

TOSHIBA

STRATA DK

Strata DK Release 2 & 3

DK24 – DK56 – DK96

Digital Key Telephone Systems

TOSHIBA AMERICA INFORMATION SYSTEMS, INC.

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Under no circumstances will the retail customer or any user or dealer or other person be entitled to any direct, special, indirect, consequential, or exemplary damages, for breach of contract, tort, or otherwise. Under no circumstances will any such person be entitled to any sum greater than the purchase price paid for the item of equipment that is malfunctioning.

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No TAIS dealer and no person other than an officer of TAIS may extend or modify this warranty. No such modification or extension is effective unless it is in writing.

STRATA DK

GENERAL END USER INFORMATION

The STRATA DK Electronic Digital Key telephone systems are registered in accordance with the provisions of Part 68 of the Federal Communications Commission's Rules and Regulations.

FCC REQUIREMENTS

Means of Connection: The Federal Communications Commission (FCC) has established rules which permit the STRATA DK system to be connected directly to the telephone network. Connection points are provided by the telephone company—connections for this type of customer-provided equipment will not be provided on coin lines. Connections to party lines are subject to state tariffs.

Incidence of Harm: If the system is malfunctioning, it may also be disrupting the telephone network. The system should be disconnected until the problem can be determined and repaired. If this is not done, the telephone company may temporarily disconnect service. If possible, they will notify you in advance, but, if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Service or Repair: For service or repair, contact your local Toshiba telecommunications distributor. To obtain the nearest Toshiba telecommunications distributor in your area, call Toshiba America Information Systems, Inc., Telecommunication Systems Division in Irvine, CA (714) 583-3700.

Telephone Network Compatibility: The telephone company may make changes in its facilities, equipment, operations, and procedures. If such changes affect the compatibility or use of the STRATA DK system, the telephone company will notify you in advance to give you an opportunity to maintain uninterrupted service.

Notification of Telephone Company: Before connecting a STRATA DK system to the telephone network, the telephone company may request the following:

- 1) Your telephone number.
- 2) FCC registration number:
 - STRATA DK may be configured as a Key or Hybrid telephone system. The appropriate configuration for your system is dependent upon your operation of the system.
 - If the operation of your system is *only* manual selection of outgoing lines, it may be registered as a Key telephone system.
 - If your operation requires automatic selection of out-

going lines, such as dial access, Least Cost Routing, Pooled Line Buttons, etc., the system must be registered as a Hybrid telephone system. In addition to the above, certain features (TIE Lines, Off-premises Stations, etc.) may also require Hybrid telephone system registration in some areas.

- If you are unsure of your type of operation and/or the appropriate FCC registration number, contact your local Toshiba telecommunications distributor for assistance.

DKSU Manufactured in Japan

Key system: CJ69XA-10242-KF-E

Hybrid system: CJ69XA-10243-MF-E

DKSU Manufactured in USA as of November 1989

Key system: CJ687N-10578-KF-E

Hybrid system: CJ687N-10579-MF-E

3) Ringer equivalence number: 0.2B (see Table A). The ringer equivalence number (REN) is useful to determine the quantity of devices which you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, but not all, the sum of the RENs of all devices connected to one line should not exceed five (5.0B). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to ascertain the maximum REN for your calling area.

4) Network connection information USOC jack required: RJ14C, RJ2EX, RJ2GX, RJ21X (see Table A). Items 2, 3 and 4 are also indicated on the equipment label.

RADIO FREQUENCY INTERFERENCE

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the manufacturer's instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference; in which case, the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

This system is listed with Underwriters Laboratory.



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Strata[®] *DK*

GENERAL DESCRIPTION

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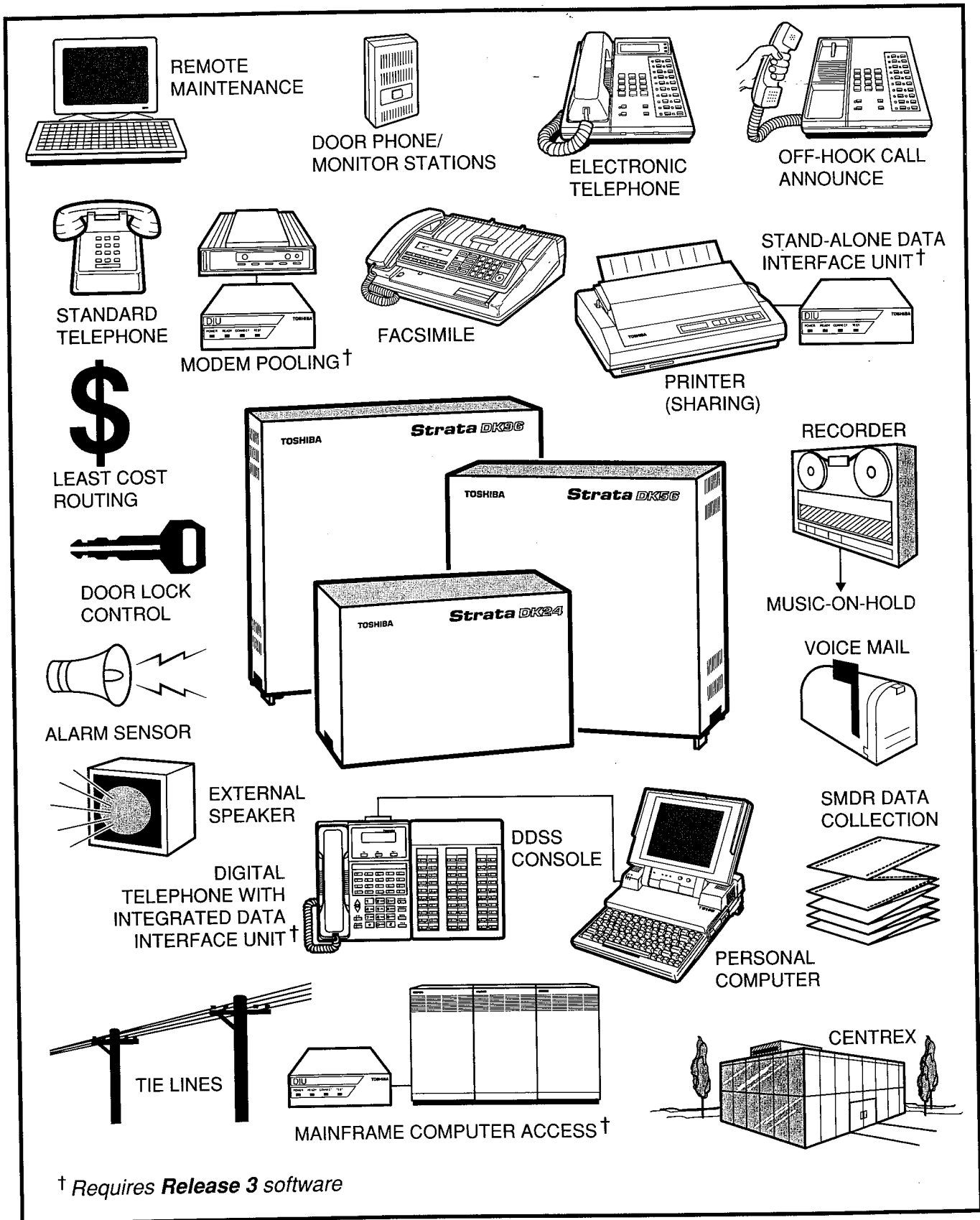


FIGURE 1—STRATA DK PERIPHERALS

1 GENERAL

Summary

STRATA DK digital key telephone systems are advanced key/hybrids that are electrically compatible with the public telephone network (loop start CO lines and E & M TIE lines) and can function in PBX or Centrex environments.

NOTE:

Every time "CO line" is mentioned hereafter, the information also applies to Centrex and PBX lines.

Each system can be configured as key or hybrid, with separate Federal Communications Commission registration numbers for each type. The appropriate configuration for an individual system depends on its function.

STRATA DK24, DK56, and DK96 models are very similar in design. Figure 1 illustrates the impressive range of basic features and options available on all three systems; Figure 2 shows the cabinets and their relative sizes. To accommodate a wide variety of users' application and expansion needs, system cabinet configurations are extremely flexible.

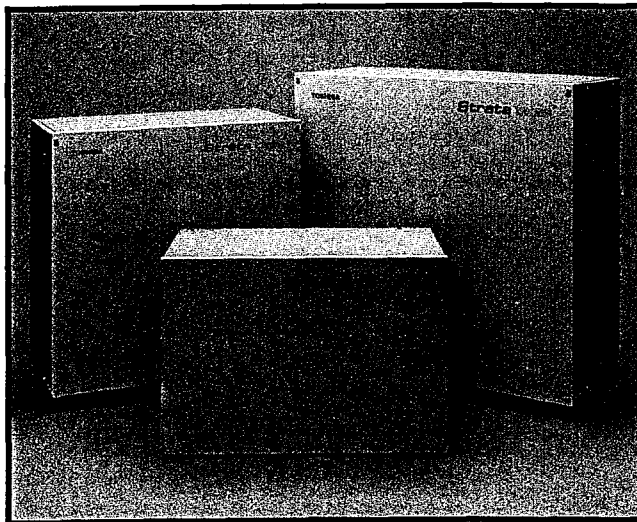


FIGURE 2—STRATA DK24, DK56, and DK96 CABINETS

The functional difference between models is primarily one of capacity (see Table A). STRATA

DK24 can be configured in possible combinations extending from 32 stations and 8 CO lines to a square system of 16 x 16. STRATA DK56 can be configured in possible combinations extending from 56 stations and 4 CO lines to 24 stations and 20 CO lines. STRATA DK96 combinations extend from 96 stations and 8 CO lines to 40 stations and 36 CO lines (see Table A).

Toshiba digital telephones are connected to the system with 1-pair cabling. With a 2B+D ISDN-type digital link, this single pair transmits and receives simultaneous voice and data along with control information. Toshiba electronic telephones are connected to the system with 2-pair cabling, and can access most of the same advanced features as the digital telephones. Solid-state digital electronics inside the key service unit translate digital signals from the electronic and digital telephone dialpads into either DTMF tones or rotary dial signals, depending on the central office's requirements (see Peripheral Hardware Descriptions). Many customer-supplied standard telephones and auto attendant/voice mail devices are also compatible with the systems, because the systems provide end-to-end DTMF signaling between digital and electronic telephones and devices connected to standard telephone ports.

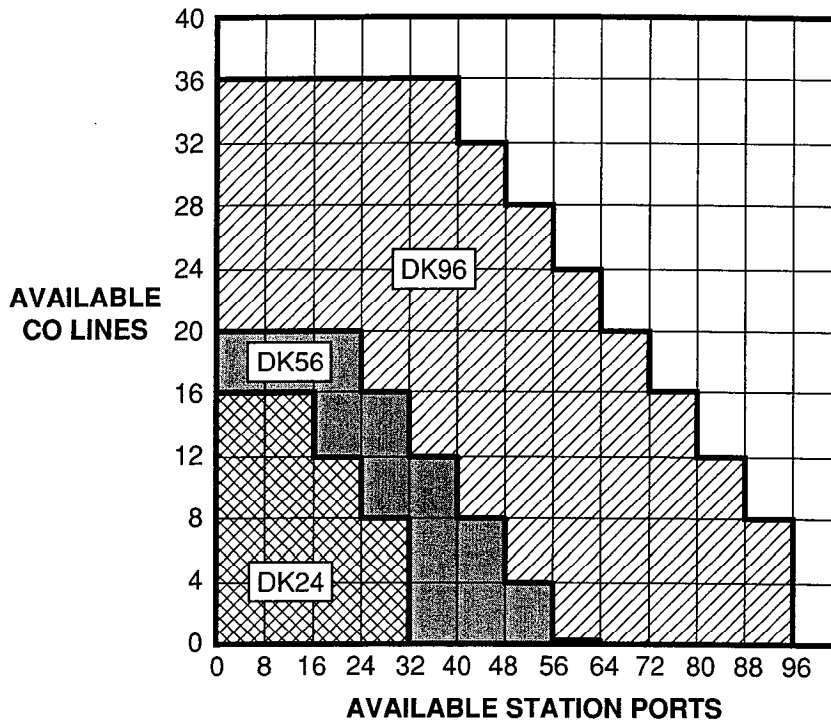
Technology

STRATA DK digital key telephone systems apply the following technology:

Pulse Code Modulation: The system is completely digital. Therefore, talk paths operate through digital switching, as opposed to analog crosspoints. Analog-to-digital and digital-to-analog conversion is accomplished by CODECs on station and CO line PCBs. Pulse Code Modulation technology allows fully non-blocking intercom and outside line talk paths.

Stored Program Control: The system uses a 16-bit microprocessor to achieve stored program control. System operating software is stored in read only memory (ROM). The system's individual configuration and custom pro-

**TABLE A
 MAXIMUM CONFIGURATIONS**



Maximum Configurations

DK24 (PCTUS)		DK24 (PCTU) ⁴		DK56		DK96	
CO lines	Stations	CO lines	Stations	CO lines	Stations	CO lines	Stations
16	16	16	16	20	24	36	40
12	24	12	24	16	32	32	48
		8	32	12	40	28	56
				8	48	24	64
				4	56	20	72
						16	80
						12	88
						8	96

NOTES:

1. The above station capacities apply to any combination of standard telephones, 6500-series electronic telephones, and 1000-series digital telephones. Station capacities using older Toshiba electronic telephones are given in STRATA DK installation documentation.
2. Installing a TIE line (PEMU) PCB or an optional interface (PIOU, PIOUS, or PEPU) PCB reduces available CO lines by four or available ports by eight.
3. The DK24's 32-station limit is a result of power supply capacity.
4. PCTU2 or PCTU3.

gramming is stored in random access memory (RAM). RAM is protected by a lithium battery, which has at least a six year life span.

Microprocessors: The system's main microprocessor is a 16-bit 68000-type that operates at a clock speed of 8 MHz. It is located on the system's control board (PCTU). Local microprocessors are located on all printed circuit boards. The local microprocessor is an 8-bit TMP90C840-type that operates at a clock speed of 10 MHz.

Custom Electronic Circuitry: Use of large scale integration (LSI) technology enables STRATA DK circuit design to be simple and efficient. More circuitry fits onto smaller printed circuit boards (PCBs) and affords a compact system. Widespread use of CMOS circuits minimize the system's power requirements.

Power Supply: The system uses a switching-type power supply to generate $\pm 5\text{VDC}$ and -24VDC . Mechanical circuit breakers on the front panel, which may be reset if necessary, protect these DC voltages. (See Table B for General Requirements).

- The source of the power used is a standard 117VAC, 15 amp circuit. The power supply has a built-in battery charger to maintain customer-supplied batteries which can be connected as a backup. This allows full normal system operation for a number of hours in the event of a primary power failure. (For more detail, see Table C).

Maintenance and Programming

As a result of large scale integrated circuitry, STRATA DK telephone systems have a minimal number of printed circuit board types. Less time is spent isolating board failures. This directly translates to saving time and money.

Hardware maintenance and repair procedures describe how to quickly and easily locate, remove, and replace defective modules, with

minimal or no system downtime.

A remote administration and maintenance option can be added to install and maintain customer software, and to test hardware from remote locations.

On-site maintenance and programming is accomplished using:

- The 20-button LCD digital or electronic telephone designated for programming and maintenance, always connected to station port 05. This telephone may be used as a normal station when not used for programming.

-or-

- An on-site ASCII terminal connected to an optional maintenance port.

2 PERIPHERAL HARDWARE DESCRIPTIONS

A wide variety of peripheral equipment is compatible with all three systems (see Figure 1). Peripherals fall under four different categories: digital telephones, electronic telephones, Toshiba-supplied peripherals, or customer-supplied peripherals. This section describes the Toshiba-supplied equipment. When applicable, system interface information is included.

Digital Telephones†

There are two digital telephone models available. The phones are enclosed in a stylish, impact-resistant case with a charcoal gray matte finish, and blend easily into any progressive office environment.

Both digital telephone models and the digital DSS console (see Digital Direct Station Selection Console) have the same dimensions:

Height: 3.6 in. (92 mm)
Width: 7.3 in. (184 mm)
Length: 9.0 in. (229 mm)

In standard form, all digital telephones may be wall mounted without additional equipment and are hearing aid compatible.

† Requires **Release 3** software.

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DECEMBER 1990**

**TABLE B
GENERAL REQUIREMENTS**

Primary power Input AC AC frequency DK24 power supply DK56 power supply DK96 power supply	85 ~ 135VAC 50/60 Hz 65 watts 140 watts 230 watts																																
Environmental specifications Operating temperature Operating humidity Storage temperature	32 ~ 104°F (0 ~ 40°C) 20 ~ 80% relative humidity without condensation - 4 ~ 158°F (-20 ~ 70°C)																																
Power supply DC voltage output specification	-24VDC: (-26.3 ~ -27.8VDC) +5VDC: (+4.5 ~ +5.5VDC) - 5VDC: (- 4.5 ~ - 5.5VDC)																																
Battery charger characteristics	Charger: current limiting Nominal float voltage: 2.275 volts/cell Charge current: 0.7 amps maximum Battery discharge cut-off voltage: 20.5 ± 0.5VDC																																
PSTU or PESU (circuits 1 & 2) Ring voltage Ringing capability	Square wave output with high/low option jumper: Low position, 130 ± 20VDC peak-to-peak (no-load) High position, 190 ± 25VDC peak-to-peak (no-load) Two ringers maximum per circuit, high or low position																																
PESU or PSTU modem interface data rate	9600 bps maximum																																
BTU rating DK24 DK56 DK96	<table border="0"> <thead> <tr> <th>PART</th> <th>QTY</th> <th></th> </tr> </thead> <tbody> <tr> <td>PEKU</td> <td>3</td> <td rowspan="5">103 BTUs (30 watt hours)</td> </tr> <tr> <td>PCOU</td> <td>2</td> </tr> <tr> <td>PCTUS</td> <td>1</td> </tr> <tr> <td>PIOUS</td> <td>1</td> </tr> <tr> <td>EKTs</td> <td>24</td> </tr> <tr> <td>PEKU</td> <td>5</td> <td rowspan="4">205 BTUs (60 watt hours)</td> </tr> <tr> <td>PCOU</td> <td>3</td> </tr> <tr> <td>PCTU</td> <td>1</td> </tr> <tr> <td>EKTs</td> <td>40</td> </tr> <tr> <td>PEKU</td> <td>9</td> <td rowspan="4">348 BTUs (102 watt hours)</td> </tr> <tr> <td>PCOU</td> <td>5</td> </tr> <tr> <td>PCTU</td> <td>1</td> </tr> <tr> <td>EKTs</td> <td>72</td> </tr> </tbody> </table>	PART	QTY		PEKU	3	103 BTUs (30 watt hours)	PCOU	2	PCTUS	1	PIOUS	1	EKTs	24	PEKU	5	205 BTUs (60 watt hours)	PCOU	3	PCTU	1	EKTs	40	PEKU	9	348 BTUs (102 watt hours)	PCOU	5	PCTU	1	EKTs	72
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TABLE C
RESERVE POWER TIME
TYPICAL RESERVE POWER DURATION ESTIMATES

Quantity of installed PCBs	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Estimated operation time (in hours)	71	45	31	23	19	16	13.5	11.5	10	9	8	7	6	5
Approximate (-24V) current drain (DC amperes)	1	1.7	2.4	3.1	3.8	4.5	5.2	6	6.6	7.3	8	8.7	9.4	10

Time is estimated with the following considerations:

1. Batteries have full charge at start of operation.
2. Batteries (2) are connected in series.
3. Batteries are 12VDC, rated at 80 amp/hours each.
4. System is operating at full load traffic with LCD phones.
5. Batteries used for this test are gel-cell and maintenance-free. Reserve duration will vary depending upon battery type, age, and manufacturer. These figures should only be used as an estimate.

Each digital telephone also features a standard modular handset cord and is connected to the system with a single-pair modular line cord which can transmit and receive simultaneous voice and data.

20-button Digital Telephone (Figure 3): The 1020H provides handsfree answerback capability on intercom lines.



FIGURE 3—20-button DIGITAL TELEPHONE

20-button Liquid Crystal Display Digital Telephone (Figure 4): The 1020SD is available as a full speakerphone with a 32-character, alphanumeric liquid crystal display (LCD) field. The numerous LCD features include:

- Alphanumeric Messaging
- Called Station Messaging

- Calling Station Messaging
- Busy Station Messaging†
- Group/Remote Station Messaging†
- Busy Lamp Field (BLF) Indication
- CO line Identification
- Speed Dial Memo
- Timed Reminders with Messaging
- Intercom User Name/Number Display
- Call Duration Display
- Date/Time of Day
- Call Progress Information



FIGURE 4—20-button LIQUID CRYSTAL DISPLAY DIGITAL TELEPHONE

Digital Telephone Upgrade Options: Digital Telephones can be upgraded to transmit and receive simultaneous voice and data. They

†Requires Release 3 software.

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can also be upgraded with off-hook call announce, loud ringing bell, and headset interface capability.

- **Simultaneous Voice and Data:** Digital telephones may be upgraded with an integrated data interface unit (PDIU-DI) to receive and transmit simultaneous voice and data; data and voice calls can be made independently of each other. The PDIU-DI (Figure 5) is easily installed, replacing the usual digital telephone base. Asynchronous data devices, such as personal computers and terminals, can be connected to the standard RS-232 connector of the PDIU-DI. Station users are able to transmit and receive RS-232 data over the PDIU-DI-equipped digital telephone's single twisted wire pair. 2B+D technology enables the digital telephone and the PDIU-DI to share the same wire pair and station port (see Table D).

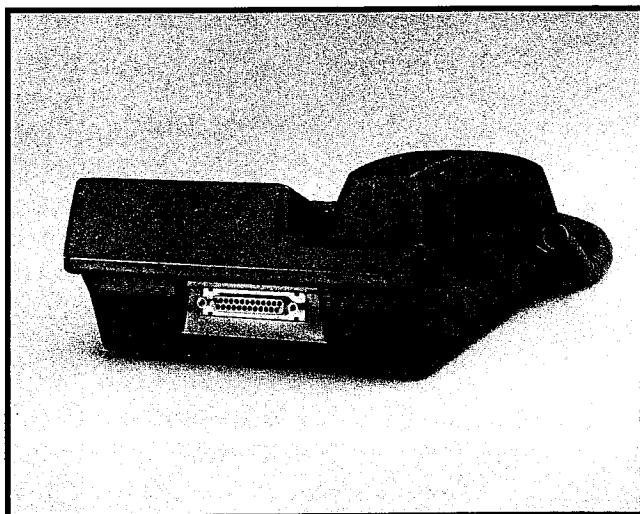


FIGURE 5—INTEGRATED DATA INTERFACE UNIT (PDIU-DI)

NOTE:

The PDIU-DI will function with all slots, except slots 11 ~ 14 in DK96.

- **Off-hook Call Announce Upgrade:** If equipped with an off-hook call announce (OCA) upgrade assembly, each digital telephone may receive intercom calls when the handset is off-hook.
 - The OCA upgrade assembly for digital

telephones is a small printed circuit board, DVSU, which installs inside the telephone base with plug-in connectors.

- Only those telephones programmed to receive OCA announcements require a DVSU.
- An extra wire pair is not required for digital telephones to receive or originate OCA, and no other subassemblies are required for the Digital Telephone Interface PCB (PDKU).
- **Loud Ringing Bell/Headset Upgrade:** Each digital telephone may also be upgraded to provide a loud ringing bell interface and a modular headset interface. To accomplish this, an upgrade assembly consisting of a small PCB (HHEU) installs inside the phone with a plug-in connector. The loud ringing bell and headset options are available simultaneously on a digital telephone.
- **Loud Ringing Bell:** An external speaker (HESB) can be directly connected to the upgraded phone. When the phone rings, the HESB produces a loud tone that mimics the phone's ring. On voice first intercom calls, the HESB amplifies the caller's voice announcement. See the External Speaker option.
- **Headset:** Most standard headsets plug into the HHEU jack and are compatible with the digital telephone.

