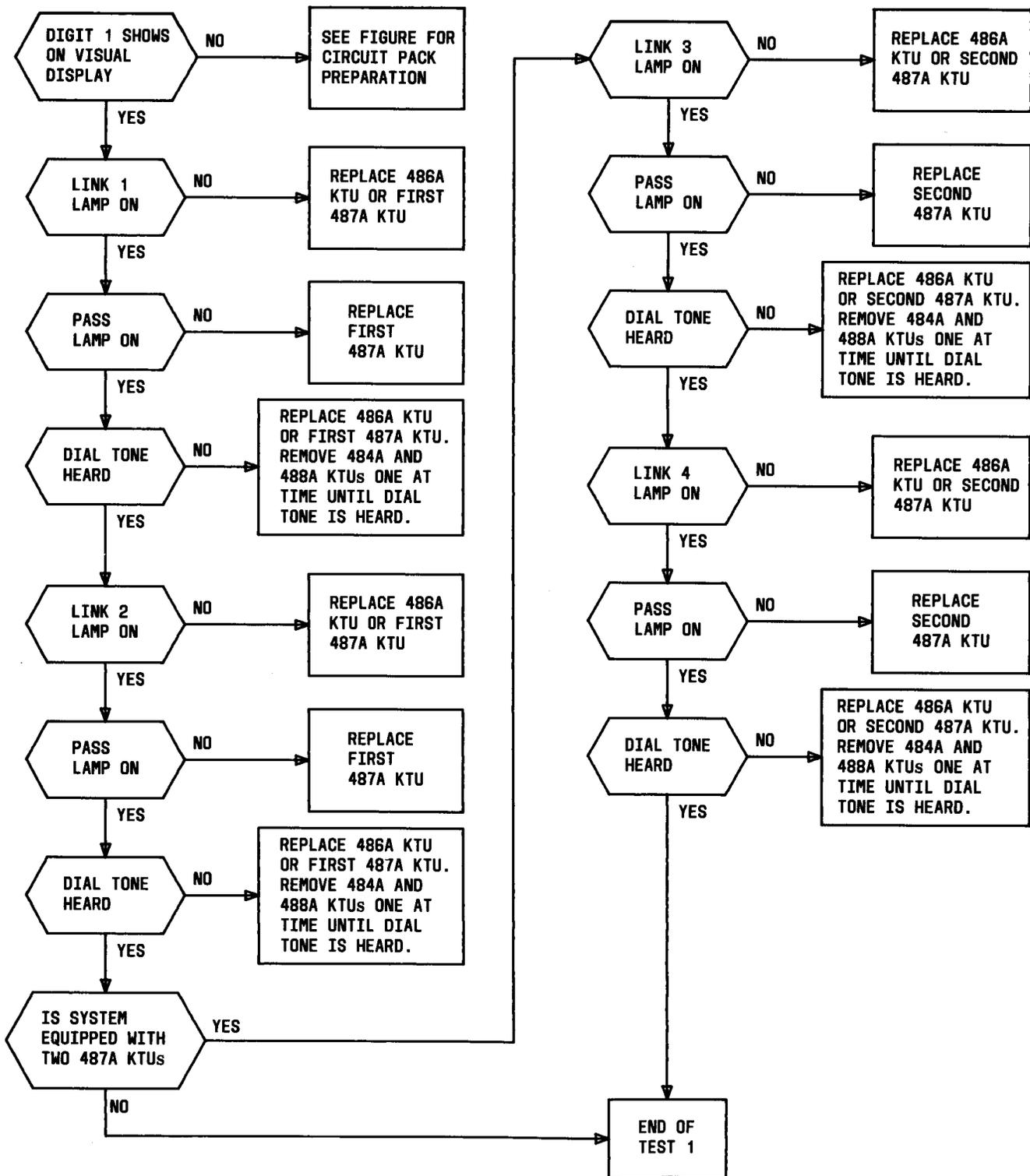


Fig. 24—Test 1 Sequence—Link Operation and Dial tone

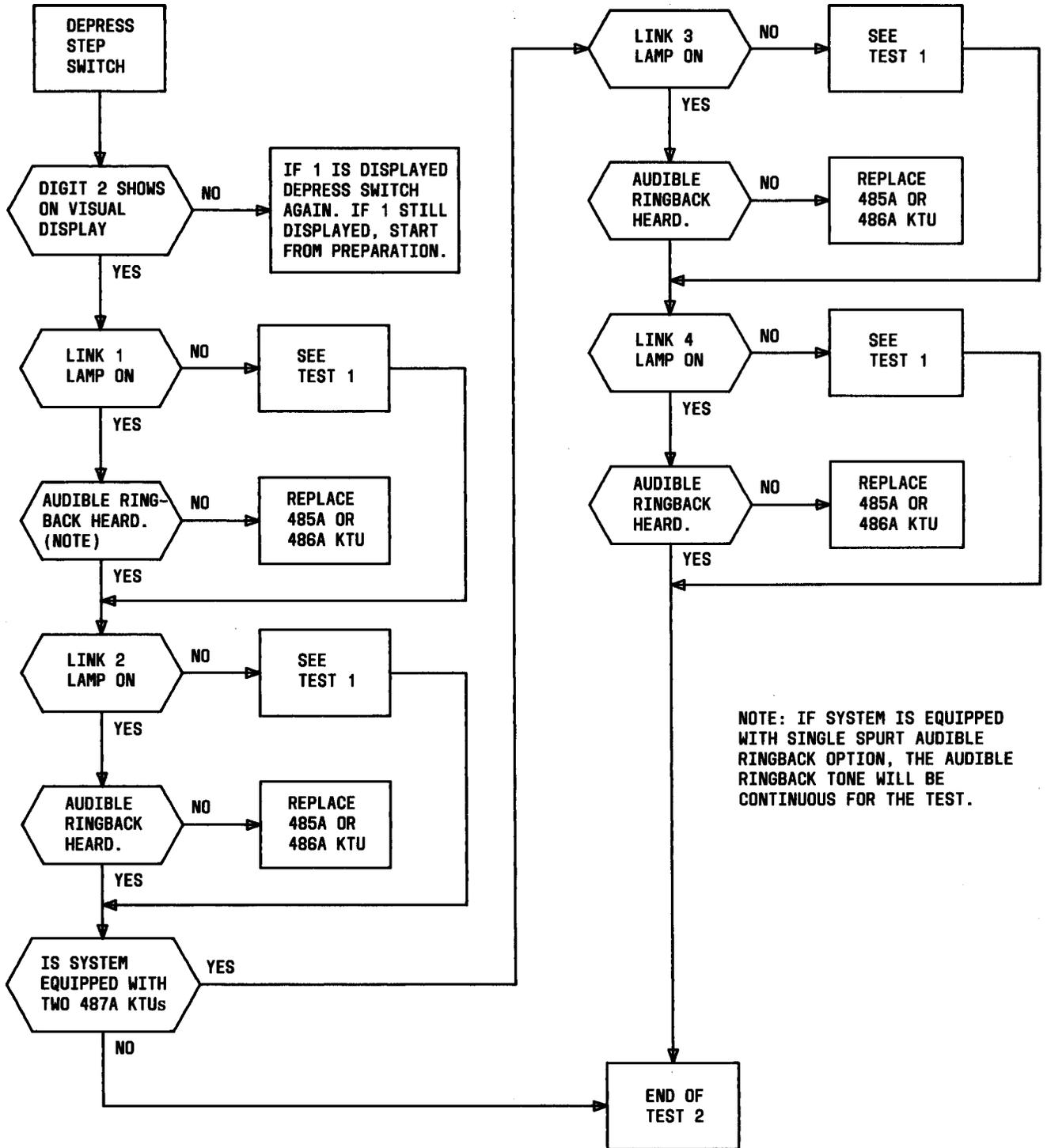


Fig. 25—Test 2 Sequence—Audible Ringback

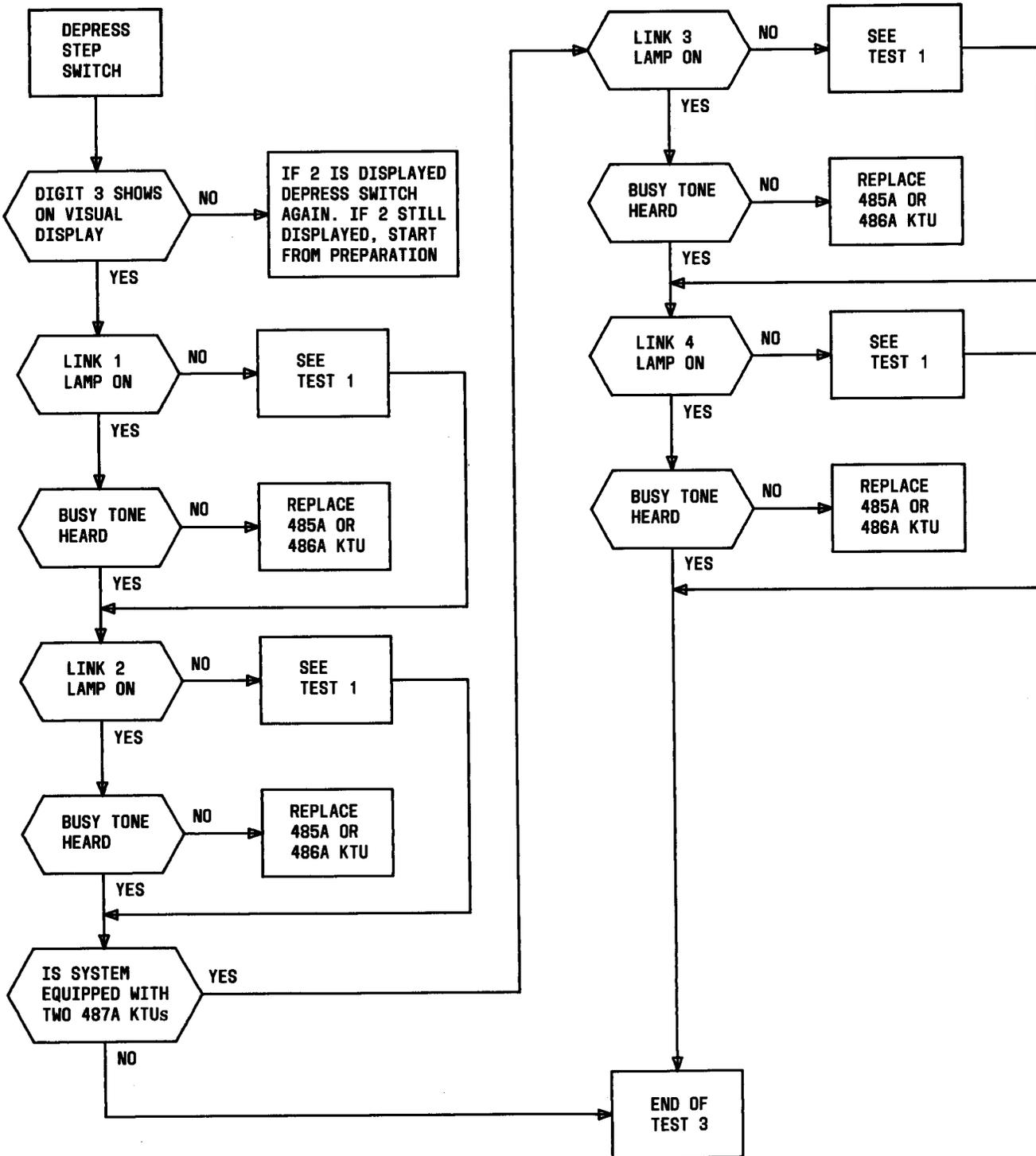


Fig. 26—Test 3 Sequence—Busy Tone

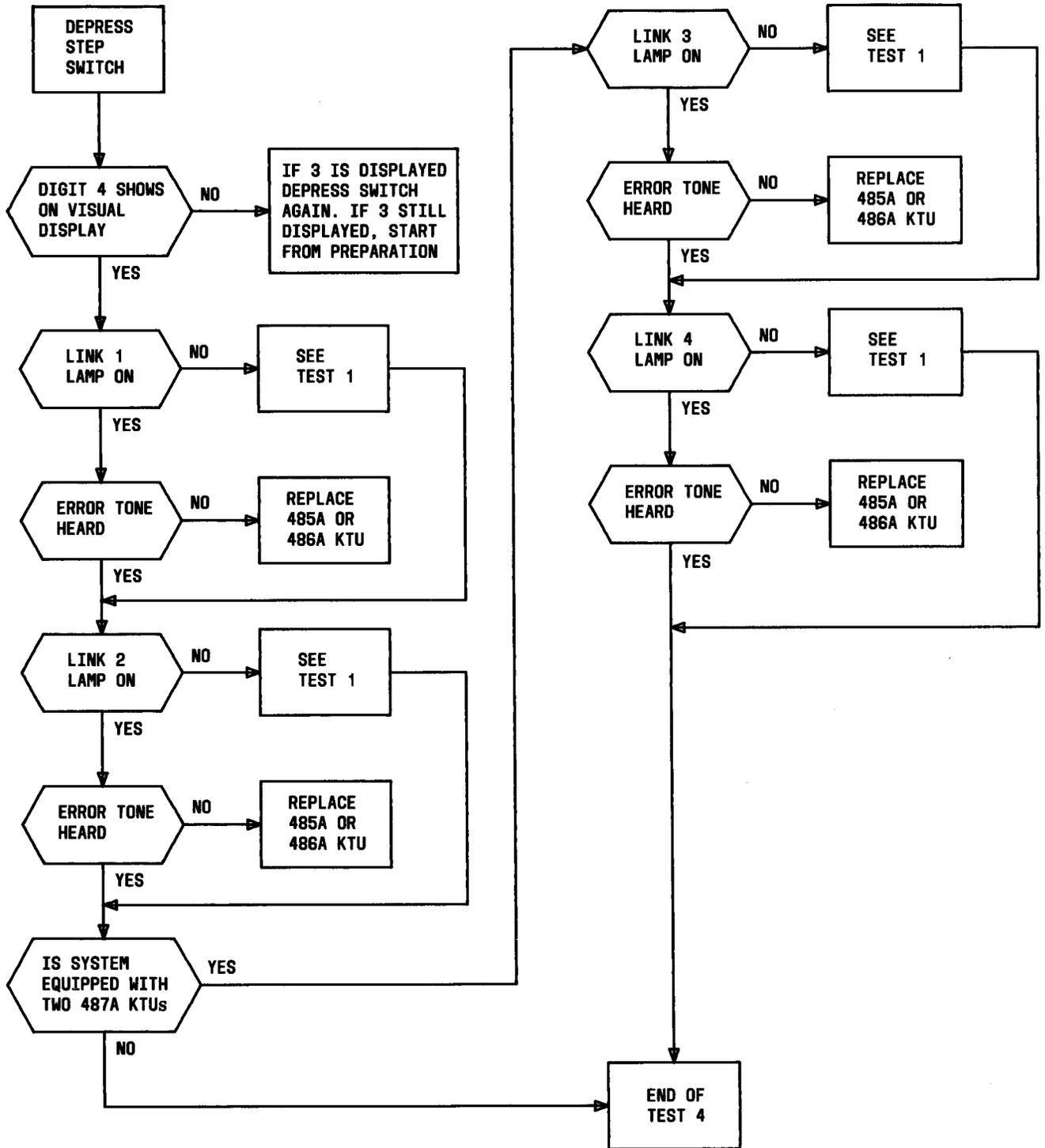


Fig. 27—Test 4 Sequence—Error Tone

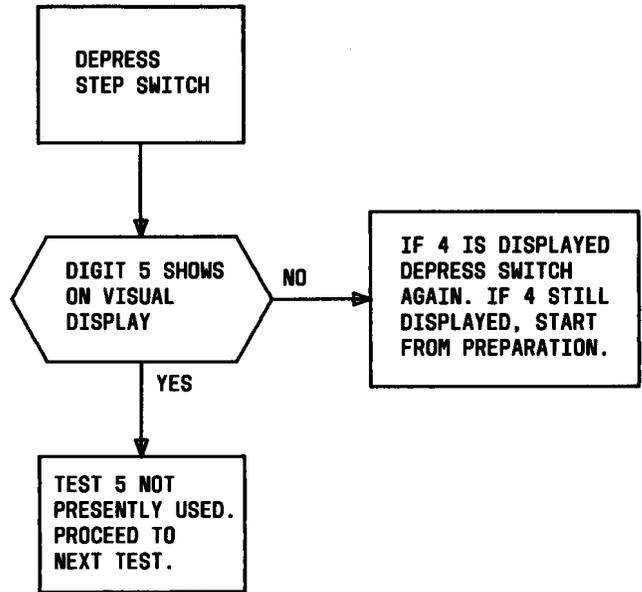


Fig. 28—Test 5 Sequence

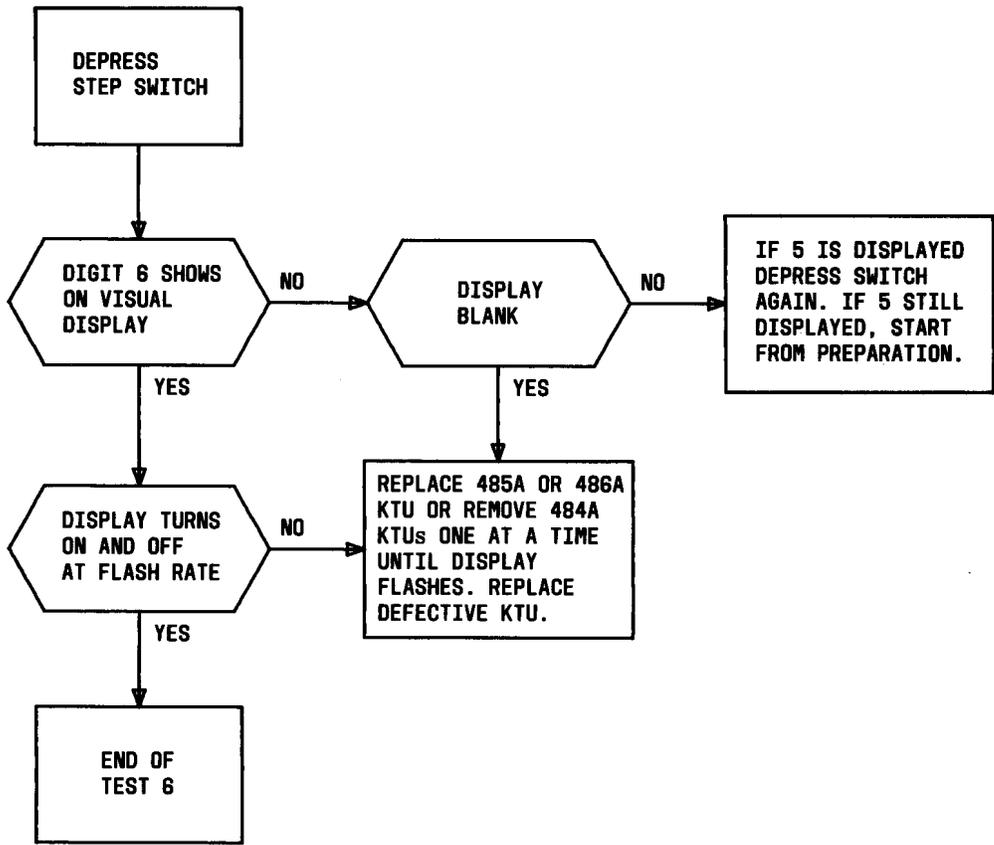


Fig. 29—Test 6 Sequence—Flash Rate

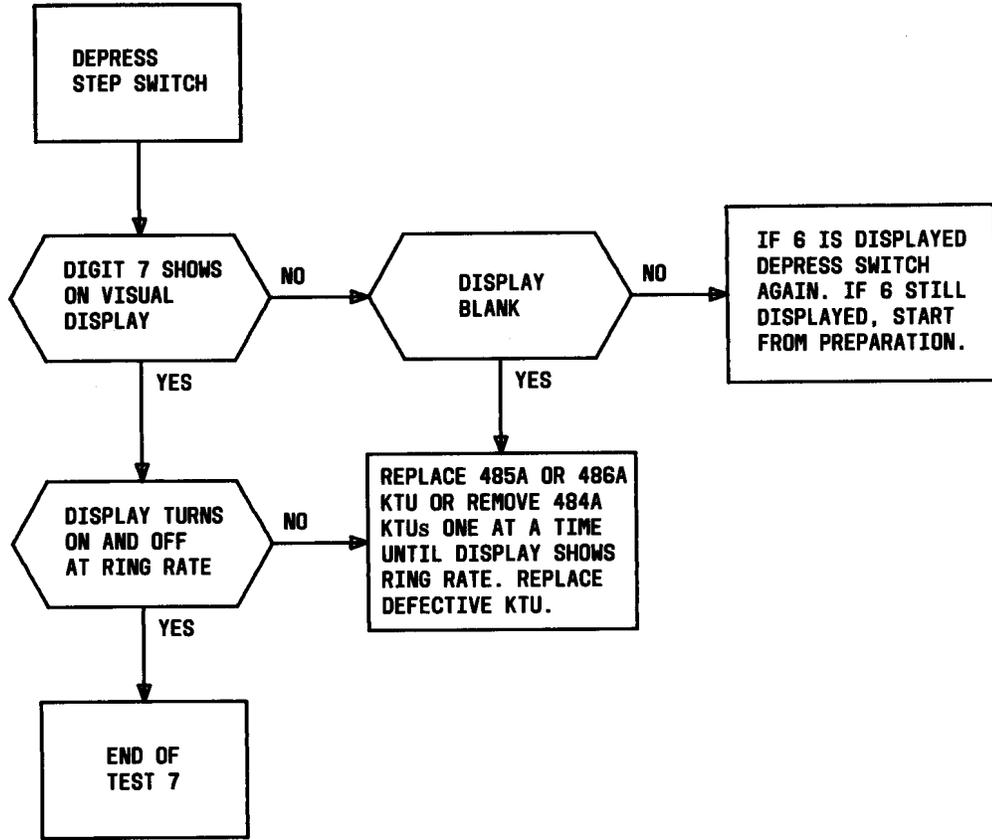


Fig. 30—Test 7 Sequence—Ring Rate

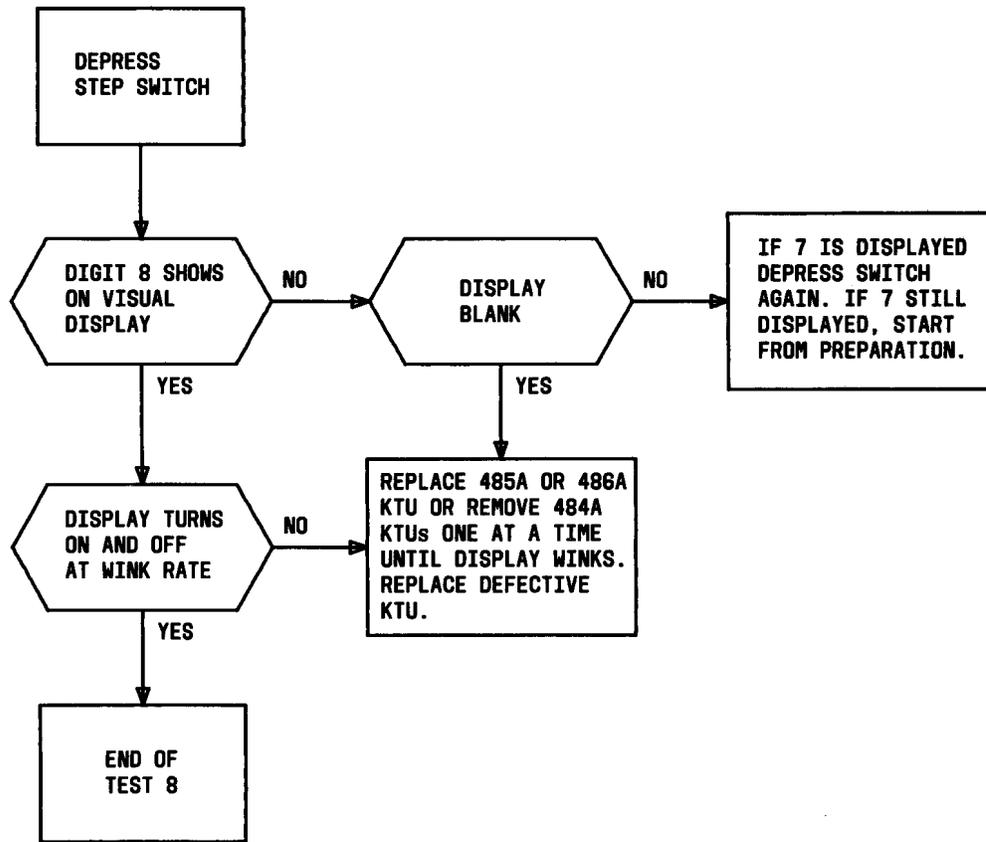


Fig. 31—Test 8 Sequence—Wink Rate

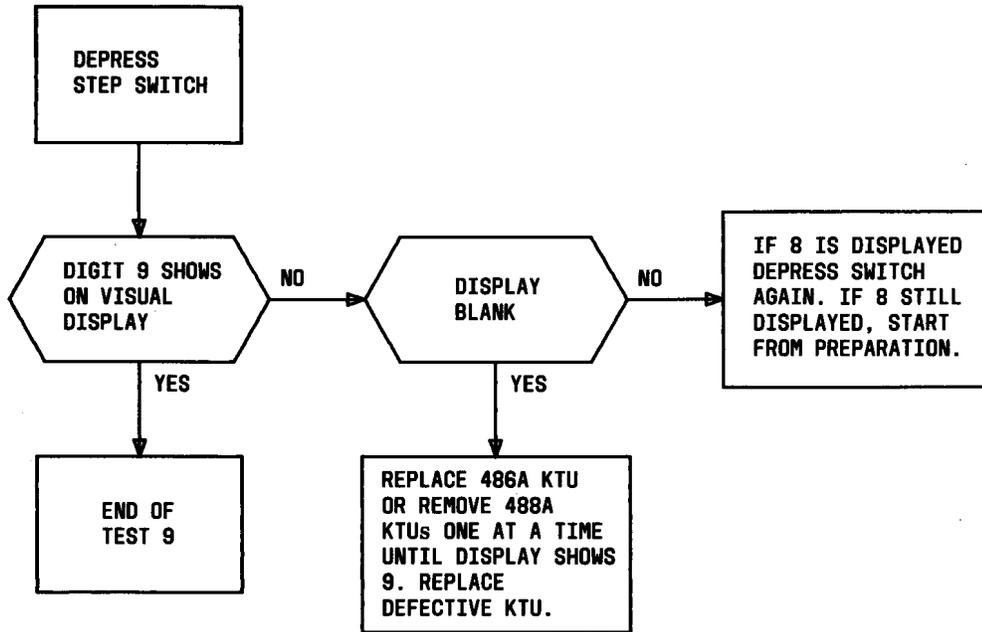


