

SWITCHING SYSTEM NO. 300

POSITION EQUIPMENT IDENTIFICATION

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1. GENERAL

- 1.01 This section describes the position equipment that *may* or *may not* be installed at an attendant position .
- 1.02 This section is reissued to include information on the J53026HK position equipment installed in the central computer complex console, and to generally update the section.
- 1.03 For general descriptive information refer to Section 981-205-100.
- 1.04 Identification of equipment units is provided in the Equipment Design Requirements Section 812-205-150.
- 1.05 Switching System No. 300 Block Diagram(s) are provided in SD-69417-0100.♦

1.06 Air Route Traffic Control Center (ARTCC) determines equipment requirements for each attendant position.

1.07 Position equipment is installed in customer-owned consoles.

2. POSITION EQUIPMENT

PUSHBUTTON (PB) DIAL (Fig. 1-4)

2.01 A set of nonlocking pushbutton keys at a position is used to take the place of a rotary dial.

2.02 The PB dial includes three control keys (START, END, and CLEAR), and a ready lamp (RL), as well as ten code-button keys labeled in accordance with a conventional dial. Code-button keys can be depressed quickly in a sequence corresponding to a given code.

2.03 When using a PB dial, a tone is heard that is slightly higher in pitch than dial tone. This is guard tone and indicates that dialing is in progress. It is heard by the attendant using the dial as well as by any other attendant who may select the same line while dialing is in progress. Tone ceases when outpulsing is completed.

- **START Key** is used only when a second dialing sequence is required such as on a selective signaling line to call in additional stations, or on a direct distance dialing (DDD) call where the 7-digit limitation of the register sender circuit is exceeded. Proper dialing procedure on a DDD call is: Dial the area code number, depress END key, depress START key, dial the other digits.

- **END Key** is used only on central office or PBX lines to tell the system that dialing has been completed. This key must be depressed after the last digit has been dialed.