Option Combinations: A digital telephone may use most of the available upgrade options simultaneously. For example, the same station may be upgraded with a digital DSS console, OCA, loud ringing bell, and headset. Digital telephones upgraded with the PDIU-DI cannot be wall mounted or upgraded with the loud ringing bell, headset, or OCA interface, but can be connected with digital DSS consoles.

Digital Direct Station Selection Console†: The Digital Direct Station Selection (DDSS) console is an optional, dedicated answering station incorporating a busy lamp field (Figure 6), and can only be used with a digital telephone.

†Requires **Release 3** software

It is normally used on systems with a heavy volume of incoming calls. A DDSS console may be used with any digital station connected to the first circuit on the digital telephone interface PCB (PDKU). Up to four DDSS consoles can be supported with a PCTU3 PCB.

- DDSS consoles are equipped with automatic line hold, and voice or tone signaling capability. The consoles have 60 flexible buttons, each with an associated LED (the DDSS button LEDs will light red or green depending on the button function). Each flexible button can be assigned one of the following functions:
 - All call page (pre-assigned)
 - CO line appearance
 - Direct station selection with busy LED
 - Night transfer (pre-assigned tenant 1 or tenant 2, if necessary)
 - Speed dial
- Each DDSS console requires one station port on a PDKU, always the eighth circuit.
- A DDSS console must be assigned to a particular station when the system configuration is defined in programming. All four DDSS consoles can be assigned to one station, or four different DDSS consoles may be assigned to four different stations (or any intermediate combination). The same DDSS console may not be assigned to more than one station.

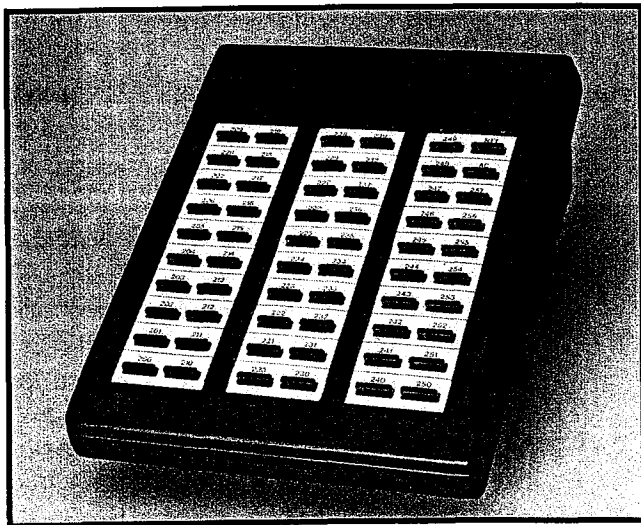


FIGURE 6— DIGITAL DIRECT STATION SELECTION CONSOLE

Electronic Telephones

Four different models of 6500-series electronic telephones are available. The phones are enclosed in a stylish, impact-resistant case (either ash white or charcoal gray) with a matte finish, and blend easily into any progressive office environment. Toshiba electronic telephones that are compatible with the analog STRATA/STRATA_e key telephone systems are also compatible with the STRATA DK systems. However, some features may vary (e.g. LCD and busy lamp field telephones).

All 6500-series electronic telephones and DSS consoles have the same dimensions:

Height: 3.6 in (92 mm)
Width: 7.0 in (178 mm)
Length: 9.0 in (229 mm)

In standard form all electronic telephones may be wall mounted without additional equipment, and they are also hearing aid compatible.

Each electronic telephone also features a standard modular handset cord, and is connected to the system with a 2-pair modular line cord. Various upgrade options, such as the off-hook call announce and loud ringing bell upgrade assemblies, require special wiring. A 3-pair modular line cord is required for off-hook call announce, and a custom external speaker cable is required for the loud ringing bell.

10-button Electronic Telephone (Figure 7):

The 6510 model is available in two variations; as a speakerphone or with handsfree answerback capability on intercom lines.

20-button Electronic Telephone (Figure 8):

The 6520 model is available with handsfree answerback capability on intercom lines.

20-button Liquid Crystal Display Electronic Telephone (Figure 9):

The 6520SD is available only as a speakerphone with a 32-character, alphanumeric liquid crystal display (LCD) field. The numerous LCD features include:

- Alphanumeric Messaging

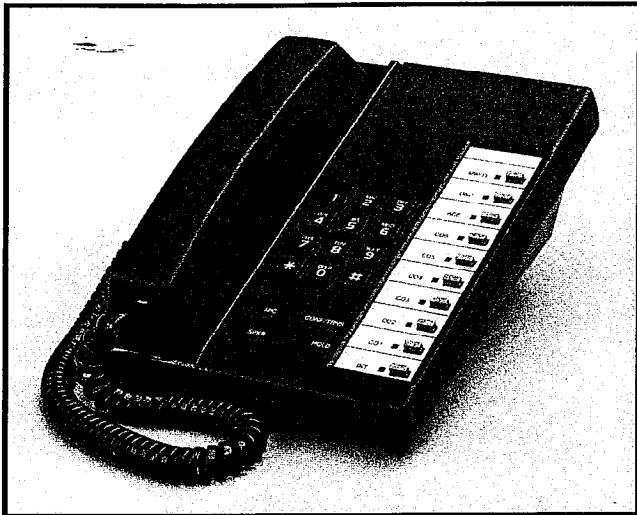


FIGURE 7—10-button ELECTRONIC TELEPHONE

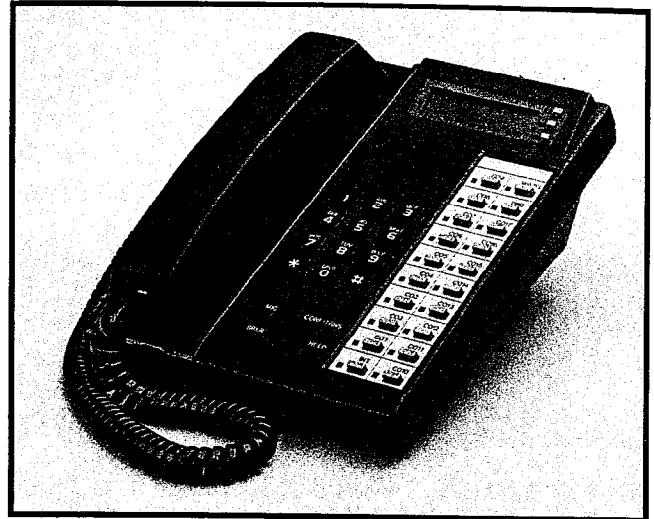


FIGURE 9—20-button LIQUID CRYSTAL DISPLAY ELECTRONIC TELEPHONE



FIGURE 8—20-button ELECTRONIC TELEPHONE

- Called Station Messaging
- Calling Station Messaging
- Busy Station Messaging†
- Group/Remote Station Messaging†
- Busy Lamp Field (BLF) Indication
- CO Line Identification
- Speed Dial Memo
- Timed Reminders with Messages
- Intercom User Name/Number Display
- Call Duration Display

System software allows the customer to assign feature buttons on all electronic telephones in a completely flexible manner.

†Requires *Release 3* software

Electronic Telephone Upgrade Options: All electronic telephones may be upgraded with off-hook call announce, loud ringing bell, and headset capability.

- **Off-hook Call Announce Upgrade:** Each electronic telephone may be upgraded to receive intercom calls when the handset is off-hook by installing an off-hook call announce upgrade assembly.
 - The assembly consists of two PCBs, HVSU and HVSI, which install inside the telephone base with plug-in connectors.
 - Only those telephones programmed to receive OCA announcements require the OCA upgrade.
 - Each station PCB (PEKU or PESU) that supports electronic telephones with OCA capability must be equipped with an EOCU subassembly.
- **Loud Ringing Bell/Headset Upgrade:** Each electronic telephone may also be upgraded to provide a loud ringing bell interface and a modular headset interface. To accomplish this, an upgrade assembly consisting of a small PCB (HHEU) installs inside the phone with a plug-in connector.
 - An external speaker (HESB) can be directly connected to the upgraded phone. When the phone rings, the HESB produces a loud tone that mimics

the phone's ring. On voice first intercom calls, the HESB amplifies the caller's voice announcement. See the External Speaker option.

- Most standard headsets plug into the HHEU jack and are compatible with the electronic telephone.
- An electronic telephone may use all available upgrade options simultaneously. For example, the same station may be upgraded with a DSS console, OCA, a loud ringing bell, and a headset.

Direct Station Selection Console: The Direct Station Selection (DSS) console is an optional, dedicated answering station incorporating a busy lamp field (Figure 10). It is normally used on systems with a heavy volume of incoming calls. A DSS console may be used with any station connected to the first circuit on a PEKU PCB. Up to four DSS consoles can be supported with a PCTU PCB, and up to three with a PCTUS PCB.

- DSS consoles are equipped with automatic line hold, and voice or tone signaling capability. The consoles have 60 flexible buttons, each with an associated LED. Each flexible button can be assigned one of the following functions:
 - All call page (pre-assigned)
 - CO line appearance
 - Direct station selection with busy LED
 - Night transfer (pre-assigned tenant 1 or tenant 2, if necessary)
 - Speed dial
- Each DSS console requires two station ports (circuits 7 and 8) on an electronic telephone interface PCB (PEKU). Only one DSS console may be installed on a particular PEKU.
- A DSS console must be assigned to a particular station when the system configuration is defined in programming. All four DSS consoles can be assigned to one station, or four different DSS consoles may be assigned to four different stations (or any intermediate combination). The same DSS console may not be assigned to more than one station.

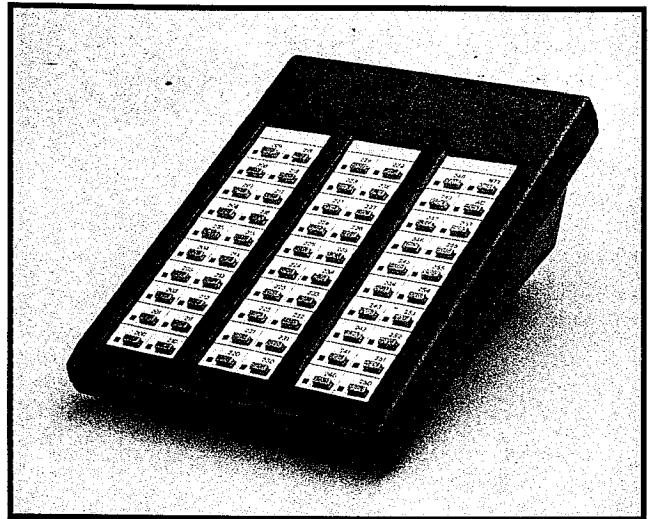


FIGURE 10
DIRECT STATION SELECTION CONSOLE

Toshiba Peripherals

This section describes each peripheral item that is available from Toshiba. Configuration and connection considerations are noted when applicable. For more detail regarding PCB interfaces, see Printed Circuit Boards.

Stand-alone Data Interface Unit (PDIU-DS)†:

The PDIU-DS (Figure 11) is used for making switched data connections for modem pooling, printer sharing, and host/mainframe computer accessing. LEDs on the front panel indicate transmission status. Each PDIU-DS requires

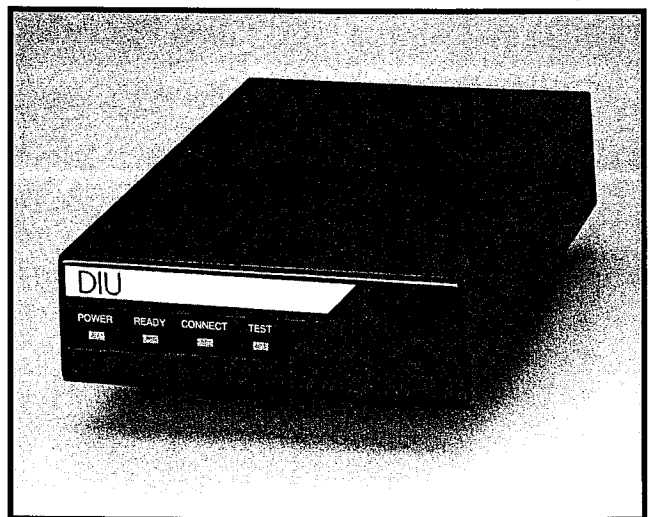


FIGURE 11—STAND-ALONE DATA INTERFACE UNIT (PDIU-DS)

†Requires *Release 3* software

**TABLE D
DATA INTERFACE SPECIFICATIONS**

ITEM	SPECIFICATIONS
Terminal Interface Specification	RS-232C (EIA) V.24/V.28 (CCITT)
Data Transmission Speed	Up to 19.2kbps, asynchronous
Flow Control	Half and full duplex, utilizing RTS/CTS/CD control leads
Automatic Dialing	Based on AT commands: <ul style="list-style-type: none"> • Data speed of AT command is 300, 600, 1200, 2400, 4800, or 9600 • Data bit: 7 or 8 bits • Stop bit: 1 or 2 bits • Parity bit: even, odd, or no parity
Maximum Distance: KSU to DKT/DIU or DIU stand-alone	<ul style="list-style-type: none"> • With local power; 1000 feet with 1-pair (24 AWG) • With battery back-up: 330 feet with 1-pair or 1000 feet with 2-pair (24 AWG)
Number of Wire Pairs	1-pair or 2-pair (24 AWG)
LED Indicators (stand-alone DIU only)	POWER: Lights when power is on READY: Lights when DTE and DIU are ready CONNECT: Lights when DIU is in transmission or ringing mode
Automatic Disconnect Timeout	Forced hang up when DIU does not detect space signal on SD or RD within nine minutes
LSI Technology	<ul style="list-style-type: none"> • One-chip CPU with a clock frequency of 12.288MHz • Memory: ROM, 16KB; RAM, 512kb • Ping-pong transmission: LSI with bearer transmission rate of 512kbps, 2B+D-type link
STRATA DK Option Compatibility	Digital telephones with integrated DIU: <ul style="list-style-type: none"> • No HHEU (headset/loud ringing bell) • No wall mount • No DVSU (off-hook call announce) • Compatible with associated digital DSS console
Cabling/Connectors	<ul style="list-style-type: none"> • DIU to DTE/DCE device: 8-wires, 50 feet maximum, 24 AWG: compatible with RJ-45, 8-wire modular cable and RJ-45 to DB25 RS-232 modular adaptors • Stand-alone DIU: RJ11 modular connector • Integrated DIU: connected inside digital telephone • Stand-alone DIU jumper plugs enable straight wire connection to a DTE or DCE device without null-modem cables or adaptors

one 2B+D station port on a PDKU (see Printed Circuit Boards) and will function on one wire pair.

NOTES:

1. The PDIU-DS will function with all slots, except slots 11 ~ 14 in DK96.
2. Modems, printers, and mainframes are connected to the standard RS-232 DB25 connector on the PDIU-DS (see Table D).

Door Phone: In one of its most popular applications, the door phone (Figure 12) mounts outside a building, next to a locked door whose entry requires screening. An individual located outside the building who wants to speak with someone inside simply presses the button on the door phone. A distinctive tone will then sound over the speakers of the digital and/or electronic telephones defined to do so through system programming. Any digital or electronic telephone user can answer and converse with the individual at the door phone. If the system is properly configured, the user can allow entry using a door lock button on the digital or electronic telephone.

- A door phone also functions as a sound monitor. Any telephone can call the door phone and listen to sounds within its immediate area.
- Up to twelve door phones can be support-

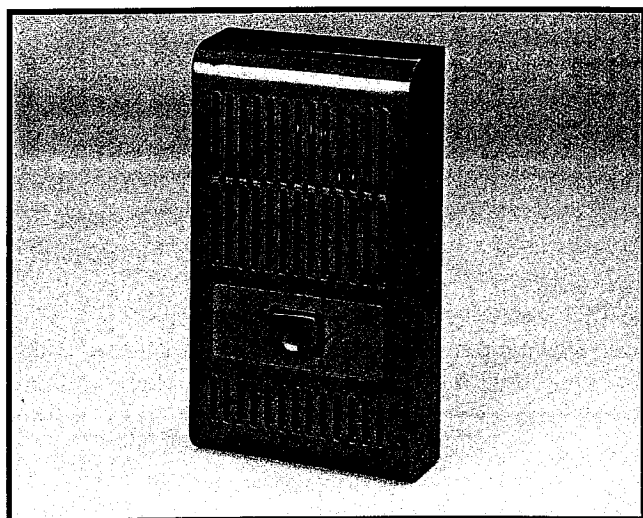


FIGURE 12— DOOR PHONE

ed with a PCTU, up to nine with a PCTUS. A door phone/lock control unit (HDCB—Figure 13) must be installed to support up to three door phones (or two door phones and one door lock control). Each HDCB requires one station port on an electronic telephone interface PCB (PEKU or PESU). Only one HDCB can be installed on a particular PEKU or PESU.

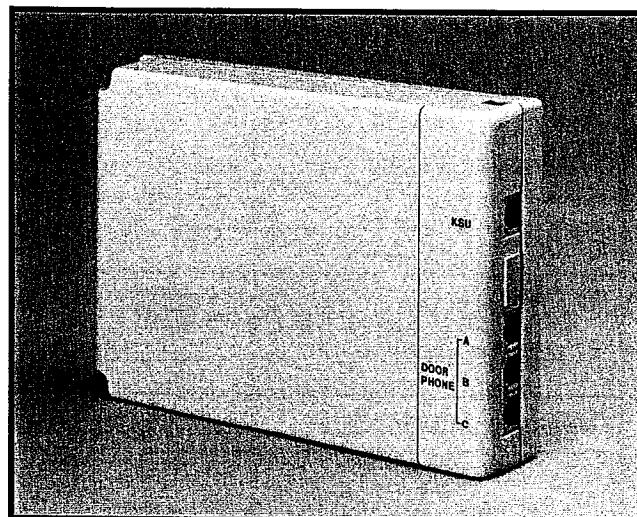


FIGURE 13—DOOR PHONE/LOCK CONTROL UNIT (HDCB)

NOTE:

The PDKU cannot support an HDCB.

- Door lock control requires an optional interface PCB (PIOU, PEPU, or PIOUS) and/or an HDCB. Up to five door lock controls can be installed, but each door lock controlled by an HDCB reduces the door phone capacity on that HDCB from three to two.

External Speaker: The HESB external speaker unit is a 6-inch, 3-watt speaker with a built-in amplifier (Figure 14). A +12 VDC power supply (HACU-120) is included with each external speaker. It connects to the back panel with an 8-foot cord and plugs into a 117VAC, 60 Hz outlet. The HESB has three applications:

- **Amplified Paging Speaker:** Allows the HESB to be used as a paging speaker, reducing the need for other manufacturers' paging equipment.

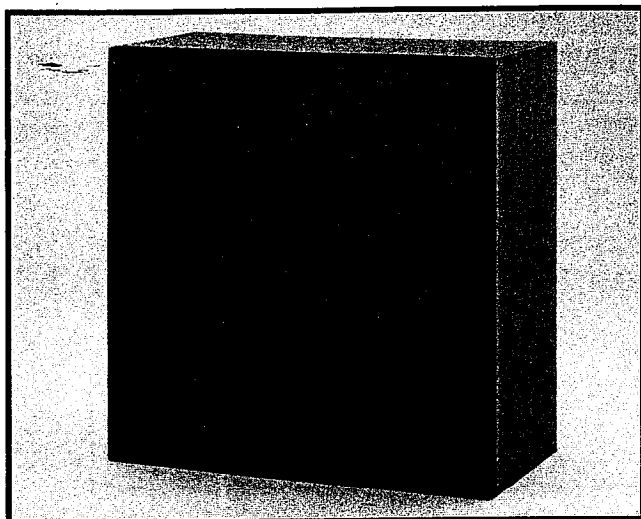


FIGURE 14—EXTERNAL SPEAKER (HESB)

- **Amplified Talkback Speaker:** When used

in conjunction with external page, an HESB can be installed as a talkback device. The HESB is connected to the door phone, which is used as a microphone to provide talkback capability.

- **Loud Ringing Bell:** Allows the voice/tone of a paging/ringing call to any digital telephone or 6500-series electronic telephone to be amplified. When an HESB is connected as a loud ringing bell, an HHEU upgrade assembly must be installed in the digital or electronic telephone's base. See the loud ringing bell/headset telephone upgrade in the last section. An external speaker cable (HESC-65 for electronic telephones; HESC-65A for digital telephones) connects the station to the speaker.

TABLE E
 STATION LOOP REQUIREMENTS

Device Description		Max Loop Resistance (Including Device)	Max Distance from KSU to Device	Number of Wire Pairs ¹
PEKU (ckts 1 ~ 8) or PESU ² (ckts 5 ~ 8)	Electronic telephone, door phone/control boxes	40 ohms	1000 ft. (303 m)	All need 2-pair. EKTs which receive OCA calls need 3-pair. ¹
PEKU (ckts 7 & 8)	DSS consoles	20 ohms	500 ft. (152 m)	
PSTU (ckts 1 ~ 8) or PESU ² (ckts 1 & 2)	Standard telephones, voice mail, auto attendant, etc.	300 ohms	Approx. 3000 ft. (909 m) with 150 ohm device. See manufacturer's product specifications for exact resistance of device.	1-pair
PDKU (ckts 1 ~ 8)	Digital telephones	40 ohms	1000 ft. (303 m)	1-pair
PDKU (ckt 8)	DDSS consoles	20 ohms	1000 ft. (303 m)	1-pair
PDKU (ckts 1 ~ 8)	PDIU-DI	40 ohms	1000 ft. (303 m)	Shares digital telephone wire-pair. ³
PDKU (ckts 1 ~ 8)	PDIU-DS	40 ohms	1000 ft. (303 m)	1-pair ³

NOTES:

1. Use 24 AWG twisted pairs.
2. PESU circuits 3 and 4 are not used.
3. Two-pair or larger wire is required to achieve maximum range.

**TABLE F
NETWORK REQUIREMENTS**

PCB	Facility Interface Code	Network Jack	Ringer Equivalence
PCOU (Loop start line)	02LS2	RJ14C	0.2B
PEMU (Type I, TIE line) 2-wire 4-wire	TL11M TL31M	RJ2EX RJ2GX	N/A N/A
PESU/PSTU (Off-premises station) (see note)	0L13A	RJ21X	N/A

NOTE:

On PESU, circuits 1 and 2 only provide off-premises capability.

Power Failure Transfer Unit: An optional external power failure transfer unit (DPFT) may be connected to the system with a PSTU PCB to provide emergency service in the event of a power failure. Up to eight CO lines are switched directly to dedicated conventional telephones (customer-provided 2500- or 500-type) for incoming and outgoing calls. When power is restored, stations/CO lines reserved for power failure transfer will automatically return to normal service. Standard telephones that are connected to the PESU PCB can also be connected to the DPFT to provide emergency service.