Fig. 32—Test 9 Sequence—Slow CO Disconnect

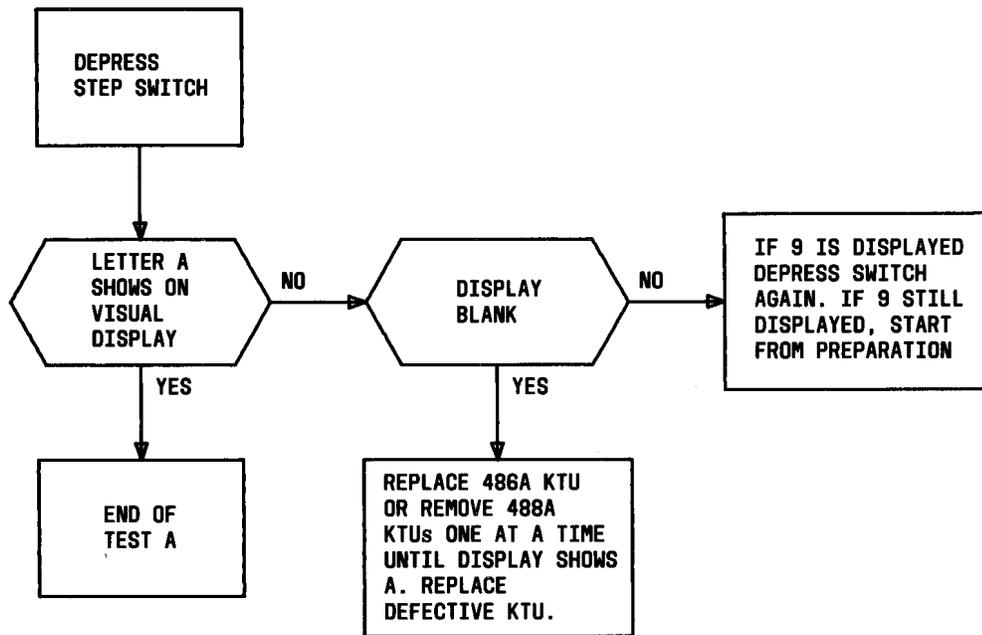


Fig. 33—Test A Sequence—Fast CO Disconnect

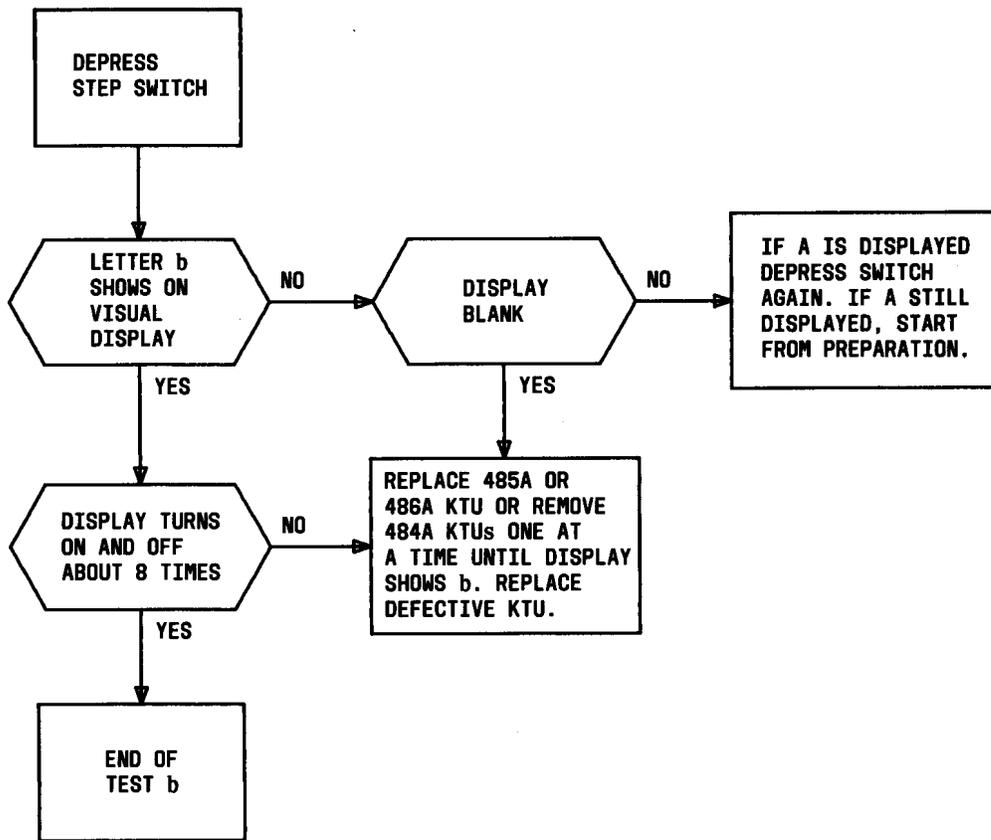


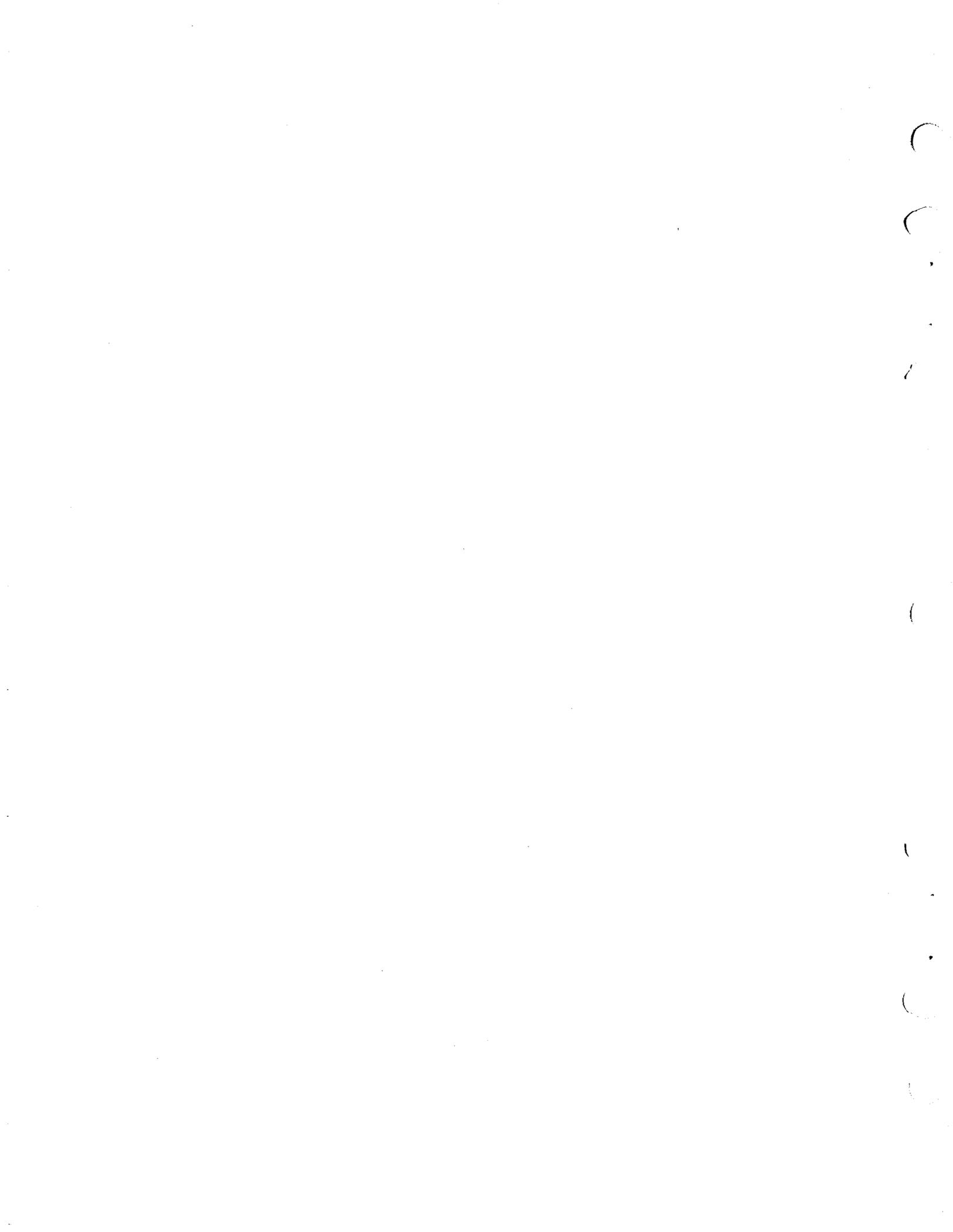
Fig. 34—Test B Sequence—Alert Time-Out

♦TABLE P♦

## CIRCUIT PACK HK-14 LAMP INDICATIONS AND SWITCHES

LAMP OR SWITCH		FUNCTION
Status Lamps	1	Indicates which link is being tested
	2	
	3	
	4	
	PASS	Indicates the outcome of a test
	FAIL	
	A	When lit, indicates proper operation of the A lead buss
	ATLL	When lit, indicates ATLL buss is operating properly
	RTC	When lit, indicates proper operation of Real Time Clock
	SCN	When lit, indicates processor is scanning stations
	+7V	When lit, indicates presence of proper voltage in system
	-10V	
	+10V	
	-24V	
-5V		
LED Display Lamp	1	Link operation and dial tone
	2	Audible ringback
	3	Busy tone
	4	Error tone
	5	Automatic transfer function*
	6	Flash rate
	7	Ring rate
	8	Wink rate
	9	Slow CO disconnect
	A	Fast CO disconnect
	B	Check for Alert Time Out
Switch	ON	In the ON position, provides off-hook indication to the system
	STEP	Steps the Diagnostic Test program through the steps
	ATXFR	Used with test number 5*

\* When making this test, FAIL lamp is normally lit. When ATXFR switch is depressed, PASS lamp lights. Test 5 is presently not used with 6B KTS.