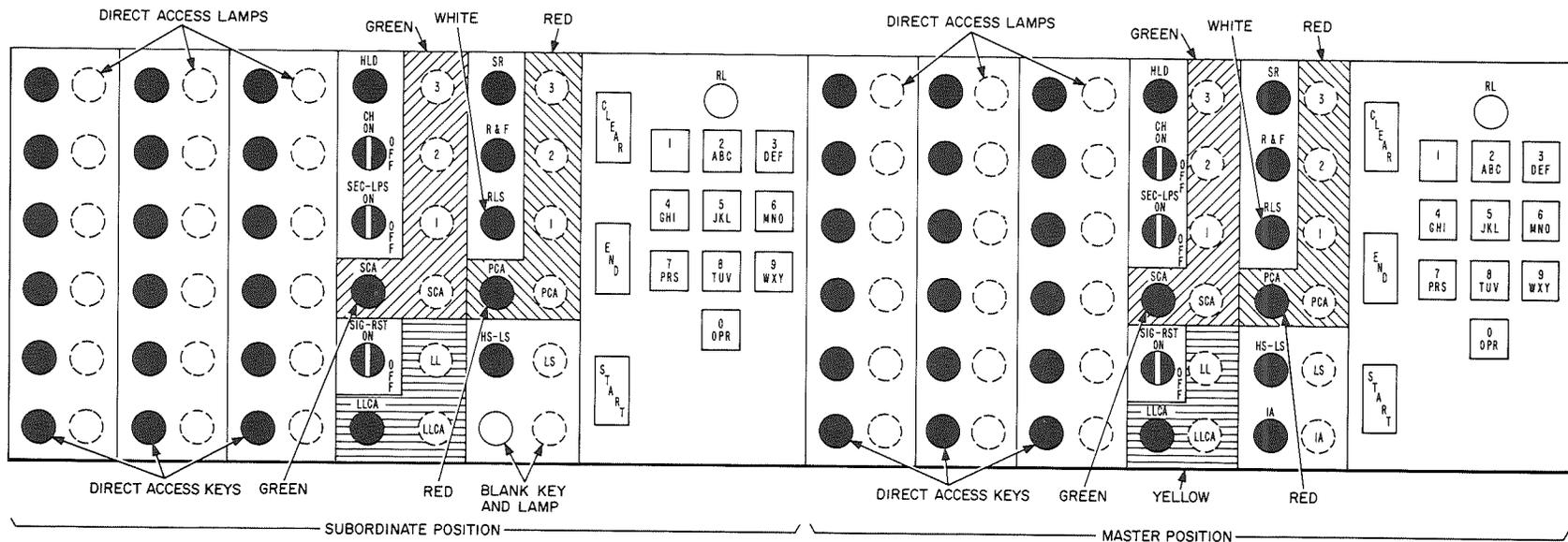


Fig. 1—Typical Arrangement of Supervisor Position (Pilot and Override Lamps Not Shown)

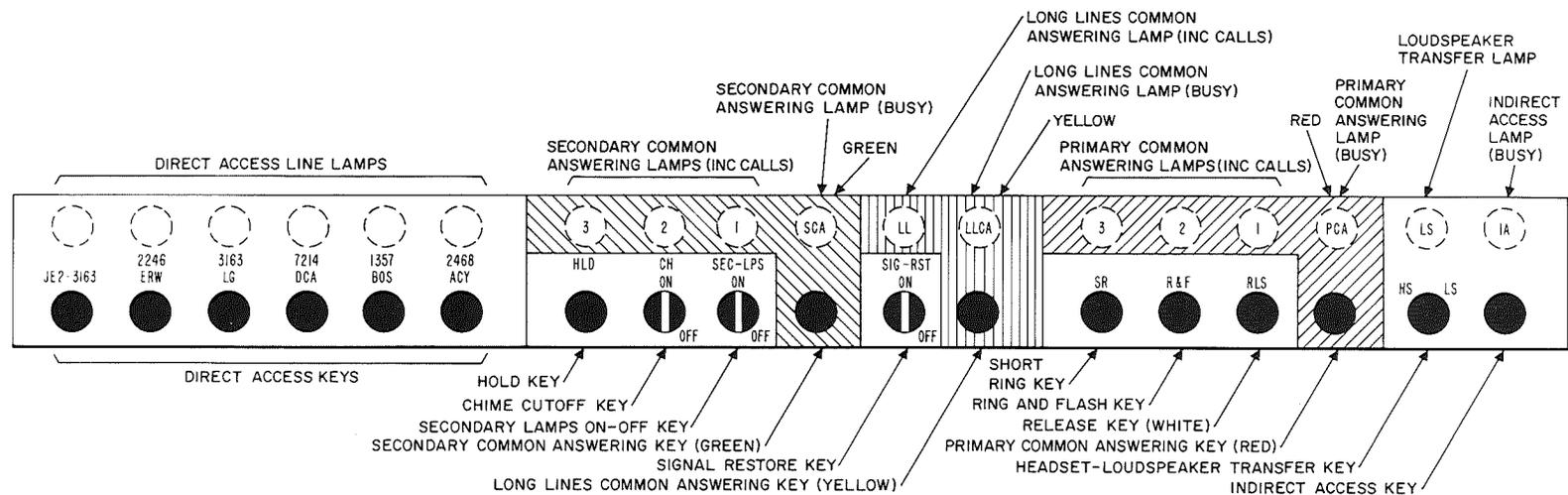


Fig. 2—Typical Arrangement of Land Line Position (PB Dial, Pilot, and Override Lamps Not Shown)

