

HANDS-FREE ANSWERING ON INTERCOM 1A1, 1A2, AND 6A KEY TELEPHONE SYSTEMS

1. GENERAL

1.01 This section provides information on the station adjuncts (Fig. 1) used in 1A1, 1A2, and 6A KTSs to provide Hands-Free Answering on Intercom (HFAI).

1.02 Whenever this section is reissued, the reasons for reissue will be listed in this paragraph.

1.03 The HFAI feature is an intercom feature and is not to be connected to CO/PBX lines. The adjuncts are activated by incoming calls only and cannot be used to originate outgoing calls.

2. DESCRIPTION

2.01 Addition of the HFAI feature requires the installation of an adjunct at the station location as follows:

- HFAI on manual intercom or one intercom path—2A transmitter-receiver
- HFAI on two or three intercom paths—2B transmitter-receiver.

If HFAI is installed at a 1- or 2-link 6A KTS station, a 276A adapter circuit must be wired between the KTS equipment and the adjunct on a one-per-adjunct basis.

2.02 The 2A transmitter-receiver permits a calling station to tone-signal another intercom station through the loudspeaker in the adjunct. If the called station does not want to receive incoming calls, depressing the do-not-disturb (DND) button will block turn-on of the adjunct and will furnish a DND tone to both parties. If the DND button is not depressed, the called party can answer without going off-hook. Conversation from the called station can also be blocked by depressing the MIKE-OFF button without affecting the incoming speech. A light emitting diode (LED) is provided



A. 2A TRANSMITTER-RECEIVER (SINGLE-PATH)



B. 2B TRANSMITTER-RECEIVER (THREE-PATH)

Fig. 1—2-Type Transmitter-Receiver

NOTICE

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

to indicate when the microphone is turned on. If desired, the called station may depress the button on the key telephone set associated with the intercom and go off-hook; conversation is then through the handset.

2.03 The 3-path adjunct (2B transmitter-receiver) operates in a similar manner but, in addition, is equipped with LEDs which indicate the intercom path the station is being called on. The called station can depress the associated pickup button on the key telephone set and go off-hook to use the handset. The path indicating LEDs will stay lit as long as the calling party is off-hook.

2.04 No modification of the intercom system is required in the 1A1, 1A2, or selector-only 6A KTSs for the addition of the adjuncts. The potential on the R lead (VS lead) from the intercom selector can be $\pm 10V$, $-24V$, or $\pm 105V$.

2.05 If the adjuncts are added to a 1- or 2-link 6A KTS, a 276A adapter circuit must be added for each adjunct (Fig. 5).

2.06 The adjuncts are equipped with a volume control for adjusting the loudspeaker level.

2.07 The 2-type transmitter-receiver will be available in four colors: black (-03), green (-51), white (-58), and light beige (-60), and will be shipped with color-coordinated faceplates. Cords will be in satin-silver (-87) only.

ORDERING GUIDE

- Transmitter-Receiver, 2A*—single-path HFAI
- Transmitter-Receiver, 2B*—3-path HFAI

*Refer to Table A for color information.

- Block, Connecting, 66E8-25—order 1 for each location where adjunct cord cannot be brought into telephone set (see Note)

Note: If station is already wired using 66E3-25, a 66E8-25 may not be required.

- Circuit, Adapter, 276A—order 1 for each adjunct installed in a 1- or 2-link 6A KTS.

3. INSTALLATION

3.01 An adjunct must be installed at each station to be furnished with the HFAI feature. The adjunct can be wired by any of the methods outlined in 3.03, 3.04, or 3.05.

3.02 The microphone in the 2A and 2B transmitter-receiver is located on the bottom of the base. To assure maximum pickup, the adjunct should not be placed on a surface that would obstruct the mike.

3.03 In installations where all the leads are available on screw terminals such as in a 6-button key telephone set, the mounting cord from the adjunct can be terminated directly in the set

TABLE A

COLOR SELECTION

TRANSMITTER-RECEIVER			FACEPLATE		
CODE	COLOR	SUFFIX	CODE	COLOR	SUFFIX
2A	Black	-03	73A	Charcoal	-70
	Moss Green	-51		Light Green	-71
	White	-58		Light Gray	-73
	Light Beige	-60		Muted Beige	-75
2B	Black	--03	73B	Charcoal	-70
	Moss Green	-51		Light Green	-71
	White	-58		Light Gray	-73
	Light Beige	-60		Muted Beige	-75

(Fig. 3). The leads from the 2012B transformer, if used, can also be brought into the set using spare terminals or D-161488 connectors.