Customer-supplied Peripherals

All three STRATA DK digital key systems support many other commonly used peripheral devices which can be supplied by the customer. Several of these devices are listed below (with the supporting PCB or data interface unit noted):

- Auto attendant device (PSTU or PESU)
- Dictation equipment (PSTU or PESU)
- External maintenance modem (PIOU or PIOUS)
- Facsimile (PSTU or PESU)
- Local maintenance terminal (PIOU or PIOUS)
- Modem (PSTU, PESU, or PDIU-DS)†

- Paging system (PIOU, PIOUS, or PEPU)
- Radio paging equipment (PSTU or PESU)
- Remote maintenance terminal (PIOU or PIOUS with IMDU)
- Standard telephones (PSTU or PESU)
- SMDR printer/call accounting device (PIOU or PIOUS)
- Voice mail messaging system (PSTU or PESU)
- Printers (PDIU-DS)†
- Personal Computers (PDIU-DI)†
- Mainframe Computer Access (PDIU-DS)†

3 SYSTEM HARDWARE DESCRIPTION

Key Service Units

Key Service Unit Exterior: All three systems can be mounted on a wall or table top. The basic key service unit consists of a single metal cabinet (Figure 2) with the following dimensions. Weight measurements approximate fully loaded systems.

STRATA DK24

Height: 10.6 in (269 mm)
Width: 16.0 in (406 mm)
Depth: 9.1 in (230 mm)
Weight: 19.4 lbs (9 kg)

†Requires **Release 3** software

**TABLE G
SYSTEM TONES**

CO Line	Idle electronic telephones	Ring tone 1	500/640 Hz, modulated by 16 Hz, 1 sec. ON—3 sec. OFF
		Ring tone 2	600/800 Hz, modulated by 16 Hz, 1 sec. ON—3 sec. OFF
		Ring transfer	540/760 Hz, modulated by 16 Hz, 1 sec. ON—3 sec. OFF
	Busy station (camp-on)		2400 Hz, modulated by 10 Hz, 1 sec. ON—3 sec. OFF
	Standard telephone or voice mail port: Normal ring option: Distinctive ring option (standard telephone):		20 Hz, 1 sec. ON—3 sec. OFF 0.4 sec. ON—0.2 sec. OFF—0.4 sec. ON—3 sec. OFF
TIE line or DISA line calls	To busy station		400 Hz, 0.25 sec. ON—0.25 sec. OFF or 400 Hz, 0.25 sec. ON—0.25 sec. OFF (programmable option ¹)
Intercom Line Calls	Tone first (EKT ring signal)		500 Hz, 1 sec. ON—3 sec. OFF
	Door phone	A & C	870 Hz, 1 sec./710 HZ, 2-0.5 sec. (5 rings)
		B	870 Hz, 0.5 sec./710 HZ, 2-0.5 sec. (5 rings)
	Busy override/DND override		2400 Hz, 1 sec. ON—3 sec. OFF
	Dial (intercom)		400 Hz, continuous
	Ringback		400 Hz, 1 sec. ON—3 sec. OFF
	Busy		400 Hz, 0.25 sec. ON—0.25 sec. OFF
	Do not disturb		400 Hz, 0.125 sec. ON—0.125 sec. OFF
	Voice page warning		500 Hz, 1 sec. ON (via electronic telephone speaker)
	OCA warning		500 Hz, 1 sec. ON only (via electronic telephone speaker)
	Executive/privacy override warning		500 Hz, 1 sec. ON only (via handset or speaker)
	Hold recall		2400 Hz, modulated by 10 Hz, 1 sec. ON—1 sec. OFF
Standard telephone ringing		20 Hz, 1 sec. ON—3 sec. OFF	
Voice Mail Special Tones	Answer: DTMF "A" Disconnect: DTMF "D" Recall: DTMF "B"	80/160 msec., dual-tone	
Special Confirmation Tones	Verified account code confirmation tones ²	Code valid	400 Hz, 0.5 sec. ON
		Code not valid	400 Hz, 0.125 sec. ON—0.125 sec. OFF—0.125 sec. ON
	Station option programming confirmation tones (call forward, timed reminders, etc.)		400 Hz, 1 sec. ON

NOTES:

1. Requires **Release 3** software.
2. Tones are sent only to the station that enters the code, not to the outside party.

STRATA DK56

Height: 15.0 in (380 mm)
 Width: 16.1 in (410 mm)
 Depth: 9.1 in (230 mm)
 Weight: 37.5 lbs (17 kg)

STRATA DK96

Height: 18.7 in (475 mm)
 Width: 19.7 in (500 mm)
 Depth: 9.1 in (230 mm)
 Weight: 55.1 lbs (25 kg)

Key Service Unit Interiors:

- The DK24 cabinet interior (Figure 15) has one shelf with seven PCB slots, labeled PCTU, S01 ~ S06. The power supply is positioned vertically on the right side of the shelf, and is installed at the factory.
- The DK56 cabinet interior (Figure 16) has one shelf with nine PCB slots, labeled PCTU, S01 ~ S08. The power supply is positioned horizontally above the shelf, and is installed at the factory.
- The DK96 cabinet interior (Figure 17) has

two shelves. The top shelf has eight PCB slots, labeled S01 ~ S08; the bottom has seven PCB slots, labeled PCTU, S09 ~ S14. The power supply is positioned vertically to the right of the shelves, and is installed at the factory.

System Printed Circuit Board Slots: Each system is equipped with universal PCB slots that are extremely flexible and can be configured to suit individual customer needs. All station, CO line and optional PCBs are the same size, and use the same connector type to mount into the cabinet's backplane. Therefore, any PCB can be installed in any universal slot, with the exception of the PCTU or PCTUS, which must be installed in the slot labeled PCTU.

System Operation

A system consists of a key service unit and up to either 32 stations in DK24, 56 stations in DK56, and 96 stations in DK96 (station loop

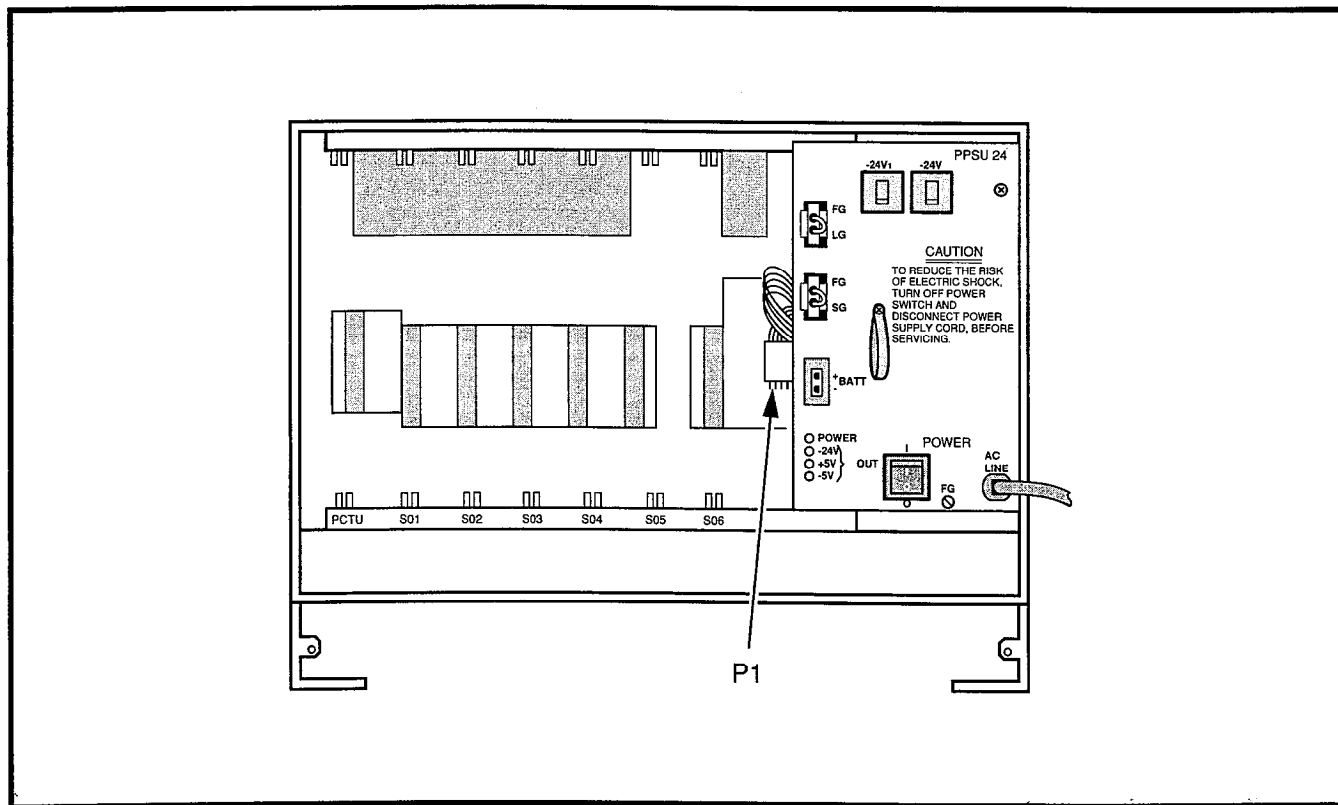


FIGURE 15—DK24 CABINET INTERIOR

**STRATA DK
GENERAL DESCRIPTION
DECEMBER 1990**

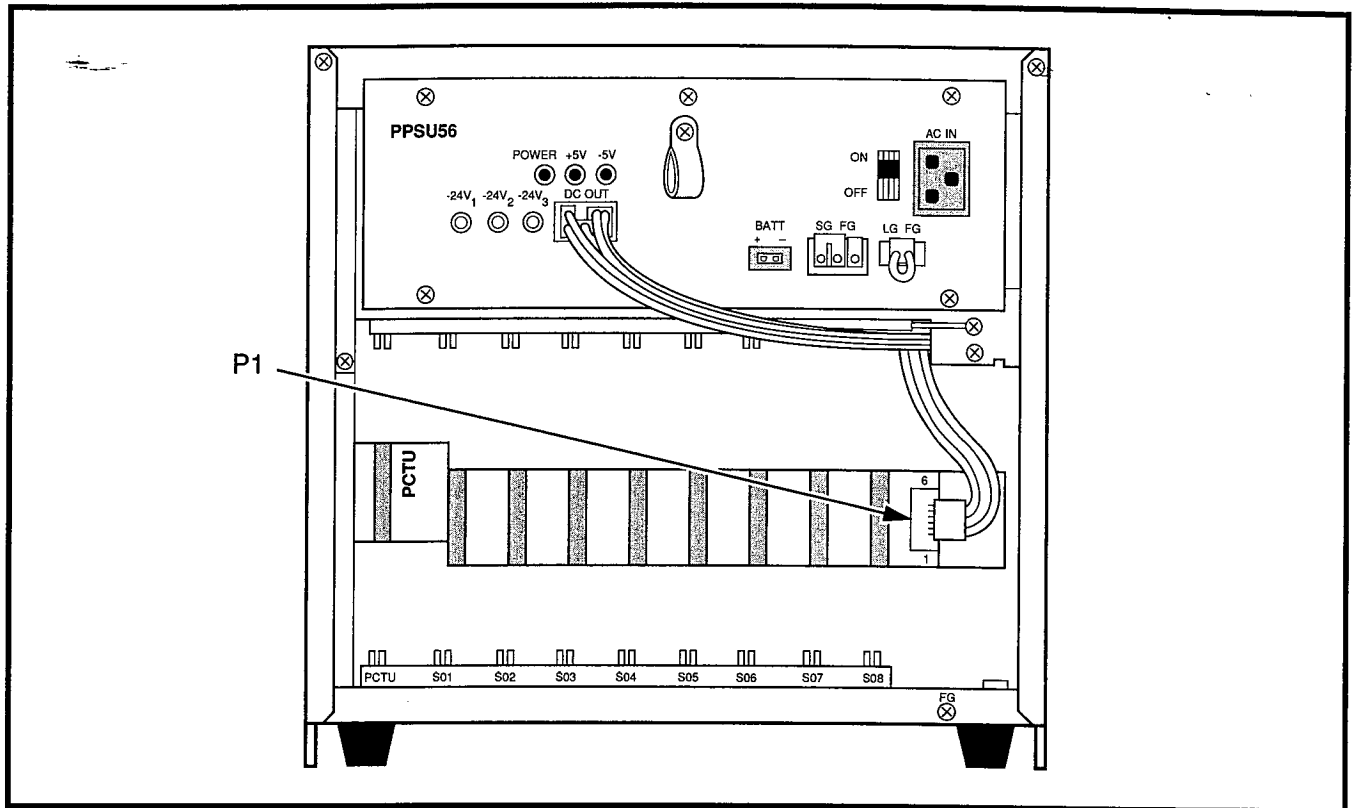


FIGURE 16—DK56 CABINET INTERIOR

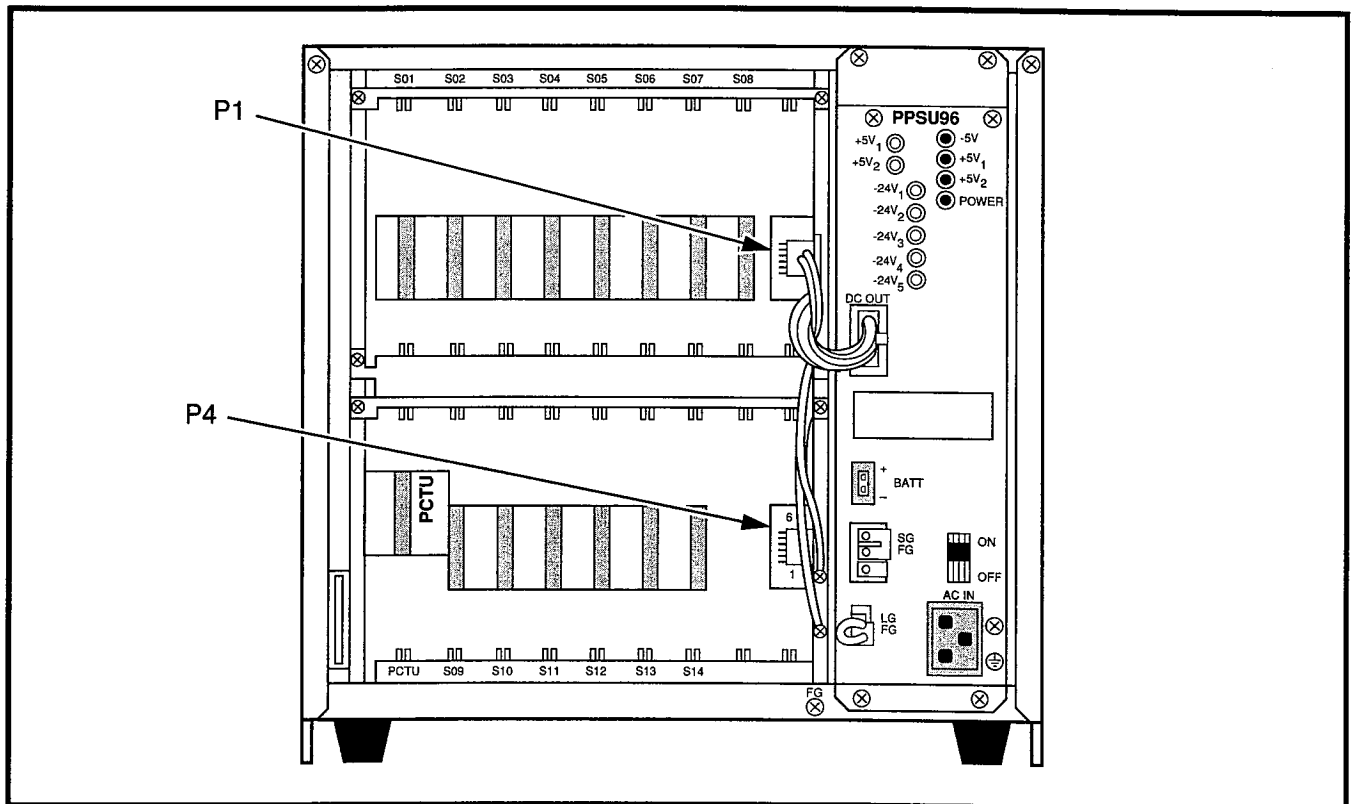


FIGURE 17—DK96 CABINET INTERIOR

lengths, network requirements, and system tone patterns are summarized in Tables E, F, and G, respectively).

The system can have several options configured, as illustrated in the functional block diagram (Figures 18A and 18B).

As represented in the functional block diagram, the system's cabinet contains a power supply and printed circuit boards appropriate to the user's configuration. PCBs include the common control unit (PCTU2, PCTU3, or PCTUS), DTMF receiver subassembly (CRCU-4 or CRCU-8), option interface unit (PIOU, PIOUS, or PEPU), remote maintenance modem subassembly (IMDU), CO line unit (PCOU), E & M TIE line unit (PEMU), digital telephone interface unit (PDKU)†, electronic telephone interface unit (PEKU), off-hook call announce subassembly (EOCU), standard telephone interface unit (PSTU), and a combination electronic/standard telephone interface unit (PESU).

Printed Circuit Boards

Most STRATA DK system hardware options are integrated within the system cabinet. Each major PCB measures 7.5 x 5.5 inches (190 x 140 mm) and mounts in a PCB slot in the shelf with a 44-pin backplane connector.

PCB external connections are made to the Main Distribution Frame (MDF) using the following industry-standard connectors:

- **25-pair Amphenol Female:** Connects digital telephones, electronic telephones, standard telephones, and most peripherals.
- **Modular:** Connects CO lines, E & M TIE lines, station message detail recording port (RS-232), and maintenance port (RS-232).
- **Terminals:** MOH and some peripherals.

The following list includes every PCB that can be installed in the key service unit. Each PCB's function is described, along with applicable configuration and connection details.

Common Control Unit (PCTU): The PCTU is the system's controller PCB, and must be

installed for the system to operate. It contains the system's main 16-bit, 68000-type microprocessor and microprocessor bus, battery-protected memory circuits, time switch logic, conference logic, and system tones. The PCTU also has a music-on-hold/background music source interface, and connectors to mount an optional DTMF receiver PCB (CRCU) for DISA, TIE lines, standard telephones and peripherals. There are three versions of PCTU PCBs available: PCTUS, PCTU2, and PCTU3. PCTUS and PCTU2 provide **Release 2** features; PCTU3 provides **Releases 2 and 3** features. See Table H for PCTU comparison and compatibility.

DTMF Receiver Subassembly (CRCU): An optional DTMF receiver PCB mounts onto the PCTU piggy-back style. It translates DTMF signals from direct inward system access (DISA) CO lines, TIE lines, standard telephones or peripheral devices to data signals for the system.

- One CRCU option must be installed for the system to receive DTMF dialing. Both 4- and 8-circuit CRCUs are available (CRCU-4 and CRCU-8).
- CRCU DTMF receiver circuits are shared by users, i.e. a receiver is seized for dialing and then released for the next call.

Option Interface Unit (PIOU): The PIOU provides a circuit interface with the peripheral options, including external paging functions, alarm interface, SMDR, and remote maintenance. Table I shows details of each feature.

Simplified Option Interface Unit (PIOUS): A reduced model of the PIOU, the PIOUS provides an interface with the peripheral options shown in Table I.

External Page Interface Unit (PEPU): Also a reduced model of the PIOU, the PEPU provides a circuit interface with the peripheral options shown in Table I.

Remote Maintenance Modem Subassembly (IMDU): An optional built-in modem provides the system with a link to off-site programming

**STRATA DK
GENERAL DESCRIPTION
DECEMBER 1990**

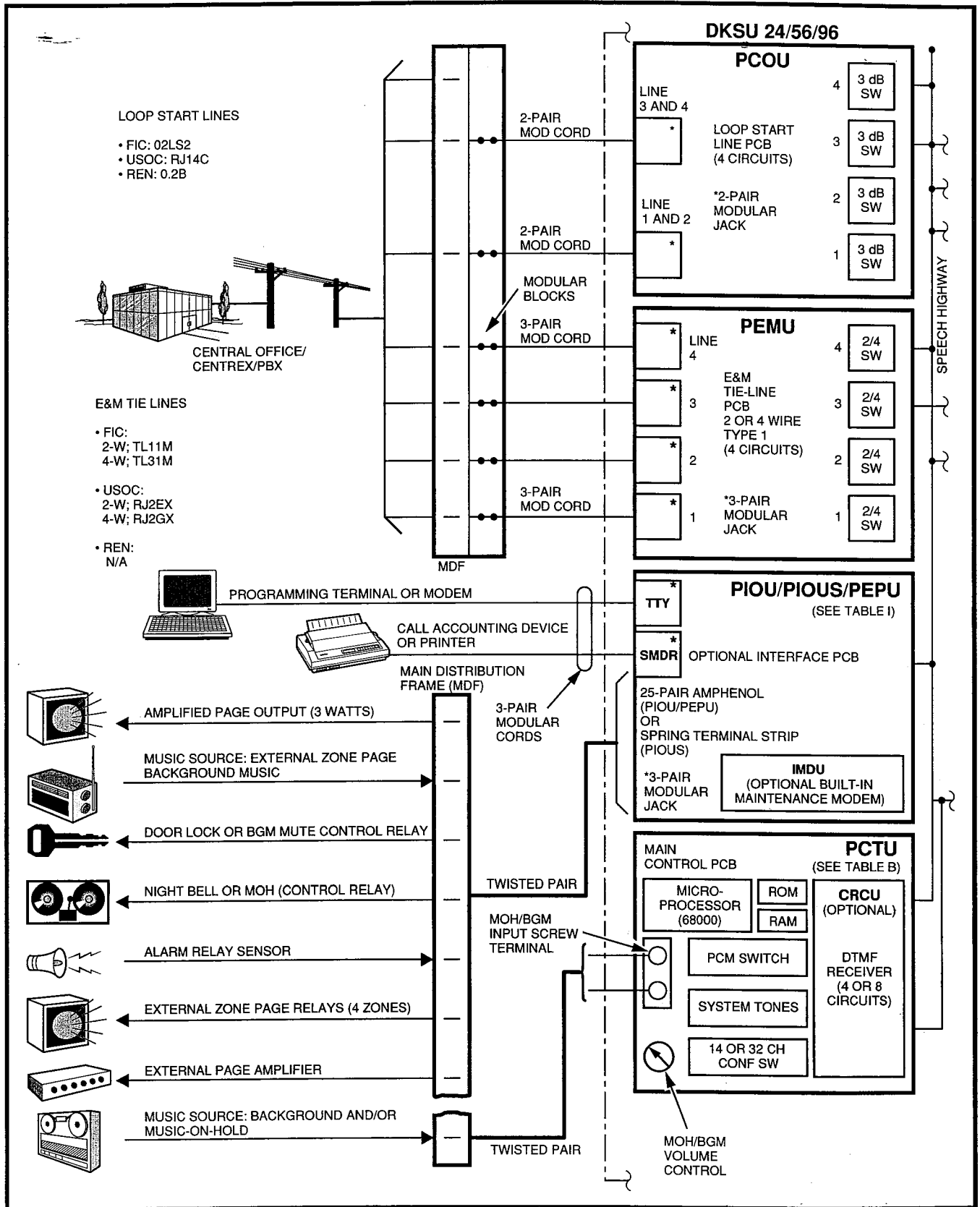
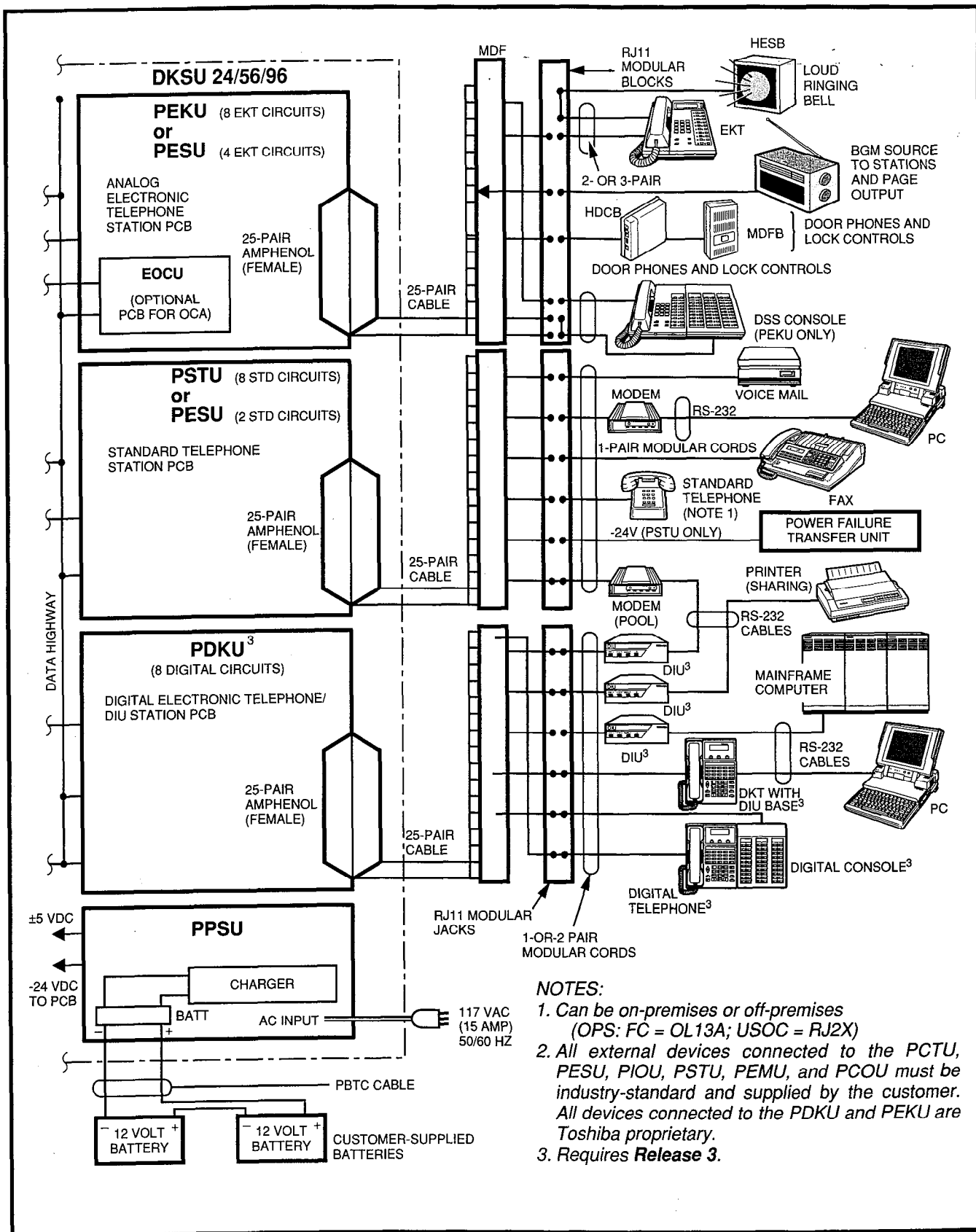


FIGURE 18A—DK FUNCTIONAL BLOCK DIAGRAM



- NOTES:**
1. Can be on-premises or off-premises
 (OPS: FC = OL13A; USOC = RJ2X)
 2. All external devices connected to the PCTU, PESU, PIU, PSTU, PEMU, and PCOU must be industry-standard and supplied by the customer. All devices connected to the PDKU and PEKU are Toshiba proprietary.
 3. Requires Release 3.