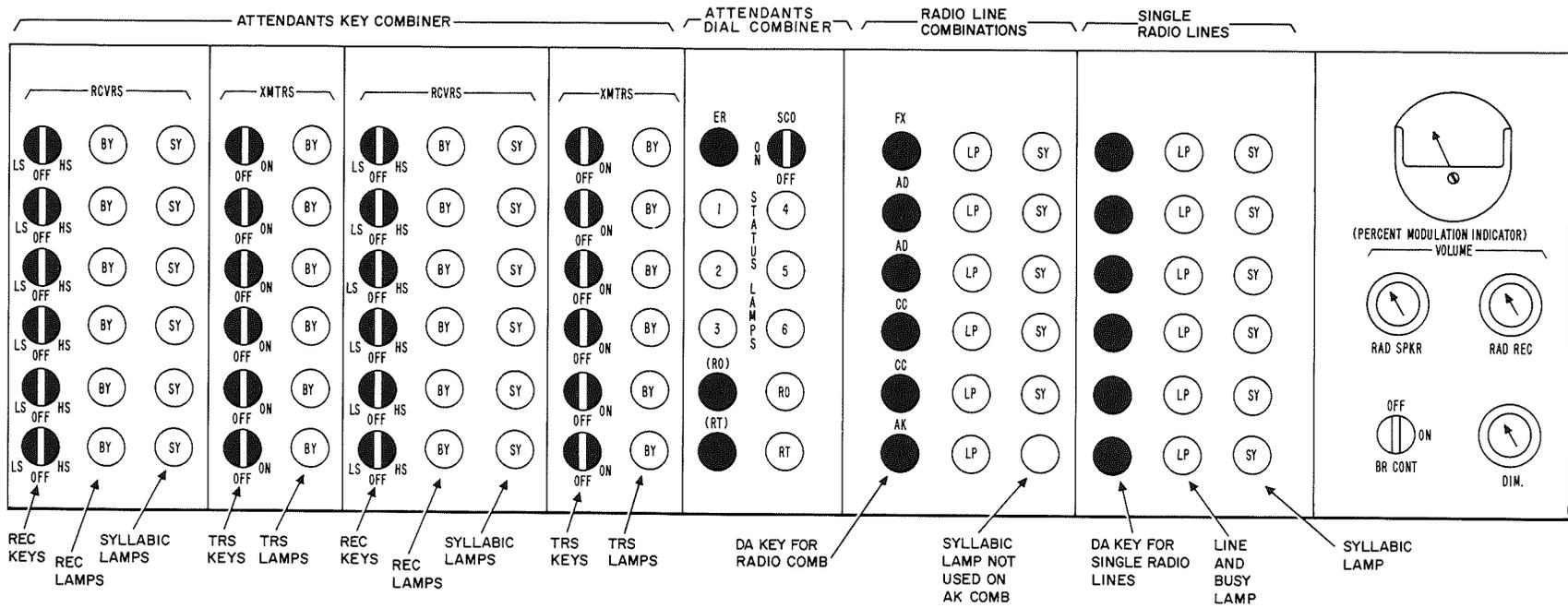


Fig. 3—Typical Arrangement of Radio Position (PB Dial, Pilot, and Override Lamps Not Shown)