3.04 Where it is not desired to terminate the cords in the set, or where the required leads are not accessible such as in 10- and 20-button sets or CALL DIRECTOR® sets, a 66E8-25 connecting block must be used. In 20-button and CALL DIRECTOR sets, all intercom circuits should appear on the same key so that all leads can be found in one plug of the mounting cord and connector cable. Fig. 4 shows connections for the single-path adjuncts using a 66E8 connecting block, and Table B shows the 3-path adjunct connections. Install the 66E8-25 connecting block as follows:

- (a) Mount block in a location which provides access to the connection between the mounting cord and connector cable.
- (b) Break the mounting cord-connector cable connection and plug the cord and cable into the proper legs on connecting block (Fig. 2B).
- (c) Terminate adjunct mounting cord leads on connecting block using 161A adapters. Power leads are terminated on screw terminals AC1 and AC2.
- (d) Terminate inside wire from transformer on AC1 and AC2.

3.05 If the station is fed by inside wiring cable terminated in a 66E3-25 connecting block, the proper leads can be accessed on the connecting block using 161A adapters.

3.06 Fig. 3 and 4 assume the intercom circuit is on the last button of a 6-button set. If intercom appears on another button, the T, R, A, L and LG leads must be connected to the leads associated with the proper button. In a like manner, Table B assumes the intercom circuits are on the last three buttons of the set. If they appear elsewhere, the adjunct cord will have to be wired to the proper leads.

3.07 The HFAI adjuncts are signaled over the R lead from the selector. Signaling for the adjuncts must be separate from any other audible arrangements at the station. Buzzers or ringers cannot be connected on intercom at stations having an adjunct. This will require a separate lead be

used for intercom signaling if the station is also wired for common audible. The potential on the signaling lead from the selector can be $\pm 10V$, $-24V$, or $\pm 105V$.

3.08 At 1- and 2-link 6A KTS installations, a 276A adapter circuit is required for each adjunct installed. Install the adapter circuit at a location permitting access to the required station and KTS leads, and wire as shown in Fig. 5.

3.09 Power for the adjuncts can be derived either from a 2012B transformer or from the $-24V$ supply in the KTS. If a 2012B transformer is used, the wiring is brought into the set or connecting block. Power from the KTS requires a spare cable conductor which is connected to either the AC1 or AC2 lead.

3.10 Do not power more than one adjunct from a 2012B transformer. If power is derived from the KTS, the drain should be figured on the basis of 90 milliamperes for each adjunct.

4. OPERATION

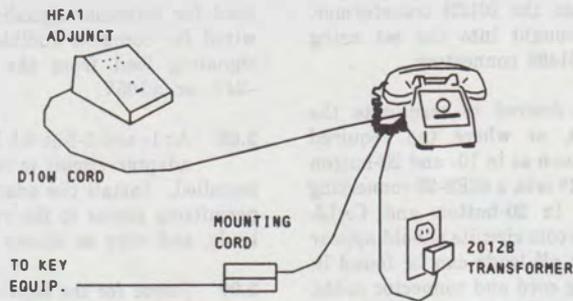
2A Transmitter-Receiver

4.01 Operation of the single-path adjunct is as follows:

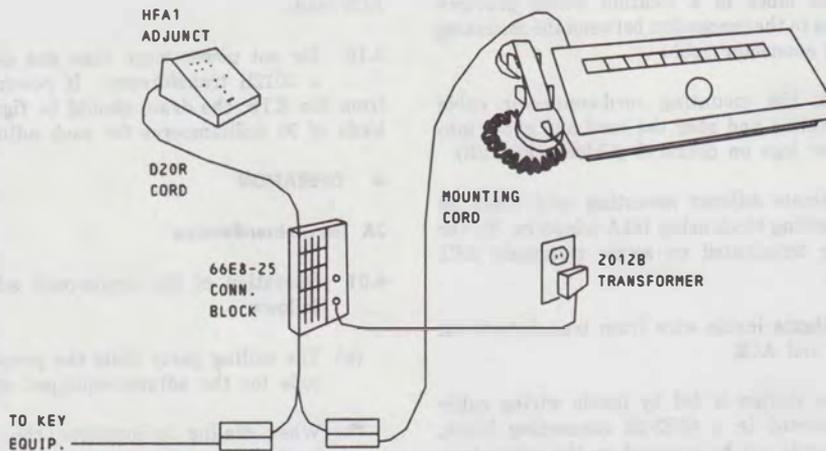
- (a) The calling party dials the proper intercom code for the adjunct-equipped station.
- (b) When dialing is complete, the microphone in the adjunct is turned on, as indicated by the MIKE-ON LED, and a single 1/2-second tone burst is heard by both parties.

