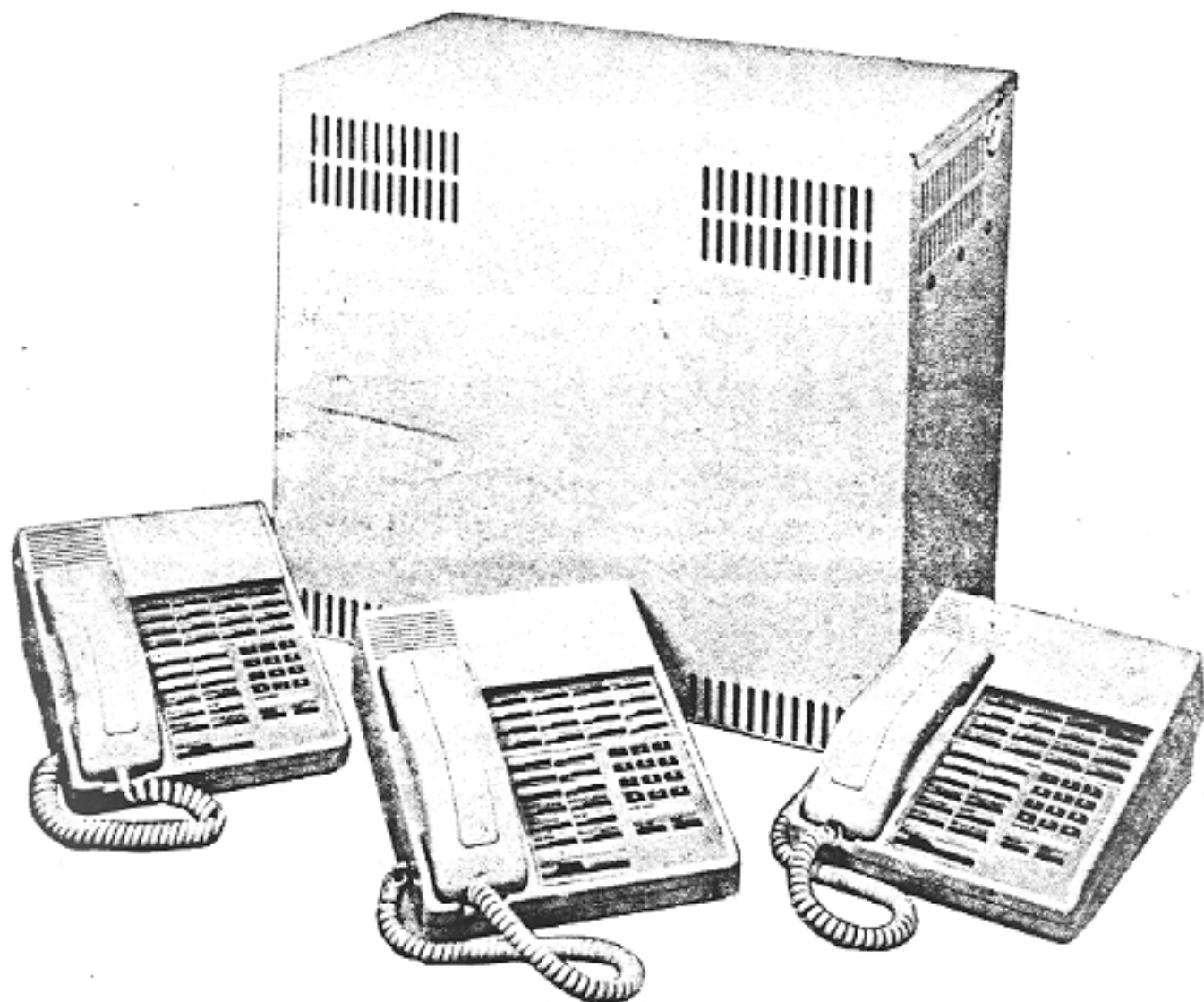

ELECTRONIC KEY TELEPHONE SYSTEMS

VANTAGE 12*

MINI INSTALLATION GUIDE



* VANTAGE 12 is a trademark of Northern
Telecom Limited

Privacy:

"Privacy" is a basic VANTAGE 12 feature which inhibits other telephone sets in the system from accessing a call on the user's telephone set. If a call on an outside line has been placed on hold, control of privacy is transferred to the telephone set which recovers the line from hold. Intercom lines, on telephone sets equipped with an intercom module, are always private.

Privacy Release:

If the user wishes to include another VANTAGE 12 telephone set in the call, pressing the PRIVACY RELEASE button allows one other set to join the line by accessing the appropriate line button. Privacy release may be repeated as many times as required. Control of privacy is always maintained by the set which originally accessed the line. Should this set drop from the call, however, control is transferred to the lowest numbered remaining sets. Note that "privacy release" is not used on intercom calls and that sets equipped with an intercom module may use the "conference call" feature to add other telephone sets to a call.

Recall:

The RECALL button on the telephone sets may be used for any operation which normally requires a hook switch flash operation, e.g. attendant recall in certain PBX systems. Note that the "last number", "stored number" and "convenience dialing" features cannot be used immediately after depressing the RECALL button. The DISCONNECT button must be used first.

Restricted Access On Lines 1 and 2:

If required by the user, any combination of telephone sets may be programmed to be restricted from using lines 1 or 2. A telephone set which is restricted from using these lines receives an overflow tone when attempt is made to access them, and the line cannot be seized. Telephone sets which are restricted from lines 1 or 2 may be invited to join a call established on these lines through use of the "privacy release" feature.

Saved Number Redial:

Each telephone set may store one telephone number (up to 20 digits) by depressing the SAVED NUMBER button after dialing has been completed. The saved number may then be automatically redialed as often as required by depressing the button again, after an idle line button has been depressed. The "saved number" feature operates independently of the "last number redial" and "convenience dialing" features.

Telephone Set Amplification:

VANTAGE 12 users with hearing impairments or who are located in a noisy environment may boost the output level of the handset by 12 dB through a switch setting in the telephone set. The regular handset may then be replaced with a variable gain handset which allows the user to vary the receive output level of the handset.

Telephone Set Mounting:

Telephone sets are basically desk top models but may be mounted on a wall with the addition of a wall-mounting bracket.

Tone On Hold:

The "tone on hold" signal is automatically presented to an outside line when it is placed on hold on a VANTAGE 12 set. The tone consists of two beeps repeated at 8.5-second intervals. The "tone on hold" signal may be replaced by a "music on hold" signal at the user's discretion, or inhibited by placing a dummy plug into the Music on Hold jack.

Visual Indicators:

The VANTAGE 12 telephone sets use Light Emitting Diodes (LED) to indicate the status of special features and of outside and intercom lines. The following special features have LEDs associated with them which are lit when the feature is enabled, or unlit if the feature is disabled:

- SPEAKER button
- DO NOT DISTURB button
- PRIVACY RELEASE button (intercom module)
- VOICE CALL PROHIBIT button (intercom module)
- PAGE button (intercom module)
- STORE button (convenience dialer module)
- ON/OFF button (handsfree unit)

The outside line LED indications for the various states are as follows:

State	LED Indication
a) Idle	Off
b) Ringing	Flashing (1/second)
c) Busy	Continuously on
d) Hold	1) At initiating set: flashing (10/s) 2) At other sets: flashing (2/s)

The intercom line LED indications (on telephone sets equipped with an intercom module) are as follows:

State	LED Indication
a) Idle	Off
b) Busy	1) Self LED-on 2) Called set LED-on
c) Hold	1) Self LED-Off until new line is selected 2) Held Set -Flashing (10/s) on originating LED -Flashing (2/s) on other sets

1. INTRODUCTION

1.01 This concise mini-installation guide may be used to completely install and test a VANTAGE 12 Electronic Key Telephone System. General considerations for installation planning are outlined in 519-1001-200 and detailed installation information is given in 519-1001-210.

System Overview

1.02 VANTAGE 12 is a small business communication system designed for use in applications requiring up to six telephone lines and up to 12 telephone sets. In addition, an intercom facility can be provided on any telephone set. System hardware consists of a Common Equipment Cabinet, electronic telephone sets and add-on option modules for the telephone sets. Cabling consists of two-conductor cable for each Central Office (CO)/PBX line, and a four conductor cable for each telephone set.

General Considerations

1.03 AC Power. The CE cabinet requires a power supply of 115 V ac $\pm 10\%$ (60 Hz $\pm 5\%$). The ac outlet to which the cabinet is to be connected must be a protected socket which is grounded and fused at 15 Amps maximum. The CE cabinet power cord is terminated in a three prong plug and is approximately 7 ft (2 m) long. The CE cabinet must be located close enough to the ac socket to allow the power cord to plug directly into the socket without the need for an extension.

1.04 Grounding. The CE cabinet must be connected to an approved building ground with a 12-14 AWG cable. A grounding lug is provided on the bottom of the cabinet to facilitate the ground connection.

1.05 Environment. The CE cabinet and telephone sets must be installed in a clean atmosphere and dry location. In addition, the equipment should not be in close proximity (4 m or 13 ft) to large electrical machines such as photocopiers or heat sources.

1.06 Cable Lengths. The maximum cable lengths in the VANTAGE 12 system are:

- (a) Telco CO line to CE cabinet (TELADAPT* cord version only): 50 ft (15.2 m) (FCC Rules and Regulations).
- (b) CE cabinet to telephone set (22 AWG): 2600 ft (800 m).
- (c) If CE cabinet to telephone set cable length exceeds 2600 ft (800 m), an OPX module is required at the telephone set location.

1.07 Tools. The following tools are required when installing a VANTAGE 12 system:

- Slot screwdriver
- Wirecutters
- 714 Connecting tool (for 66-block option)
- QT BIX* 16A (for BIX connector option).

* TELEDAPT and BIX are trademarks of Northern Telecom Limited

2. VANTAGE 12 SYSTEM INSTALLATION

**Chart 2-1
UNPACK AND INSPECT EQUIPMENT**

Note: Follow this procedure before beginning the installation to ensure that all items have been received in good order. Report all problems to the supplier.