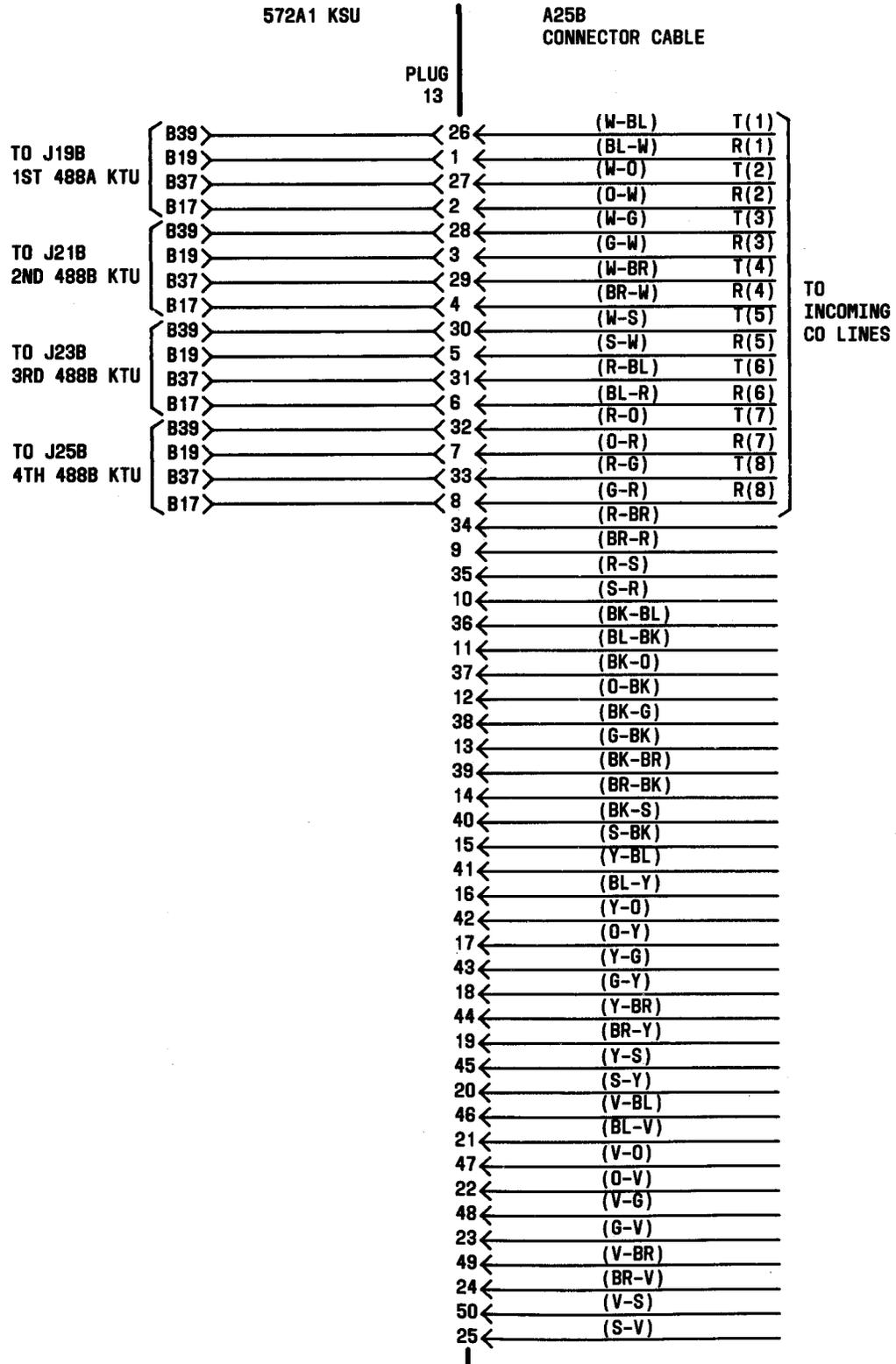


Fig. 35—Terminations of Incoming CO/PBX Lines in 572A1 KSU

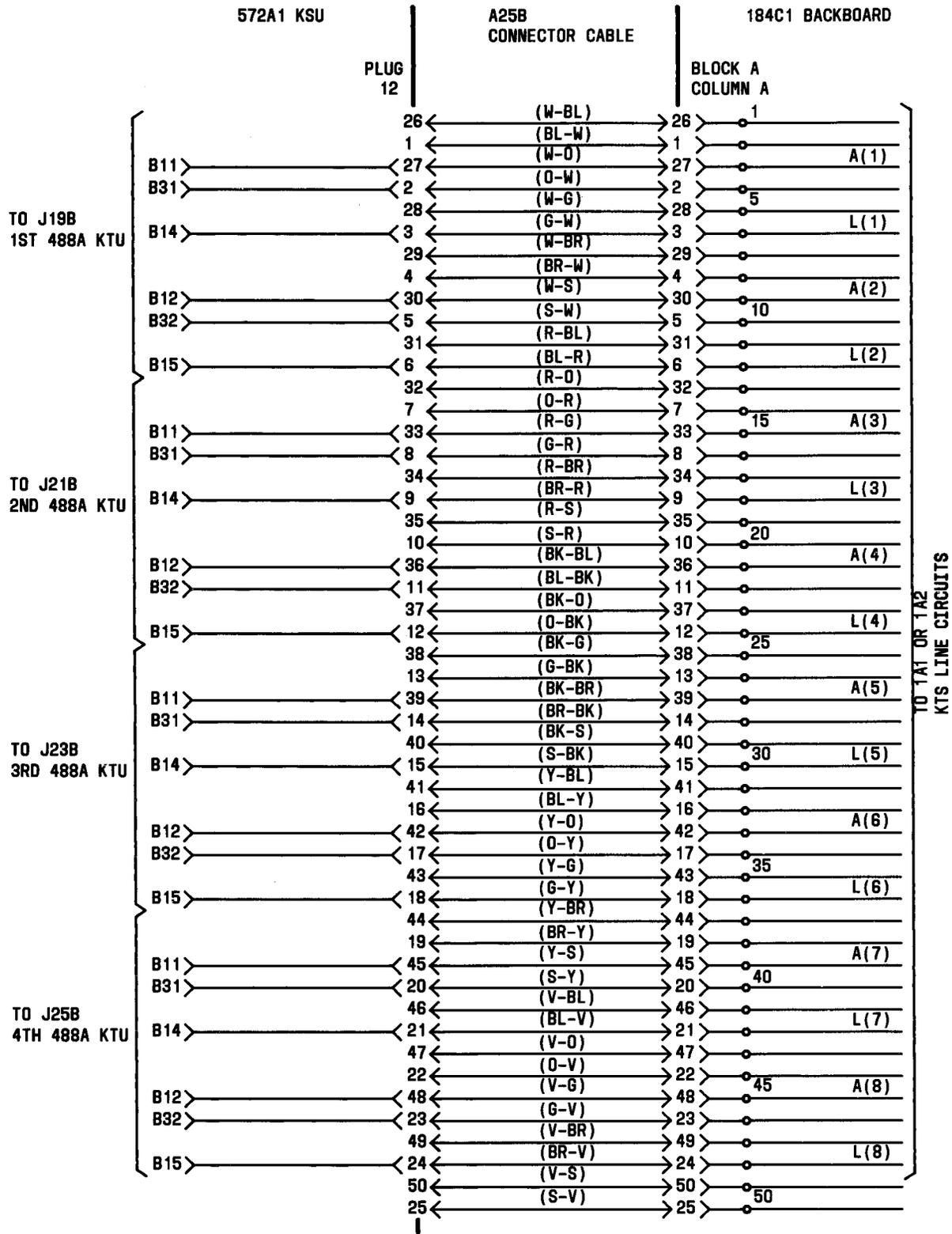


Fig. 36—Connections Between Plugs 12 and 1 to 4 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 1 of 5)

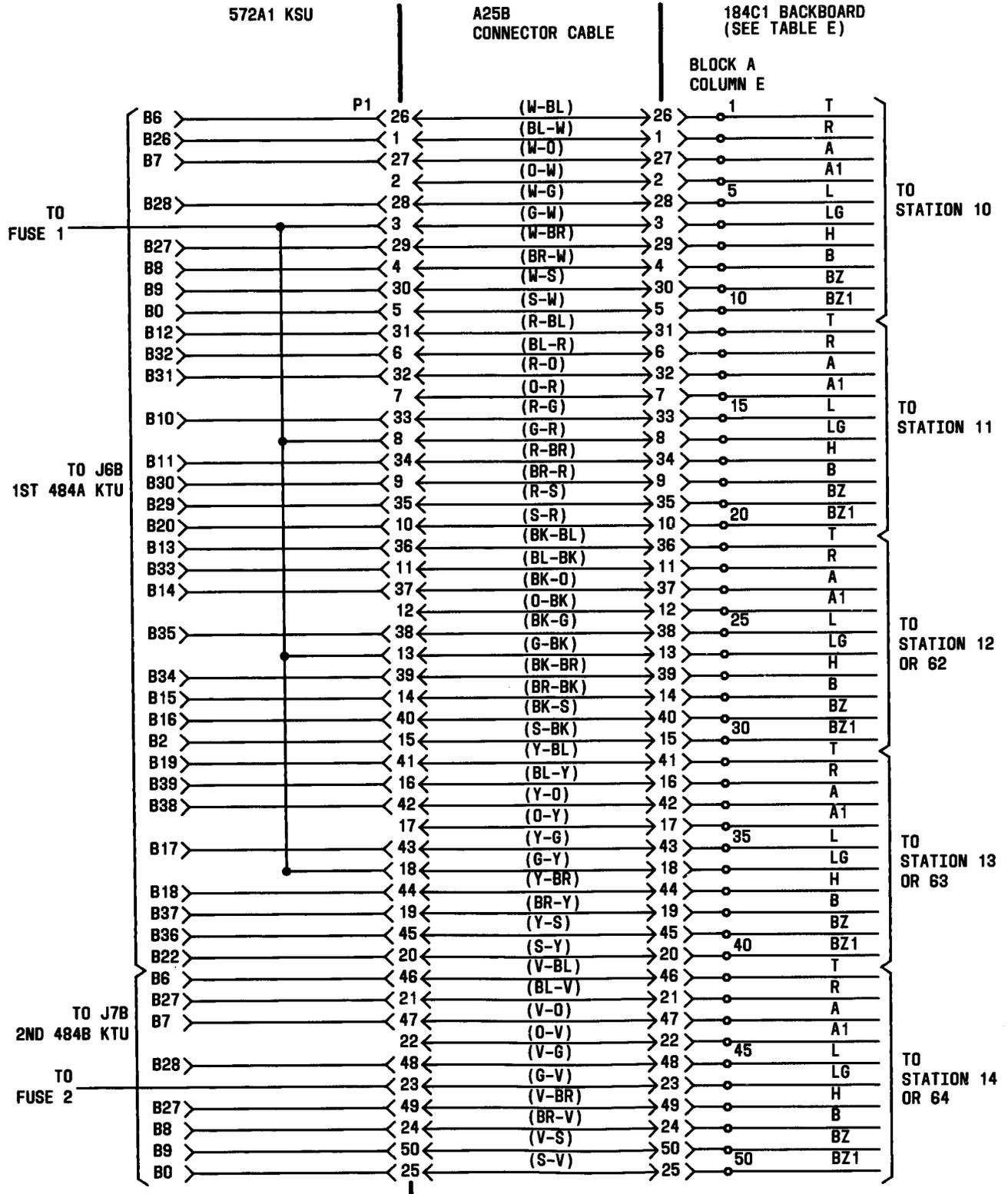


Fig. 36—Connections Between Plugs 12 and 1 to 4 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 2 of 5)