FIGURE 18B—DK FUNCTIONAL BLOCK DIAGRAM

**TABLE H
COMMON CONTROL INFORMATION**

Item	PCTU2/PCTU3	PCTUS
CPU type	68000/16 bit	68000/16 bit
Clock speed	8 MHZ	8 MHZ
Conference channels	32	14
ROM memory	• 512KB (PCTU2) • 768KB (PCTU3)	512KB
RAM memory	• 256KB (PCTU2) • 384KB (PCTU3)	128KB
Personal LCD message memory (10 ~ 19)	10 messages 32 characters each 16 LCD stations max.	10 messages 32 characters each 6 LCD stations max.
Personal speed dial LCD memo memory (10 ~ 49)	40 memos 12 characters each 16 LCD stations max.	40 memos 12 characters each 6 LCD stations max.
Verified account codes	• PCTU2-none • PCTU3-300 codes, 4 ~ 15 digit each max.	None
Personal timed reminder LCD memo memory (605 ~ 609)	5 reminder memos 32 characters each 16 LCD stations max.	5 memos 32 characters each 6 LCD stations max.
System speed dial memory (60 ~ 99)	40 numbers, 20 digits each, shared by all stations in the system.	
Station speed dial memory (10 ~ 49)	40 numbers, 20 digits each, separately available to all stations in the system.	
System LCD message memory (60 ~ 99)	40 messages, 32 characters each, shared by all LCD stations in the system.	
System speed dial LCD memo memory (60 ~ 99)	40 memos, 12 characters each, shared by all LCD stations in the system.	
Personal timed reminder memory (605 ~ 609)	5 timed reminders, separately available to all stations in the system.	

NOTES:

1. The PCTUS is compatible with DK24 only; however, the PCTU may be used with all systems.
2. The PCTU and PCTUS provide MOH/BGM interface with volume control and support either CRCU-4 or -8.
3. See Tables J and K for PCTU and PCTUS configuration information.
4. PCTU2, PCTU3, and PCTUS ROMs are not interchangeable.

TABLE I
OPTIONAL INTERFACE PCB OPTIONS

Interface Option	PIOU	PIOUS	PEPU
Unamplified page output (single zone, 600 ohms, duplex)	X	X	X
Amplified page output (single zone, 3 watts, 8 ohms)	X		X
Zone page interface (unamplified, 4 zones)	X		
Night transfer or music-on-hold control relay	X	X	X
Door lock or external amplifier control relay	X	X	X
Alarm sensor	X	X	
SMDR output (RS-232/6-wire modular connector)	X	X	
Maintenance port for a local ASCII terminal or external modem (RS-232/6-wire modular connector)	X	X	
Remote maintenance modem (IMDU subassembly, no external connector)	X	X	

NOTE:

X = the option is provided.

and maintenance equipment, such as a personal computer or ASCII terminal. The IMDU has an internal maintenance channel and does not require a dedicated CO line or station port. Data transmission speed can be set at 300 or 1200 BPS full duplex.

- The IMDU mounts on top of the option interface unit (PIOU or PIOUS) piggy-back style.

CO Line Unit (PCOU): The PCOU provides the system with four loop-start CO lines and a standard, built-in automatic busy redial (ABR) circuit. Each CO line can be programmed to be either DTMF or dial pulse. In addition, each CO line has a 3 dB pad option switch to control excessive loudness resulting from close proximity to the PBX or central office. Each CO line circuit provides built-in gas tubes for limited protection from lightning.

- A maximum of four PCOU PCBs can be installed in DK24 to provide sixteen CO lines, five PCOU PCBs can be installed in DK56 to provide twenty CO lines, and nine in DK96 to provide thirty-six CO lines.
- Connections from the PCOU to the MDF

are made with modular connectors, each with two circuits.

E & M TIE Line Unit (PEMU): The PEMU provides for E & M Type I signaling, immediate-start TIE lines. Each PEMU reduces the maximum system capacity by four CO lines and four stations (four CO lines and eight stations if the PCTUS is used). A choice between 2- or 4-wire transmission is available as a jumper-plug option.

- A maximum of one PEMU can be installed in DK24 to provide four TIE lines, two in DK56 to provide eight TIE lines, and three in DK96 to provide twelve TIE lines (see Table K for details).
- Connections from the PEMU to the MDF are made with modular connectors, each with one circuit.

Digital Telephone Interface Unit (PDKU)†: The PDKU provides eight ports for digital telephones and data interface units (PDIU-DI and PDIU-DS). It can support one DDSS console. PDKUs supporting digital telephones with off-hook call announce do not require an EOCU.

†Requires Release 3 software

**TABLE J
SYSTEM CAPACITIES**

Item	PCTU2/PCTU3	PCTUS
System compatibility	DK24, DK56, and DK96	DK24
Universal PCB slot capacity	6 max, DK24 8 max, DK56 14 max, DK96	6 max
Station port capacity	32 max, DK24 56 max, DK56 96 max, DK96	24 max
CO line capacity	16 max, DK24 20 max, DK56 36 max, DK96	16 max
TIE line capacity	4 max, DK24 8 max, DK56 12 max, DK96	4 max
DSS consoles: DSS/DDSS	4 max	3 max
Door phones	12 max	9 max
Simultaneous 4-party conferences	8 max	3 max
LCD stations w/personal message memory	16 max	6 max
Door lock controls	5 max	4 max
PDIU-DI (PCTU3 only)	21 max, DK24 53 max, DK56 80 max, DK96	Not supported
PDIU-DS (PCTU3 only)	24 max, DK24 56 max, DK56 80 max, DK96	Not supported

The PDKU does not support door phones or background music source connection.

- Each digital telephone requires one port on the PDKU; the maximum number of digital telephones per PDKU is eight. Each DDSS console requires only one port (always circuit 8), and reduces the maximum number of digital telephones by one. Each PDIU-DS requires one PDKU port, and each PDIU-DI shares the same port with its accompanying telephone.
- Connections from the PDKU to the MDF are made with 25-pair amphenol connectors. Each port normally uses single-pair wiring. No extra wiring is required for off-hook call announce.
- A maximum of four PDKUs can normally be installed in DK24 to provide thirty-two digital telephone ports, seven in DK56 to

provide fifty-six digital telephone ports, and twelve in DK96 to provide ninety-six digital telephone ports.

Electronic Telephone Interface Unit (PEKU):

The PEKU provides eight ports for electronic telephones. It can be configured for off-hook call announce by installing an EOCU. It can also be configured to support a DSS console and/or door phone control unit (HDCB). One designated PEKU port can be connected to a customer-supplied background music source to feed music to all electronic telephones.

- Each electronic telephone requires one port; the maximum number of electronic telephones per PEKU is eight. The upgrade for off-hook call announce does not require a port. Each DSS console requires two ports and reduces the maximum

TABLE K
UNIVERSAL SLOT CONFIGURATIONS

PCB	Circuits per PCB	PCB Maximum Capacities				Interfaces
		DK24		DK56	DK96	
		PCTUS	PCTU ⁵	PCTU ⁵	PCTU ⁵	
PDKU ⁶	8 digital telephone circuits (digital telephone ports)	N/A	4 (32)	7 (56)	12 (96)	<ul style="list-style-type: none"> Digital telephones DDSS consoles PDIU-DI PDIU-DS
PEKU ¹	8 electronic telephone circuits (electronic telephone ports)	3 (24)	4 (32)	7 (56)	12 (96)	<ul style="list-style-type: none"> Electronic telephones HDCB door phone DSS consoles BGM source EOCU PCB for OCA
PSTU	8 standard telephone circuits (standard telephone ports)	3 (24)	4 (32)	7 (56)	12 (96)	<ul style="list-style-type: none"> Standard telephones Voice mail ports FAX Dictation machines Off-premises stations Other similar devices
PESU ²	2 standard telephone 4 electronic telephone (standard/electronic telephone ports)	3 (6/12)	5 (10/20)	7 (14/28)	12 (24/48)	Standard: same as PSTU Electronic: same as PEKU except PESU does not support DSS console
PCOU	4 CO line circuits (lines)	4 (16)	4 (16)	7 (28)	9 (36)	<ul style="list-style-type: none"> Central office loop start lines
PEMU ³	4 TIE line circuits (lines)	1 (4)	1 (4)	2 (8)	3 (12)	<ul style="list-style-type: none"> E&M TIE lines <ul style="list-style-type: none"> Type 1 - signaling 2- or 4-wire transmission Immediate start
PIOU, PIOUS, or PEPU ⁴	See Table C	1	1	1	1	See Table I

NOTES:

- The PEKU/station capacities apply to 6500-series electronic telephones only. If other Toshiba electronic telephone series (i.e. 2000, 3000, 6000) are used, quantities will be less.
- The PESU is intended for systems that require one or two standard telephone ports, only one PESU would normally be used in a system.
- Only one PEMU should be installed in a DK24 because of the power supply's capacity. If a PEMU is installed with a PCTUS, only 16 station ports are available for telephones.
- Only one type of peripheral interface (PIOU, PIOUS, or PEPU) may be installed in a DK system.
- PCTU capacities are the same for PCTU2 or PCTU3.
- PCTU3 required.

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number of electronic telephones by two; each HDCB takes one port, and reduces the maximum by one.

- Connections from the PEKU to the MDF are made with 25-pair amphenol connectors. Each port normally uses 2-pair wiring; 3-pair wiring is required when off-hook call announce is supported.
- A maximum of three PEKUs can normally be installed in DK24 to provide twenty-four electronic telephone ports, seven in DK56 to provide fifty-six electronic telephone ports, and twelve in DK96 to provide ninety-six electronic telephone ports (see Table K).

NOTE:

The system capacities above apply only when connecting 6500-series telephones to PEKU PCBs. If earlier series Toshiba electronic telephones are used, the capacities are reduced (see Table K).

Off-hook Call Announce Upgrade Unit

(EOCU): An optional off-hook call announce upgrade unit mounts on top of the PEKU or PESU piggy-back style. It is required on every PEKU or PESU that supports stations receiving off-hook call announce. The unit provides two off-hook call announce channels, which are shared by all electronic telephone circuits on a PEKU or PESU. An EOCU is not required on PDKUs supporting stations with off-hook call announce (see Table L).

Standard Telephone Interface Unit (PSTU):

The PSTU provides an interface between standard telephones and the system. It adds eight standard telephone ports, and has a 20 Hz square-wave ring generator.

- In addition, the PSTU provides support for numerous Toshiba-supplied and customer-supplied peripherals. Toshiba peripherals include:
 - Digital Voice Messaging Systems: One standard telephone port is required for each voice mail port.

- Power Failure Transfer Unit: The PSTU provides a -24VDC output for controlling a power failure transfer unit (DPFT).
- Customer-supplied peripherals include those listed below:
 - Auto attendant device
 - Dictation equipment
 - Facsimile
 - Off-premises station
 - Modem
 - Standard telephone
 - Voice mail device
- A maximum of three PSTUs can normally be installed in DK24, providing twenty-four standard telephone ports; seven PSTUs can normally be installed in DK56, providing fifty-six standard telephone ports; and twelve in DK96, providing ninety-six standard telephone ports (see Table K).
- Connections from the PSTU to the MDF are made with 25-pair amphenol connectors, one pair per port.
- If any devices which send DTMF signals are connected to the PSTU, a CRCU must be installed on the PCTU2, PCTU3, or PCTUS.

Standard/Electronic Telephone Interface Unit

(PESU): The PESU PCB provides an interface with a combination of two standard telephone and four electronic telephone circuits. The two standard circuits are identical to PSTU circuits, providing an interface with standard telephones and/or peripheral devices. The four electronic telephone circuits are identical to the PEKU circuits; they provide interface to Toshiba electronic telephones (with/without off-hook call announce), BGM source connection, and an HDCB, but do not support a DSS console.

- The PESU can accept an EOCU sub-assembly PCB to support electronic telephones that receive off-hook call announce.
- If any devices that are connected to the PESU standard telephone ports send DTMF signals, a CRCU must be installed on the PCTU PCB.

**TABLE L
OPTIONAL SUBASSEMBLIES**

Subassembly	Host	Capacity	Function
EOCU	PEKU and PESU	1 for PEKU or PESU that supports OCA	Provides OCA path for 8 circuits on PEKU or 4 circuits on PESU.
CRCU (4 or 8 circuits)	PCTU or PCTUS	1 per PCTU/system	Provides DTMF receiver for DISA, standard telephone circuits, and TIE lines.
IMDU	PIOU or PIOUS	1 per PIOUS/system	Provides remote maintenance interface with built-in modem.
HHEU	6500-series EKT/ 1000-series DKT	1 per EKT/DKT	Provides interface for headset and loud ringing bell.
HVSU	6500-series EKT	1 per EKT	Provides interface for EKT to receive OCA.
HVSI	6500-series EKT	1 per EKT	Provides interface for EKT to receive OCA.
DVSU	1000-series DKT	1 per DKT	Provides interface for DKT to receive OCA.

System Capacity and Configuration

This section provides an overview of system configuration requirements and considerations.

Table A I illustrates each system's various station/CO line capacities. For example, the STRATA DK96 system can have 36 CO lines and 40 stations. Optional upgrades impact the station

port/CO line capacity. Generally, each optional PCB, e.g. PEMU, PIOUS, PIOUS, or PEPU, installed in the cabinet occupies a slot that may have been used to support eight station ports or four CO lines.

The number of station ports or CO lines provided by each PCB is given in Table K. Tables L and M list each type of subassembly and optional unit that can be installed.

**TABLE M
OPTIONAL UNITS**

Option unit	Interface	Capacity	Function
HDSS 6560 (DSS console)	PEKU (circuits 7 & 8)	4 per system with PCTU2/3 3 with PCTUS	Provides a 60-button DSS console that functions with electronic telephones. Buttons are flexibly assigned as CO line, speed dial, and DSS.
DDSS1060 ⁵ (Digital DSS Console)	PDKU (circuit 8)	4 per system with PCTU3	Provides a 60-button DSS console that functions with digital telephones. Buttons are flexibly assigned as CO line, speed dial, and DSS.
HDCB (door phone control)	PEKU or PESU (circuit 5)	4 per system with PCTU2/3 3 with PCTUS	Provides MDFB door phone and door lock control interface.
MDFB	HDCB control box (each HDCB supports three MDFBs)	12 per system (PCTU2 or 3) 9 per system (PCTUS)	<ul style="list-style-type: none"> • Door monitor with two-way talk path to system telephones. • Door bell that rings designated electronic and digital telephones. • Microphone for talkback when paged over HESB amplified speaker.
HESB	PIOU, PIOUS, or PEPU for page, speaker, or amplifier	1 per PIOU, PIOUS, or PEPU	External page amplifier and speaker.
	DKT/EKT with HHEU PCB for loud ringing bell	1 per DKT/EKT (with HHEU PCB)	Loud ringing bell.
DPFT	PSTU	2 max, DK24 3 max, DK56 5 max, DK96	Connects up to 8 CO lines directly to standard telephones if the system's AC power is removed.
Integrated DIU (PDIU-DI) ⁵	PDKU via DKT	8 per PDKU; 1 per DKT	Used for transmitting and receiving data between terminals, personal computers and devices connected to other PDIU-DIs or to modems, printers and computers connected to PDIU-DSs. The PDIU-DI is also used to provide personal computer access to outside dial up data services and/or bulletin boards via modem pooling.
Standalone DIU (PDIU-DS) ⁵	PDKU (any circuit)	8 per PDKU	For making RS-232 switched data connections for modem pooling, printer sharing, and host/mainframe computer accessing.

DSS AND DDSS CONSOLE NOTES:

1. No additional hardware is required to use the DSS and DDSS consoles.
2. The DDSS and DSS consoles are assigned to associated digital and electronic telephones, respectively in programming.
3. DDSS and DSS consoles cannot be connected to PESU electronic telephone circuits.

DOOR PHONE NOTES:

1. A maximum of three HDCBs are allowed per system equipped with a PCTUS or four HDCBs with a PCTU2/3, to support up to nine or twelve door phones (MDFBs), respectively.
2. One electronic telephone (PEKU or PESU) port, always the fifth circuit port, is required per HDCB.
3. HDCBs can only be connected to PEKU or PESU port numbers 04, 12, 20, and/or 28.
4. One door lock control can be configured on each HDCB in place of one door phone.
5. HDCBs cannot be connected to PDKU station ports.
6. Requires **Release 3** software.

4 FEATURES

STRATA DK digital key systems offer a broad range of features and services, which are summarized in Tables N, O, and P.

TABLE N SYSTEM FEATURES

The system features listed below function on all STRATA DK systems.

Standard

- Account Codes (Forced/Voluntary/Verified†)
- All Call Voice Page
- Alternate Point Answer
- Automatic Hold/Park Recall
- Automatic Release from Hold/DISA
- Background Music*
- Centrex/PBX Compatible
- Centrex Ringing Repeat
- CO Line Groups
- CO Line Queuing
- Conferencing
- Credit Card Dialing†
- DAY/NIGHT Modes
- Delayed Ringing
- Distinctive CO Line/Intercom Ringing
- DTMF Back Tone
- DTMF and Dial Pulse CO Line Compatible
- DTMF Signal Time (80/160 ms)
- Dual FCC Registration
- Flexible Button Assignment
- Flexible Intercom Numbering
- Flexible Line Ringing Assignment
 - Immediate
 - Delay 1
 - Delay 2
- Flexible Port/Line Assignment
- Group Paging
- Least Cost Routing
- Live System Programming
- Memory Protection
- Message Waiting
- Music-on-Hold*
- Night Ringing Answer Code
- Non-blocking Talk Paths
- Outgoing Call Restriction
- Pooled CO Lines
- Privacy/Non-privacy
- Station Hunting
- System Programming through Station
- System Speed Dial
- Tandem CO Line Connections
- Tenant Service
- Toll Restriction
- Toll Restriction Override by System Speed Dial
- Transfer Privacy
- Traveling Class of Service†
- Unlimited Handsfree Intercom Paths
- Unrestricted Call Transfer over Intercom
- Voice Mail Interface
 - Automated Attendant
 - Call Forward to Voice Mailbox
 - Message Waiting Indication
 - Voice Mail Control via Digital/Electronic Station
- Feature Integration
- Voice Mail Identification Codes
- Voice or Tone Signaling
 - Voice First
 - Tone First
- Wall or Table Mounting

Optional

- Alarm Sensor*
- Data Switching†*
- Direct Inward System Access
- Door Lock Control*
- Door Phones
- Night Ringing Over External Page*
 - Night Pickup Code
- Night Ringing Over Selected Page Zones
- Off-premises Station
- Page Interface
- Page Zones
- Power Failure Transfer*
- Relay Service*
 - External Page/Door Lock Relay
 - Night/Hold Relay
- Remote Administration and Maintenance*
- Reserve Power*
- Station Message Detail Recording*
- TIE Lines

*May require customer-supplied peripheral hardware; see the detailed feature descriptions

†Requires **Release 3** software.

**TABLE 0
DIGITAL AND ELECTRONIC TELEPHONE FEATURES**

The station features listed below are accessible from each digital and electronic telephone.

Standard

- Account Code Button
- Automatic Busy Redial
- Automatic Callback
- Automatic Hold/Park Recall
- Automatic Line Selection
- Background Music with Station Control*
- Busy Override
- Call Forward
 - All Calls
 - Busy
 - No Answer
 - Busy/No Answer
 - Fixed
- Call Park
- Call Pickup
- Call Transfer with Camp-on
- CO/Centrex/PBX Feature Buttons
- Direct Station Selection Buttons
- DISA Security Code Revision
- Distinctive LED Indications
 - Incoming Call
 - In-use
 - On-hold
- Distinctive Station Ringing
- Do Not Disturb
- Do Not Disturb Override
- DP/DTMF Mode Change
- Exclusive Hold
- Executive Override
- Fixed Call Forward
- Handsfree Answerback
- Hearing Aid Compatible
- Message Waiting/Flash
- Microphone Control Button
- Modem Button
- Modular Handset and Line Cords
- On-hook Dialing
- Pooled Line Buttons
- Privacy Button†
- Privacy Release Button
- Privacy Override
- Private CO Lines
- Pushbutton Dialing
- Release Button
- Remote Retrieval of Held Calls
- Repeat Last Number Dialed
- Ringing Line Preference
- Saved Number Redial
- Speed Dial Buttons
- Station Speed Dial
- Timed Reminder
- Toll Restriction Override Code Revision

Optional

- Data Button
- Direct Station Selection Console Features
 - Automatic Line Hold
 - Flexible Buttons
 - All Call Voice Page Button
 - CO Lines
 - DSS
 - Night Transfer Button
 - Speed Dial
 - Voice or Tone Signaling
 - Call Forward Override
- Liquid Crystal Display Features
 - Alphanumeric Messaging
 - Busy Lamp Field Indication
 - Busy Station Messaging†
 - Called Station Messaging
 - Calling Station Messaging
 - CO Line Identification
 - Group Station Messaging†
 - Intercom Name/Number Display
 - Speed Dial Memo
 - Station Identification
 - Timed Reminders with Messages
- Modular Headset Interface
- Off-hook Call Announce

*May require customer-supplied peripheral hardware; see the detailed feature descriptions

†Requires **Release 3** software.