STEP PROCEDURE

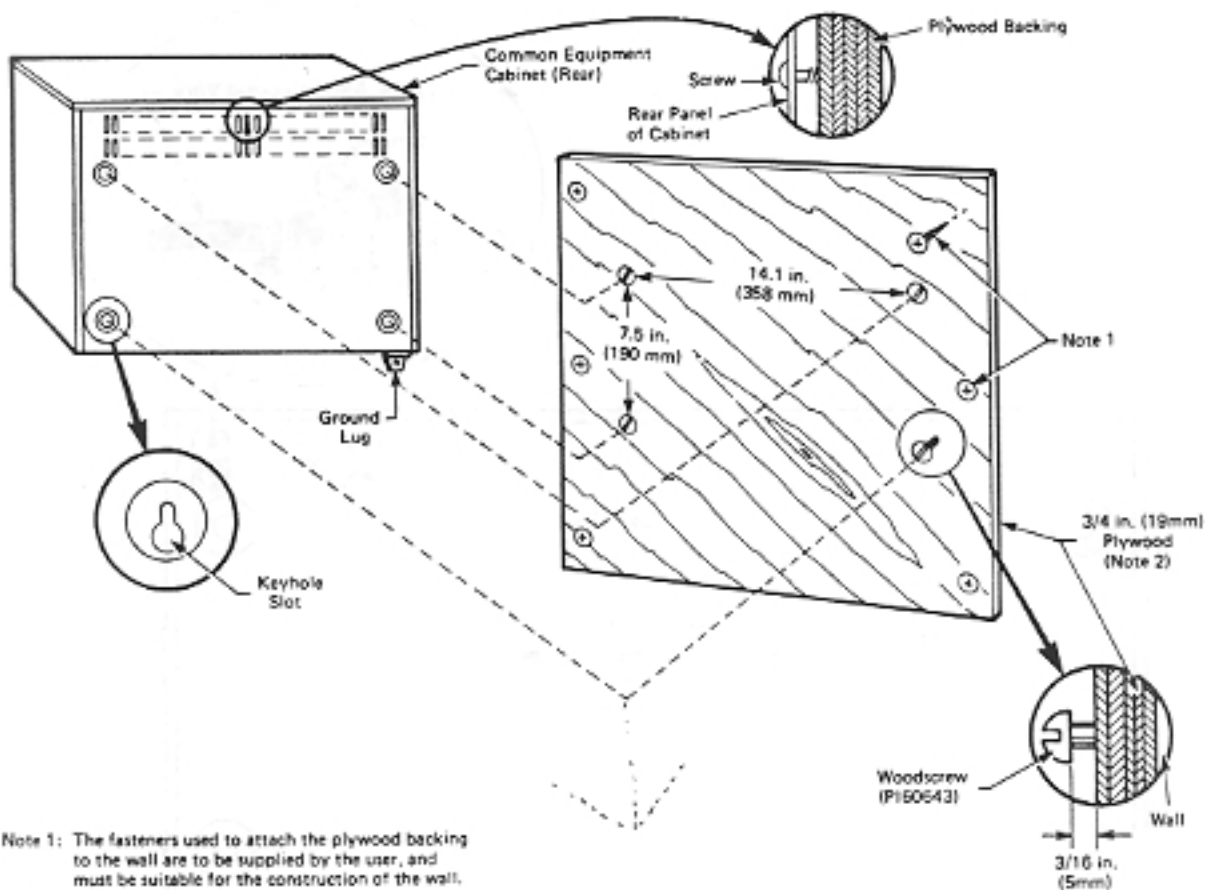
- 1 Check all items received against the shipping order form and the packing slip. Report any errors immediately to the supplier.
 - 2 Open the shipping carton and remove the cabinet. Do not discard the carton until the equipment has been fully installed and tested.
 - 3 Inspect the cabinet for damaged connectors, broken or bent connector pins or any scratches or dents.
 - 4 Remove the power supply from its shipping carton and inspect it for damaged connectors, damaged cords and scratches or dents.
-

Chart 2-2
INSTALL COMMON EQUIPMENT CABINET

Note: The CE cabinet may be installed on the floor or mounted on a wall or in an equipment rack. Two 25-pair multi-pin connectors are provided to facilitate connection to the CO/PBX lines and the telephone sets. If alternate connection arrangements are required, a BIX, 66-Block or TELADAPT connector adapter may be installed in the CE cabinet.

STEP PROCEDURE

- 1 Remove CE cabinet cover (remove the four screws which secure the cover and pull the cover off). Place the CE cabinet into its location. If required, mount the cabinet onto the wall (using the template provided to mark the screw holes) or into the equipment rack (Fig. 2-1).
- 2 Connect a 12-14 AWG copper cable between the grounding screw on the bottom of the cabinet (Fig. 2-2) and an approved electrical ground.
- 3 If required, install a connector adapter (Fig. 2-3) as follows:
 - (a) Insert the two self-tapping screws (supplied) through the pre-drilled holes located in the connector adapter mounting plate.
 - (b) Place the connector adapter into the proper position by aligning the screws with the holes in the CE cabinet frame (Fig. 2-3), then tighten the screws to secure the connector adapter to the cabinet.
 - (c) Connect the 25-pair cable assembly located on the left side of the connector adapter to the 25-pair connector located at the top left corner of the CE cabinet printed circuit board.
 - (d) Connect the 25-pair cable assembly located on the right side of the connector adapter to the 25-pair connector located at the top right corner of the CE cabinet printed circuit board.
- 4 To install the power supply:
 - (a) Remove the wiring grommet from the power cord exit hole located on the bottom of the CE cabinet (Fig. 2-2).
 - (b) Route the power supply power cord through the front of the CE cabinet (power supply circuit pack slot) and out through the exit hole.
 - (c) Slip the wiring grommet over the power cord plug and replace it in the exit hole to protect the cord.
 - (d) Place the power supply into the power supply slot while pulling the slack out of the power cord from the bottom of the cabinet.
 - (e) Push the power supply all the way into the slot until it stops, then secure the power supply with the screw provided.
 - (f) Ensure that the power switch is OFF. Do not plug the power cord into the ac receptacle at this time.



Note 1: The fasteners used to attach the plywood backing to the wall are to be supplied by the user, and must be suitable for the construction of the wall.

Note 2: The plywood backing used to mount the cabinet to the wall is supplied by the user.