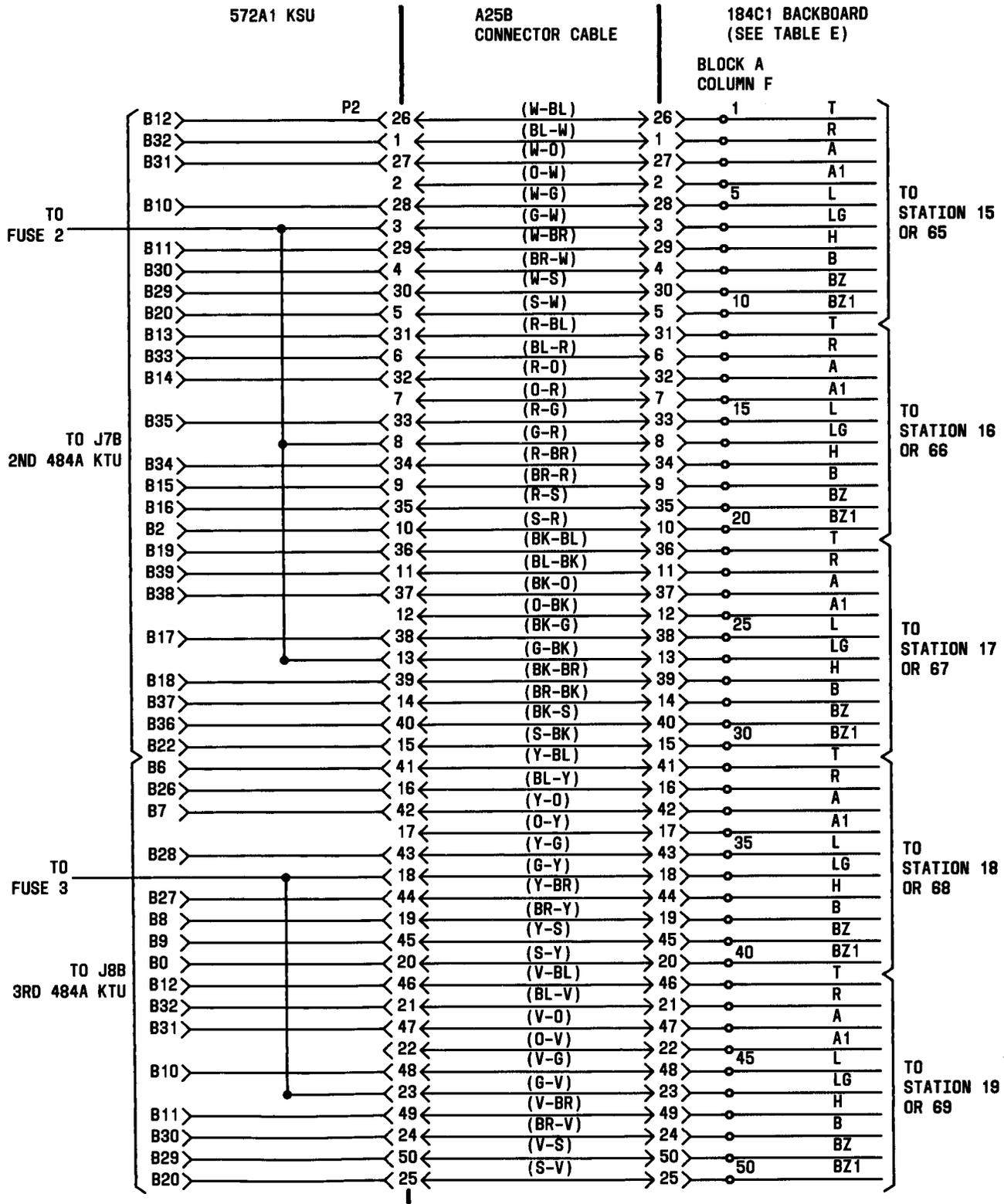


Fig. 36—Connections Between Plugs 12 and 1 to 4 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 3 of 5)

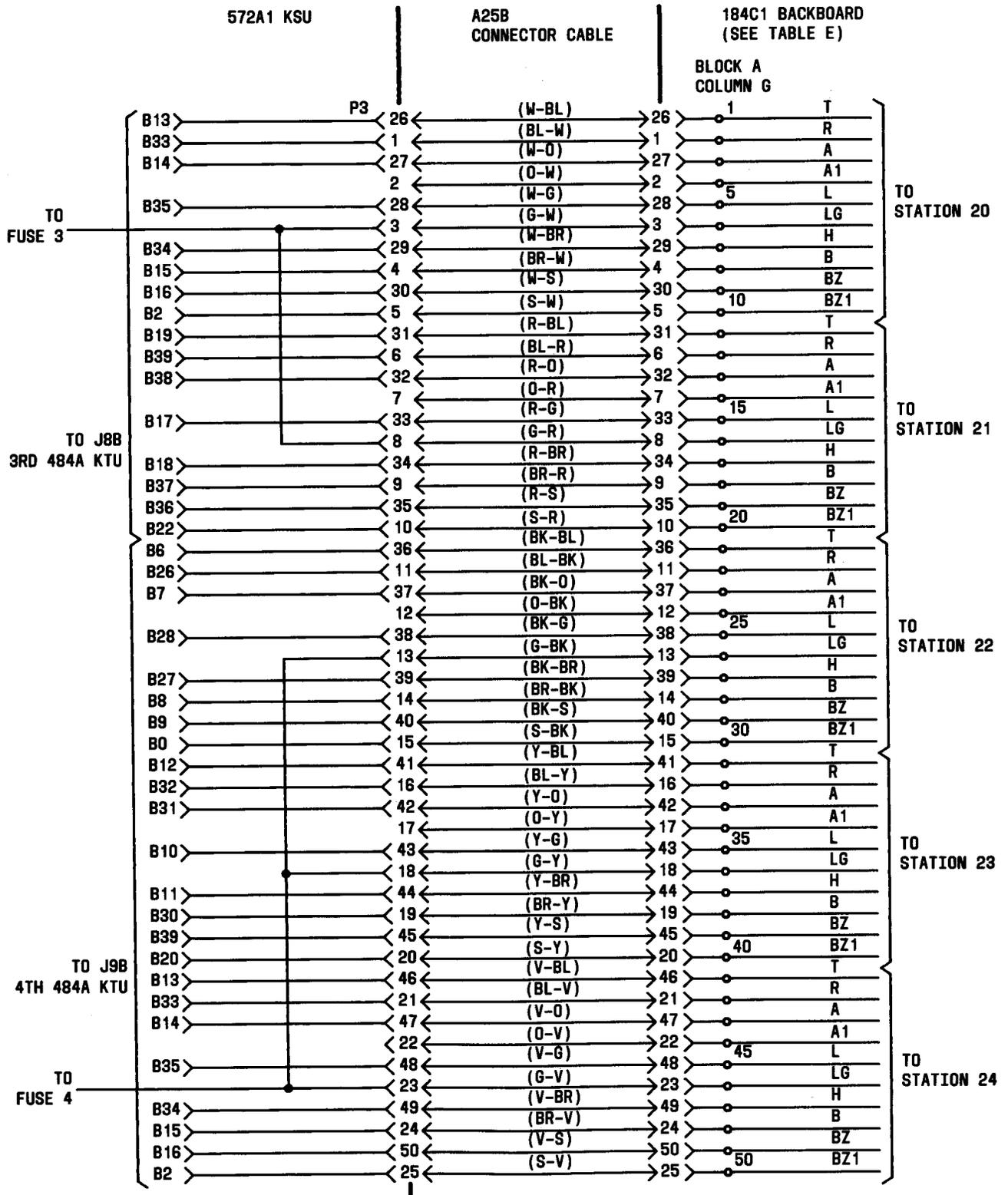


Fig. 36—Connections Between Plugs 12 and 1 to 4 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 4 of 5)

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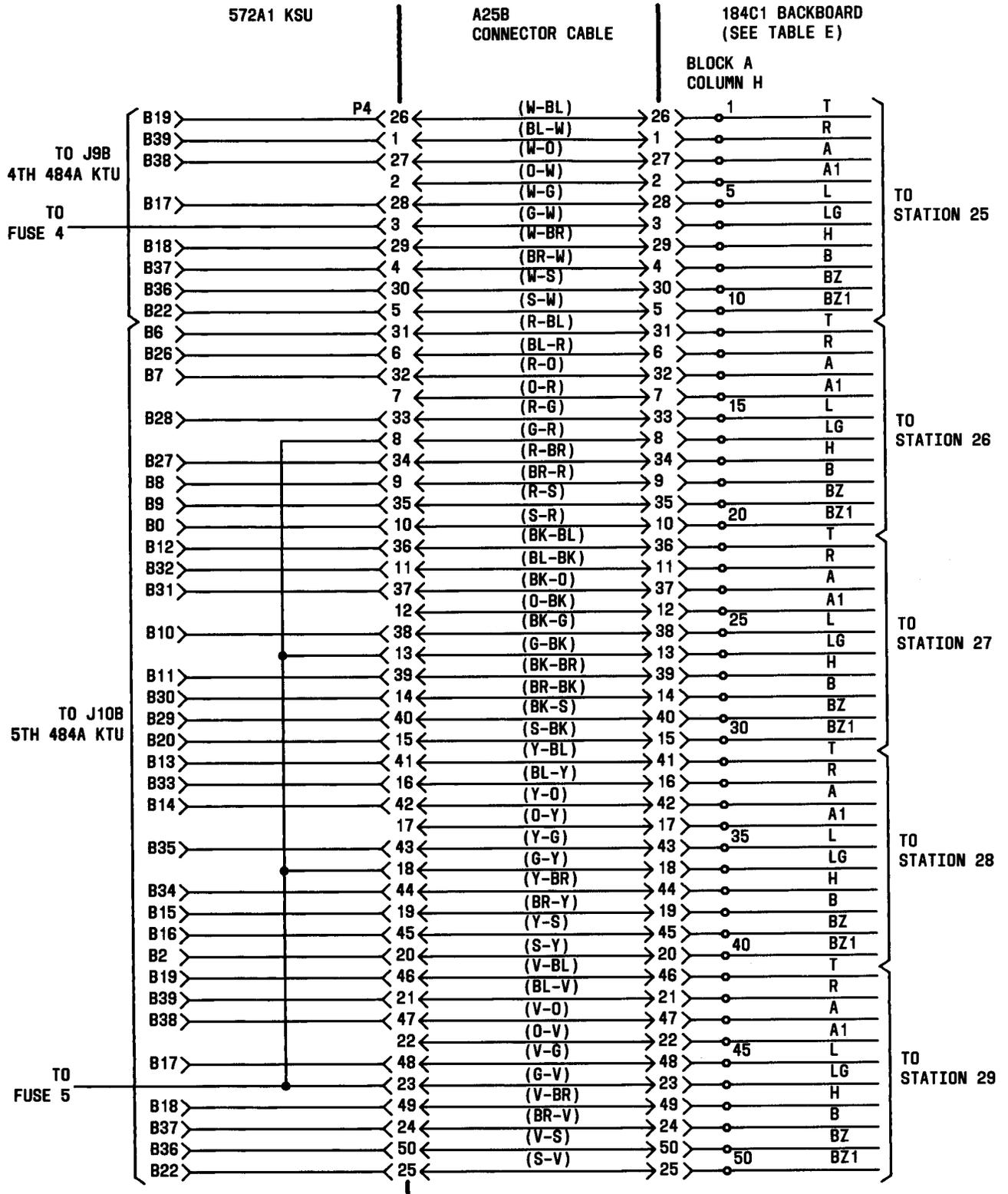