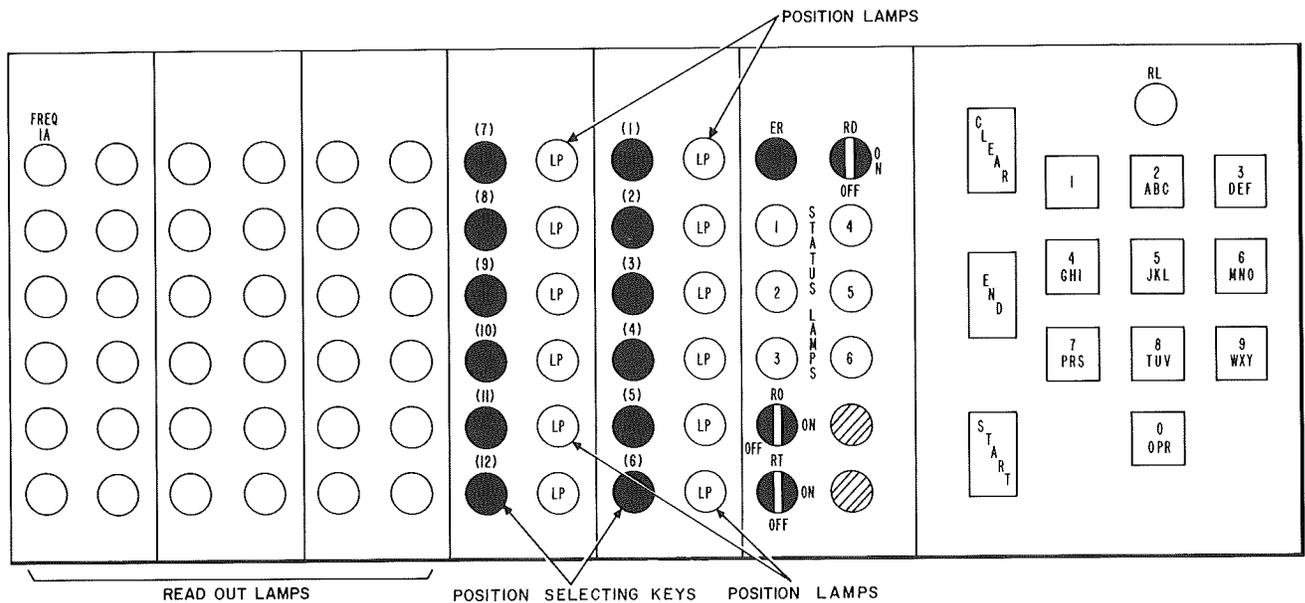


Fig. 4—Typical Arrangement of Central Combiner Position

- **CLEAR Key** is used to clear the system of incorrect dial pulses. Clear key should be depressed if a flashing ready lamp is received, as this indicates a mistake in dialing.
- **READY Lamp (RL)** steady indicates that a dialing path has been established. Attendant can start dialing. A flashing ready lamp indicates an unassigned, nonvalid, or restricted code has been dialed, or two keys have been depressed simultaneously. A time-out feature starts operating with the lighting of the ready lamp. Dial path will be removed (lamp out) if each digit is not sent within a given interval of time. Circuit must then be reselected.

KEY PANEL MODULES (Fig. 2)

2.04 Attendant position may be equipped with any number of module units, depending on the requirements of that particular position. Each module unit has six control keys, associated line lamps and, in radio combining, syllabic lamps. Additional units may be installed as required. Key panel modules may be mounted vertically or horizontally in the face of the console.

2.05 Attendant at an operating position may establish connections by one of two methods: direct access (DA) or indirect access (IA).

Direct Access (DA) Keys

2.06 Each position is equipped with a number of DA keys, one key per line. Attendant depresses a DA key and is connected through system to another attendant, land line, single radio line, or a combination of radio lines.

Indirect Access (IA) Key

2.07 Each position is equipped with only one IA key. This enables a position to be connected to any type of line or position even though it does not have DA capability. This is accomplished by depressing IA key which enables the attendant with his pushbutton dial to dial the indirect access code number of a line, position, or a single radio line.

Indirect Access Codes

2.08 Each attendant position, line, and single radio line will be assigned an indirect access code number consisting of two or three digits.

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- **Valid Code**, a predetermined group of indirect access code numbers available for assignment. For additional information, see Table A of SD-69311-01 and SD-69397-01.
- **Nonvalid Code**, groups of ten, 3-digit codes that are not available for assignment because of equipment limitations.
- **Unassigned Code**, single 2- or 3-digit codes within a valid group that are available for assignment but have not been used.
- **Restricted Code**, valid 2- or 3-digit codes assigned to land and radio lines that have been restricted from some attendant positions.

Hold Key (HLD)

2.09 A nonlocking pushbutton key used to establish a hold condition on central office or PBX lines only. A winking line lamp indication is provided at all positions having a DA to the line to indicate when a line is being held. If the connection was originally established by IA, there will be no lamp indication to show the line is being held.

Short Ring Key (SR)

2.10 Nonlocking pushbutton key used to provide a timed ringing signal on manual ringdown lines.

Ring and Flash Key (R&F)

2.11 Nonlocking pushbutton key used to take the place of a switch hook on a central office or PBX line. Key is also used on ringdown lines to provide signaling.

Chime Cutoff Key (CH)

2.12 Locking turnbutton key used to cutoff position chime signals.

Signal Restore Key (SIG RST)

2.13 Locking turnbutton key, with an ON and OFF position, used to control the position signal blanking feature.

Secondary Lamp Cutoff Key (SEC LPS)

2.14 Locking turnbutton key, with an ON and OFF position, used by an attendant to control the secondary common answering lamps on another preassigned attendant position.