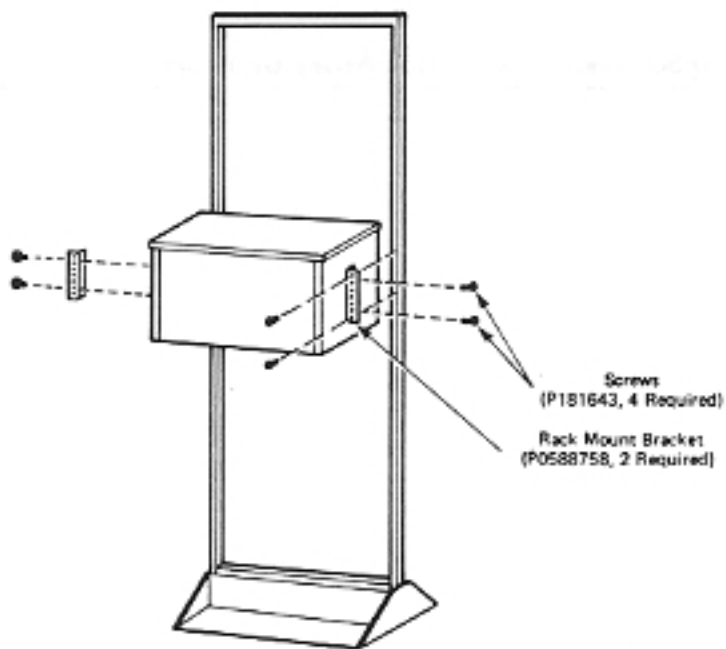


Fig. 2-1
Installing CE Cabinet

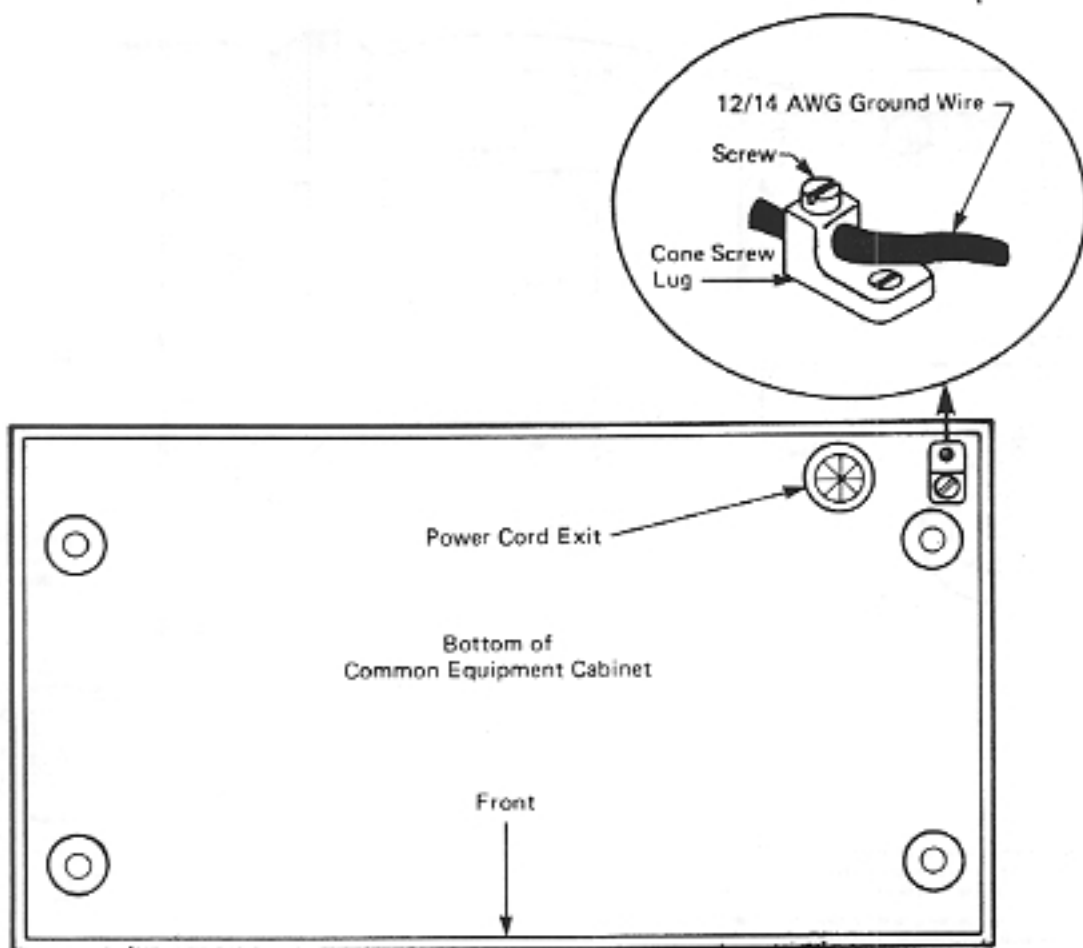


Fig. 2-2
Location of Grounding Screw and Power Cord Wiring Grommet

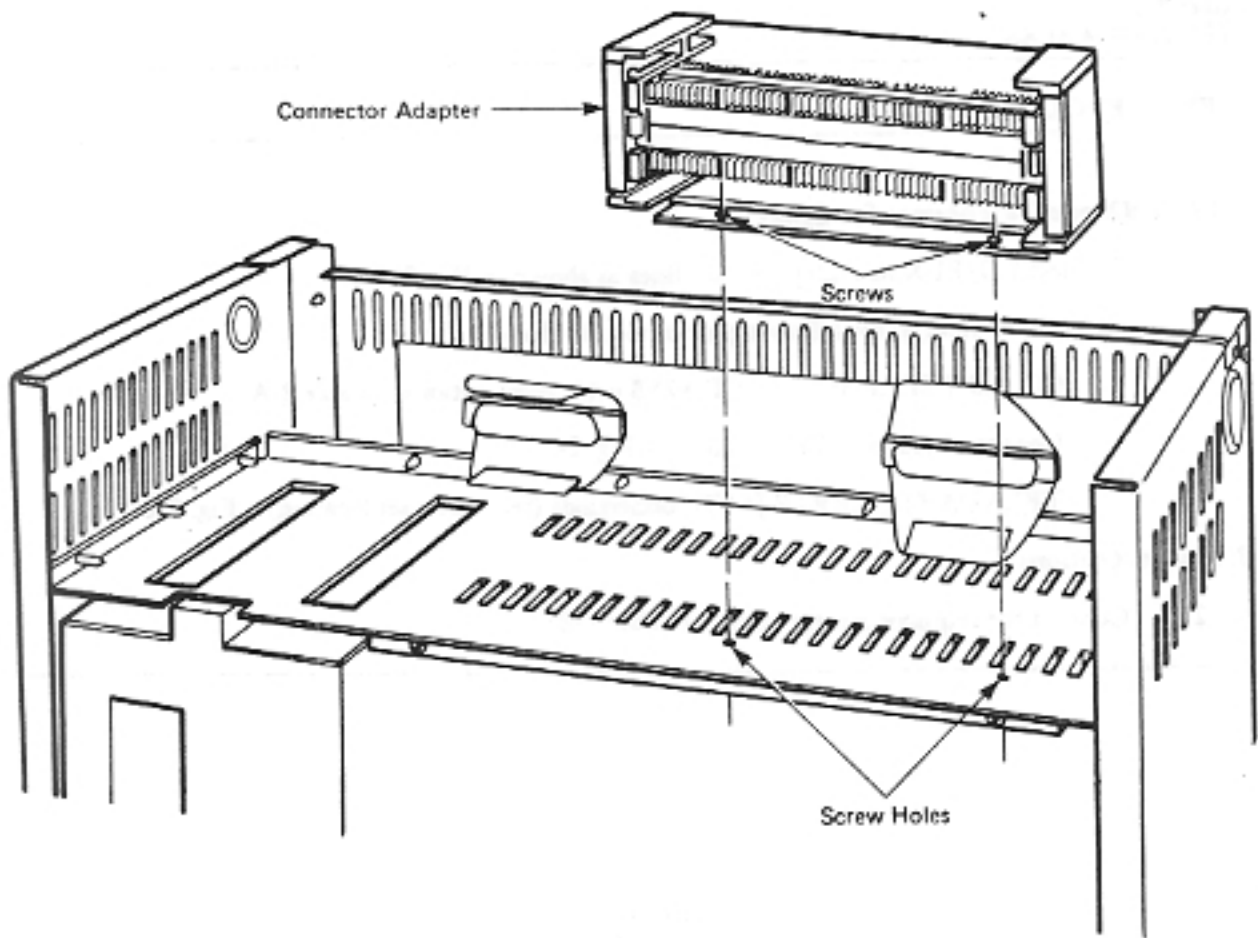


Fig. 2-3
Installing Connector Adapter

Chart 2-3
INSTALL CABLES

STEP PROCEDURE

A. CO/PBX and Telephones Set Lines

- 1 Connect CO/PBX and telephone set lines as shown in Fig. 2-4.

Note: refer to the following for connection information:

CO and TELEPHONE SET A25B cable terminations – Table 2-A

Connector Adapter Terminations – Fig. 2-5

TELADAPT (USOC RJ14C) connections (telephone set location) – Fig. 2-6.

B. System Options

- 2 Connect the required system options (Table 2-B).

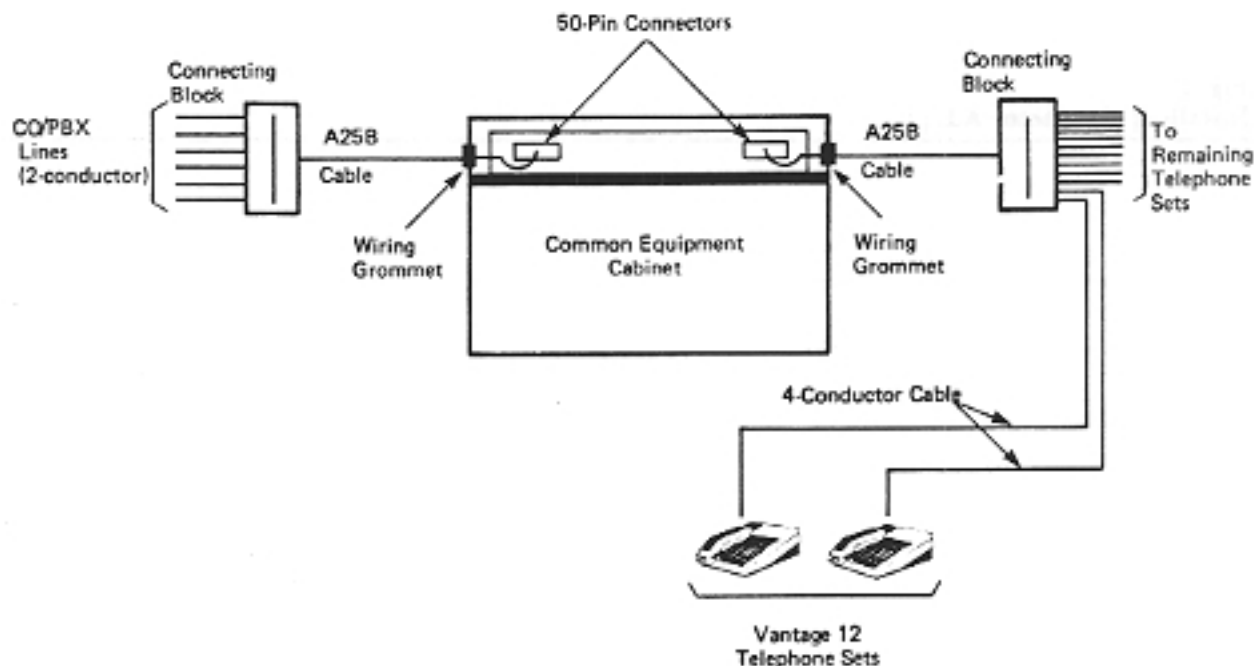


Fig. 2-4
CO/PBX and Telephone Line Connections

Table 2-A
A25B CABLE TERMINATIONS

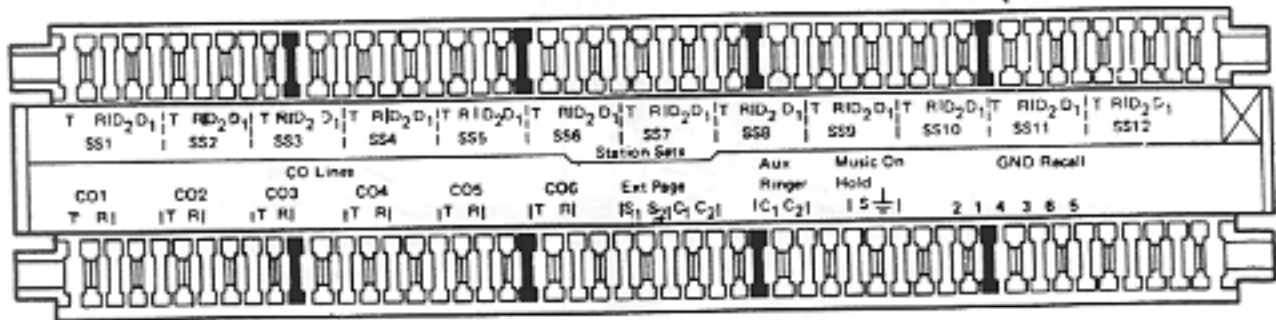
LEFT-HAND PLUG (CO)					RIGHT-HAND PLUG (Station Set)				
FEATURE	PAIR NO.	LEAD DESIGNTN	PAIR COLOR	PIN NO.	FEATURE	PAIR NO.	LEAD DESIGNTN	PAIR COLOR	PIN NO.
CO/PBX 1	1T	T	W-BL	26	TEL SET NO. 1	1T	T	W-BL	26
	R	R	BL-W	1		R	R	BL-W	1
	2T		W-O	27		2T	DATA 1	W-O	27
	R		O-W	2		R	DATA 2	O-W	2
CO/PBX 2	3T	T	W-G	28	TEL SET NO. 2	3T	T	W-G	28
	R	R	G-W	3		R	R	G-W	3
	4T		W-BR	29		4T	DATA 1	W-BR	29
	R		BR-W	4		R	DATA 2	BR-W	4
CO/PBX 3	5T	T	W-S	30	TEL SET NO. 3	5T	T	W-S	30
	R	R	S-W	5		R	R	S-W	5
	6T		R-BL	31		6T	DATA 1	R-BL	31
	R		BL-R	6		R	DATA 2	BL-R	6
CO/PBX 4	7T	T	R-O	32	TEL SET NO. 4	7T	T	R-O	32
	R	R	O-R	7		R	R	O-R	7
	8T		R-G	33		8T	DATA 1	R-G	33
	R		G-R	8		R	DATA 2	G-R	8
CO/PBX 5	9T	T	R-BR	34	TEL SET NO. 5	9T	T	R-BR	34
	R	R	BR-R	9		R	R	BR-R	9
	10T		R-S	35		10T	DATA 1	R-S	35
	R		S-R	10		R	DATA 2	S-R	10
CO/PBX 6	11T	T	BK-BL	36	TEL SET NO. 6	11T	T	BK-BL	36
	R	R	BL-BK	11		R	R	BL-BK	11
	12T		BK-O	37		12T	DATA 1	BK-O	37
	R		O-BK	12		R	DATA 2	O-BK	12
EXTERNAL PAGING	13T	SIGNAL	BK-G	38	TEL SET NO. 7	13T	T	BK-G	38
	R	SIGNAL	G-BK	13		R	R	G-BK	13
	14T	CONTROL	BK-BR	39		14T	DATA 1	BK-BR	39
	R	CONTROL	BR-BK	14		R	DATA 2	BR-BK	14
AUXILIARY RINGING	15T		BK-S	40	TEL SET NO. 8	15T	T	BK-S	40
	R		S-BK	15		R	R	S-BK	15
	16T	CONTROL	Y-BL	41		16T	DATA 1	Y-BL	41
	R	CONTROL	BL-Y	16		R	DATA 2	BL-Y	16
MUSIC ON HOLD	17T		Y-O	42	TEL SET NO. 9	17T	T	Y-O	42
	R		O-Y	17		R	R	O-Y	17
	18T	SIGNAL	Y-G	43		18T	DATA 1	Y-G	43
	R	SIGNAL	G-Y	18		R	DATA 2	G-Y	18