Note: If the called party does not want to receive incoming calls on the intercom, the DND button must be depressed. With the DND depressed, both parties will hear a double tone burst when the station is called. To allow incoming calls, the DND button must be depressed again, releasing it.

- (c) After hearing the single-tone burst, the calling station can voice-signal the called station. The called station may answer via the microphone in the adjunct.
- (d) If the called party does not want local conversation or noise to be heard, the



A. INSTALLATION WITH CORDS TERMINATED IN TELEPHONE SET



B. INSTALLATION USING 66E8-25 CONNECTING BLOCK

Fig. 2—Typical Installations, HFA1 Adjuncts

MIKE-OFF button must be depressed, at which time the LED will turn off. The called party may return to HFAI by releasing the MIKE-OFF button.

off-hook, the HFAI feature is canceled for that call.

2B Transmitter-Receiver

4.02 Operation of the 3-path adjunct is as follows:

- (a) Calling and DND are the same as for single path.

TABLE B
 CONNECTIONS FOR 2B TRANSMITTER-RECEIVER

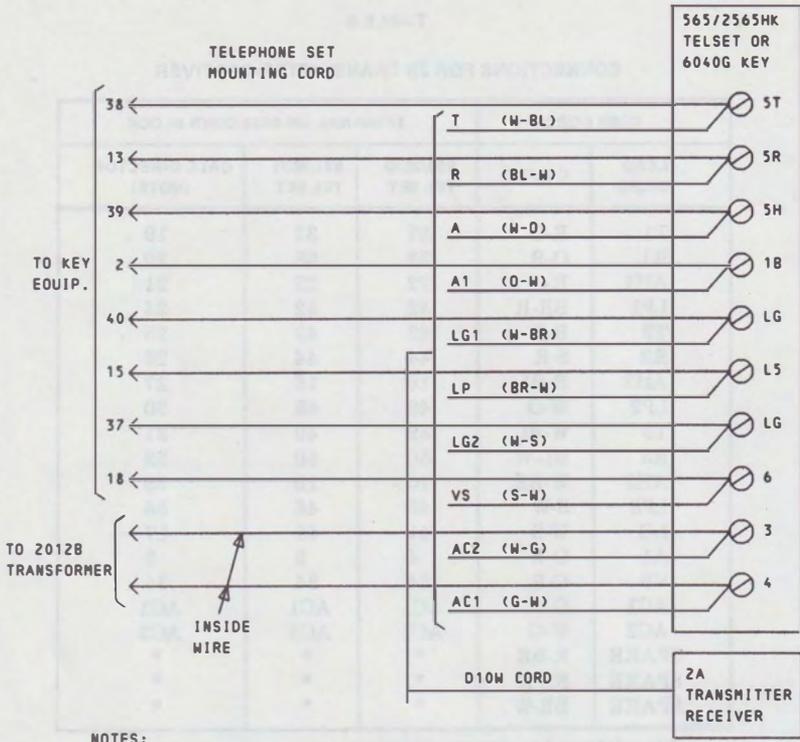
D20R CORD		TERMINAL ON 66E8 CONN BLOCK		
LEAD DESIG	COLOR	830/2830 TEL SET	831/2831 TEL SET	CALL DIRECTOR (NOTE)
T1	R-O	37	37	19
R1	O-R	38	38	20
AH1	R-G	22	22	21
LP1	BR-R	42	42	24
T2	R-S	43	43	25
R2	S-R	44	44	26
AH2	R-BL	16	16	27
LP2	W-O	48	48	30
T3	W-BL	49	49	31
R3	BL-W	50	50	32
AH3	W-BR	10	10	33
LP3	S-W	46	46	36
LG	W-S	41	41	17
A1	O-W	4	5	5
VS	G-R	34	34	34
AC1	G-W	AC1	AC1	AC1
AC2	W-G	AC2	AC2	AC2
SPARE	R-BR	*	*	*
SPARE	BL-R	*	*	*
SPARE	BR-W	*	*	*

* Insulate and store.

Note: Adjuncts cannot be used with concentrator-type CALL DIRECTORS. Connections shown are for intercom on the last three buttons of the key.