Fig. 36—Connections Between Plugs 12 and 1 to 4 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 5 of 5)

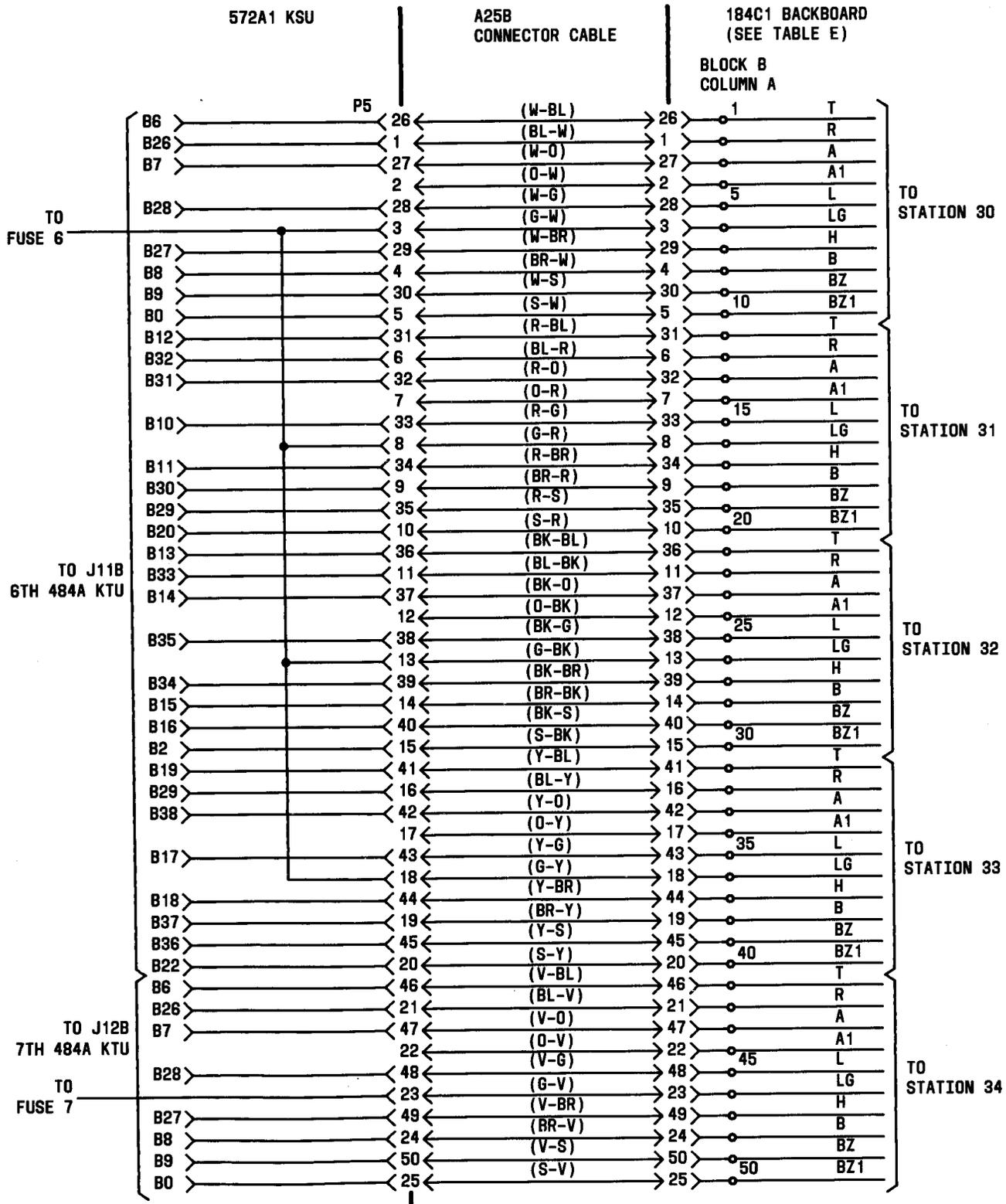


Fig. 37—Connections Between Plugs 5 to 8 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 1 of 4)

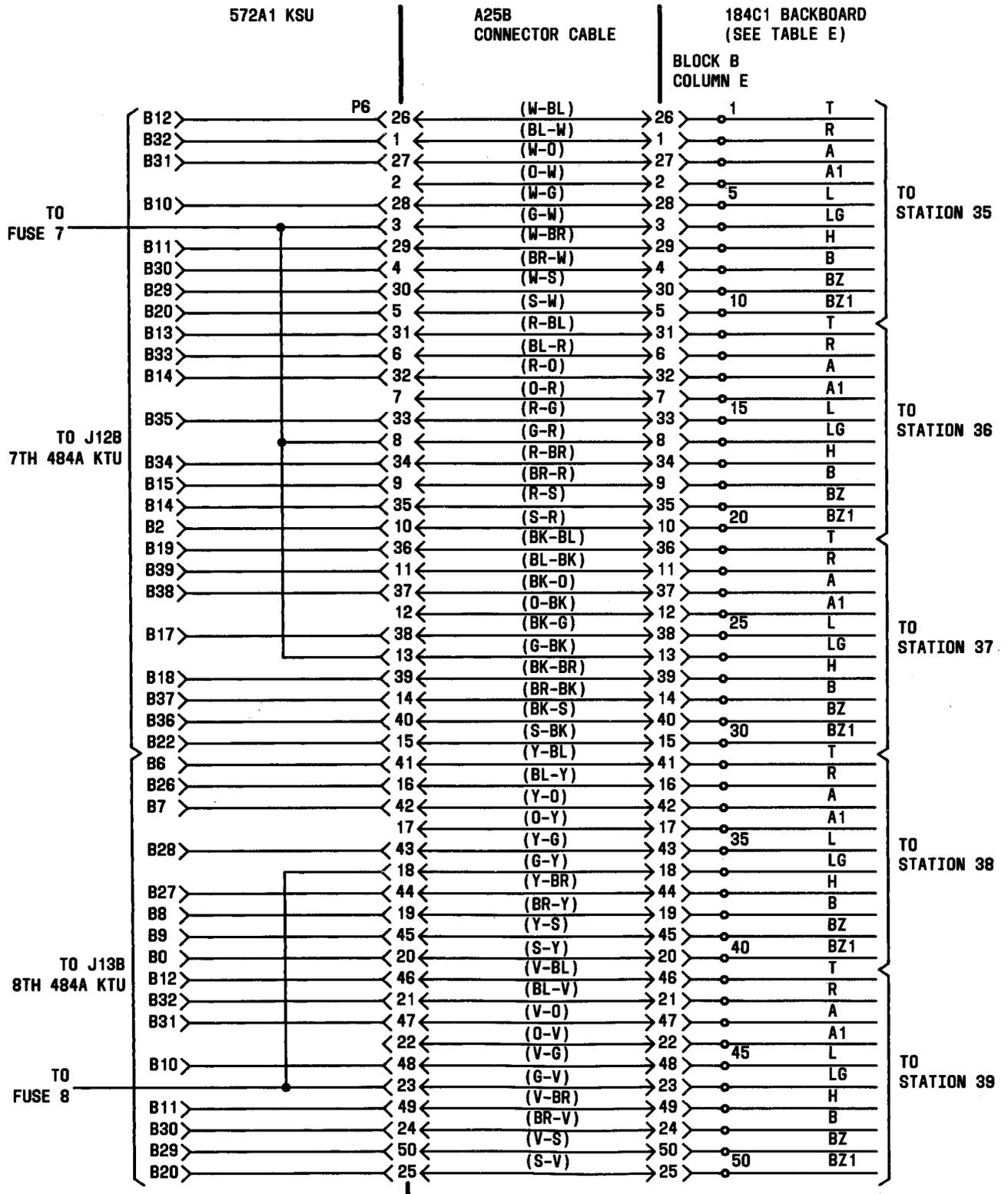


Fig. 37—Connections Between Plugs 5 to 8 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 2 of 4)

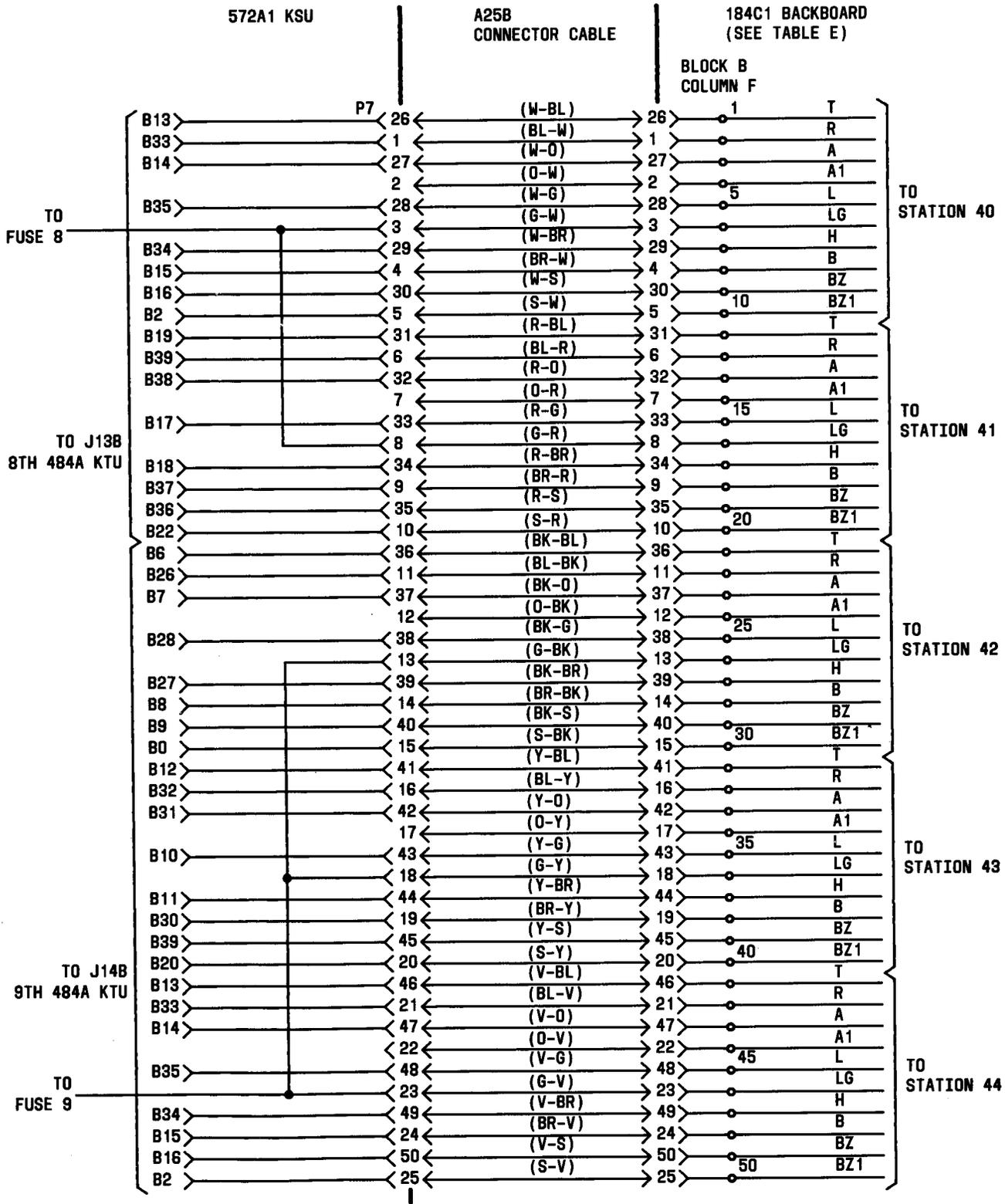


Fig. 37—Connections Between Plugs 5 to 8 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 3 of 4)