Table continued

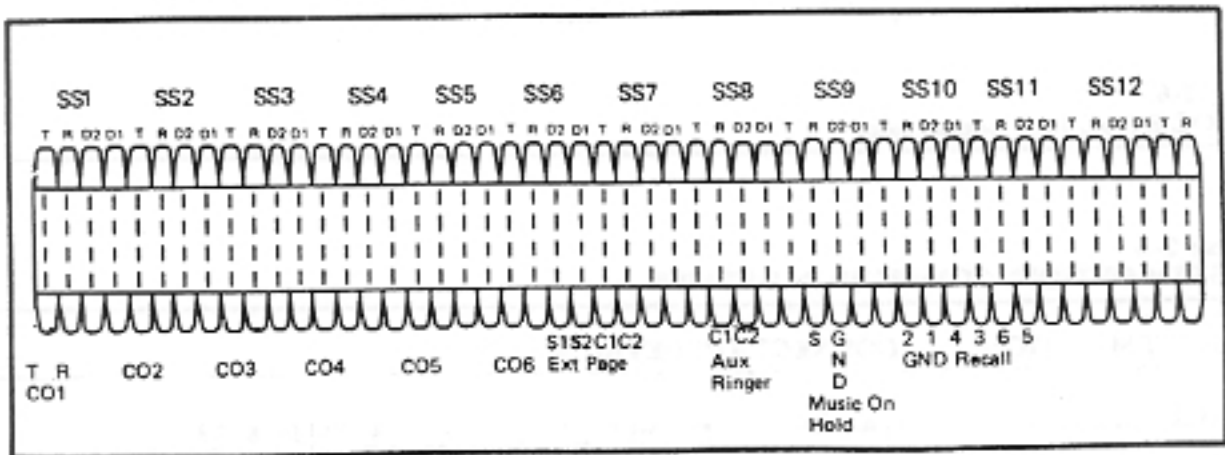
Table 2-A Continued
A25B CABLE TERMINATIONS

LEFT-HAND PLUG (CO)					RIGHT-HAND PLUG (Station Set)				
FEATURE	PAIR NO.	LEAD DESIGNTN	PAIR COLOR	PIN NO.	FEATURE	PAIR NO.	LEAD DESIGNTN	PAIR COLOR	PIN NO.
GROUND	19T		Y-BR	44	TEL SET NO. 10	19T	T	Y-BR	44
	R		BR-Y	19		R	R	BR-Y	19
	20T	GND RECALL	Y-S	45		20T	DATA 1	Y-S	45
	R	GND RECALL	S-Y	20		R	DATA 2	S-Y	20
GROUND	21T	GND RECALL	V-BL	46	TEL SET NO. 11	21T	T	V-BL	46
	R	GND RECALL	BL-V	21		R	R	BL-V	21
	22T	GND RECALL	V-O	47		22T	DATA 1	V-O	47
	R	GND RECALL	O-V	22		R	DATA 2	O-V	22
	23T		V-G	48	TEL SET NO. 12	23T	T	V-G	48
	R		G-V	23		R	R	G-V	23
	24T		V-BR	49		24T	DATA 1	V-BR	49
	R		BR-V	24		R	DATA 2	BR-V	24
	25T		V-S	50		25T		V-S	50
	R		S-V	25		R		S-V	25

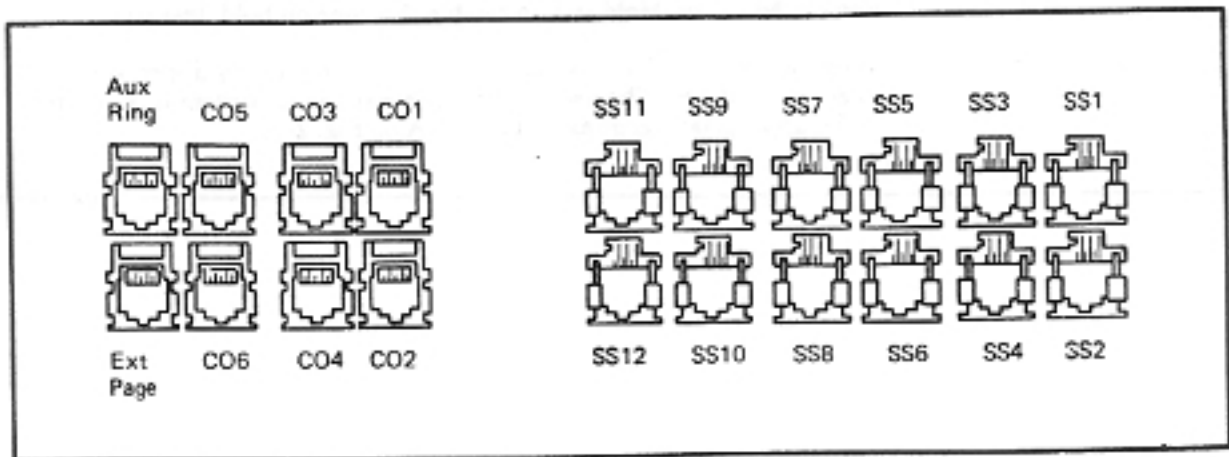
GRD



A. Connections, BIX Connecting Block Module (NTOB 1302)



B. Connections, 66 Type Connecting Block Module (NTOB 1303)



C. Connections, Teladapt Connecting Block Module (NTOB 1304)

Fig. 2-5
Connector Adapter Connections

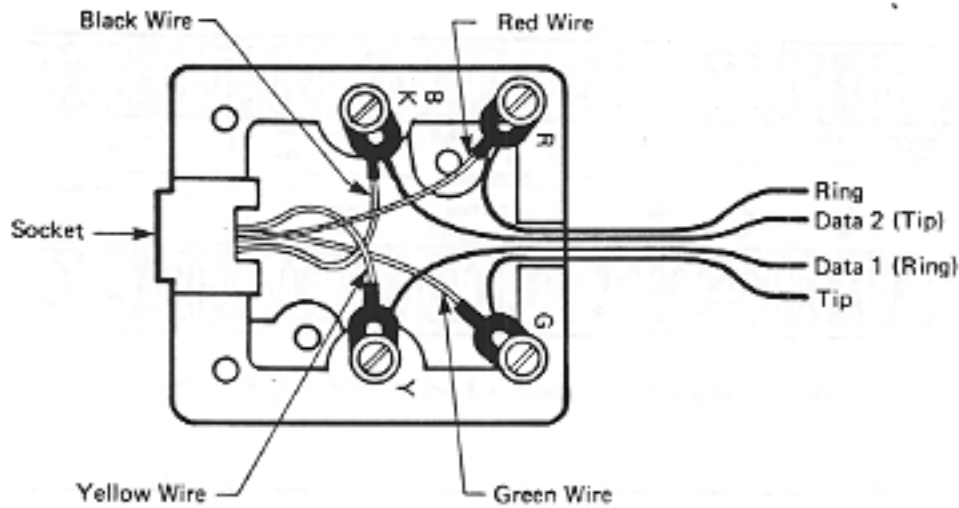


Fig. 2-6
USOC RJ14C Jack Connections

Table 2-B
SYSTEM OPTIONS CONNECTION DETAILS

SYSTEM OPTION	CONNECTION DETAILS
Music on Hold	<p>This feature is activated by the presence of a mini plug (e.g., Switchcraft 750) in the MUSIC ON HOLD jack located on the backplane. Connect the cable from the music source either to the mini plug, or to the appropriate connector terminals (Table 2-A, or Fig. 2-5).</p> <p>Note: If the connection is made at the 25-pair connector or on the connector-adapter module (if installed), a dummy plug must be inserted into the Music on Hold jack to disable the 'tone on hold' feature.</p>
External Paging	<p>This feature is used only when the telephone sets are equipped with intercom modules. The user-owned external paging system is connected to the appropriate terminals (Table 2-A or Fig. 2-5).</p>

Table continued

Table 2-B Continued
 SYSTEM OPTIONS CONNECTION DETAILS

SYSTEM OPTIONS CONNECTION DETAILS

If the TELADAPT connector adapter is being used, the paging signal appears on pins 3 (red) and 4 (green) and the control leads are pins 2 (yellow) and 5 (black) of the TELADAPT jack. The control leads are across relay contacts which close when the paging system is used. The current on the control leads must not exceed 50mA.

The NTOB42AB switch matrix must be used with the NTOB47 Controller to allow the control relay to operate correctly.

Note: While the NTOB42AB switch matrix can be used with the older vintage UART and CPU cards, the paging control signal cannot be used.

Auxiliary Ringing

The user-owned ring generator is connected to the appropriate connector terminals (Table 2-A, Fig. 2-5). The VANTAGE 12 control signal used to activate the auxiliary ringer is a Form A relay contact closure between the appropriate terminals (pins 3 (red) and 4 (green) on the corresponding TELADAPT jack, if used). The relay contacts close whenever a ring signal is detected on a line card which has been programmed to alert the common auxiliary ringer. The maximum current carrying capability of the relay contacts is 50 mA, therefore this relay must not be used to directly switch the power for the auxiliary ringer on or off. This relay may be used to drive a slave relay located in the auxiliary ringer apparatus to control the power.

Off Premise Extension (OPX) Module

The OPX module is used on telephone set lines which are greater than 2600 ft (800 m) in length (22 AWG) between the CE cabinet and the telephone set location. The OPX module must be located at the telephone set location, and cannot be used with Emergency Transfer telephone sets. Refer to the information provided with the OPX module for installation details.

Chart 2-4
INSTALL CIRCUIT CARDS AND SET SWITCH OPTIONS

STEP PROCEDURE

- 1 Ensure that the power supply switch is in the OFF position.
 - 2 Unpack circuit cards. Prior to handling the circuit cards, note:
 - (a) The installer must touch the metal frame of the CE cabinet (or use a grounding wrist strap) to discharge any build up of static electricity.
 - (b) Do not handle or unpack the circuit cards near large electrical machines such as photocopiers.
 - (c) Handle the circuit cards by the latches or the edges of the card. Do not touch the circuit card components or wiring.
 - (d) Circuit cards should not be inserted or removed from the CE cabinet unnecessarily. In addition, take care not to drop or jar the card.
 - (e) When not in use, store the circuit cards in their anti-static bags and shipping containers.
 - 3 On each line card, set the switches (Fig. 2-7) as required (Table 2-C) then insert the card into the appropriate CE cabinet slot (LC1 to LC6).
 - 4 Insert the switch matrix circuit card into the SM slot in the CE cabinet.
 - 5 On the controller card:
 - (a) Set the option switches (Fig. 2-7) according to Tables 2-D, 2-E and 2-F.
 - (b) Insert the controller card into the UART/CONTROLLER slot of the CE cabinet.
 - 6 If a convenience dialer circuit card (NTOB45AA, BA or CA) is provided, set switch S1 on the card (Fig. 2-7) to the ON position then insert the card into the SP slot in the CE cabinet.
-