- (b) Upon completion of dialing, the MIKE-ON LED and the LED associated with the incoming intercom path are turned on and the single tone burst is heard at both stations.
- (c) The balance of operation is the same as for single-path HFAL, except if called station

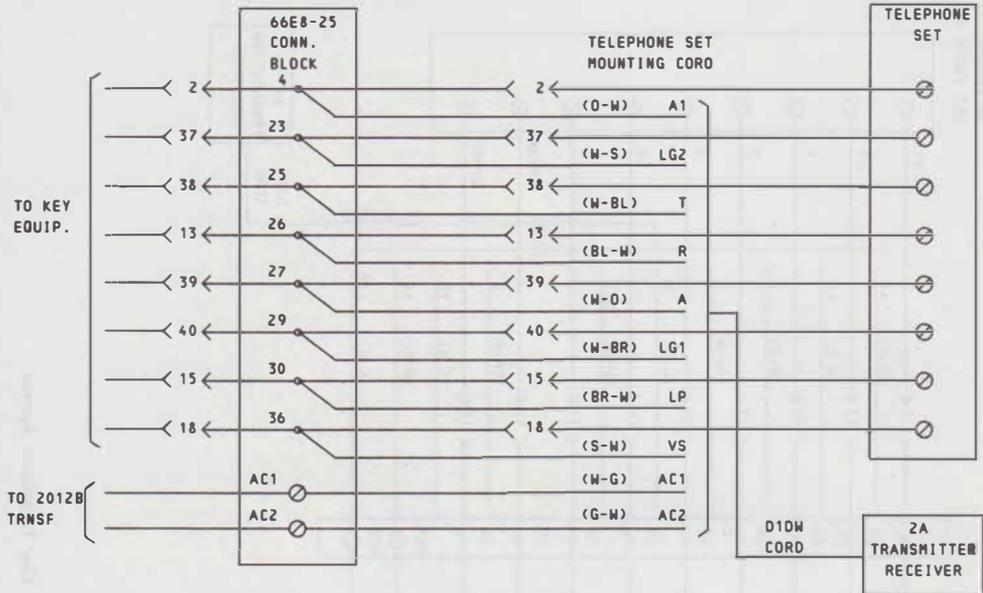
wishes to converse over telephone, the intercom pickup button associated with lit LED must be depressed and the station go off-hook.



NOTES:

1. CONNECTIONS SHOWN ARE FOR INTERCOM ON THE 5TH PICKUP BUTTON. IF INTERCOM APPEARS ON ANOTHER BUTTON, THE T, R, A, LG1 AND LP LEADS MUST BE CONNECTED TO PROPER TERMINALS.
2. AUDIBLE SIGNAL IN SET CANNOT BE CONNECTED ON INTERCOM AT STATION HAVING VS-HFA1 ADJUNCT. CONNECTION SHOWN USE BUZZER LEAD AS VS LEAD. DISCONNECT BUZZER LEADS IN SET.
3. 2012B TRANSFORMER IS SHOWN CONNECTED TO SPARE TERMINALS 3 AND 4. IF THESE TERMINALS ARE IN USE, USE ANY SPARE TERMINALS OR D-161488 CONNECTORS.
4. IF POWER IS OBTAINED FROM KEY SYSTEM (-24B) USE ONE SPARE LEAD FROM KTS AND CONNECT TO EITHER AC1 OR AC2.