TABLE P
STANDARD TELEPHONE FEATURES

The features listed below are accessible from a standard telephone by dialing access codes. See both System Features and Digital and Electronic Telephone Features sections for detailed descriptions.

Standard

- All Call Voice Page
- Automatic Callback
- Automatic Hold/Park Recall
- Busy Override
- Call Forward
 - All Calls
 - Busy
 - No Answer
 - Busy/No Answer
- Call Park
- Call Pickup
- Call Transfer with Camp-on
- Centrex/PBX Compatible
- CO Line Queuing
- Conference (four party, including two CO lines)
- Distinctive Ringing (CO vs. Intercom calls)
- Do Not Disturb Override
- DP/DTMF Mode Change
- Executive Override
- Forced and Voluntary Account Codes
- Group Paging
- Least Cost Routing
- Message Waiting (set only, not receive)
- Night Pickup Code
- Remote Retrieval of Held Calls
- Repeat Last Number Dialed
- Station Hunting
- Speed Dial (Station and System)
- Toll Restriction
- Toll Restriction Override by System Speed Dial
- Toll Restriction Override Code Revision
- Voice Mail Interface
- Voice Signaling (to, not from)

Optional

- Direct Inward System Access
- Off-premises Station

System Features

Account Codes (Forced/Voluntary/Verified)†:

Account codes may be forced or voluntary; and may be verified or not. Account code digit length is 4 ~ 15 digits and set system wide; this digit length applies to all types and combinations of account codes used in the system. Account codes are sent out on the system's SMDR port with each call record as calls are completed.

- **Forced:** Each station may be required (forced by programming) to enter an account code before being allowed to dial a telephone number from selected CO lines.
 - A station may be forced to dial account codes on some CO lines but not others, depending on how the CO line is set in

system programming—forced or voluntary.

- Each station in the system may be programmed so that account codes entered from that station will be verified or not verified.
- **Voluntary:** Voluntary account codes may be entered by any station at any time during a telephone call by pressing the **ACCOUNT** button or dialing an access code.
 - If a voluntary account code is dialed from a digital or electronic telephone, the call will not be interrupted. If dialed from a standard telephone, the call will be placed on hold while the code is being entered; therefore, the account code is normally entered from standard telephones at the beginning or end of the telephone conversation.

† Requires *Release 3* software.

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- Each station in the system may be programmed so that account codes entered from that station will be verified or not verified.
- **Verified†:** Each station is set independently in system programming so that account codes, forced and voluntary, will be verified or not verified.
 - The system may be programmed to have 300 verified account codes total—voluntary and forced.
 - A verified account code may be system programmed so that all the digits (4 ~ 15) of the code are verified, or only the first portion (programmable length) of the code is verified. 300 blocks of partially verified account codes can be established, and each of these blocks can contain a near limitless amount of variations. For example, if the required length of each account code in the system is five digits, and if each of the available 300 verified account codes is three digits, then there would be 100 combinations (00 ~ 99) for each verified account code. In this instance, there would be 30,000 partially verified account codes available, 100 combinations for each of the 300 verified account code blocks.
- Each verified account code can be assigned to a toll restriction class of service in system programming. When a verified account code is dialed at a station, that station's normal toll restriction class is temporarily replaced by the verified account code's toll restriction class of service (the station reverts back to its normal restriction class when the call is completed). The account code will be sent out on that station's SMDR call record.
- Verified account codes may be added, deleted, or changed by users from stations enabled to in system programming.

NOTE:

The 911 emergency number bypasses forced verified account code requirements.†

†Requires **Release 3** software.

Alarm Sensor: When configured with a customer-supplied alarm, the sensor detects when the alarm relay is activated and causes all digital and electronic telephones to sound a startling tone. The digital or electronic telephone alarm tone is reset from any station programmed with an **ALRM** button. This feature is optional, and an option interface PCB (PIOU or PIOUS) is required in order to support it.

All Call Voice Page‡: A user can page to all station speakers simultaneously by dialing a 2-digit access code or by pressing the **AC** button. The system can also be programmed to page to an external zone speaker as part of the all call page. See External Page Interface and External Zone Paging.

Alternate Point Answer: Allows users to answer transferred CO calls from any station that shares the CO line button's appearance.

Automatic Hold/Park Recall‡: If a station parks or puts a call on hold, and a pre-programmed period of time lapses without the call being retrieved, the call automatically sounds a distinctive reminder tone at the station which initiated the hold/park. Each station's recall time can be set individually in programming.

Automatic Release from Hold/DISA: If a CO line is put on hold (or is used for a DISA call), and the outside party hangs up, the system disconnects automatically, releasing the CO line(s). Individual CO lines can be programmed to either recognize or ignore the disconnect signal from the central office. This feature will not operate unless the telephone company's central office provides a disconnect signal to the system.

Background Music: Background music can be broadcast two different ways; over digital and/or electronic telephone speakers, and over optional external paging speakers.

- When background music is broadcast over digital and/or electronic telephone speakers, the music source connects directly to the system's controller PCB (PCTU) or a designated (PEKU or PESU) station port. No optional hardware is required.
- When external speakers are used, an option interface PCB (PIOU, PIOUS, or

‡Available using standard or electronic telephones.

PEPU) must be installed in the system to connect the customer-supplied speakers and/or amplifiers.

- Music sources, such as radios, tape players, record players, CD players, etc., are supplied by the customer. Up to two separate sources may be connected to the system at the same time. One source can broadcast background music over digital and/or electronic telephone speakers, while the second broadcasts over external speakers. External speaker and station speaker background music can be controlled (ON/OFF) from the stations via dialing codes. Background music and music-on-hold can share a source or each can have separate sources. See Music-on-Hold.
- Separate music sources allow callers on hold to receive special music and/or advertising messages while station users and external speakers receive BGM from another source or sources.

Centrex/PBX Compatible†: All system features are compatible with Centrex/PBX operation; including repeat of Centrex/PBX ringing cadence, one-button access to Centrex/PBX features, 1- ~ 4-digit station numbering plan, and delayed ringing to selected stations.

Centrex Ringing Repeat†: The system mimics CO/Centrex/PBX cadences received from outside lines when it rings a called station. This capability enables the system to use special CO/Centrex/PBX calling/callback features.

CO Line Groups†: For easy access, various types of CO lines can be assigned to groups (normally for pooled line and LCR applications). For example, all local lines can be assigned to one group and WATS lines in another group. Station users access line groups with a code. The system can be programmed with up to eight separate CO line groups.

CO Line Queuing†: A station user can use the Automatic Callback feature to queue up for a busy outgoing CO line. When the CO line is

finally available, the system calls the station back. Queuing applies to single CO lines, CO line groups, and when calling via LCR. If line queuing is set when using LCR, the dialed telephone number is automatically redialed when the line queue callback is answered by the station.

Conferencing‡: The system can connect the following conference combinations:

- One or two stations and two CO lines.
- Two or three stations and one CO line.
- Four stations on one intercom line.
- All of the above conference combinations can be set-up using digital, electronic, and/or standard telephones.
- CO lines can be accessed using CO line buttons, access codes, and/or LCR.
- Stations and CO lines can be added in any order by accessing CO lines with access codes or LCR.
- Thirty-two conference channels are available with a PCTU. Four parties can participate in each conference, and as many as eight conferences can be held simultaneously.
- Fourteen conference channels are available with a PCTUS. Four parties can participate in each conference, and as many as three conferences can be held simultaneously.
- Incoming and outgoing CO lines can be connected in a conference.

Credit Card Calling†: Callers can make credit card calls (0+ telephone number + credit card number) that bypass toll restriction. The calls are billed to the credit card, not the system CO line. The system requires callers making 0+ calls to dial a telephone number or a telephone number plus a credit card number. If the proper number of digits are not dialed, the call will be dropped within 20 seconds to prevent operator-placed calls that would be billed to the system CO line.

Data Switching†: STRATA DK offers a sophisticated data switching capability that can interconnect a wide range of end user-supplied

†Requires *Release 3* software.

‡Available using standard or electronic telephones.

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data equipment, including personal computers, printers, and modems. Asynchronous data can be transmitted at speeds up to 19.2 kbps. The system allows personal computer (PC) keyboard dialing (up to 9600 bps) using the AT command set. When used in conjunction with PC desk top software, dial-by-name and other dial directories may be set up inside the PC. The system provides four data security groups to restrict data calls between groups. The system also provides program options to allow modems to be used in pooling groups.

DAY/NIGHT Modes: The system has three available modes, DAY, DAY2 and NIGHT. Each mode can be assigned a distinct CO-to-station ringing arrangement for handling calls differently. The system can be programmed with either two or three modes (which can be changed by any station programmed with a **NT** button):

Two modes:	Three modes:
DAY	DAY
NIGHT	DAY2
	NIGHT

Delayed Ringing: If a CO line call rings to a station and is not answered, alternate stations can be programmed to ring 12 or 24 seconds later. Twelve seconds is approximately 3 rings; 24 seconds, 6 rings. Delayed ringing is selectively provided for each line, by each station.

Direct Inward System Access: Using a DTMF telephone, outside callers can dial internal stations (DISC) or outgoing CO lines directly, without going through a receptionist or operator. Any number of CO lines can be programmed with the direct inward system access (DISA) feature.

- The caller dials the DISA CO line number and hears ringing. Then, a tone sounds for nine seconds. While the tone is sounding, the caller may dial a station number or outgoing CO line access code. If a busy station is dialed, the caller can dial another station. If no number is dialed and the nine-second interval elapses, the call is transferred to a pre-assigned ringing arrangement.

- If set in program memory, an optional security code must be dialed to make DISA calls through the system via CO lines, but is never required to dial internal stations directly. The DISA security code (1 ~ 15 digits) may be set, changed, or canceled from system programming and/or designated stations. If the DISA security code is not set in memory, it is not necessary for dialing out on CO lines via DISA.
- A built-in 4-minute timer automatically disconnects DISA calls in situations where the central office does not provide a release signal. After a warning tone, this timer can be reset by the caller dialing **0** to extend the call another four minutes as many times as required to finish the call. This timer is always operational during DISA calls to prevent CO line lock-up.
- A CRCU PCB must be installed on the PCTU PCB to allow DISA operation.
- A DISA CO line can be assigned to any Night Transfer ringing mode, allowing CO lines to ring normally in one mode (i.e. DAY) and become DISA lines when the system is transferred to another mode (see DAY/NIGHT Modes).
- DISA CO line calls have complete system privacy and cannot be overridden.
- The system provides DISA class of service, which allows Toll Restriction to be applied to DISA CO line calls.

Distinctive CO Line/Intercom Ringing‡: When CO and intercom calls ring a station, the ringing is different. This helps the user determine the type of each incoming call before answering. (This feature is optional for single-line telephones and standard for digital and electronic telephones.)

- A further distinction is available for electronic telephones as a station feature. Stations in close proximity may be programmed for a unique ring on incoming CO calls. This allows individual station users to recognize their telephone's ringing. See Station Features, Distinctive Station Ringing.

‡Available using standard or electronic telephones.

Door Lock Control: Any telephone programmed with a door lock button can unlock a door. Pressing the button activates the electronic door lock, and the lock opens for 3 or 6 seconds, as specified in programming. The actual electronic door lock mechanism must be supplied by the customer. This feature is optional. An option interface PCB (PIOU, PIOUS, or PEPU) or an HDCB is required to support it. Up to five door lock controls can be installed with a designated button for each (four are provided by each of up to four HDCBs and one via either a PIOU, PIOUS, or PEPU—see System Features, Relay Service). If a PCTUS is installed, the maximum number of door lock controls is four.

Door Phones: The door phone has several applications.

- For example, it can be used in conjunction with door lock control, outside an entrance which must be screened. When a button is pressed on the door phone, any or all digital and/or electronic telephones in the system can be programmed to ring with a distinct door phone tone. Any digital or electronic telephone can answer the ring and converse with the person at the door phone. The door lock can be opened if the person requires entry.
- Door phones may be programmed to ring any combination of digital and/or electronic telephones; they may even be programmed to ring over external page when the system is in NIGHT mode.
- A second function of the door phone is that of a monitor. Any telephone can call the door phone and monitor its immediate area.
- A maximum of twelve door phones are allowed per system with a PCTU2/3 and nine with a PCTUS. A maximum of four HDCBs can be installed to support up to three door phones each. Each HDCB requires the support of one electronic telephone interface unit (PEKU or PESU).
- When multiple door phones are installed, they may ring with two distinct door phone

tones. See Toshiba Peripheral Equipment, Door Phone Control Unit.

NOTE:

The PDKU cannot support an HDCB.

DTMF Back Tone: The system can be programmed to allow or prevent DTMF tones from being returned to an electronic or digital telephone when its user dials on CO lines or sends digits to voice mail.

DTMF and Dial Pulse CO Line Compatible‡: The system works with either DTMF or rotary dial pulse CO lines programmed on a line-by-line basis.

DTMF Signal Time (80/160 ms): The standard DTMF dial signal time is 160 milliseconds, but it may be reduced to 80, if the central office or peripheral equipment, such as voice mail devices, will function with the reduced signal time. The DTMF signal time is set independently for CO line outdialing and voice mail auto dial digits via system programming.

Dual FCC Registration: The system can be configured as either key or hybrid, with separate FCC registration numbers for each type. The appropriate configuration for an individual system depends on its function. For more details, refer to General End User Information, located in the front of this document.

Flexible Button Assignment: Each digital telephone has 20 buttons and each electronic telephone has 10 or 20 buttons which may be flexibly programmed as a CO or as any of the different types of features.

Flexible Intercom Numbering‡: A station intercom number can be programmed to have up to four digits. The numbers can be assigned to any station port, and can be programmed in any sequence.

Flexible Line Ringing Assignment: Each CO line can be programmed to ring (or not ring) at each station in the system. A different ringing

‡Available using standard or electronic telephones.

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assignment may be assigned to the system for each DAY, DAY2 or NIGHT mode (see DAY/NIGHT Modes). If a station is programmed to ring for a particular CO line, then a choice may be made between three timing specifications:

- **Immediate:** Stations assigned IMMEDIATE timing ring as soon as the CO line rings into the system.
- **Delay 1:** If stations with IMMEDIATE timing have not answered within 12 seconds (three rings), stations assigned DELAY 1 timing begin ringing also.
- **Delay 2:** If the above stations have not answered within 24 seconds (6 rings), stations assigned DELAY 2 timing begin ringing also.

Flexible Port/Line Assignment: The system's universal slots can be assigned to station, CO line, or E & M TIE line PCBs in a variety of custom configurations. See System Capacity and Configuration.

Group Paging‡: Dialing a 2-digit access code permits a user to make vocal announcements to one of four internal station groups or all stations simultaneously. Any station receiving an announcement can directly access the originator by dialing a code, although any other station receiving the announcement will be cut off. Stations are assigned to groups when the system is programmed. This feature is independent of external paging zones, which reach external speakers (see External Zone Paging).

Least Cost Routing‡: Eight different routing plans may be designed to automatically place outgoing calls using the most cost-efficient method. Three different LCR time schedules can be set up for the business day. Each schedule can use a different priority sequence to place calls, depending on the time of day. Stations can be grouped into one of four classes of LCR. Each class has its own routing priority. Selected station users may have priority use of a line, even when the route with the lowest cost is not available. LCR is compatible with ABR and two CO line conference.

‡Available using standard or electronic telephones.

Live System Programming: Programming the system does not normally interrupt service. When the system is programmed on-site, only the station executing commands loses normal function. When the system is programmed from a remote terminal, all stations remain functional. Service is only interrupted for hardware upgrades.

Memory Protection: If the power fails, the system has an internal battery backup that protects data and the customer's programmed configuration. This information will be maintained within a powerless system for approximately six years.

Message Waiting: Any station and most voice mail devices can leave a message waiting indication at a digital or an electronic station which causes the called digital station's MESSAGE LED or called electronic station's MW/FL LED to flash. In such a case, the station user can either automatically recall the originating station or voice mail device, or cancel the indication without responding. Up to three indications sent by other stations will be queued. A fourth indication is always reserved for the Message Center.

- The system message waiting feature integrates with most voice mail/auto attendant devices by providing special codes that allow the device to set and cancel the message waiting LEDs on the digital and electronic telephones. The digital and electronic telephones automatically retrieve the message via the **MESSAGE** and **MW/FL** buttons respectively.

Music-on-Hold‡: A customer-supplied music source, such as a radio or tape player, can be connected to the system. CO lines or stations placed on hold connect to the music-on-hold source, and the holding party hears music.

- The music source can be connected directly to the controller PCB (PCTU or PCTUS). An optional interface PCB is not required to support this feature. However, if the system is to be configured with a tape recorder that plays a pre-recorded

message to holding parties, the option interface unit PCB (PIOU, PIOUS, or PEPU) is suggested.

- The interface PCB has a relay that can be programmed to control a tape player every time a call is placed on hold. When the relay activates, the tape plays. When the call goes off hold, the tape stops. The tape recorder does not need to run continuously in order for the taped message to reach holding parties (see Relay Service).
- Music-on-hold and background music can share a music source or have individual music sources (see Background Music).

Night Ringing Over External Page‡: When the system is in Night mode, and an incoming call from a CO line or door phone is received, the system can be programmed for ringing to sound over an external speaker. When this feature is used, persons working after-hours are more likely to answer important calls, especially if they work away from a telephone. The customer-supplied external speaker requires an option interface PCB (PIOU, PIOUS, or PEPU) to support it. See Night Ringing Over Selected Page Zones.

- Any station in the system can answer the call by dialing the Night Pickup code.

Night Ringing Over Selected Page Zones‡: CO lines can be programmed to night ring over selected PIOU page zones via customer-supplied paging equipment. The lines can be divided into two groups (tenant 1 and tenant 2) which can then be assigned to night ring over the selected zones, 1 ~ 4.

Non-blocking Talk Paths‡: All CO and intercom lines can be used at the same time. The system can operate at full capacity at all times.

Off-premises Station: An off-premises station is a standard telephone located off-site from the system. Each is supported by one standard telephone interface (PSTU or PESU) port, and normally requires a special line from the central office. Each PSTU supports up to eight off-premises stations, and each PESU

supports up to two off-premises stations.

Outgoing Call Restriction: Stations can be selectively restricted from originating calls over any number of CO lines. Only outgoing calls are restricted. The same stations can receive incoming calls over the restricted CO lines.

Page Interface‡: Dialing a 2-digit code permits user access to a customer-provided external speaker through an internal 3-watt amplifier, or a two-way 600-ohm voice path is available for use with a customer-supplied talkback speaker/amplifier. The external amplifier and speaker are optional, and an option interface PCB (PIOU, PIOUS, or PEPU) is required to support them.

NOTES:

1. Page can be accessed by all stations and TIE lines (optional), but not DISA/DISC lines.
2. The 3-watt amplifier is included with either a PIOU or PEPU, but not on the PIOUS.

Page Zones‡: Dialing a 2-digit access code permits a user to page to one of four external zones or all zones simultaneously. External zones are composed of customer-supplied speaker(s) and amplifier(s). This feature is independent of group paging, which reaches internal station groups (see Group Paging). The external speakers required to operate this feature are optional. An option interface PCB (PIOU) is required to support them. The PIOUS or PEPU provides one external zone only.

NOTE:

Zone page can be accessed by all stations and TIE lines, but not DISA/DISC lines.

Pooled CO Lines: Several CO lines can be pooled to appear under one station CO line button. CO lines can be pooled in categories, e.g., all WATS lines in one pool, all regular CO

†Requires **Release 3** software.

‡Available using standard or electronic telephones.

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lines in another pool, etc.

- Outgoing pooled line buttons override system LCR, and cannot be used to set up tandem CO calls.
- Pooled line buttons can be used to set up two-CO line conference calls with one or two stations.

Power Failure Transfer: Up to eight CO lines are switched directly to up to eight dedicated conventional telephones (customer-provided 2500- or 500-type) for incoming and outgoing calls. This feature requires an external unit, the power failure transfer unit (DPFT). A standard telephone interface unit (PSTU) is required to supply the DPFT with a -24VDC control signal and ground connections.

Privacy/Non-privacy: The system can be programmed to be totally private or non-private, or any combination of private/non-private on a station-by-station basis. The system is in private mode by default, meaning that station users, by pressing the CO line button, cannot access a CO line that is in-use by another station. Station users, however, can change their individual station's mode via the privacy release button. Users having stations with common CO line appearances can access a CO line that is currently in use by a non-private user. Up to three stations may converse on a single CO line via non-private operation. See Station Features, Privacy Release Button and Privacy Override.

NOTES:

1. In private systems (default), all stations are denied Privacy Override.
2. In nonprivate systems, all stations are allowed Privacy Override.

Relay Service: Two relays provide signals to activate optional external equipment. Each relay can be optionally configured to be normally open or normally closed. Each relay can be programmed to perform one function only. Relays and their optional functions are as follows:

- **External Page/Door Lock Relay:** This relay can be programmed to activate one of the following functions:
 - **External Page:** An external music source can be connected to the system to provide background music over external speakers. When a paging announcement is made over the external speakers, the external page relay mutes the background music.
 - **Door Lock Control:** This relay controls an electronic door lock. When the station door lock button is pressed, the door is unlocked by the relay for either 3 or 6 seconds as specified in programming.
- **Night/Hold Relay:** This relay can be programmed with one of the following functions:
 - **Night Relay:** The night relay activates if the system is in night mode and there is an incoming CO line or door phone ring. In programming, the relay can be set to activate continuously (for indirect answering machine control) or pulsating at 1 second ON/3 seconds OFF (for a night bell) when a CO line or door phone rings.
 - **Hold Relay:** The hold relay activates any time a CO line is on hold. It is normally used to control the music-on-hold source. A common source controlled by this relay is a tape deck (see Music-on-Hold).

NOTES:

1. Door lock control is also provided via HDCBs (see Door Lock Control).
2. Both relays reside on the option interface PCB (PIOU, PIOUS, or PEPU). Therefore, a PIOU, PIOUS, or PEPU is required for any relay functions discussed above.

Remote Administration and Maintenance: System administration, programming, and maintenance can be performed from a remote

location, over a customer-supplied ASCII terminal and modem. The system remains live, with no interruption to operation.

- Remote access of system programming/maintenance is accomplished by calling in on CO lines that connect to the maintenance modem (direct ring or transfer). A customer-supplied commercial modem or an internal modem unit (IMDU) with a supporting option interface PCB (PIOU or PIOUS) are required to support this feature.