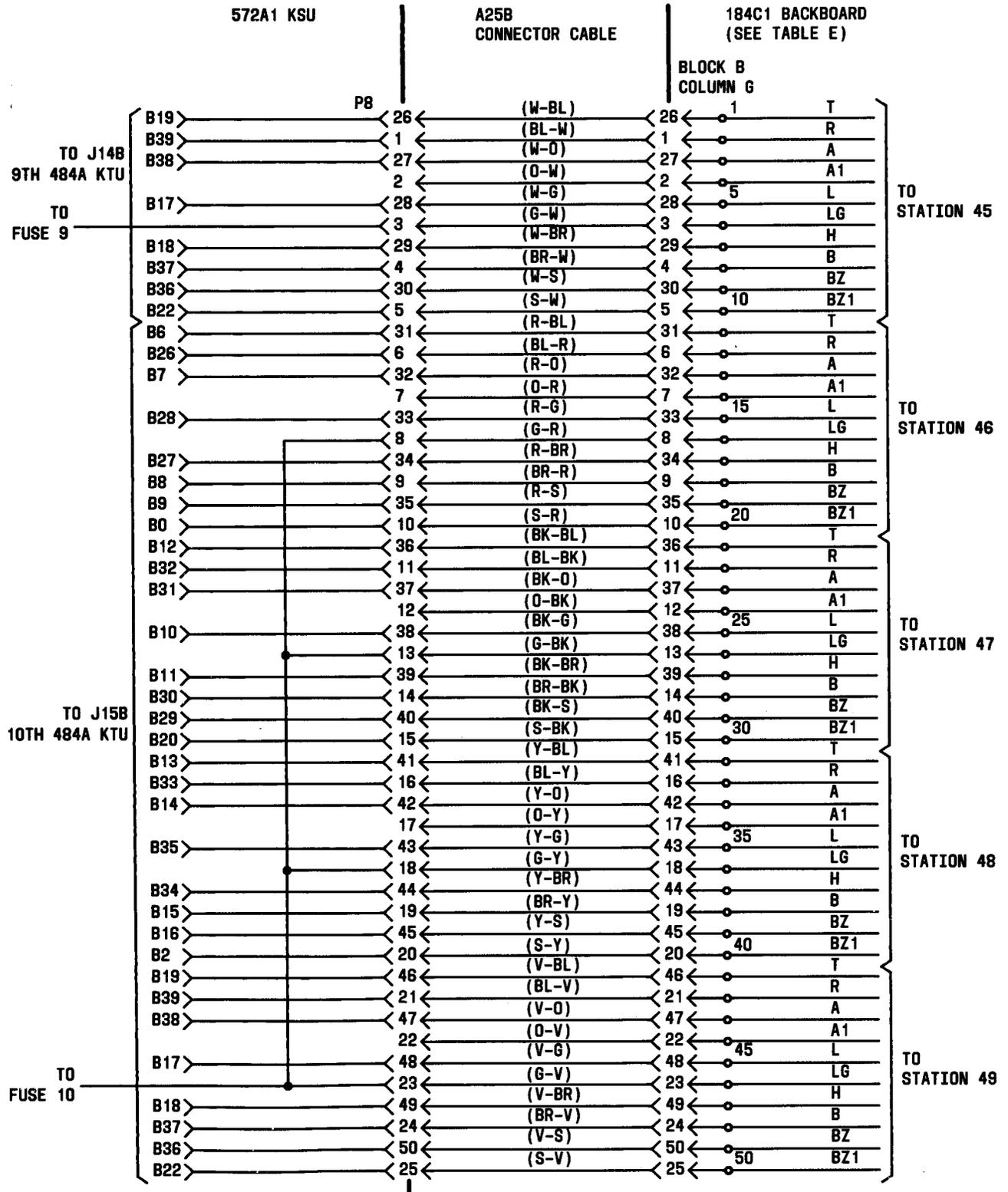


Fig. 37—Connections Between Plugs 5 to 8 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 4 of 4)

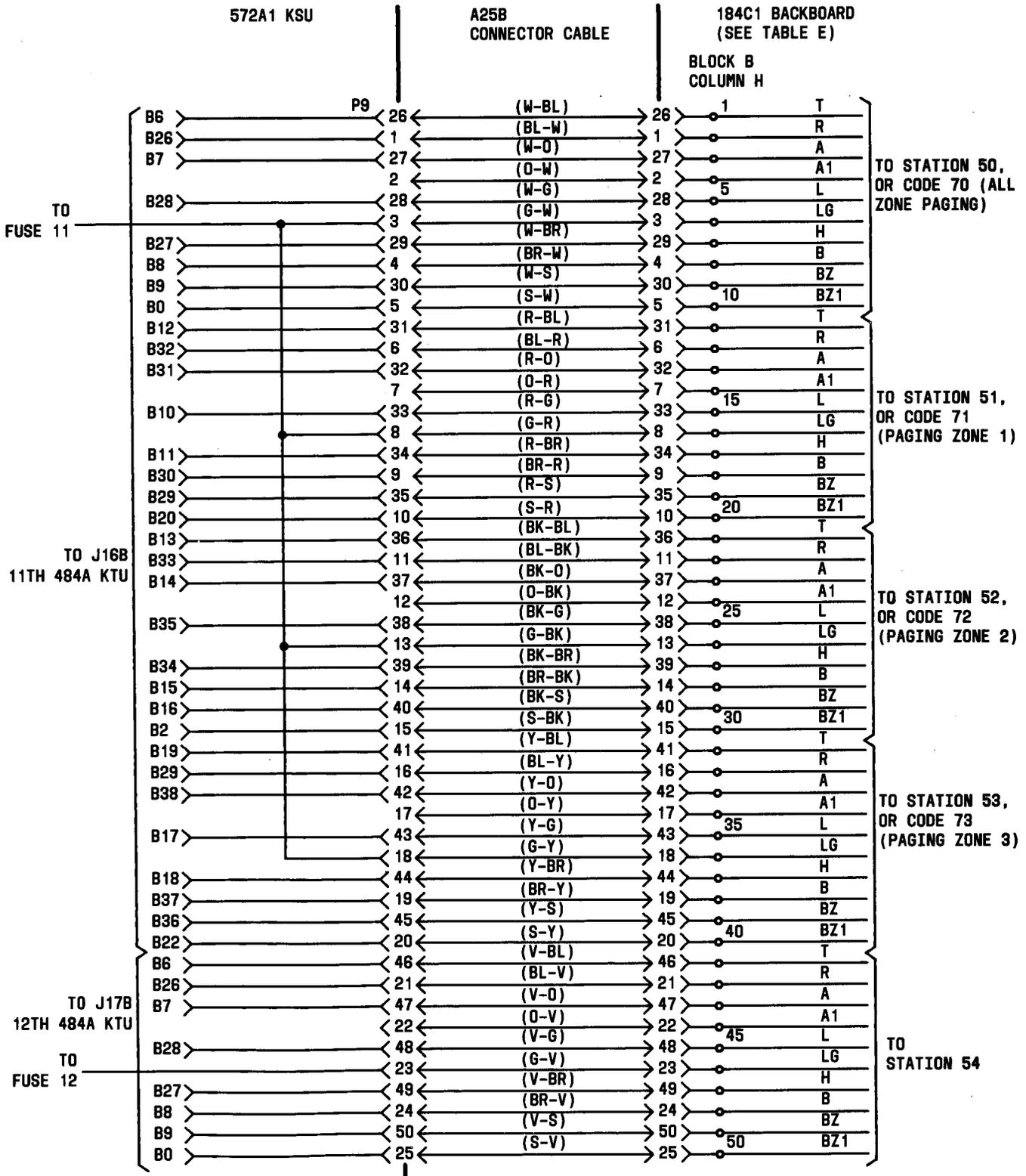


Fig. 38—Connections Between Plugs 9 to 11 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 1 of 3)

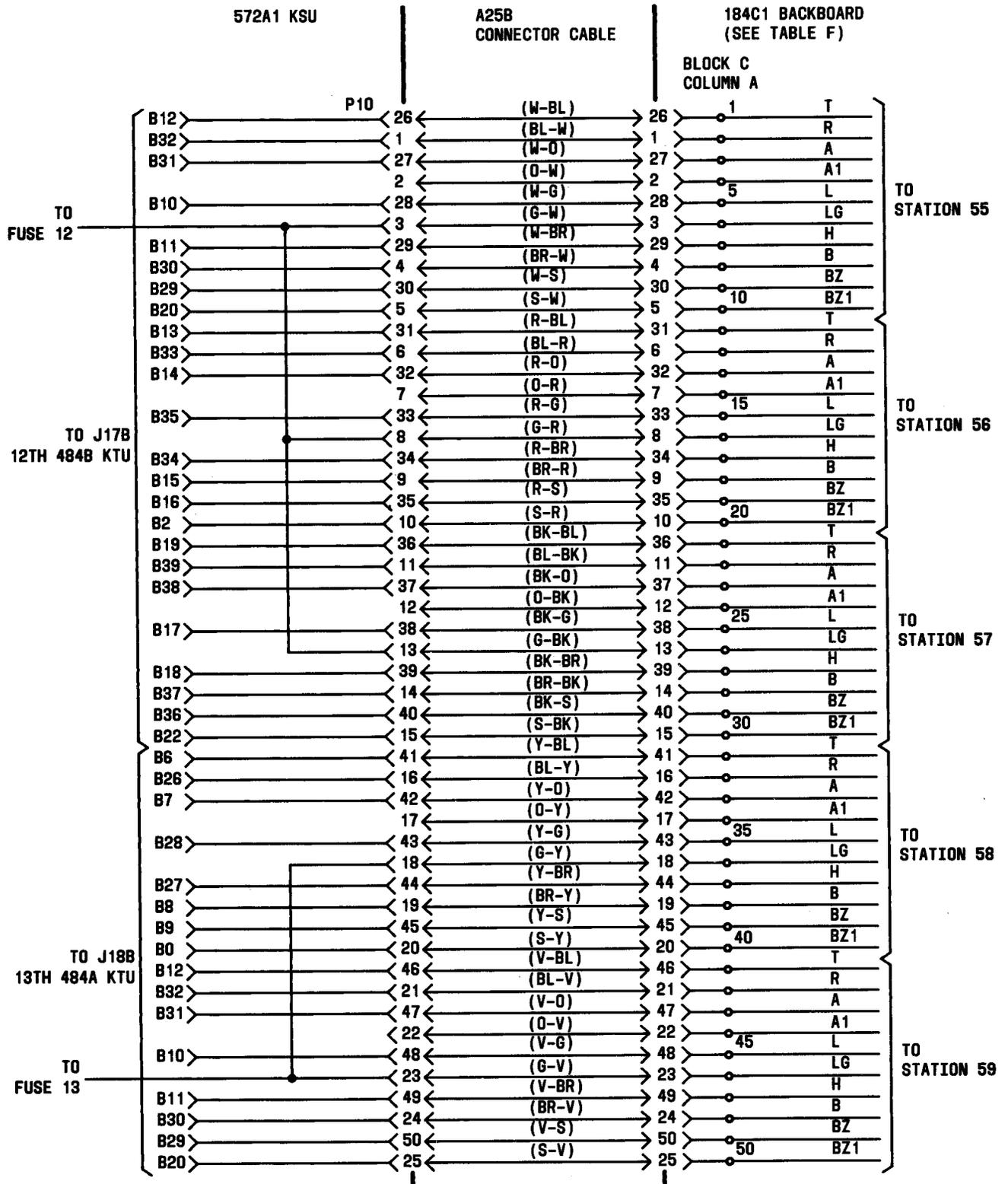


Fig. 38—Connections Between Plugs 9 to 11 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 2 of 3)