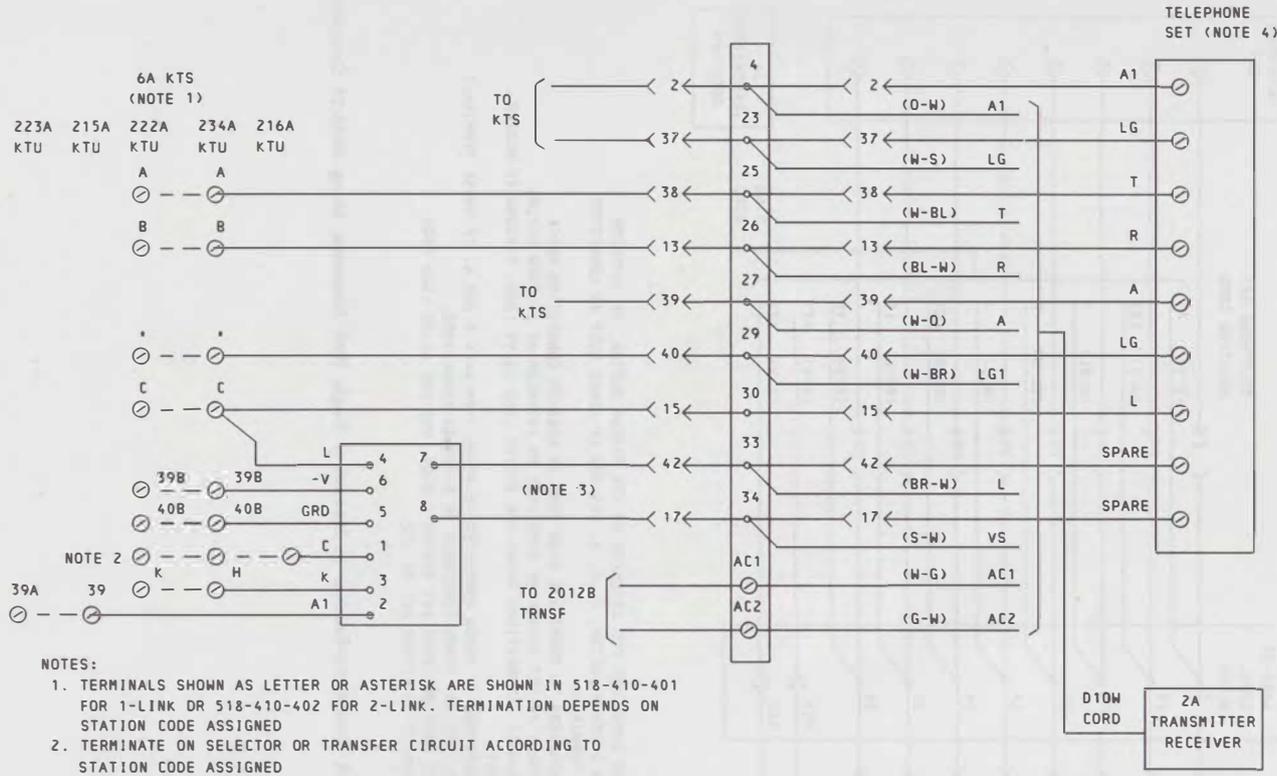
Fig. 3—Connections for 2A Transmitter-Receiver in Manual or Single Path Intercoms, With Cord Terminated in Telephone Set



NOTES:

1. CONNECTIONS SHOWN ARE FOR INTERCOM ON 5TH PICKUP BUTTON. IF INTERCOM APPEARS ON ANOTHER BUTTON, T, R, A, LG1 AND LP LEADS MUST BE CONNECTED TO PROPER TERMINALS.
2. USE 161A ADAPTERS TO TERMINATE D10W CORD IN 66E8-25 CONNECTING BLOCK
3. AUDIBLE SIGNAL IN SET CANNOT BE CONNECTED ON INTERCOM AT STATION HAVING VS-HFA1 ADJUNCT. CONNECTIONS SHOWN USE BUZZER LEAD AS VS LEAD. DISCONNECT BUZZER LEADS IN SET.
4. 2012B TRANSFORMER IS SHOWN CONNECTED TO SPARE TERMINALS 3 AND 4. IF THESE TERMINALS ARE IN USE, USE ANY SPARE TERMINALS OR D-161488 CONNECTORS.
5. IF POWER IS OBTAINED FROM KEY SYSTEM (-24B), USE ONE SPARE LEAD FROM KTS AND CONNECT TO EITHER AC1 OR AC2.

Fig. 4—Connections for 2A Transmitter-Receiver in Manual or Single Path Intercoms, Using 66E8-25 Connecting Block



- NOTES:
1. TERMINALS SHOWN AS LETTER OR ASTERISK ARE SHOWN IN 518-410-401 FOR 1-LINK OR 518-410-402 FOR 2-LINK. TERMINATION DEPENDS ON STATION CODE ASSIGNED
 2. TERMINATE ON SELECTOR OR TRANSFER CIRCUIT ACCORDING TO STATION CODE ASSIGNED
 3. SPARE LEADS REQUIRED FOR LP AND VS LEADS BETWEEN 276A ADAPTER AND ADJUNCT.
 4. CONNECTIONS SHOWN PUT INTERCOM ON 5TH PICKUP. IF INTERCOM APPEARS ON ANOTHER PICKUP, REQUIRED LEADS MUST BE MOVED (T, R, A, L)

Fig. 5—Adjunct Connections in 6A Key Telephone System