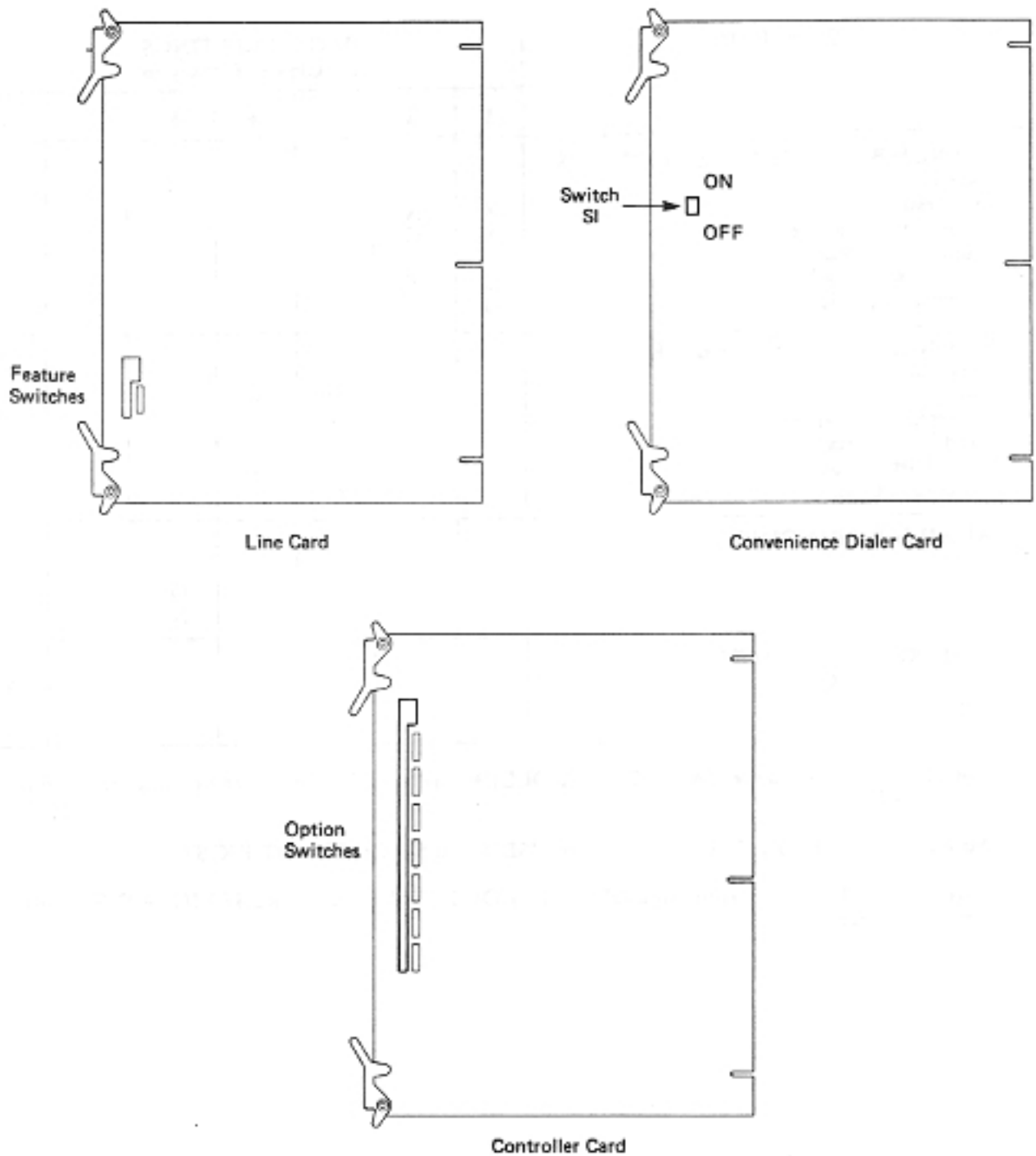


Fig. 2-7
Location of Switches on Circuit Cards

Table 2-C
LINE CARD SWITCH SETTINGS

FUNCTION	SWITCH SETTINGS (X = Closed, O = Open)						
	1	2	3	4	5	6	7
ODD NUMBERED SET RESTRICTIONS (Notes 1 and 3) No Restrictions Directory Assistance and Long Distance Long Distance only All outgoing calls	X X O O	X O X O					
EVEN NUMBERED SET RESTRICTIONS (Notes 1 and 3) No Restrictions Directory Assistance and Long Distance Long Distance only All outgoing calls			X X O O	X O X O			
AUXILIARY RINGING ON OFF					O X		
EMERGENCY TRANSFER LINE CARD ONLY (Note 2)						X	X

Note 1: Switch 38 on the UART/CONTROLLER card must be closed if any dialing restrictions are to be selected.

Note 2: On the regular line card, S-6 is not USED, and S-7 DOES NOT EXIST.

Note 3: The RECALL feature is inhibited if the OUTGOING CALL RESTRICTIONS feature is selected (Feature on).

Table 2-D
CONTROLLER CARD SWITCH SETTINGS FOR
'LINE 1, 2 RESTRICTED ACCESS' FEATURE

VANTAGE 12 TELEPHONE SET NO.	LINE 1 SWITCH NUMBER												LINE 2 SWITCH NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 RESTRICT	X												X											
1 ALLOW	O												O											
2 RESTRICT		X												X										
2 ALLOW		O												O										
3 RESTRICT			X												X									
3 ALLOW			O												O									
4 RESTRICT				X												X								
4 ALLOW				O												O								
5 RESTRICT					X												X							
5 ALLOW					O												O							
6 RESTRICT						X												X						
6 ALLOW						O												O						
7 RESTRICT							X												X					
7 ALLOW							O												O					
8 RESTRICT								X												X				
8 ALLOW								O												O				
9 RESTRICT									X												X			
9 ALLOW									O												O			
10 RESTRICT										X												X		
10 ALLOW										O												O		
11 RESTRICT											X												X	
11 ALLOW											O												O	
12 RESTRICT												X												X
12 ALLOW												O												O

Note: Switch 39 on the UART/Controller card must be closed (X) if 'Line 1, 2 restricted Access' feature is selected.

Table 2-E
 CONTROLLER CARD SWITCH SETTINGS FOR 5 SECOND
 AUTOMATIC DISCONNECT FEATURE

5-SECOND AUTOMATIC DISCONNECT FEATURE (Note)		SWITCH SETTINGS (X = Closed, O = Open)					
		25	26	27	28	29	30
OUTSIDE LINE 1	ENABLE	X					
	DISABLE	O					
OUTSIDE LINE 2	ENABLE		X				
	DISABLE		O				
OUTSIDE LINE 3	ENABLE			X			
	DISABLE			O			
OUTSIDE LINE 4	ENABLE				X		
	DISABLE				O		
OUTSIDE LINE 5	ENABLE					X	
	DISABLE					O	
OUTSIDE LINE 6	ENABLE						X
	DISABLE						O

Note: When the '5-second automatic disconnect' feature is enabled, dialing (on-hook) must commence within 5 seconds after selecting an idle outside line, otherwise the line returns to the idle state.

31
32
33
34
35
36
37
38
39
40
41
42

**Table 2-F
CONTROLLER CARD SWITCH OPTIONS**

FUNCTION		CARD SWITCH (X=CLOSED, O=OPEN)											
		31	32	33	34	35	36	37	38	39	40	41	42
HOOK FLASH	300 ms	X	X										
	700 ms	X	O										
	1.0 s	O	X										
	1.6 s	O	O										
RECALL (Note 1)	MODE	INTERRUPT	GROUND			X	O						
*DIAL MODE (Note 2)	DIAL PULSE ONLY				X			O	X				
	DIAL PULSE AND DTMF DTMF ONLY				X	O		O	X				
PAGING (Note 3)	EXT PAGING ONLY					X	O					X	
	EXT PAGING AND PAGING TO SETS											X	
HELD LINE REMINDER	FEATURE ON						O						X
	FEATURE OFF						X						X
OUTGOING CALL RESTRICTIONS (Note 4)	FEATURE ON								X	O			
	FEATURE OFF												
RESTRICT ACCESS TO LINES 1 AND 2	FEATURE ON											X	
	FEATURE OFF											O	

ON = CLOSED

Note 1: The RECALL feature is used to signal a PBX operator (if applicable) for purposes of transferring a call. The user must obtain the following information from the telephone company:

- Hook flash timing interval
- Whether hook flash operation is loop current interrupt (INTERRUPT) or a ground signal (GROUND).

Note that the RECALL feature is inhibited if the OUTGOING CALL RESTRICTIONS feature is selected (Feature ON).

***Note 2:** Switch 34 is functional only if switch 37 is closed. In the 'DIAL PULSE and DTMF' mode, dialing is done via dial pulses however, the user may send DTMF end-to-end signals to the far end after dialing has been completed and the call answered, by depressing the '#' button prior to sending the code.

Note 3: When the VANTAGE 12 paging system is used, the paging signals are always presented at the EXT PAGE jack (or pins 13-38 on the CO connector in NTOB13 cabinets), regardless of the setting of the feature switch.

Note 4: Switch 38 enables or disables the outgoing call restriction feature which is determined on an individual telephone set basis through the switch settings on the line cards (DP 1006).

Chart 2-5
TURN THE SYSTEM ON

STEP PROCEDURE

- 1 Plug the ac power cord from the CE cabinet into the ac receptacle.

Note: The ac receptacle must be protected and grounded and fused at 15 Amps maximum.

- 2 On the power supply, set the on/off switch to the ON position.

- 3 Momentarily set the RESET/EMG TRANSF switch to the RESET position.
-

Chart 2-6
INSTALL TELEPHONE SETS

STEP PROCEDURE

A. Set Internal Switches

- 1 Remove the telephone set faceplate and set the internal option switches as shown in Fig. 2-8.
- 2 Type out the required information on the designation card then replace the card and the telephone set faceplate.

B. Install Add-On Modules

Intercom or Intercom/Convenience Dialer Modules

- 3 Open the privacy lid and remove the faceplate, designation cards and card tray from the feature well, then remove the connector cover from the rear of the telephone set (Fig. 2-9).
- 4 Place the intercom (or intercom/convenience dialer) module into the feature well and connect the cable from the module to the connector pins (Fig. 2-9).
- 5 Type the required information on the designation card(s) then place the card(s) and the faceplate (supplied with the module) over the module. If the Handsfree module is not to be installed, replace the connector access cover on the rear of the telephone set.

Handsfree Module

- 6 If required, remove the connector access cover from the rear of the telephone set and connect the cable from the handsfree unit to the connector pins as shown in Fig. 2-10.

Note: The connector access cover is not used when the handsfree unit is installed.
- 7 Pass the telephone line cord through the slot in the bottom of the handsfree module then secure the handsfree unit to the bottom of the telephone set using the screws provided (Fig. 2-10).

Wall Mounting Bracket

- 8 Mount the wall mounting bracket then install the telephone set on the bracket as shown in Fig. 2-11.

Volume Control Handset

- 9 Remove the regular handset by releasing the TELADAPT connector at the left side of the VANTAGE 12 set, then plug the cord from the volume control handset into the TELADAPT socket.

Note: When the volume control handset is installed on a VANTAGE 12 telephone set, ensure that Switch 9 (12 dB Amplification), of the telephone set's internal switches, is closed.