Headset-Loudspeaker Key (HS-LS)

2.15 Nonlocking pushbutton key used to transfer an incoming overrider's speech from a headset to a loudspeaker and vice versa. Associated with the key is a lamp indicating when the speech is directed to the loudspeaker.

Primary and Secondary Common Answering Keys

2.16 Positions may be equipped with primary and secondary common answering lamps and keys, each group of which consists of four lamps and a pushbutton key. Three of the lamps indicate incoming calls; the other lamp indicates by fluttering when the attendant has answered a call.

2.17 Primary common answering (PCA or PA) provides terminations for calls which are directed to a particular position by means of the local line circuit.

2.18 Secondary common answering (SCA or SA) is a feature of a predesignated position which is used as a backup for a primary common answering position.

2.19 Each position can be a primary position for certain lines and a secondary answering position for other lines.

Long Line Common Answering Key (LLCA or LL)

2.20 LLCA is provided to permit the answering of a predetermined number of selective signaling-type private lines by depressing a common pushbutton key. Position is provided with two lamps and a pushbutton key for this purpose. One lamp indicates one or more calls have been directed to the position. The other lamp indicates by fluttering when the LLCA key has been depressed to answer a call.

2.21 If a position has direct access to a long line circuit, the termination and lamp signal of

an incoming call is directed to the DA key and not to the LLCA key.

Lamp Signals

2.22 Certain line-lamp signals are provided to show line status:

- An unlit lamp indicates the line is not in use at any position.
- Steady lamp indicates the line has been selected and is in use at another position.
- Flashing lamp (1/2 second on, 1/2 off) indicates an incoming call.
- Winking lamp (60 pulses per minute) is associated only with central office and PBX lines and indicates the line is being held. All other lines are held automatically until they are released by the attendant.
- Fluttering lamp (12 pulses per second) indicates to the attendant which pushbutton key he has depressed.

2.23 Other lamp indications are:

- Position override (intercommunication) lamp, when lit, indicates that one or more positions have joined this position via the override feature.
- Position pilot lamp, when flashing, indicates incoming calls directed to this particular attendant position. Steady lamp indicates position is being used as a test position.

Brightness Control in Dark Environment Areas (Fig. 3)

2.24 Where dark environment is required, equipment is provided to control the brightness of signal lamps at an attendant position. An arrangement may also be included for dimly lighting line lamps in the *no signal* condition. Lamps are controlled as follows:

- **Brightness Control Key (BR CONT)**, a locking turnbutton key with an ON and OFF position. When OFF, the DIM regulator is disabled. All idle signal lamps are extinguished. When ON, dim lighting is provided on all line

lamps in the no signal condition to assist in originating calls.

- **Dim Regulator (DIM)** is a manually adjusted potentiometer used to regulate the brightness of active signal lamps. It has no control over the brightness of idle line lamps, position lamp, or override lamp.

Position Signal Blanking

2.25 This feature automatically extinguishes all other line lamp displays at a position upon receipt of an incoming call or calls specifically directed to that particular position. A fluttering lamp at the position, however, is not affected.

2.26 Position blanking works in conjunction with the position pilot lamp. Pilot lamp will continue to flash while any PCA, LLCA, and some preassigned DA lines remain unanswered. Blanked-out lamps will be restored when the position pilot lamp stops flashing.

- **Signal Restore Key (SIG RST)** is a locking turnbutton key with an ON and OFF position. In the OFF position, position signal blanking will be effective. Key in the ON position will disable the blanking feature of that position and restore lamp signals.

AUXILIARY LAMP PANELS

Master Panel

2.27 A field of 100 lamps is used to indicate the status of all lines in the ARTCC. During light load periods, the panel facilitates the answering of incoming calls to unattended positions. By dialing the IA code number of the incoming line, any position can pick up the call. A lamp cutoff key (LD CO) is provided to control the lamp display.