Reserve Power: Two customer-supplied 12-volt batteries can be connected to the system as a power failure backup. The batteries are connected to the system's standard power supply, therefore, no optional interface PCB is required. When electrical power is intact, the battery continuously trickle charges to capacity. The battery charger is built into the power supply. In the event of a power failure, the system automatically switches over to battery power without any interruption to existing calls or other normal system function. The length of time reserve power will operate depends upon the number of batteries provided, and the system load (see Table B).

IMPORTANT NOTES:

1. *Local ordinances may dictate battery type, housing, and installation method.*
2. *Batteries must be connected when the system is operating via AC power (if batteries are installed after the AC power fails, they will not operate the system).*
3. *Batteries are connected to the system with the Toshiba-supplied PBTC-3M cable.*

Station Hunting‡: When a called station is busy, the call will hunt to an assigned station. If the assigned station is busy, the call hunts to the next assigned station, and so on. The call is eventually routed to the first idle station. The hunting sequence can be either consecutive or non-consecutive, and is fully flexible. If a hunt

station is call forwarded, calls to the station will ring at the forwarded destination—not the hunt destination.

Station Message Detail Recording: The system provides detailed information regarding both incoming and outgoing calls. The information includes time and duration of a call, as well as the called number. It can also include account codes entered (forced and voluntary), the time it took to answer a call, and the station to which a call was transferred. Calls may be screened to print out all calls, outgoing only, or outgoing long distance calls only.

- The system provides the information through an RS-232 port (ASCII), which is compatible with most commercial printers and call accounting devices. Such customer-supplied peripherals may be capable of providing sophisticated account tracking and reporting features.
- Station message detail recording is optional, and an option interface PCB (PIOU or PIOUS) is required to support it.

System Programming through Station: The system is easily programmed through an LCD-type digital or electronic telephone connected to PEKU port 05. The programming electronic telephone functions the same as any other station when it is not in programming mode. See Live System Programming.

System Speed Dial‡: Up to 40 system speed dial numbers can be stored by the digital or electronic telephone connected to PEKU port 00. Each number can be up to 20 digits, and 10 of the 40 numbers can be linked to any other speed dial number to automatically dial up to 37 digits. Any station in the system can speed dial the stored number by pressing a 2-digit access code or a previously programmed **SD** button. Names may be assigned to each number for LCD telephone users. Speed dial buttons (locked or fixed) can be configured for one-button access to Centrex/PBX features. A fixed **SD** button cannot be changed except by station 200. See Station Features, Speed Dial Buttons and Station Speed Dial.

‡Available using standard or electronic telephones.

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Tandem CO Line Connections: This feature allows an unattended line-to-line connection, leaving the originating station free to make another call. For supervision purposes, the originating station must have both CO line button appearances to allow tandem operation. Therefore, tandem calls cannot be set-up from standard telephones, digital telephones, or electronic telephones using LCR, pooled line buttons, or CO line access codes.

Tenant Service: Two small businesses in the same office building which do not each require a full system can share a system. Each tenant's CO line buttons appear in the correct sequence on stations. Each tenant can have two dedicated DSS consoles. Tenants can also call each other directly. Tenants can have separate:

- LCR and toll restriction plans.
- Night transfer ringing assignments.
- Flexible door phone and CO line ringing assignments.

TIE Lines: TIE lines can be installed to link STRATA DK systems to one another, or to link a STRATA DK system to a PBX or any other system with TIE lines. System configuration allows a maximum of four TIE lines on DK24, eight on DK56, and twelve on DK96. TIE lines are interfaced via the PEMU PCB, each of which provides four circuits. TIE lines are E & M Type I signaling, optional 2- or 4-wire transmission, immediate start.

- Paging system (external and station speakers) access by far-end callers originating TIE line calls can be denied or allowed in system programming.
- System programming allows or denies handsfree answerback on incoming TIE line calls.
- Off-hook call announce is not available over TIE lines.

Toll Restriction†: Stations can be individually restricted from making toll calls. Four restriction levels can be defined, each allowing or denying specific area and office codes, long distance information calls, international calls,

and/or operator-assisted calls. Each station is assigned any one of the available restriction levels or no restriction. Individual CO lines can be defined as unrestricted. By dialing one of the two toll restriction override codes programmed into the system, a user can bypass toll restriction. Also, a user can temporarily change a station's toll restriction class (See Station Features: Traveling Class of Service, Toll Restriction Override Code Revision, and Verified Account Codes).†

Toll Restriction Override by System Speed Dial†: System speed dial numbers can be programmed to override toll restrictions. For instance, when employees need to access a toll number that falls into a restricted area/office code for work purposes, an employer can program the particular toll number as a system speed dial number. Even if their stations are toll restricted, they can access the number with speed dialing.

Transfer Privacy: Optional transfer privacy can be programmed system-wide. When transfer privacy is programmed and an outside call is answered by one station, then transferred to another station, it can only be answered by the second station, or by a station with directed call pickup. Other stations cannot pick up the transferred call with a CO line button. See Alternate Point Answer and Directed Call Pickup.

Traveling Class of Service†: The normal toll restriction class of a station can be temporarily changed to another class. Each of the four toll restriction classes can be assigned a four-digit code. If one of these codes is entered at any station, the station will assume the class associated with the code for the next dialed number. The station will revert back to its normal toll restriction class for subsequent calls. In system programming, any station can be assigned to change these codes. The traveling class code data is not sent out the SMDR port and will not print out on station call records. Traveling class codes can be added, deleted, or changed by users from stations selected in programming.

†Requires *Release 3* software.

†Available using standard or electronic telephones.

Unlimited Handsfree Intercom Paths: All intercom lines can carry handsfree conversations simultaneously. Because intercom paths are non-blocking, the number is only limited by the amount of digital and electronic stations.

Unrestricted Call Transfer over Intercom: Any CO line call can be transferred to any station over the intercom line. A station does not need a specific CO line's appearance in order to answer the call.

Voice Mail Interface†: The system can be configured with a Toshiba- or customer-supplied voice mail messaging system. Depending upon the voice mail product installed, some or all of the following features may be provided: call routing, message handling, information management, etc.

- **Automated Attendant:** An integrated Automated Attendant can streamline the system's call answering capability. Additionally, the supervised transfer capability virtually eliminates unanswered or missed calls.
- **Call Forward to Voice Mailbox:** Each telephone user can forward calls directly to a personal mailbox. The caller bypasses the usual sequence of voice mail commands, and simply leaves a message after hearing a tone.
- **Message Waiting Indication:** When a message is recorded in a user's mailbox, the voice mail system automatically sets a message waiting indication at the user's station. When the station user listens to the message, he/she can erase the message, allowing the voice mail device to automatically turn off the indication.
- **Voice Mail Control via Station:** Station users can control voice mail equipment from their telephone dialpads.
- **Feature Integration:** The integration of special voice mail features in STRATA DK system software enable the systems to work together more efficiently.
- **Voice Mail Identification Codes:** Each station user can set VM ID codes to automatically route calls directly to his/her mail-

box. VM ID codes can be up to 16 digits in length and will dial automatically on forwarded and hunt-type calls, or when responding to an MW indication.

- To support a voice mail system, an optional standard telephone interface unit PCB (PSTU or PESU) must be installed in the STRATA DK system.

Voice or Tone Signaling‡: Each method suits different business needs, and the calling station can select the other setting at any time, regardless of the system's programming. In addition, the intercom tone can be optionally disabled, via system programming, to each station individually to allow room sound monitoring. The system can be programmed to announce calls in one of two ways:

- **Voice First:** Can be more convenient, enabling the called party to answer without touching the station. A distinctive intercom tone sounds over the receiving station's speaker, followed by the caller's voice.
- **Tone First:** Ensures a conversation's privacy. The intercom tone sounds over the receiving station's speaker every four seconds, until the station user answers the call. See Station Features, Distinctive Ringing.

Wall or Table Mounting: The cabinet can be mounted on the wall or table top. Special brackets shipped with every cabinet may be installed on the rear of the cabinet to provide recommended clearance from the mounting surface.

Digital and Electronic Telephone Features

Account Code Button†: Allows users to enter voluntary account code (verified or not) during a conversation without interrupting the conversation.

Automatic Busy Redial: If a station user dials an outside number and gets a busy signal, the user can hang up and have automatic busy redial (ABR) dial the number until the call completes. ABR retries the number either every 30 or 60 seconds up to 15 times. When the call

†Requires *Release 3* software.

‡Available using standard or electronic telephones.

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successfully completes, the originating station sounds a distinctive ABR tone. No optional hardware is required to support ABR. ABR is compatible with LCR.

Automatic Callback†: If a station user dials another station over an intercom line and gets a busy signal, the user can hang up and have automatic callback (ACB) redial the number. When the busy station is freed, ACB calls the originating station. When the originating station user answers the ACB recall, the system rings the called station. The callback request will stay active indefinitely until either the called station is freed, or the caller cancels the ACB request.

Automatic Hold/Park Recall†: A CO line or intercom call placed on-hold or parked will automatically recall the station after a previously programmed time period. A different time period can be selected for each station.

Automatic Line Selection: Each station can be programmed so that when the handset is lifted or the **SPKR** button is pressed, a CO line, CO line group, or intercom line is automatically accessed.

Background Music with Station Control: A station user may control background music playing over the station's speaker. The music may be switched on or off and the volume may be adjusted to suit the individual user. A designated station (200) can control (on/off) background music played over the external page speakers.

Busy Override†: Upon calling a busy station and receiving a busy tone, the caller can dial **2** to sound a tone burst to the called station. Busy Override is available to all stations and cannot be blocked.

Call Forwarding: When a station is set in a call forward mode, calls to the forwarded station are routed to an alternate station or voice mail device. This feature applies to both intercom and designated CO line calls. Incoming CO line calls will forward only if the CO lines are

programmed to ring at a single station (and that station is forwarded). All CO lines transferred to a forwarded station will forward. When a station is in a call forward mode, it is allowed to originate telephone calls as usual. There are five different call forward modes available for each station. Each mode is set/canceled by the station user via individual call forward buttons or dial access codes. The call forward modes are:

- **All Calls:** When a station is idle or busy, all calls to the station will forward immediately and the station will not ring.
- **Busy:** When a station is busy, all calls to the station will forward immediately. When the station is idle, incoming calls will ring normally.
- **No Answer:** When a station is idle, calls to the station ring for 12 seconds² and then forward. When the station is busy, incoming calls will receive busy tone when calling the station.
- **Busy/No Answer:** When a station is idle, calls to the station ring for 12 seconds and then forward. When the station is busy, incoming calls will forward immediately.
- **Fixed:** When the station is either idle or busy, all incoming calls will forward immediately and the station will not ring. Fixed call forward is different from the other call forward modes in that the destination station is set once in system programming, not selected each time the user sets the station in a call forward mode.

NOTES:

1. *The alternate station or device is selected by the station user when setting call forward (all calls, busy, no answer, and busy/no answer). With fixed call forward, the alternate station or device is selected in system programming for each station.*
2. *If voice first, one ring tone will occur, then voice announce. If tone first or CO line call, three rings occur before forwarding activates.*
3. *The system can be programmed to allow the DSS (or DDSS) console or*

†Available using standard or electronic telephones.

associated telephone to override the call forward feature and ring stations set in the call forward mode. This allows attendants to notify users that may have forgotten their telephones are in the call forward mode.

4. *Call forward takes precedence over station hunting destinations.*
5. *All call forward modes are available to all stations; however, only one mode can be activated on a particular station at a time.*
6. *If system power is removed, call forward information remains set on stations when power is restored.*
7. *The call forward destination station can call the forwarding station.*

Call Park†: A station can place an existing call on park/hold and consult by placing another call. After consulting, the original call can be retrieved. This feature can also be used to park an outside CO line call, then page a person internally to pick up the call. Any station can pick up the parked CO line calls selectively by dialing an access code plus the CO line number.

NOTE:

When a call is parked, the CO line LED will flash at the on-hold rate.

Call Pickup†: By going off-hook and dialing an access code, any station can pick up:

- Calls on-hold or parked (selectively).
- Calls ringing at other stations.
- An external page.
- CO line ringing at night over external page or night bell.
- Call pickup (**PKUP**) buttons can be assigned to stations to automatically pick up calls.

Call Transfer with Camp-on†: Allows an outside call to be transferred to an idle or busy station (camp-on). Recall occurs if the call is not answered within a specified time period. The recall time period is flexible, and can be programmed for different times for individual

stations. The recall time set in programming for each station is the time it will take to recall the station when it originates a transfer that is not answered.

CO/Centrex/PBX Feature Buttons: Speed dial buttons can be used to store access codes, plus any flashes or pauses necessary to access features through a host switching system. These fixed feature buttons can only be changed by the station connected to port 00. Every fixed feature button assigned to the station reduces the system speed dial numbers by one.

Data Button†: Allows manual dialing of internal data calls, data interface unit to data interface unit connections.

Direct Station Selection Buttons: By pressing an assigned button, a station user can ring the selected station. The button's LED gives an indication of whether or not the station is busy.

DSS and DDSS Console Features: The following features operate on all DSS and DDSS consoles:

- **Automatic Line Hold:** By pressing a station's **DSS** button, the attendant automatically places a CO line on hold and rings the selected station.
- **Flexible Buttons:** Each DSS and DDSS console has 60 flexible buttons. Each button can be assigned one of the following functions:
 - **All Call Voice Page:** The **AC** button allows the attendant to voice page all station speakers simultaneously. It is pre-assigned and must be located at button 59.
 - **CO line:** Pressing a **CO** button accesses a CO line (incoming or outgoing).
 - **Direct Station Selection:** Pressing a **DSS** button calls (or transfers a call to) the selected station.
 - **Night Transfer:** Pressing the **NT** button puts the system ringing pattern in DAY, DAY2 or NIGHT mode. See System

†Requires **Release 3** software.

†Available using standard or electronic telephones.

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Features, Day/Night Mode, for a definition of these ringing modes. If the system has tenant service, then the DDSS and/or DSS consoles specified for the second tenant have independent control over ringing modes. The **NT** button is pre-assigned and must be button 60.

- **Speed Dial:** Pressing an **SD** button dials a telephone number automatically.
- **Voice or Tone Signaling:** DSS and DDSS consoles may be programmed for voice- or tone-first signaling, independent of the system's assignment. As with all stations, the DSS or DDSS console attendant may choose the alternate mode at any time. See Voice or Tone Signaling.
- **Call Forward Override:** Either the DSS/DDSS console or its associated telephone can be programmed to call stations even when the station has call forward set. This allows attendants to notify users that may have forgotten their telephones are in the call forward mode.

DISA Security Code Revision: To ensure confidentiality, only stations selected in programming can set, change, or cancel the DISA security code (1 ~ 15 digits).

Distinctive LED Indications: A station or CO Line LED flashes distinctively to indicate different states:

- **Exclusive Hold and CO Line Conference:** Lines that are placed on exclusive hold or are on a conference call will flash at double the on-hold rate (see Exclusive Hold).
- **Incoming Call:** An LED flashes distinctively at the called station.
- **In-use:** Other stations see a steadily lit LED, and the LED on the in-use station flashes distinctively.
- **On-hold:** Other stations see a distinctive on-hold flash. The used station's LED flashes at a special on-hold rate.

Distinctive Station Ringing: System-wide, CO lines and intercom lines ring differently from

each other, as described in System Features, Distinctive CO Line/Intercom Ringing. Electronic telephone stations in close proximity can be programmed to ring differently. This allows station users whose phones are near each other to easily distinguish between their incoming CO line calls. Two different tones are available for incoming CO line calls:

- **Tone 1:** 500/640 Hz, modulated by 16 Hz
- **Tone 2:** 600/800 Hz, modulated by 16 Hz

Do Not Disturb: When a station user does not want to be disturbed, the **DND** button can be pressed, and users calling that station will get a fast busy signal.

Do Not Disturb Override‡: A privileged user, by dialing a **2**, can send a tone to a station that is in the do not disturb mode. DND override cannot be blocked for selected stations.

DP/DTMF Mode Change‡: Allows a station to change CO out-dialing signal modes from dial pulse (DP) to DTMF (or vice versa) by pressing the **TO** button.

Exclusive Hold: A station user can press the **HOLD** button twice to hold a call and not allow it to be picked up by any other party whose station has the same CO line appearance. Exclusive hold calls can be picked up with the remote retrieval of held calls feature, although the party picking up the call must know it is there (no LED indication of a holding call is given to any station except the station originating the exclusive hold).

Executive Override‡: A privileged user can enter any conversation in the system by dialing **3**. An optional warning tone sounds to notify conversing parties that an additional party is about to enter the conversation.

NOTE:

Executive override can be blocked selectively to any station in system programming. This provides security for modem (data) calls, voice mail calls, fax calls, etc.

‡Available using standard or electronic telephones.

*Executive override is not blocked by the **PRIVACY** button.*

Fixed Call Forward: Station feature buttons can be programmed to put the station in call forward mode (with one touch) to a fixed station, e.g., receptionist's station or a voice mail system. The destination is fixed in programming and cannot be changed by the station user.

Handsfree Answerback: When a voice-announced intercom call comes in, an electronic telephone user can answer without lifting the handset.

Hearing Aid Compatible: All Toshiba telephones are hearing aid compatible.

Liquid Crystal Display Features: The following features operate on all LCD model telephones:

- **Alphanumeric Messaging:** System and personal messages display on the 32-character LCD. Up to 40 system messages can be used by all LCD stations. In addition, a number of stations can program a maximum of 10 personal messages (see Note). Both letters and numbers are allowed in the messages. The LCD messages are fully editable.
- **Busy Station Messaging†:** When reaching a busy LCD station, a message can be sent to that station (a tone will be heard). The busy station may also return a message to the calling station's LCD. The two stations may continue this procedure to carry on a "silent" conversation.
- **Called Station Messaging:** An LCD message can be left for another LCD station. When the other LCD user answers the message indication, the LCD displays any message that has been left.
- **Calling Station Messaging:** A message displayed on a called station's LCD automatically displays on a calling station's LCD when the called station is dialed.
- **Group Station Messaging†:** Allows any station to set a Called or Calling station Message for a group of stations.
- **Busy Lamp Field Indication:** The LCD can indicate the on-/off-hook status of all stations in the system. Station status displays in increments of 20, listed by station port number.
- **CO Line Identification:** Each CO line can be assigned a 16-character alphanumeric name. All LCD phones using a named line display the line's name and/or number.
- **Intercom Name/Number Display:** Allows LCD station users to set a title (e.g. your name, lobby, etc., up to 16 characters) in station memory. The title displays on the top row of the station's LCD when it is idle, and is displayed on the bottom row of another LCD station when calling that station. The title is programmed from each station individually and may be set and cleared easily with an access code. It is sent on direct intercom, forwarded, and hunt type calls. Any station type (non-LCD, standard telephone, and/or voice mail port) may be programmed from station 200 to send a title to the LCD stations they call.
- **Speed Dial Memo:** A number of LCD telephone users can assign names (up to 12 characters) to each of their 40 personal speed dial numbers (see Note). A user can scroll through the list of names on the LCD and make a selection. When selected, the number is automatically dialed by pressing a **CC** button. All system speed dial numbers may be set with LCD memo for use with all LCD phones.
- **Station Identification:** A station's number is displayed on its LCD when the handset is on-hook. A station's number is also displayed on another station's LCD when it is calling that station.
- **Timed Reminders with Messages:** This feature enhances the timed reminder feature, which is available to all digital and electronic telephones. Up to five separate messages can be set at a number of LCD telephones (see Note). The messages display at the programmed time and are accompanied by a tone. Each message

† Requires *Release 3* software.

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can be programmed to display just once, or on a daily basis.

NOTE:

When the system is equipped with a PCTU2/3 PCB, up to 16 LCD stations can set 10 personal messages (10 ~ 19) to use with the station messaging, speed dial memo, and timed reminder features. When a DK24 is equipped with a PCTUS PCB, the number is reduced to six stations. With either PCB type, all LCD stations can set the 40 system messages (60 ~ 99) when using the above features.

Message Waiting/Flash: Pressing the **MW/FL** button causes a timed flash to be transmitted to a connected line. The timing of the flash can be programmed to be long enough to cause a disconnect, or to operate Centrex/PBX features.

Microphone Control Button: Stations can be programmed with an **MCO** button to turn a microphone on/off. The **MCO** button also enables and disables handsfree answerback.

Modem Button†: Allows a user to reserve a modem from a pool, or to switch from a voice to a data call.

Modular Handset and Line Cords: All digital and electronic telephones are equipped with modular handset and line cords.

Modular Headset: All models may be optionally equipped with a modular headset jack.

Off-hook Call Announce: Allows a station user to call and speak to an off-hook, busy digital or electronic telephone through the telephone's speaker. The called station user can respond over the telephone's microphone without interrupting the conversation on the handset. If the called station is currently involved in another handsfree conversation, then the caller receives a busy signal. The feature is activated automatically or by dialing an access code

on a station-by-station basis. This is an optional feature and requires additional hardware. An off-hook call announce upgrade must be made to each station programmed with the feature. The electronic telephone interface unit PCBs (PEKUs or PESUs) that support upgraded stations also require an upgrade called the off-hook call announce subassembly (EOCU). The digital interface unit (PDKU) does not require the EOCU subassembly.

NOTE:

OCA is not recommended for use with any stations equipped with headsets.

On-hook Dialing: Users can dial calls without lifting the handset. System dial tone, dial pulsing, ringing, and the voice of the answering party are all amplified over the station's speaker. The handset doesn't need to be lifted until after the party answers.

Pooled Line Buttons: A group of CO lines can appear under one button. Up to four pooled line buttons can be assigned at each station for every group. A maximum of eight CO line groups are allowed in the system.

Privacy Button†: If pressed, this button denies privacy override on common CO lines. The **PRIVACY** button does not block executive or busy override.

Privacy Release Button: CO lines that appear on stations are in private mode by default. If a station user accesses a common CO line and presses the **PRV/RLS** button, then any other station (including stations without the privacy override option) can enter that line.

Privacy Override: Stations enabled in programming can enter an existing CO line conversation if the station has the CO line button appearance. Before the overriding station enters the conversation, an optional warning tone sounds to notify conversing parties. A maximum of two stations can simultaneously override an existing CO line-to-station call

†Requires **Release 3** software.

using privacy override (this allows a conference of up to three stations and one outside party).

NOTES:

1. *Privacy override can be blocked selectively to any station in system programming (this provides security for modem, fax, and voice mail calls).*
2. *This feature allows a system to be totally private or non-private, or any combination, on a station-by-station basis via system programming. If all stations are allowed privacy override, the system is non-private. If all stations are denied privacy override, the system is private. Individual stations can be allowed/denied privacy override in any combination.*
3. *DISA CO line calls cannot be overridden.*

Private CO Lines: CO lines can be restricted to appear only on selected stations.

Pushbutton Dialing: All Toshiba telephones are equipped with pushbutton dialpads.

Release Button: A release (**RLS**) button can be programmed on digital and electronic telephones, allowing the user to disconnect from an existing call without having to go on-hook to press the hookswitch. This flexible button is useful on stations that are equipped with headsets.

Remote Retrieval of Held/Parked Calls‡: Calls placed on-hold or parked by a station can be picked up by a different station with the **PKUP** button or the access code. Calls on exclusive hold may be picked up from a remote station using this feature, although the party picking up the call must know the call is on-hold, since no LED indication of a holding call is given to any station except the station originating the exclusive hold. If more than one CO line is on-hold, the lines can be selectively retrieved by dialing **5 7** plus the line number (**00 ~ 36**).

Repeat Last Number Dialed‡: The last number dialed by a station is stored in system memory, and may be redialed automatically by accessing a CO line and pressing the **#** or **RDL** button. See Saved Number Redial.