C. Connect Telephone Set Line Cord

- 10 Connect the telephone set line cord to the wall jack (prewired in Chart 2-3). If the cable between the CE cabinet and the telephone set is longer than 2600 ft (800 m), an OPX module must be used between the wall jack and the telephone set.
-

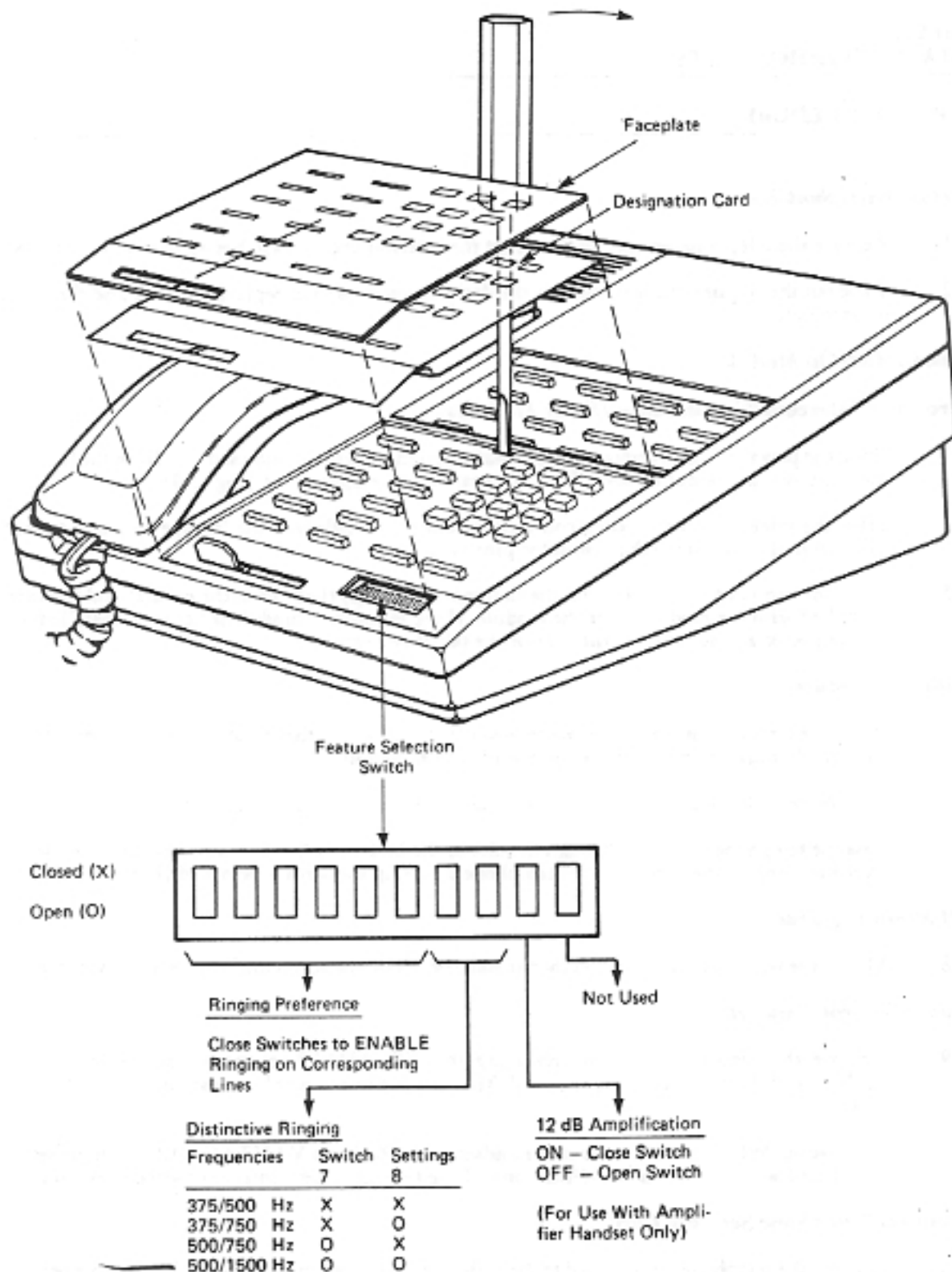


Fig. 2-8
Setting Internal Switch Options

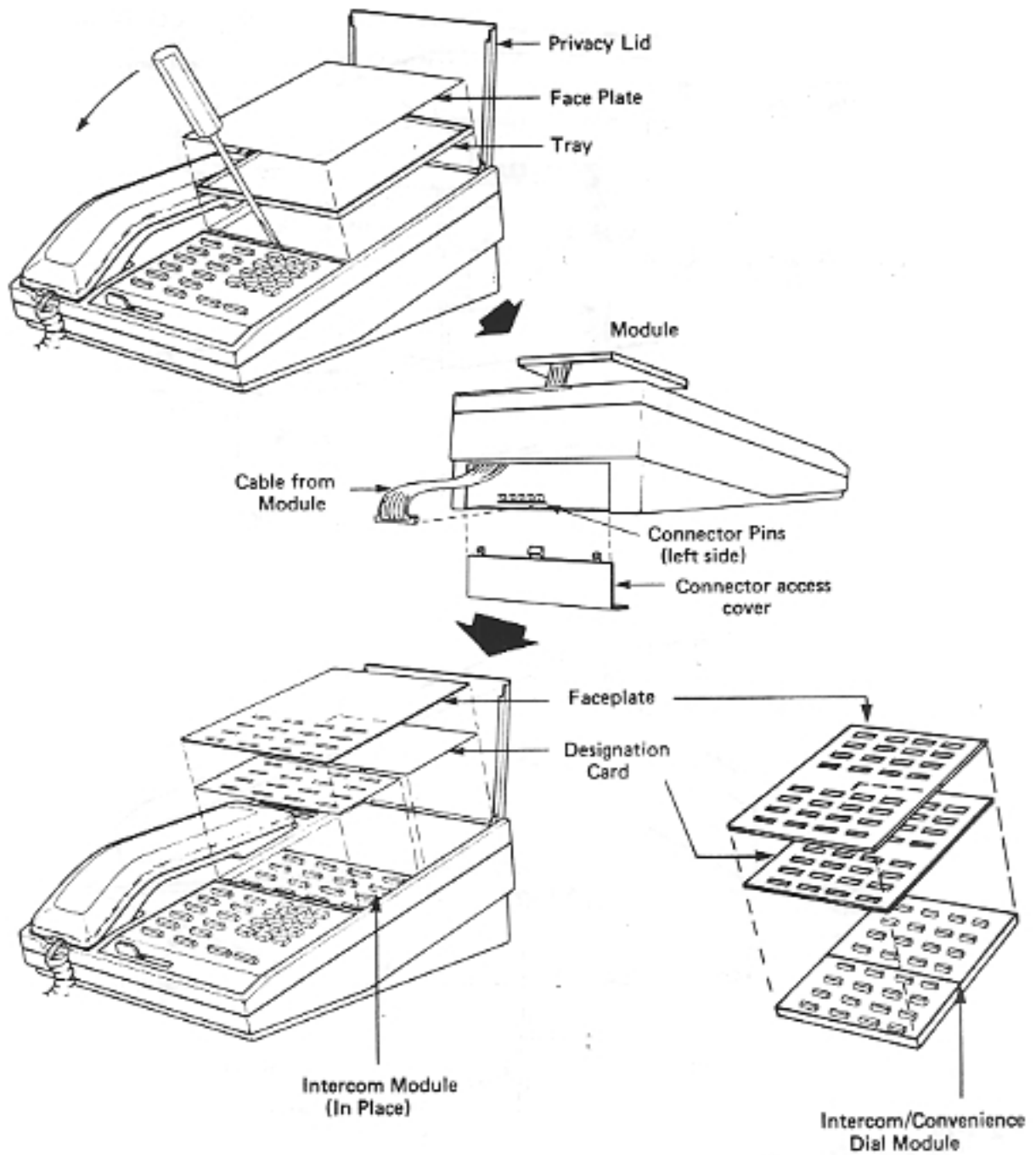


Fig. 2-9
Installing Intercom (Convenience Dialer) Modules

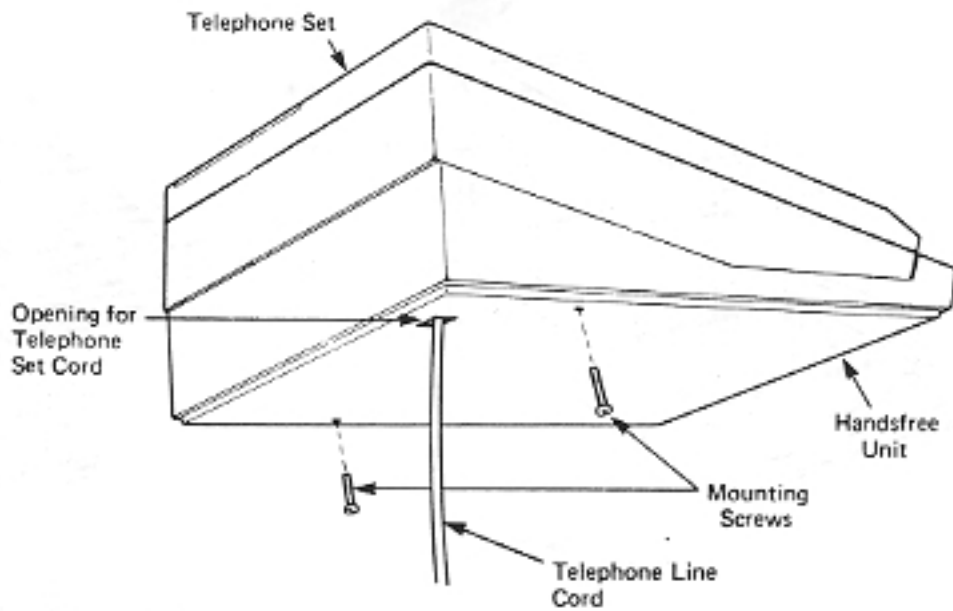
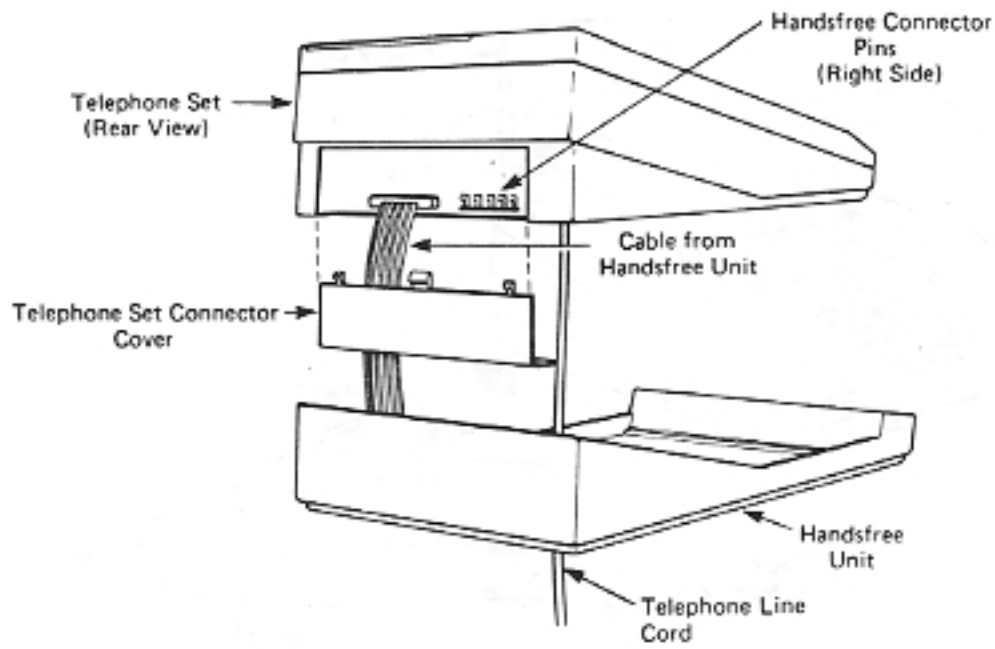