Position Panel

2.28 A field of 23 lamps is used to indicate the status of a limited number of lines in the ARTCC. A lamp display cutoff key (LD CO) is provided to control the lamp display.

Per Cent Modulation Indicator

2.29 A volume-indicating meter is used to give the attendant a visual indication of his speech level. Meter is mounted on the attendant console.

Syllabic Lamps

2.30 A syllabic lamp is associated with each DA key assigned for the selection of single radio lines or for connection to a combination of radio lines, except attendant key-controlled combining.

2.31 The intensity of the lamps is arranged to vary with the volume amplitude of the speech received from a single radio line or a combination of radio lines.

COMBINING OF RADIO LINES (Fig. 3)

2.32 Combining is the grouping of two or more radio lines into a common loudspeaker and a single DA key. This permits an attendant to monitor (listen to only) a combination of radio lines while accepting and originating other calls. To originate or answer a call, a single DA key is used to seize the combination of radio lines. This transfers incoming speech from the loudspeaker to attendant headset.

2.33 There are four methods of combining radio lines for attendant position: fixed, attendant key-controlled, attendant dial-controlled, and central combining.

Fixed Combining

2.34 Attendant has no control over the selection of radio lines in a fixed combination. Attendant has a DA key, line lamp, and a syllabic lamp for each combination.

Attendant Key-controlled Combining

2.35 Attendant may select from one to twelve preassigned radio lines at his position for combining. This permits selection of radio lines either singly or in various combinations.

2.36 Each radio line at the position is equipped with the following:

- **REC Key** is a locking key with an LS OFF HS position. Key operated to the LS position places the receive channel in a combination that is monitored over the loudspeaker and excludes the transmit channel from the position. REC key operated to the HS position prevents monitoring of the channel until the DA key is operated to seize all channels in a combination.

- **REC Lamp**, when ON, indicates receive channel only has been placed in a combination.

- **TRS Key** is a locking key with an ON and OFF position. TRS key operated to the ON position places the receive and transmit channel in a combination.

- **TRS Lamp**, when ON, indicates receive and transmit channels have been placed in a combination.

- **Syllabic Lamp** is connected to the receive channel of each radio line. Lamp lights on incoming voice currents to indicate incoming call.

- If the REC key is operated to LS position and its associated TRS key is operated to the ON position, receive channel will be connected to both the loudspeaker and the headset when the DA key is operated to seize a combination.

Attendant Dial-controlled Combining

2.37 Combining of radio lines is controlled by the attendant with his pushbutton dial and the use of IA code numbers. Attendant may establish a maximum of six radio lines in each combination.

- **Receive-Transmit (RT)** key is used to connect the transmit and receive channels of a radio line to a combination.

- **Receive Only (RO)** key is used to connect the receive channel only of a radio line to a combination.

- **Erase (ER)** key is used by the attendant to release all radio lines in a particular combination.

- **Status** lamps indicate the number of radio lines in a particular combination.

- **Status Lamp Cutoff (SCO)** key is used to cutoff the status lamps.

Central Combining (Fig. 4)

2.38 A central combiner groups radio lines into combinations for attendant positions. Central combiner is a nonoperating position. It cannot originate or answer a call.

2.39 Central combiner console is equipped with the following:

- **Position (POS)** selection keys are used to select a particular attendant position for radio combining. POS key is also used with the Read Out (RD) key and Read Out lamps to provide a visual identification of radio lines that have been grouped in a combination for a particular attendant position.
- **Receive-Transmit (RT)** key selects receive and transmit channels of a radio line that is to be placed in a combination.
- **Receive Only (RO)** key selects the receive channel only of a radio line that is to be placed in a combination.
- **Erase (ER)** key, in conjunction with the POS, will release all radio lines in this particular attendant combination.
- **Pushbutton (PB) Dial** is used to dial the IA code numbers of individual radio lines that are to be placed in combination. A maximum of six radio lines may be grouped in the same combination.
- **Status** lamps indicate the number of radio lines that have grouped in a combination for an attendant position.
- **Read Out (RD)** key is locking key with an ON and OFF position. RD key is used with the POS key and Read Out lamps to identify radio lines grouped in a combination for a particular attendant position. Flashing lamp indicates transmit and receive channels have been grouped in a combination. Steady lamp indicates receive channel only has been placed in a combination.