Ring Line Preference: A station automatically answers whichever line is ringing when there are a number of appearing lines. The line can be answered by lifting the handset or by pressing the **SPKR** button. The ringing line is automatically selected.

Saved Number Redial: A programmable **SAVE** button stores the number that was just dialed for redialing at a later time. It may be used at any time and is exclusive of repeat last number dialed.

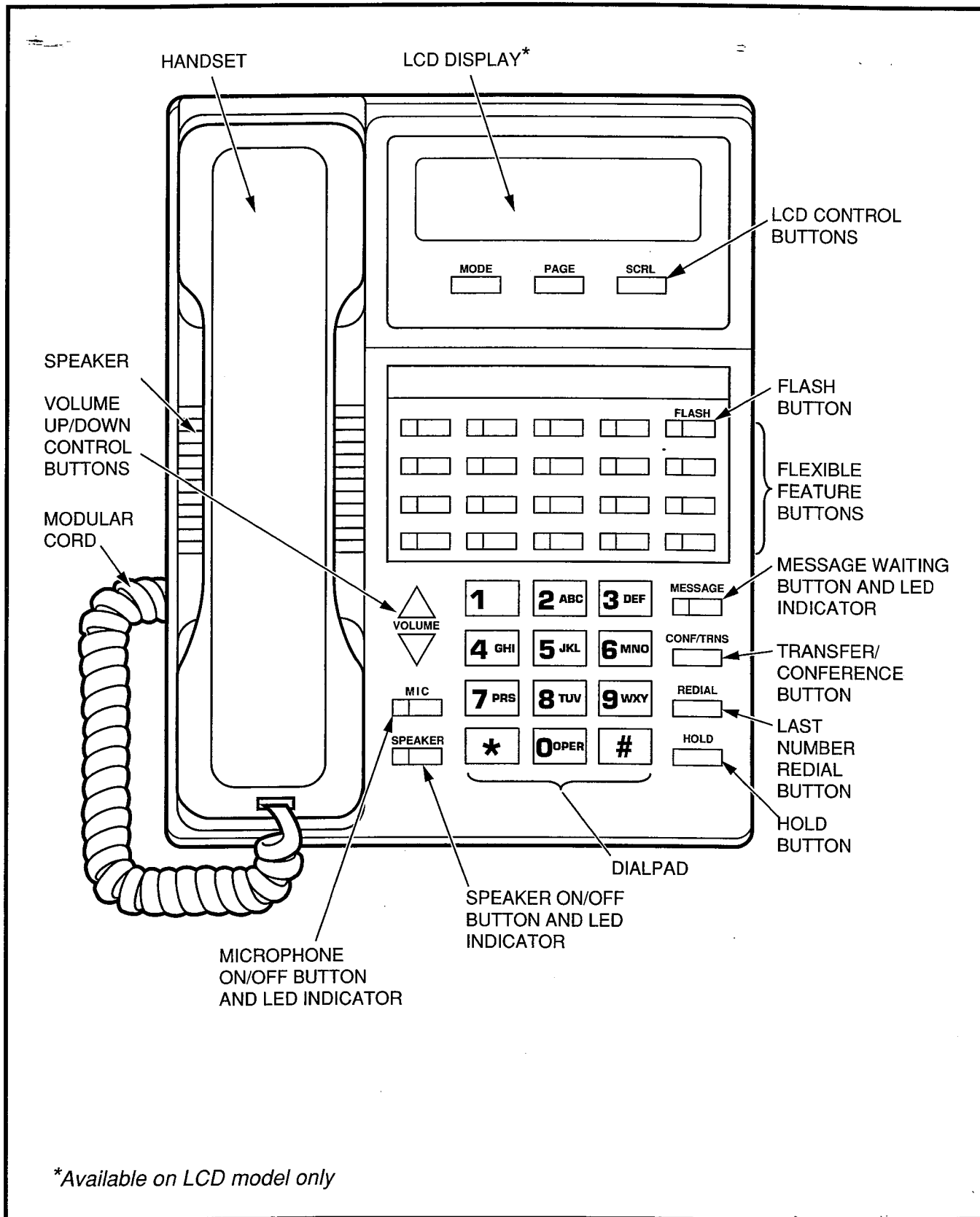
Speed Dial Buttons: **SD** buttons can be assigned to each station during programming. Each **SD** button on the station can store a pre-programmed telephone number (up to 20 digits, including pause and flash signals). When the station user presses a programmed **SD** button, the station automatically dials the stored number. See System Features, System Speed Dial.

Station Speed Dial‡: In addition to system speed dial, each station can store a private list of up to 40 telephone numbers, each up to 20 digits. Flashes and pauses may also be stored in speed dial memory. Stored numbers, flashes, and pauses are dialed automatically by pressing pre-programmed **SD** buttons or by dialing the code for the specific memory location.

Timed Reminder: Five separate reminders can be set at any digital or electronic telephone, even if it has no LCD. A reminder tone sounds at the pre-set time. Each reminder may be set to ring only once, or at the same time daily.

Toll Restriction Override Code Revision‡: To ensure confidentiality, only selected stations in the system can change the codes for bypassing toll restriction. Stations are selected in programming. See System Features, Toll Restriction.

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**Available on LCD model only*

FIGURE 19—DIGITAL TELEPHONE DIAGRAM

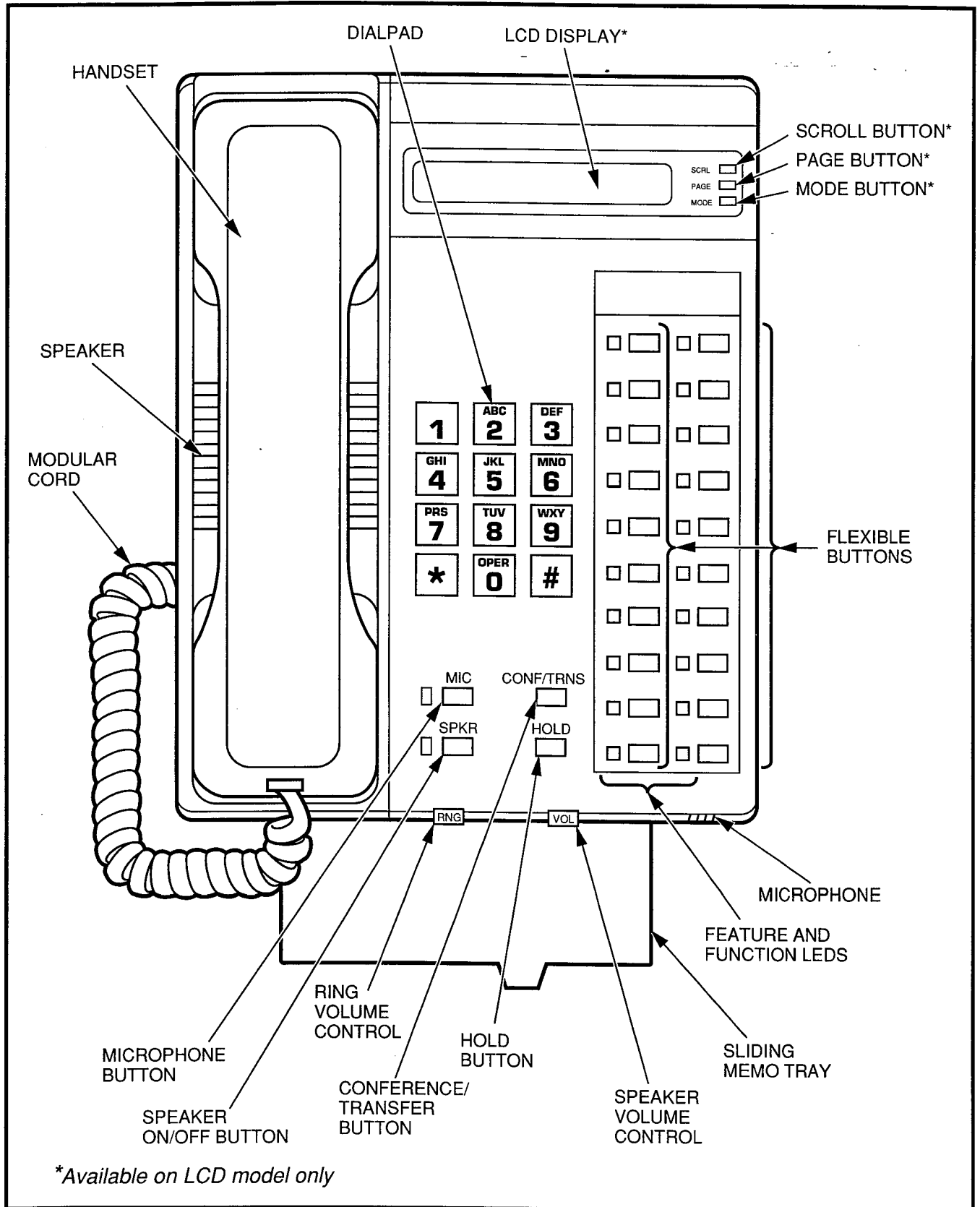


FIGURE 20—ELECTRONIC TELEPHONE DIAGRAM

GLOSSARY OF ACRONYMS

BPS	Bits per second—baud rate.	IMDU	Remote maintenance modem sub-assembly.
CO	Central office.	KSU	Key service unit.
CODECS	Coder/decoder semiconductor.	LCD	Liquid crystal display.
CRCU	DTMF receiver subassembly—optional DTMF receiver upgrade for the PCTU2/3 or PCTUS.	LED	Light emitting diode—busy lamp indication.
CRCU-4	4-circuit DTMF receiver subassembly.	LSI	Large scale integration.
CRCU-8	8-circuit DTMF receiver subassembly.	MDF	Main distribution frame.
DISA	Direct inward system access.	MDFB	Door phone unit.
DISC	Direct inward station calling.	OCA	Off-hook call announce.
DK	Digital key.	PBX	Private branch exchange.
DPFT	Power failure transfer unit—emergency backup unit.	PCB	Printed circuit board.
DSS	Direct station selection.	PCM	Pulse code modulation.
DDSS†	Digital direct station selection.	PCOU	CO line unit—PCB option that provides the system with four CO lines.
EOCU	Off-hook call announce subassembly—optional PCB upgrade to PEKU or PESU for OCA (not needed on PDKU).	PCTU	Common control unit—the system's controller PCB (there are three versions, PCTU2, PCTU3, and PCTUS).
FCC	Federal Communication Commission.	PDKU†	Digital telephone interface unit—station port PCB—supports digital telephones and digital interface units (PDIU-DIs and PDIU-DSs). It can also support a DDSS console.
HDCB	Door phone control unit—peripheral to support door phone or door lock option.	PDIU-DI†	Integrated data interface unit—integrated into the base of a digital telephone, it is used for transmitting and receiving data between terminals/personal computers and devices connected to other PDIU-DIs or to modems, printers, and computers connected to PDIU-DSs. The PDIU-DI also provides personal computer access to outside dial-up data services and/or bulletin boards via modems.
HESB	External speaker unit—speaker box with built-in amplifier.		
HHEU	A subassembly to upgrade an electronic telephone with a headset and/or loud ringing bell.		
HVSI	A subassembly to upgrade an electronic telephone with OCA.		
HVSU	A subassembly to upgrade an electronic telephone with OCA.		

†Requires *Release 3* software.

- PDIU-DS†** Stand-alone data interface unit—used for modem pooling, printer sharing, and access to a host/main-frame computer.
- PEKU** Electronic key telephone interface unit—station port PCB—supports eight electronic telephones.
- PEMU** E & M TIE line unit—supports four Type I E & M TIE lines.
- PEPU** External page interface unit.
- PESU** Combination standard/electronic telephone interface unit—station port PCB—supports two standard telephones (or peripheral devices) and four electronic telephones.
- PIOU** Option interface unit—PCB that supports peripheral options.
- PIOUS** Option interface unit—a reduced version of the PIOU PCB that supports peripheral options.
- PSTU** Standard telephone interface unit—optional PCB interface for eight standard phones (or peripheral devices).
- RAM** Random access memory.
- ROM** Read only memory.

†Requires *Release 3* software.

Strata[®] *DK*

RELEASE 1, 2, and 3 INSTALLATION

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1 PURPOSE

1.00 The purpose of this manual is to provide detailed step-by-step instructions for installing and programming STRATA DK systems.

1.01 This chapter provides an overview of manual organization; a list of reference documentation that supports the installed system; a list of system mnemonics; and inspection, packaging and storage guidelines.

2 ORGANIZATION

2.00 This manual is organized in modular chapters for easy removal and replacement of updated materials. The chapters are as follows:

- Chapter One - Introduction
- Chapter Two - System Description
- Chapter Three - Installation Site Requirements
- Chapter Four - System Configuration
- Chapter Five - KSU Cabinet Installation
- Chapter Six - PCB Installation
- Chapter Seven - Telephone Installation
- Chapter Eight - Peripherals Installation
- Chapter Nine - System Wiring and Main Distribution Frame Arrangements

3 REFERENCE DOCUMENTATION

3.00 The STRATA DK digital key systems are supported by the following complement of reference documentation:

3.10 Fault Finding Procedures: Hardware troubleshooting and diagnostic information presented in flowchart form.

3.20 General Description: An overview of the systems and their features.

3.30 User Guides: Detailed step-by-step guides for system operation.

3.40 System Record: A series of tables used to record the system's software features and configuration programming.

3.50 Programming: Detailed step-by-step instructions on how to enter data in the System

Record, and program the system from the completed System Record Sheets. LCD responses are included to provide clear guidance for the programmer.

3.60 Remote Maintenance and Administration: Programming and maintenance procedures specially adapted for remote maintenance and administration terminal use. Detailed, step-by-step instructions are provided, complete with the terminal responses.

NOTE:

These procedures also apply when using a local ASCII terminal connected directly to the DK system.

4 SYSTEM MNEMONICS/TERMS

4.00 Mnemonics are used to identify the system's hardware, operation, and features. The following alphabetical listing describes the mnemonics used in this manual.

BPS: Bits Per Second—Unit of measure that refers to the transmission speed (baud rate) of electronic signals. It is used when describing modem operation.

CO: Central Office—The facility which houses switching equipment that provides telephone service (CO lines, E & M TIE lines, Centrex lines, etc.) for the immediate geographical area.

CO Line: A term used to define the STRATA DK hardware circuit that connects to the Central Office network line pair. Each CO line and TIE line circuit is assigned a CO line number in system software.

CODECs: Coder/Decoders—Semiconductors that allow the system to process analog-to-digital and digital-to-analog conversions.

CRCU-4: An optional upgrade to the system's controller PCB (PCTU or PCTUS1) that provides a 4-circuit DTMF receiver for system DISA CO lines, E & M TIE lines, and standard telephones.

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CRCU-8: An optional upgrade to the system's controller PCB (PCTU or PCTUS) that provides an 8-circuit DTMF receiver for system DISA CO lines, E & M TIE lines, and standard telephones.

DDSS (Release 3): Digital Direct Station Selection Console—A console to facilitate processing a heavy load of incoming calls. The DDSS console is usually associated with a dedicated attendant's telephone.

DISA (Release 2 and higher): Direct Inward System Access—A feature available for CO lines that allows an outside party to access a system's internal stations or outgoing CO lines* without going through an operator or automated attendant. An optional security code may be set to prevent unauthorized access to outgoing CO lines for through system calling.

DK: Digital Key.

DPFT: Power Failure/Emergency Transfer Unit—An optional backup unit that provides emergency service during power failures.

DSS: Direct Station Selection Console—A console to facilitate processing a heavy load of incoming calls. The DSS console is always associated with a dedicated attendant electronic telephone station.

DVSU (Release 3): A subassembly that equips a digital telephone with off-hook call announce capability.

EOCU: Off-hook Call Announce Subassembly—An optional upgrade to the Electronic Telephone Interface Unit PCB (PEKU) that provides support for stations with off-hook call announce.

FCC: Federal Communication Commission—The telecommunication industry's federal regulatory agency. All Toshiba hardware is FCC listed or approved.

HDCB: Door Phone Control Box—A peripheral hardware unit that supports optional door phones.

HESB: External Speaker Box—A speaker/amplifier that can be configured with the system to provide a variety of functions.

HESC-65: A cable used to connect electronic telephones (HHEU) to the HESB for the loud ringing-bell option.

HESC-65A (Release 3): A cable that connects an HHEU-equipped digital or electronic telephone to an HESB for the loud ringing bell option.

HHEU: Loud Ringing Bell/Headset Jack Interface Upgrade Unit—A small PCB upgrade for use inside a digital telephone or a 6500-series electronic telephone that allows a speaker (HESB) and/or a headset to be installed with the station.

HVSI: The second of two subassemblies that comprise the upgrade assembly that equips an electronic telephone with Off-hook Call Announce capability.

HVSU: One of two subassemblies that comprise the upgrade assembly that equips an electronic telephone with Off-hook Call Announce capability.

IMDU: Remote Maintenance Modem Interface Unit—A subassembly installed on a PIOUS or PIOUS PCB that allows the system to be connected with a remote maintenance/administration terminal.

KSU: Key Service Unit—The system's cabinet with its common equipment.

LCD: Liquid Crystal Display—The display on digital and electronic telephones.

LED: Light Emitting Diode—The indicators located on printed circuit boards, digital telephones, and electronic telephones.

LSI: Large Scale Integration—Related to circuit design technology. STRATA DK printed circuit boards use LSI circuit design.

MDF: Main Distribution Frame—The wiring frame usually located in a phone closet.

*Release 2 software and higher

MDFB: Door Phone Box—A peripheral two-way speaker box option.

OCA: Off-hook Call Announce.

PBX: Private Branch Exchange—Industry-standard term which refers to a telephone switch, usually on-premises, which serves an individual company, and is connected to a public telephone exchange through the CO.

PCB: Printed Circuit Board.

PCM: Pulse Code Modulation—A widely used form of digital telephone switching.

PCOU: CO Line Interface Unit—An optional PCB that provides the system with four CO lines.

PCOU2: The PCOU2 is a direct replacement for the PCOU. Their fit/form/function is identical; however, for manufacturing reasons, the PCOU was phased out in favor of the PCOU2.

PCTU 1, 2, or 3: Common Control Unit—The system's controller PCB. It supports up to 14 universal slots, 96 station ports, and 36 CO lines. The PCTU1 supports **Release 1** software; the PCTU2 supports **Release 2** software; and the PCTU3 supports **Release 3** software. All three PCTU versions are compatible with all DK systems—DK24, DK56, and DK96.

PCTUS: Common Control Unit—The controller PCB for the DK24. It supports up to six universal slots, 24 station ports and 16 CO lines. It also supports **Release 2** software. The PCTUS is compatible with DK24 only.

PDIU-DI (Release 3): Integrated Data Interface Unit—Integrated into the base of a digital telephone, it is used for transmitting and receiving data between terminals/personal computers and devices connected to other PDIU-DIs or to modems, printers, and computers connected to PDIU-DSs. The PDIU-DI is also used to provide personal computer access to outside dial-up data services and/or bulletin boards via modem pooling.

PDIU-DS (Release 3): Stand-alone Data Interface Unit—Used for modem pooling, printer sharing, and access to a host/mainframe computer.

PDKU (Release 3): Digital Telephone Interface Unit—An optional PCB that provides the system with eight digital telephone circuits. In addition to digital telephones, the PDKU can support data interface units (stand-alone and integrated) and a digital DSS console.

PEKU: Electronic Telephone Interface Unit—An optional PCB that provides the system with eight electronic telephone circuits.

PEMU: E & M TIE Line Unit—An optional PCB that provides the system with support for four E & M Type I TIE lines.

PEPU: External Page Interface Unit—An optional PCB (essentially a reduced model of the PIOU) that provides support and/or circuit interface for optional hardware peripherals and upgrades associated with external paging functions.

PESU (Release 2 and higher): Standard/Electronic Interface PCB—An optional PCB that provides the system with a combination of two standard and four electronic telephone circuits. The standard telephone circuits may also be connected to optional hardware peripherals, such as voice mail, auto attendant, and fax machines.

PIOU: Option Interface Unit—An optional PCB that provides support and/or circuit interface for optional hardware peripherals and upgrades.

PIOUS: The same as the PIOU, with some exceptions; most notably, the PIOUS has one external paging interface zone, while the PIOU has four.

NOTE:

Each system will support only one of the following PCBs: PIOU, PIOUS or PEPU.

Port: A term used to identify a station circuit location. Each station and TIE line hardware circuit is assigned to a port number in system software.

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PPTC: A Toshiba-supplied adapter that is used to connect the modular SMDR and/or maintenance ports of the PIOU or PIOUS to the DB-25 connector of a printer, terminal, modem or call accounting machine.

PBTC: A Toshiba-supplied cable used to connect customer-supplied batteries to any DK PPSU power supply for emergency reserve power.

PSTU: Standard Telephone Interface Unit—An optional PCB with built-in ring generator that provides interface for eight standard telephones or optional hardware peripherals (voice mail, auto attendant, fax machine, etc).

PSTU2: Standard Telephone Interface Unit—Provides same function as the PSTU with the addition of a switch to select high or low ringing generator voltage.

RAM: Random Access Memory—Refers to the type of system memory that holds individual system configuration and feature programming. RAM is read/write memory, and can be easily revised in programming.

ROM: Read Only Memory—Refers to the type of system memory that holds static software that comprises the mechanics of the features' functions. ROM is only revised by Toshiba software engineers.

4.10 Use of Notes, Important Notes, Cautions, and Warnings

4.11 Notes call attention to specific items to elaborate, or to refer the reader to other information.

4.12 Important Notes are used when the information is considered to be very important.

4.13 Cautions call attention to the possibility of equipment being damaged if the instructions are not followed closely.

4.14 Warnings are used when the given tasks involved could cause the possibility of personal injury or death to the technician.

**5 INSPECTION, PACKAGING,
and STORAGE**

5.00 Inspection

5.01 When the system is received, examine all packages carefully and note any visible damage. If any damage is found, do not open the packages. Contact the delivery carrier immediately and make the proper claims.

5.02 Check the system against the packing slip. If it is determined that equipment is missing, contact the delivery carrier and your supplier immediately.

5.03 After unpacking (and before installing), check the system against the packing list and inspect all equipment for damage. If equipment is missing or damaged, contact your supplier immediately.

5.04 Be sure to retain original packaging materials for reuse when storing or transporting system hardware.

5.10 Packaging and Storage

CAUTION!

When handling (installing, removing, examining) PCBs, do not touch the back (soldered) side or edge connector. Always hold the PCB by its edges.

5.11 When packaging and storing the system, remove PCBs from the system cabinet (the power supply may remain installed in the cabinet for storage and shipment). Printed circuit boards should be packaged in their original antistatic bags for protection against electrostatic discharge. Be sure to package equipment in its original shipping containers.

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**RELEASE 1, 2, and 3
INSTALLATION**

**CHAPTER TWO
SYSTEM DESCRIPTION**

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1 GENERAL

1.00 This chapter provides a discussion of the technology employed in the STRATA DK system design, and a detailed description of the system hardware, including the basic equipment cabinet (key service unit), PCB options, and system peripheral equipment. A description of system controls and indicators is also provided.

1.10 System Description

1.11 A STRATA DK system consists essentially of a key service unit (KSU) cabinet (Figure 2-1) which houses the power supply and a number of PCBs. The quantity and type of PCBs, telephones, and peripherals installed depends on the user's requirements. The primary differences between models are KSU sizes, PCB capacities, and power supplies.

1.12 Hardware for all three system types is identical, with the exception of the KSUs and power supplies. Differences between models are identified, as applicable.