Fig. 2-10
Installing Handsfree Unit

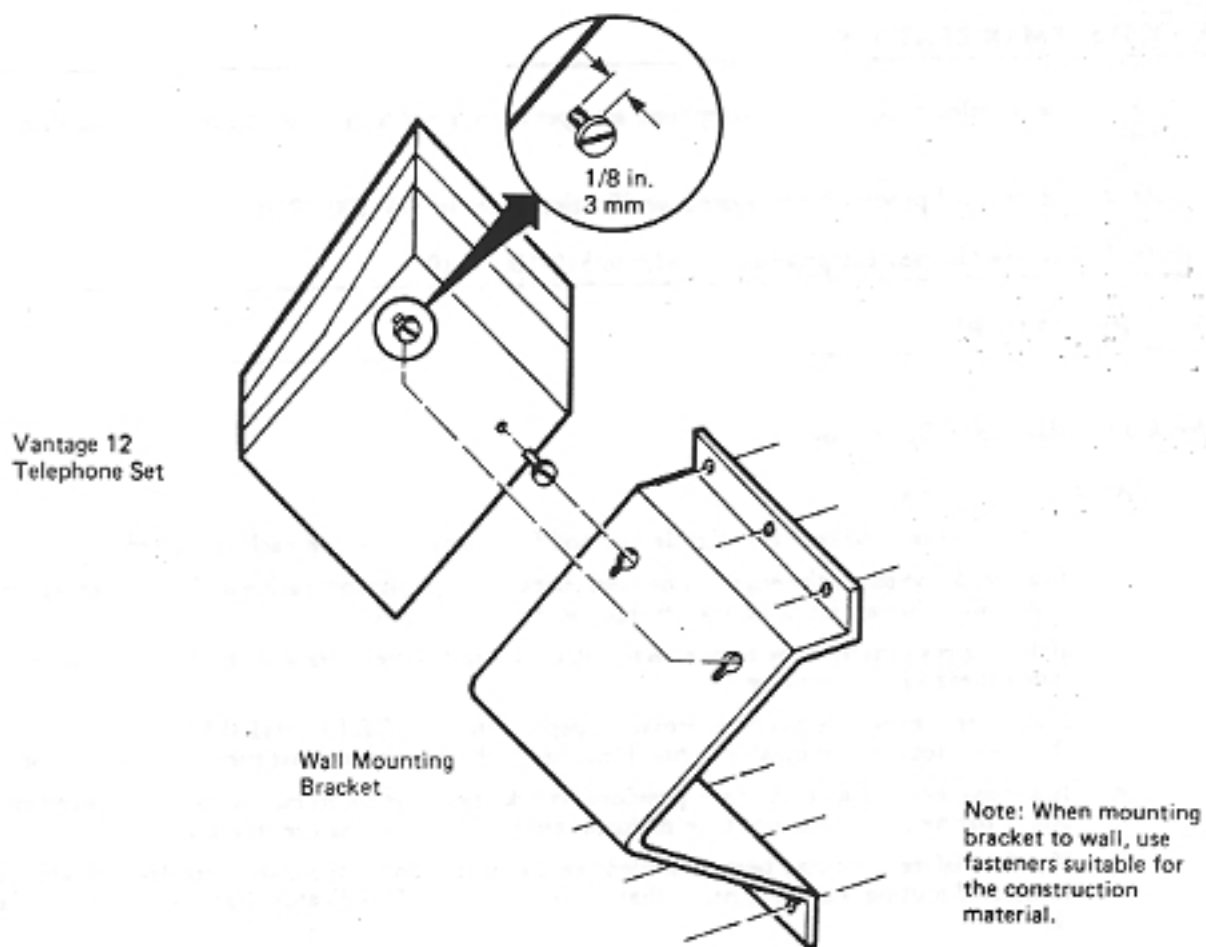


Fig. 2-11
Install Wall Mounting Bracket

Chart 2-7

VERIFY SYSTEM OPERATION

Note 1: For detailed procedures on telephone set operation, refer to the user guide provided with the system.

Note 2: For detailed procedures on system verification, refer to 519-1001-210.

Note 3: For trouble-clearing procedures, refer to 519-1001-510.

STEP PROCEDURE

A. Check Telephone Set Operation

- 1 At each telephone set:
 - (a) Check for dial tone on each eligible line and for overflow tone on each restricted line.
 - (b) Make a call on one of the eligible lines and check voice quality, operation of the speaker features and ensure that all LED indicators light when appropriate.
 - (c) If dialing restrictions have been selected, dial the applicable codes and check that the overflow tone is heard in the speaker.
 - (d) If an intercom module has been provided, depress the VOICE PROHIBIT key and check that the associated LED indicator lights. Depressing the key again must turn the indicator off.
 - (e) If a convenience dialer has been provided, check operation by storing a telephone number in one of the memory locations then make an automatic call using the stored number.
 - (f) If a handsfree unit has been installed, check operation of the handsfree feature and the associated muting feature. Ensure that all associated LED indicators light at the appropriate times.

B. Check System Features

Check Emergency Transfer Feature

Note: Perform this test only if Emergency Transfer (ET) telephone sets were installed. The VANTAGE 12 system must have been running for a minimum of 2 hours prior to this test to ensure that the batteries have acquired a charge.

- 2 On each ET telephone set, make a call over the designated emergency line.
- 3 At the CE cabinet, turn the power supply switch to OFF.
- 4 Check that all calls on the ET sets have remained connected.
- 5 At the CE cabinet, turn the power supply switch to the ON position. The calls on the ET sets must remain connected although no LED indicators will be lit at this time.
- 6 Terminate all calls on the emergency lines.

Chart continued

Chart 2-7 Continued
VERIFY SYSTEM OPERATION

STEP PROCEDURE

Check Common Auxiliary Ringer Operation

- 7 Make a call to one of the lines which has been programmed to operate the auxiliary ringer and check for proper operation.

Check External Paging System Operation

- 8 On a telephone set equipped with an intercom module, depress the PAGE key and speak into the handset. Check that your voice was heard on the external paging system.

Check Music on Hold Operation

- 9 Make a call to one of the VANTAGE 12 telephone sets and place the call on hold at the VANTAGE 12 set end. Check that the music source connected to the VANTAGE 12 system can be heard on the telephone line.
-

VERIFIED COPY

DATE

Case No.

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1-800-251-1758

TECH SERV. Bill Boman

1-800-558-9936

527-5514

vantage 12

FEATURES DESCRIPTIONS



VANTAGE 12 Feature Descriptions

All Call Paging:

This feature allows a telephone set equipped with an intercom module to access the loudspeakers in all other sets in the system and the external loudspeaker system (if provided). The "all call paging" feature may be set up to operate in one of three modes:

- Telephone sets only
- Telephone sets and external loudspeaker system (if provided)
- External loudspeaker system only

The "all call paging" feature is activated by depressing the PAGE button on a telephone set that is equipped with an intercom module, then speaking into the handset. All telephone sets, except those with "do not disturb" on, receive a voice call alerting signal before hearing the message. Telephone sets busy on an outside line may automatically place the line on hold and receive the page message by depressing the PAGE button on the intercom module. Telephone sets equipped with a handsfree unit cannot use "handsfree answerback" in response to an "all call page".

Users receiving an "all call page" message may terminate the broadcast by depressing the PAGE button, DO NOT DISTURB button, HOLD button, or any outside line button. The originator of the all call page may terminate the message by:

- placing the handset on hook, or
- depressing the PAGE button, or
- selecting a line button

Audible Ringback Tones:

In addition to the ringback tones provided by the telephone company central office for calls made on an outside line, VANTAGE 12 provides ringback tones on intercom calls made within the system. These tones consist of one beep repeated at 20 second intervals for a voice call, and two beeps every 6 seconds for a signal call.

Audible Ringing:

The audible ringing signal used in the VANTAGE 12 system consists of two tones (warble tone) heard through the telephone set loudspeaker. The cadence of the tones follows the ringing signal supplied by the telephone company on the outside line. The pitch of the ringing tones may be varied from set to set ("Distinctive Ringing" feature), and the volume of the tones may be adjusted by a control located on the left side of the set.

Audible ringing signals are attenuated if the loudspeaker of the telephone is in use, and inhibited if the "do not disturb" feature is invoked, or if the set is not programmed to ring on that line. The ringing signal is still heard if the telephone set is busy on an outside line. In the event that no telephone sets are programmed to ring on an outside line, or the "do not disturb" feature is enabled on all eligible telephone sets, the ringing tone is transferred to the prime telephone set.

During a commercial power or system failure, ringing tones for incoming calls are heard only on "emergency transfer" telephone sets, if provided.

Automatic Hold:

A busy line may be automatically placed on hold if the user, without depressing the HOLD, DISCONNECT, or hook-switch buttons, depresses a second line button (or an intercom line button if the intercom module has been provided).

Auxiliary Ringing Devices:

Registered auxiliary ringing devices supplied by the user may be connected to the VANTAGE 12 system in one of two ways:

a) **On Individual Outside Lines:** Auxiliary ringing devices which require only tip and ring connections may be connected to individual outside lines before the VANTAGE 12 system provided that the total Ringing Equivalence Number (REN) for auxiliary devices connected to each line does not exceed "4". The REN value for the VANTAGE 12 system is "1" for each outside line. The maximum REN value allowed per telephone line is "5".

b) **Common Auxiliary Ringer:** A common auxiliary ringer supplied by the user may be connected to the VANTAGE 12 system and programmed to ring on all or any combination of outside lines. This auxiliary device must be powered from a source separate from the VANTAGE 12.

Call Hold:

VANTAGE 12 allows outside or intercom calls to be placed on hold automatically (Automatic Hold), or manually (user depresses the HOLD button). Placing a call on hold allows the user to originate or receive other calls. A "held line reminder" signal is heard on the telephone set loudspeaker after 60 seconds and repeated at 30 second intervals to remind the user that a line has been placed on hold. When a user places a line on hold, the associated line LED on the user's telephone set flashes at five times the rate as lines which were placed on hold at other sets in the system.

Call Transfer:

Telephone sets equipped with an intercom module allow the user to easily transfer a call on an outside line to another VANTAGE 12 telephone set. This is done by depressing the intercom line button for the telephone set to which the call is to be transferred, which causes the call on the outside line to be placed on hold automatically. When the other telephone set answers, simultaneously depressing the intercom line button and the outside line button causes the call to be transferred. The transferring party may then disconnect and is free to originate or receive other calls.