LOUDSPEAKER SETS

2.40 Attendant position may be equipped with a radio and a land-line loudspeaker set. Customer will furnish loudspeaker sets for positions equipped with the Automatic Radio Transfer feature. Telephone company will furnish all other loudspeaker sets as described below:

2.41 Radio loudspeaker set is used for monitoring single radio lines or a combination of radio lines.

- Volume control is located on the position console.

- ON-OFF switch is operative.

- Loudspeaker set may be connected to customer-owned recording equipment and may be used for playback.

2.42 Land-line loudspeaker set is used to monitor voice-signaling land-lines, overrider's speech, and chime signals.

- Volume control will be located on the speaker.

- ON-OFF switch will be inoperative.

- Headset-Loudspeaker (HS-LS) key, associated with the land-line loudspeaker set, is used to transfer incoming speech from headset to loudspeaker and vice versa. A lamp (LS) indicates when incoming speech has been transferred to the loudspeaker.

ATTENDANT TELEPHONE CIRCUIT

2.43 The attendant is connected to the system by plugging a headset or handset into the jacks of a position console. A push-to-talk (PTT) switch will be provided either with the instrument or as a foot switch.

2.44 Headsets removed from the jacks will disable the position and release all existing connections. However, attendant can still operate his SEC-LPS key and cut on the secondary common answering lamp display at his supporting position. Lamp signals and land-line loudspeaker set will continue to function.

Telephone Jacks

2.45 Position may be equipped with two sets of jacks on the left side of the console. Jacks are wired for talk-listen operation. No monitor jacks are provided. Telephone jacks can only be used to originate or accept land-line calls.

Radio Jacks

2.46 Position may be equipped with two sets of radio jacks on the right-hand side of the console. Radio jacks can be used on either land-line or radio lines.

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Automatic Radio Transfer

2.47 When the headset of a position is plugged into the radio jacks, this circuit automatically connects the radio lines to the headset whenever all land-line connections are released.

2.48 If a land-line key is operated at the position, radio lines are disconnected from No. 300 Switching System and any radio channels being monitored by the position will be transferred to the customer-owned loudspeaker.

2.49 Position *cannot* be used for any type of radio combining.

SUPERVISOR POSITION (Fig. 1)

2.50 Position is arranged for operation as a master position or may be subdivided into a master and subordinate position to be operated by two or more attendants. Position may be equipped to divide into subordinate positions for about every thirty DA lines.

2.51 Each line circuit in the system has a DA appearance on supervisor position. In addition to DA keys, each position (master and subordinate) has a pushbutton dial, HLD, SR, R&F, and an RLS key. Only the master position has an IA key and an override lamp.

2.52 When a headset is plugged into the master position, attendant can operate all DA keys on the position. As additional attendants plug into the subordinate position jacks, supervisor position is divided into master and subordinate positions.

2.53 Supervisor position maintains control over restricted lines in the ARTCC with a control key (CK) and lamp. A control key and lamp is provided for each restricted line in the system.

2.54 Attendants who do not have a DA appearance of restricted lines on their position must call the supervisor to request clearance when they need to place a call on a restricted line. If clearance for one call is granted, the supervisor momentarily operates the CK key which permits any attendant to gain access via IA to the restricted line. If a series of calls are to be made, CK is not restored to normal until all calls have been completed. CK lamp, when lit, indicates the restriction on a particular line has been removed.

2.55 Certain selected line circuits may also be terminated in the LLCA or PCA for urgent alarm coverage when a special emergency code number is dialed. Position pilot lamp will flash and a buzzer will signal until the emergency call is answered.

2.56 Supervisor position may be used to *originate* and answer call even though the common control equipment of the system has failed.