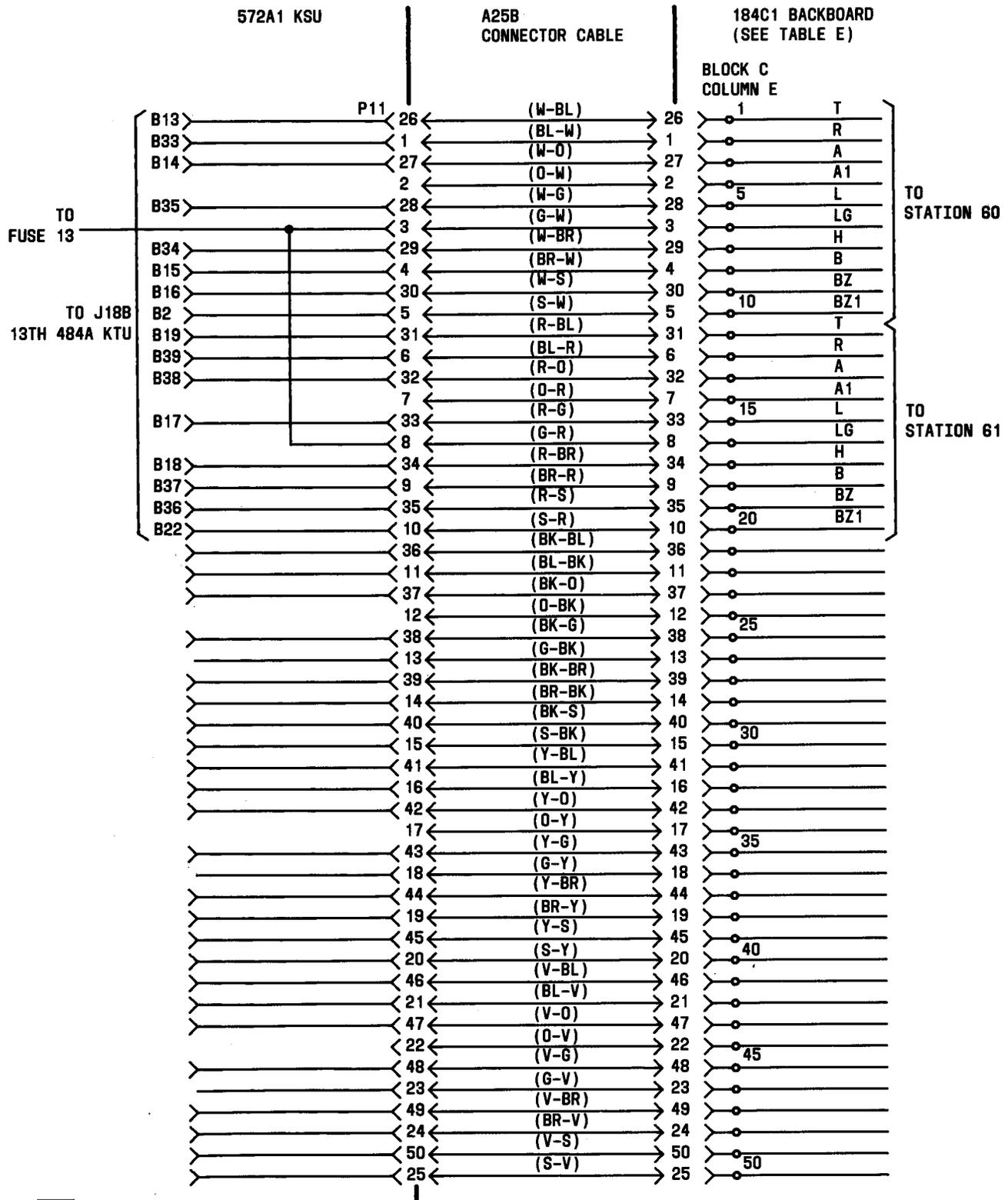
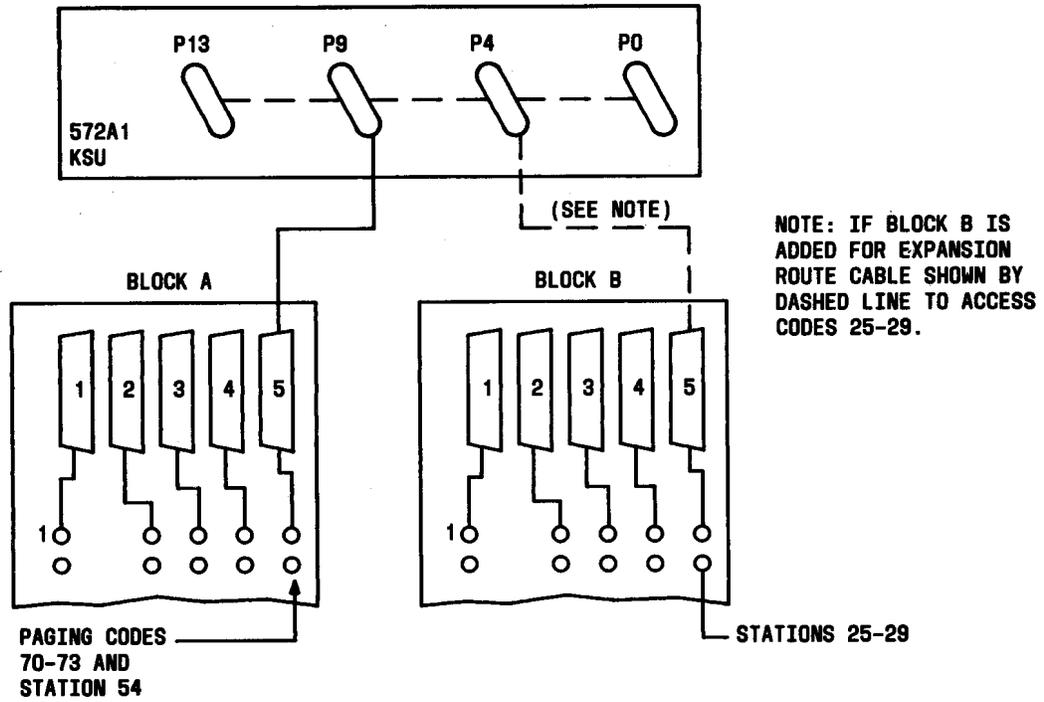
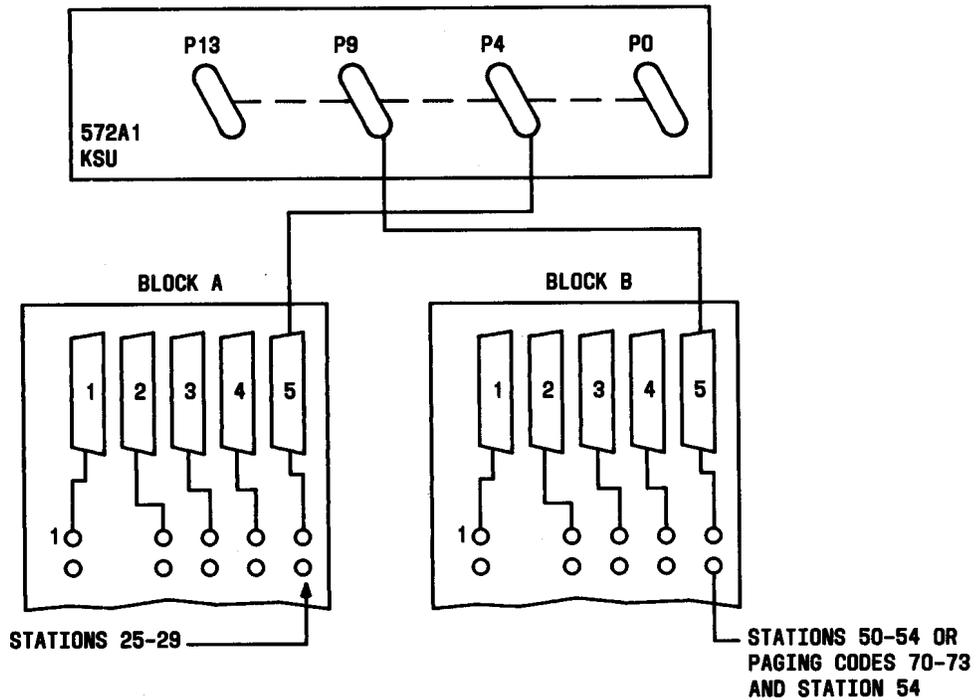


Fig. 38—Connections Between Plugs 9 to 11 of 572A1 Key Service Unit and 184C1 Backboard (Sheet 3 of 3)



A. SMALL SYSTEM USING ONE BLOCK INITIALLY AND HAVING PAGING ACCESS



B. LARGER SYSTEM INITIALLY USING TWO BLOCKS WITH OR WITHOUT PAGING ACCESS

Fig. 39—Cabling Methods When Paging Access is Supplied



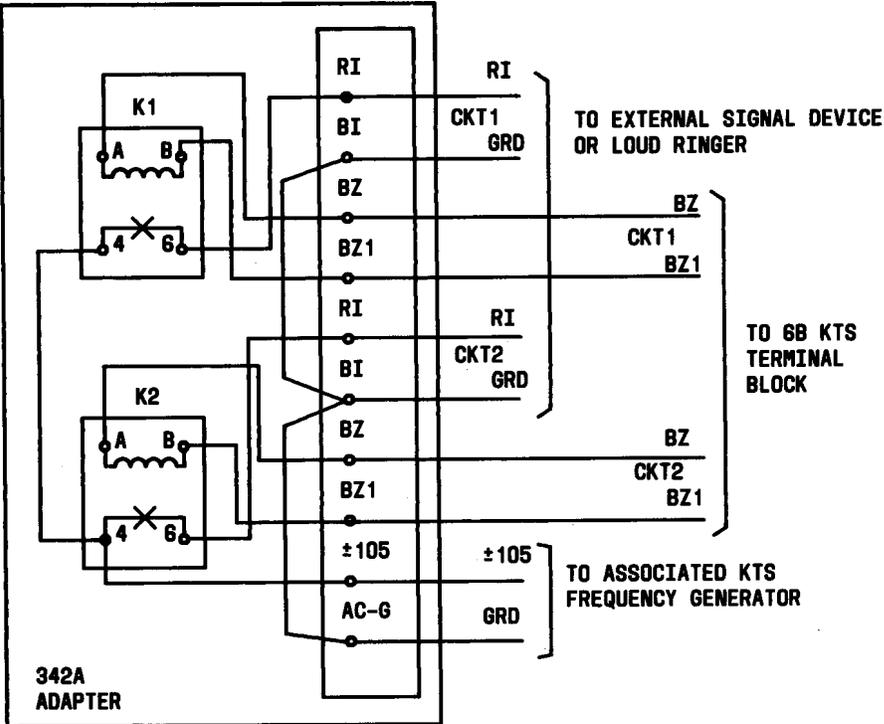


Fig. 41—Connections for External Signal or Loud Ring (324A Adapter)