Common Equipment Cabinet Mounting:

To facilitate the location of the CE cabinet on the customer's premises, the CE cabinet may be mounted in one of three ways:

- Free standing on the floor
- On a wall (required plywood backing and mounting hardware)
- In an equipment rack (requires mounting brackets)

Conference Call:

The "conference call" feature allows two outside lines or telephone sets to be connected together. A conference call may be established by:

- bridging a second party to an established call, or
- adding a second party to an established call, or
- using the "privacy release" feature to allow a second VANTAGE 12 telephone set to pick up the line on which the original call was made

Bridging is accomplished by selecting the intercom button corresponding to the set to be bridged, which automatically places the call on the outside line on hold, then simultaneously depressing the outside line button and the intercom button. The user, the call on the outside line and the intercom call are now bridged together.

To add a second line to an established call, the user simultaneously depresses the "self" line button and an idle outside line (or intercom line) and places a call to the second party. The first party hears the supervision tones (dialing, etc.) when the second call is placed.

Consultation Call:

This feature allows the user to privately consult a third party while busy on an outside line. Depressing the intercom button for the party to be consulted automatically places the outside line on hold and rings the desired telephone set. The user can return to the outside line and place the consultation call on hold by simply depressing the appropriate outside line button. If desired, the consultation call can be re-established by depressing the intercom line button again. The consultation call can be terminated by depressing the DISCONNECT button prior to selecting the outside line button.

Convenience Dialing:

The "convenience dialing" feature allows automatic dialing of numbers which the user has stored in the common equipment convenience dialer memory. The intercom/convenience dialer option can store 11 numbers containing a maximum of 16 digits, and 4 numbers containing a maximum of 20 digits. The numbers are entered into memory using the telephone set dial pad. In the event of a power failure, the convenience dialer memory continues to store the numbers for up to 70 hours.

Dialing Restrictions:

Individual telephone sets in the VANTAGE 12 system can be programmed, by switch settings on the controller card, to restrict them from one of the following call types:

- Long distance calls (accessed by 0 or 1)
- Long distance calls and directory assistance calls (0, 1, 411)
- All outgoing calls

Dial Mode:

The VANTAGE 12 system may be programmed to interface with telephone companies which require dial pulse signaling, or Dual Tone Multi Frequency (DTMF) signaling (tone signaling). When programmed for dial pulse signaling, end-to-end DTMF tones can still be sent to the called party after dialing has been completed by depressing the "#" button on the dial pad prior to dialing the end-to-end signaling code.

Disconnect:

Depressing the DISCONNECT button on the telephone set allows a user to terminate a telephone call without placing the handset on hook, and reserves the line for 5 seconds to permit the user to place another call. If the user selects another outside line or intercom line within the 5-second interval, the original line immediately becomes available for system use, subject to system programming.

Distinctive Ringing Tone:

To allow users to determine, from a distance, which of several closely located telephone sets is ringing, the ringing tone of each telephone set may be adjusted for one of four distinctive sounds. The switches which control the selection of the ringing tones are located inside the telephone set and are normally set during installation.

Do Not Disturb:

To inhibit all audible ringing tones associated with incoming and intercom calls, the user may invoke the "do not disturb" feature by depressing the DO NOT DISTURB button on the telephone set. While in the "do not disturb" mode:

- the user may still originate outgoing or intercom calls
- if the telephone set is equipped with a handsfree unit, handsfree answerback on intercom calls (HFAI) is prohibited
- if all telephone sets programmed to ring on a particular line are in the "do not disturb" mode, an incoming call on that line rings immediately on the prime telephone set (set number 3), even if the prime set is in the "do not disturb" mode

Emergency Transfer:

The "emergency transfer" option provides protection for service on a designated emergency line(s) in the event of a commercial power failure, or a recognizable failure in the VANTAGE 12 system. This feature requires the following optional equipment:

- An emergency transfer line card (replaces regular line card) connected to a line designated as an emergency line
- An emergency telephone set (replaces regular VANTAGE 12 telephone set) which is connected to the odd-numbered telephone set interface of the emergency transfer line card

The VANTAGE 12 system can accommodate up to six emergency transfer line cards and six emergency telephone sets.

When in the emergency transfer mode:

- the emergency telephone set is equipped for basic 2-way, dial-pulse only service for up to ten hours
- VANTAGE 12 special features are not available

Emergency Transfer (Cont'd):

- all calls previously in progress (except calls on emergency lines when connected to the corresponding emergency telephone set) are lost
- "last number" and "saved number" codes stored in the system are lost
- the previous states of "voice call page", "do not disturb", "privacy release" and loudspeaker are cleared back to the normal (non-operated) mode
- when commercial power is restored, the VANTAGE 12 system automatically resets itself for normal operation

External Paging:

The common equipment cabinet is equipped with a Teladapt jack (EXT PAGE) to which the user may connect an external paging system. The external paging system, which may consist of amplifiers and loudspeakers, must be powered separately from the VANTAGE 12 system. The external paging system is accessed whenever an "all call page" (requires an intercom module) is made on the VANTAGE 12 system. The "all call" page feature provides the paging message at the EXT PAGE jack.

Feature Well Hardware Options:

To increase the features and capabilities of the VANTAGE 12 telephone, one of the following add-on modules may be installed in the telephone set feature well:

- **Intercom Module:** Allows the use of all intercom and paging features. Note that a small directory tray located immediately above the intercom module is provided with this option
- **Intercom/Convenience Dialer Module:** Allows the use of all intercom, paging and convenience dialing features

Group Listening:

To permit a telephone conversation to be heard over the telephone set loudspeaker for the benefit of other listeners, the user depresses the SPEAKER button while the handset is off hook to invoke the "group listening" feature and adjusts the volume level as required. Depressing the SPEAKER button a second time causes the loudspeaker to turn off.

Handsfree Answerback on Intercom:

For telephone sets equipped with a handsfree unit, this feature allows the user to respond to intercom voice calls by talking in a normal conversational voice and without having to touch the telephone set. Note that this feature is subject to the restrictions imposed by the "do not disturb", "voice call prohibit" and "all call page" features. In addition, a warning tone is provided every 20 seconds to remind the user that an intercom call is in progress and thus prevents accidental eavesdropping.

Handsfree Listening:

This allows the user to listen to a call through the telephone set loudspeaker with the handset on hook. The feature is activated by depressing the SPEAKER button then placing the handset on hook. Subsequent use of the handset to participate in the call causes the speakers to turn off automatically. The telephone set can be disconnected from the call while in the "handsfree listening" mode by depressing either the SPEAKER button to turn the speaker off while on hook, or by depressing the DISCONNECT button.

Handsfree Operation:

Handsfree operation allows the user to participate in a telephone call with the handset on hook by speaking to the telephone set in a normal voice and listening to the other party over the telephone set loudspeaker. The user may confer privately with people near the telephone set by depressing the MUTE button on the handsfree unit, which suppresses voice transmission to the other party. The handsfree unit is normally activated by depressing the on-off key. However, it turns on automatically when receiving an intercom voice call. Lifting the handset automatically turns the handsfree unit off and allows the user to talk privately. Note that handsfree operation is not permitted when receiving an "all call paging" message.

Held Line Reminder:

The "held line reminder" signal is heard through the telephone set loudspeaker when a line has been placed on hold and no change in line status has occurred for 1 minute. The signal (two beeps) is repeated at 30 second intervals until a change in line status occurs. After a 2-minute interval from the first held line reminder signal, the signal is also presented at the prime telephone set (set number 3). If a ringing line is answered and then disconnected or placed on hold within 3 seconds, a fast held line reminder signal which is repeated every three seconds is heard on the telephone set loudspeaker. This feature is intended to prevent incoming calls from being inadvertently lost, should they be accidentally answered. The "held line reminder" feature may be enabled or disabled on a system basis through switch settings in the common equipment.

Intercom Signal Call:

If the telephone set is equipped with an intercom module, the user may place a regular intercom call with the handset on-hook by depressing the intercom line button associated with the set to be called. The calling party hears an audible ringback of the tone signal alerting the called set. At the called set, the intercom alerting signal (two beeps) is heard at 6 second intervals, until the call is answered or abandoned.

Intercom Voice Call:

If the telephone set is equipped with an intercom module, the user may originate an intercom voice call to any of the other VANTAGE 12 sets by depressing the appropriate intercom line button, and speaking into the handset. At the called set, the voice call alerting signal (one beep) is heard, followed by the message.

Intercom Voice Call Prohibit:

This feature is enabled or disabled on sets equipped with an intercom module by operating the VOICE CALL PROHIBIT button. When enabled, the "voice call prohibit" feature changes the normal signal alerting tone associated with a voice call to the intercom signal call tones (two beeps) repeated at 6 second intervals. The actual voice message is inhibited.

Last Number Redial:

This feature allows the user to store the last number dialed on the dial pad in memory. Once stored, the user can invoke automatic dialing of the number by simply depressing the LAST NUMBER button. The "last number redial" feature works independently of the "saved number" and "convenience dialing" features.

Lines:

The VANTAGE 12 system may interface with a maximum of six outside lines. An outside line may be any of the following central office (CO) or PBX lines:

- Regular CO line
- PBX line
- Foreign Exchange (FX)
- WATS
- CENTREX
- Private or Tie Line
- Lines can be programmed to automatically disconnect 5 seconds after selection if no further action (e.g. dialing) is taken. This applies only when the handset is on-hook.

Line Preference:

Each telephone set may be programmed, by internal switch settings, to respond to ringing only on certain preselected lines. Although the set receives visual indications for all lines in the VANTAGE 12 system, only those preselected lines ring at the user's set.

Line Selection:

To select a line for an outgoing call, the user depresses an idle line button. Dialing (on-hook) must commence within a 5-second period, otherwise the line returns to the idle state. If the line is a private line or a tie line, the time-out period does not apply.

A ringing line may be selected manually by depressing the appropriate line button, or by lifting the handset, which causes automatic connection to the ringing line. Automatic ringing line selection is inhibited if the telephone set is not programmed to ring on the line with an incoming call, or if the "do not disturb" feature is enabled.

Listen on Hold:

If the user has been placed on hold by the other party, the user may depress the **SPEAKER** button and place the handset on hook while waiting for the other party to return. When the other party announces his return, the user hears the announcement through the loudspeaker, and may then pick up the handset and resume the conversation.

Music on Hold:

This optional feature allows the user to connect his own music source to the common equipment and replace the normal "tone on hold" signal supplied by the system with the user's choice of music program. The use of the "music on hold" feature is the same as for "tone on hold".

On Hook Dialing:

For ease of placing a call, the user may originate a call with the handset on hook and pick up the handset when the called party answers (or abandon the call if not answered). When the user selects an idle line button with the handset on hook, the speaker automatically turns on and dial tone is heard. Dialing and subsequent ringback signals can be heard as the user places the call. Picking up the handset to commence conversation automatically turns the speaker off.

Overflow Tone:

The **VANTAGE 12** overflow tone is heard in the telephone sets when an attempt has been made to access a service or feature which, for some reason, has been inhibited. Typical examples of when the system returns overflow tone are:

- The user has attempted to access line 1 or 2 but the system has been programmed to restrict the user from those lines
- All intercom paths are busy
- The user has selected a line which is in use by another set
- The user has attempted to originate a type of call, e.g. long distance, which has been restricted