▶CENTRAL COMPUTER COMPLEX CONSOLE POSITION (Fig. 5)

2.57 The central computer complex console position J53026HK is used for voice communication between the computer location and ARTCC positions, associated peripheral facilities, and local PBX lines. The position layout is similar to that of a typical supervisor position layout except that only 6 direct access keys are provided and some of the supervisory function keys are not provided.◆

POSITION RECORDING

2.58 Attendant position will be connected to customer-owned voice-recording equipment. A warning beep tone will be provided on central office and PBX lines.

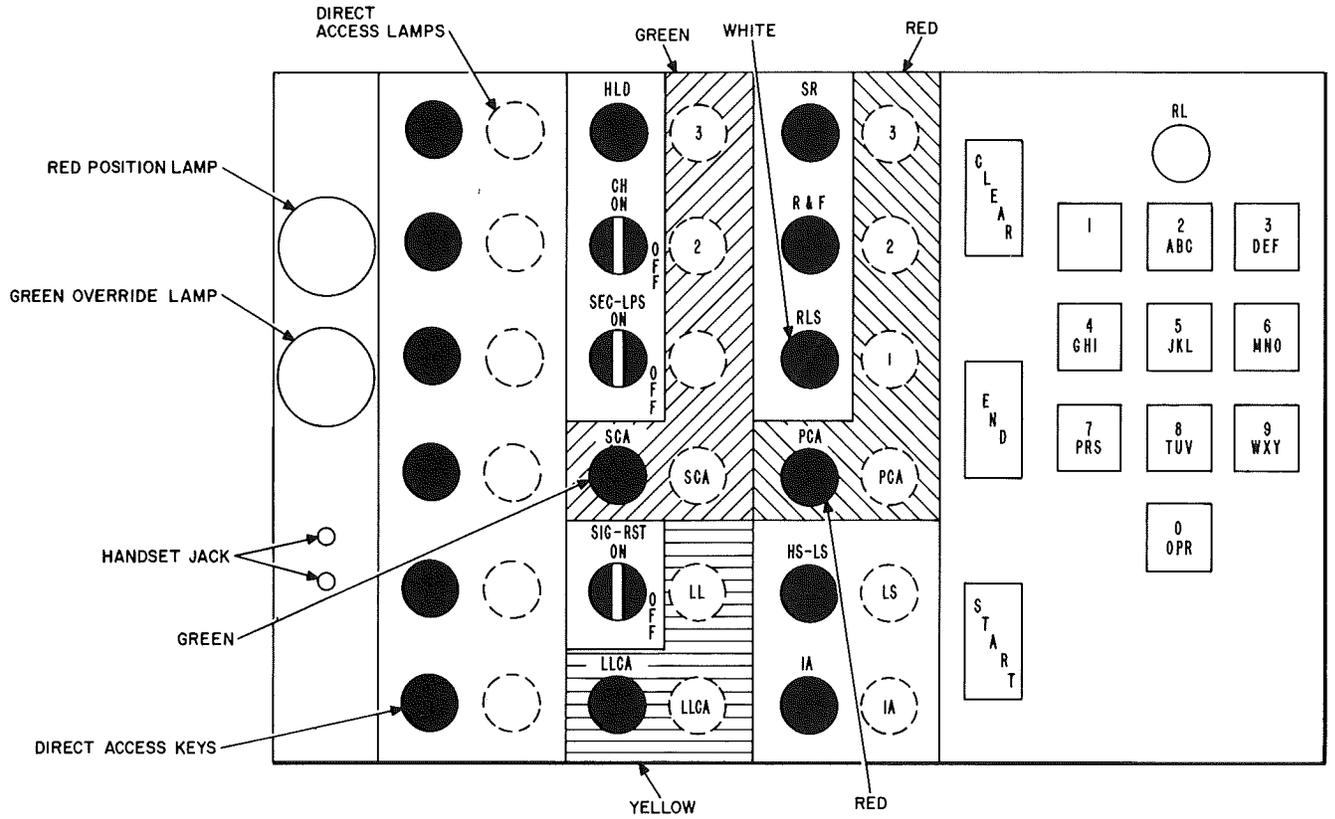


Fig. 5—Computer Complex Console Position J53026HK-Panel Layout