2 SYSTEM TECHNOLOGY

2.00 Custom Electronic Circuitry

2.01 STRATA DK system circuitry employs Large Scale Integration technology to increase system efficiency while allowing a reduction in physical size. Use of CMOS circuits, when applicable, minimizes the system's power requirements.

2.10 Microprocessors

2.11 Main Microprocessor. The systems employ a 16-bit, 68000-type microprocessor, operating at a speed of 8 MHz, for stored program control. The main microprocessor is located on the Common Control Unit (PCTU or PCTUS1 PCB).

2.12 Local Microprocessors. Local microprocessors are located on most PCBs and in electronic telephones. The local microprocessors in the KSU are 8-bit, TMP90C840-type microprocessors, which operate at a clock speed of 10 MHz.

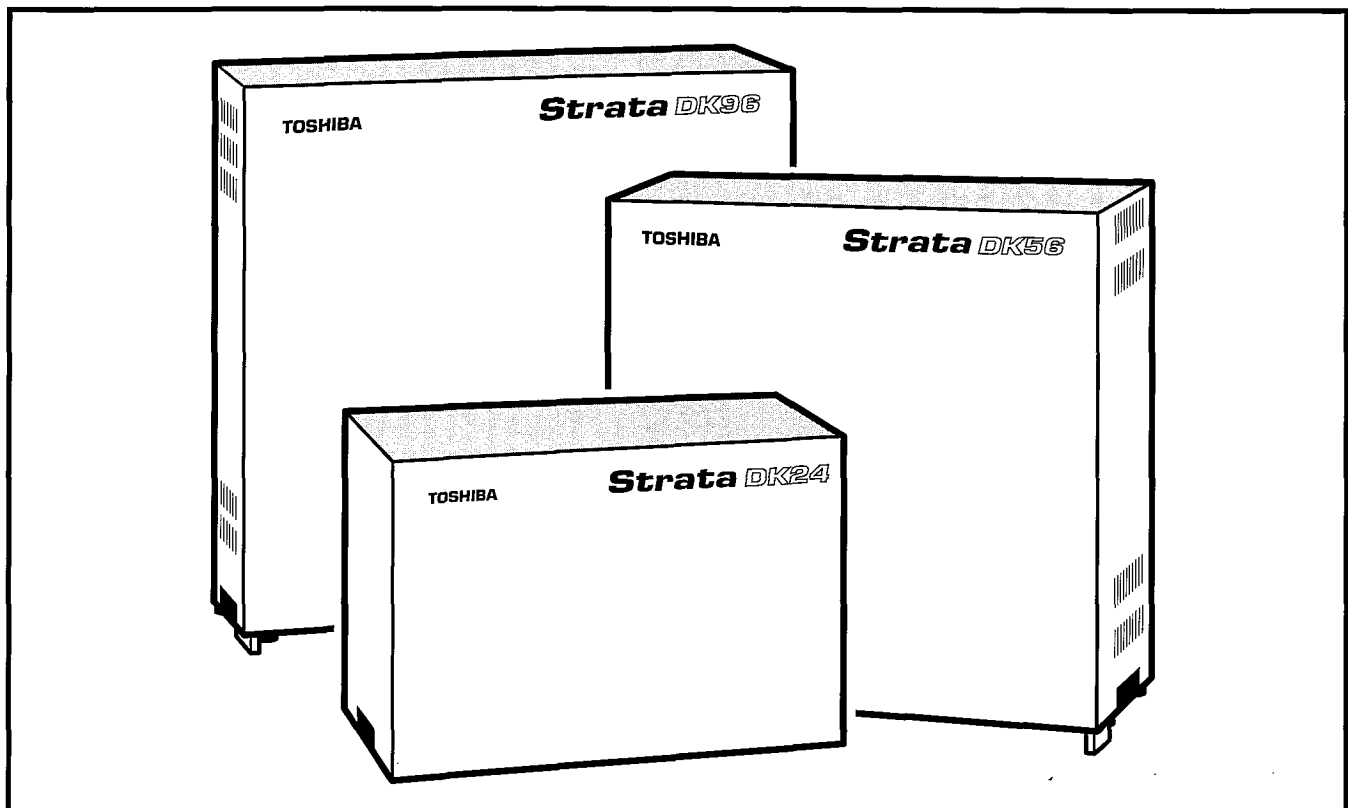


FIGURE 2-1—DK24/56/96 KSUs

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2.20 Stored Programming

2.21 System Operating Software. System operating software is stored in ROM, and is revised only by Toshiba software engineers.

2.22 Configuration and Custom Programming. Each system's individual configuration and custom programming is stored in RAM. The contents of system RAM is user-developed and -programmed based on the system's configuration and the user's requirements. System RAM is protected by a lithium battery with a shelf life of approximately six years.

2.30 Pulse Code Modulation (PCM)

2.31 PCM technology allows fully non-blocking intercom and outside line talk paths. Talk paths operate through digital switching, as opposed to analog crosspoints. Analog-to-digital and digital-to-analog conversion is accomplished by CODEC integrated circuits.

3 KEY SERVICE UNITS (KSU)

3.01 The STRATA DK KSUs consist of single, free-standing cabinets that can be configured for either wall or table-top mounting. One-inch rubber feet on the base of the cabinet ensure that proper clearance is maintained when the KSU is table-top mounted. The KSU interior houses the PCB shelves and the power supply.

3.02 External dimensions and approximate weights for the DK24, DK56, and DK96 models are listed below. Weights are based on cabinets containing a full complement of PCBs.

DK24 Height: 10.6 in. (269 mm)
 Width: 16.0 in. (406 mm)
 Depth: 9.0 in. (229 mm)
 Weight: 19.4 lbs (9 kg)

DK56 Height: 15.0 in. (381 mm)
 Width: 16.0 in. (406 mm)
 Depth: 9.0 in. (229 mm)
 Weight: 37.5 lbs (17 kg)

DK96 Height: 18.6 in. (475 mm)
 Width: 19.6 in. (500 mm)
 Depth: 9.0 in. (229 mm)
 Weight: 55.1 lbs (25 kg)

3.10 DK24 KSU Interior

3.11 The DK24 KSU interior has one shelf (Figure 2-2) with seven available PCB slots, labeled PCTU and S01 ~ S06. Only the PCTU slot serves a dedicated function.

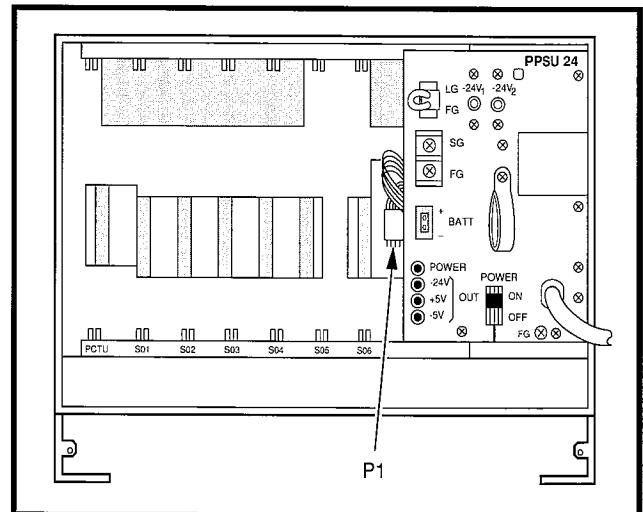


FIGURE 2-2—DK24 KSU INTERIOR

3.12 Each PCB slot (S01 ~ S06) incorporates a standard 40-pin female connector located in the same vertical position on the KSU's backplane. This standardization enables any of the optional PCBs to be installed in any slot. The PCTU slot incorporates the same 40-pin female connector, but it is set 0.25-inch higher, so that only a PCTU or PCTUS1 PCB may be installed in the slot.

3.13 The power supply is factory-installed, mounted vertically into the right side of the PCB shelf, and is secured with two combination slotted/Phillips mounting screws at the right side of the cabinet.

3.20 DK56 KSU Interior

3.21 The DK56 KSU interior also has just one shelf (Figure 2-3), but with nine available PCB

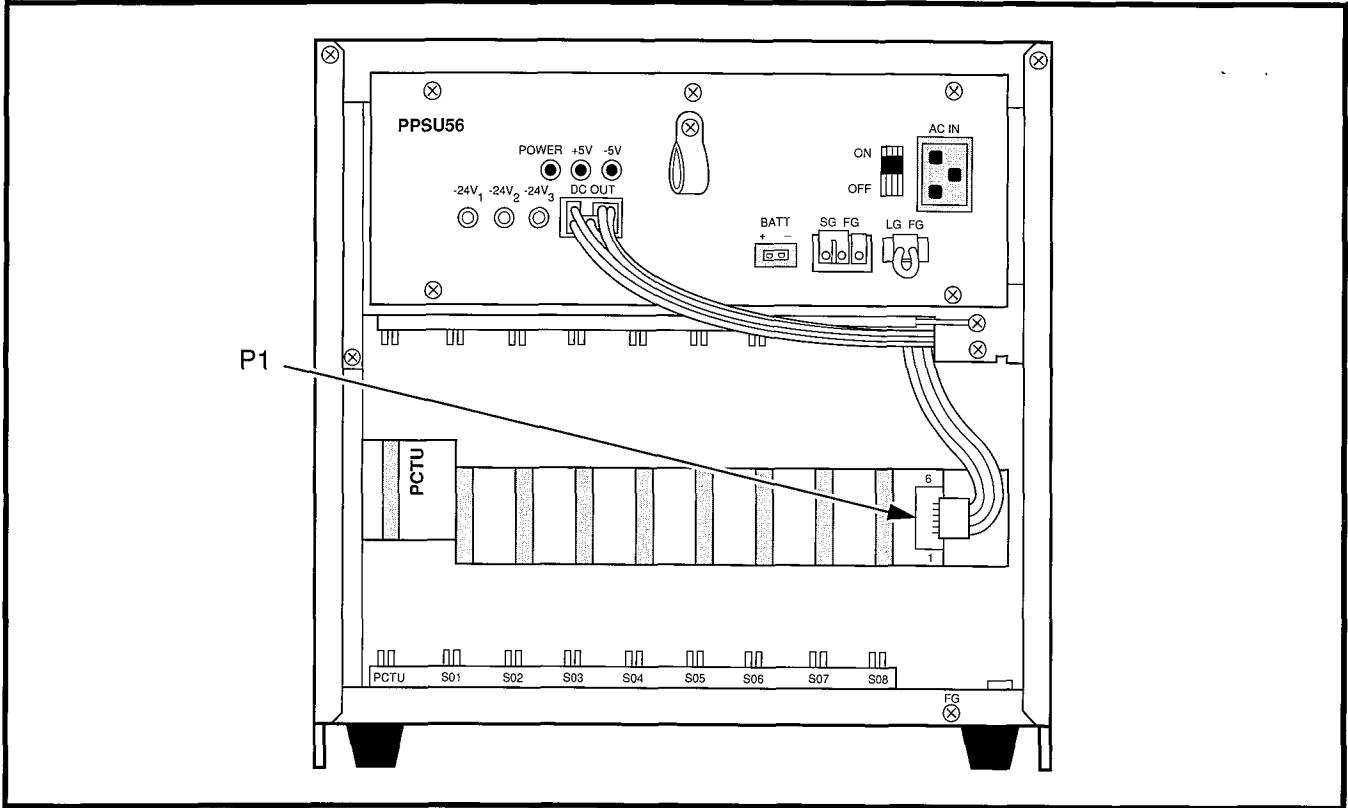


FIGURE 2-3—DK56 KSU INTERIOR

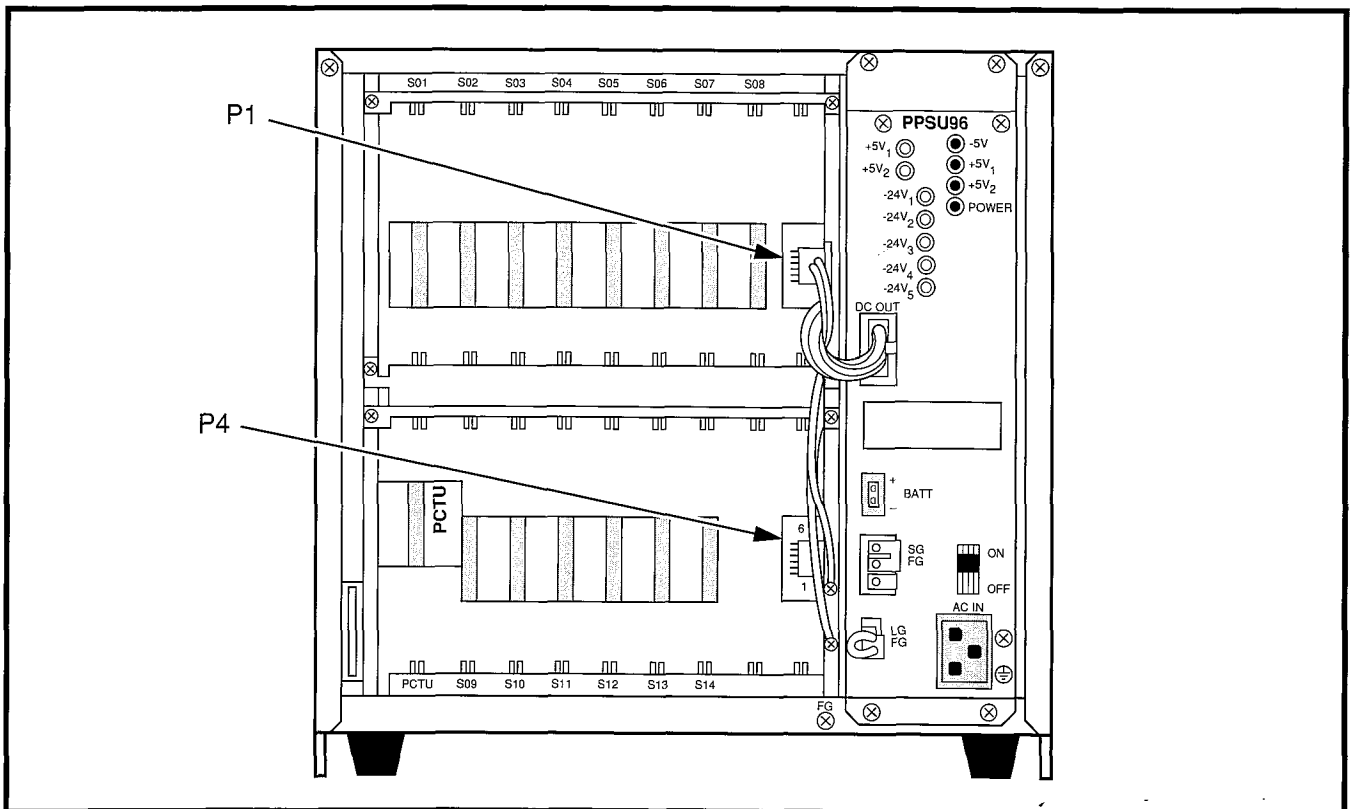


FIGURE 2-4—DK96 KSU INTERIOR

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slots. These slots are labeled PCTU and S01 ~ S08; only the PCTU slot serves a dedicated function.

3.22 Each PCB slot (S01 ~ S08) incorporates a standard 40-pin female connector located in the same vertical position on the KSU's backplane. This standardization enables any of the optional PCBs to be installed in any slot. The PCTU slot incorporates the same 40-pin female connector, but it is set 0.25-inch higher, so that only a PCTU PCB may be installed in the slot.

3.23 The power supply is factory-installed, mounted horizontally above the PCB shelf, and is secured with four combination slotted/Phillips mounting screws.

3.30 DK96 KSU Interior

3.31 The cabinet interior has two shelves (Figure 2-4). The top shelf has eight available PCB slots labeled S01 ~ S08. The bottom shelf has seven available PCB slots labeled PCTU and S09 ~ S14. Only the PCTU slot serves a dedicated function.

3.32 Each PCB slot (S01 ~ S14) incorporates a standard 40-pin female connector located in the same vertical position on the KSU's backplane. This standardization enables any of the optional PCBs to be installed in any available slot. The

PCTU slot incorporates the same 40-pin female connector, but it is set 0.25-inch higher, so that only a PCTU PCB may be installed in the slot.

3.33 The power supply is factory-installed, mounted vertically (to the right of the two PCB shelves), and is secured with four combination slotted/Phillips mounting screws.

4 POWER SUPPLIES

4.00 STRATA DK systems incorporate single-chassis, switching-type power supplies. The power supplies for the three models are functionally identical (except for power capacity), although they differ in appearance due to cabinet sizes and mounting considerations. The DK24 model uses a PPSU24 power supply (Figure 2-5), DK56 uses a PPSU56 (Figure 2-6), and DK96 uses a PPSU96 (Figure 2-7).

4.01 The power supplies generate $\pm 5\text{VDC}$ and -24VDC output voltages (that are protected by mechanical circuit breakers located on the power supply front panel). Input voltage is provided by a standard 117VAC, 15 amp circuit. Electrical characteristics include:

- Primary Power
 - Input AC: 85VAC ~ 135VAC
 - AC Frequency: 50/60 Hz
 - Wattage: DK24/65, DK56/140, DK96/230

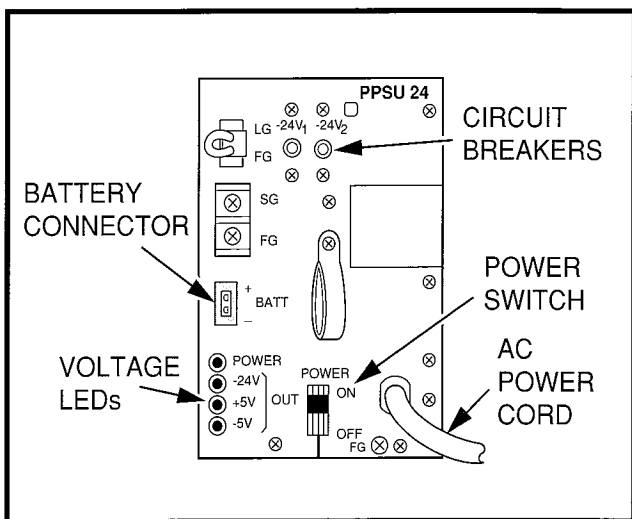


FIGURE 2-5—DK24 POWER SUPPLY FRONT PANEL

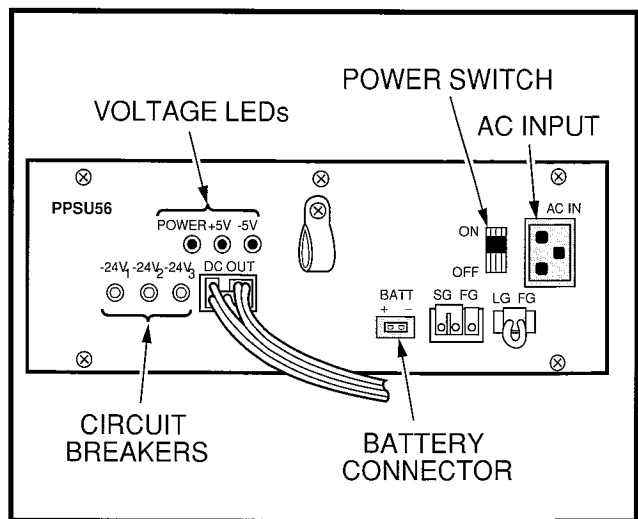


FIGURE 2-6—DK56 POWER SUPPLY FRONT PANEL

- DC Voltage Output Specifications
 - -24VDC; -26.3 ~ -27.8
 - +5VDC; +4.5 ~ +5.5
 - -5VDC; -4.5 ~ -5.5
- Circuit Breakers
 - 24; -24V
 - 56; -24V
 - 96; -24V, +5V

4.10 Reserve Power

4.11 Two customer-supplied, 12-volt batteries (80 ampere hours maximum) can be connected in series to the system as a power failure backup. In the event of a power failure, the system automatically switches over to battery power without any interruption to existing calls or other normal system functions. The length of time reserve power operates depends on the system, size and number of batteries provided, and the system load. Typical reserve power duration estimates are provided in Table 2-A.

4.12 A Toshiba-supplied, 9-foot battery cable, part number PBTC, supports the reserve battery installation.

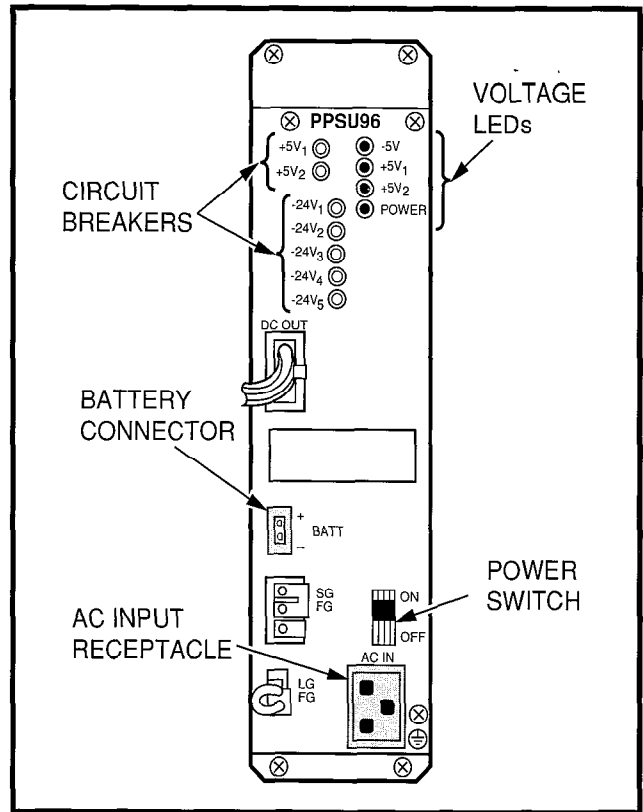


FIGURE 2-7—DK96 POWER SUPPLY FRONT PANEL

**TABLE 2-A
 TYPICAL RESERVE POWER FUNCTION ESTIMATES**

Quantities of PCBs Installed (Including PCTU)	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Estimated Operation Time (Hours)	71	45	31	23	19	16	13.5	11.5	10	9	8	7	6	5
Approximate (-24V) Current Drain (DC Amperes)	1	1.7	2.4	3.1	3.8	4.5	5.2	6	6.6	7.3	8	8.7	9.4	10

Time is estimated with the following considerations:

- (1) Batteries have full charge at start of operation.
- (2) Batteries (2 ea.) are connected in series.
- (3) Batteries are 12 VDC, rated at 80 amp/hours each.
- (4) System is operating at full load traffic with LCD-type telephones.
- (5) Batteries used for this test are gel-cell, maintenance-free batteries. Reserve duration will vary depending on battery type and manufacturer. These figures should only be used as an estimate.

IMPORTANT NOTES:

1. *Local ordinances may dictate battery type and installation details.*
2. *The reserve power batteries must be installed while commercial AC power is applied to the system to allow the power supply reserve relay to operate. If batteries are connected after AC power is lost, the batteries WILL NOT power the system and the system WILL NOT operate.*

4.20 Battery Charger

4.21 To allow full normal system operation during a power failure, the power supply has a built-in, current limiting battery charger that maintains customer-supplied batteries. Electrical characteristics of the battery charger include:

- Nominal float voltage: 2.275 volts/cell
- Charge current: 0.7 amps maximum
- Battery discharge cut-off voltage: $20.5 \pm 0.5V$

5 POWER FAILURE/EMERGENCY TRANSFER UNIT

5.00 The Power Failure/Emergency Transfer Unit (DPFT) provides an optional means of ensuring uninterrupted telephone operation in the event of a power failure. The DPFT (Figure 2-8) automatically connects selected CO lines to standard telephone lines in the event of a power failure, while

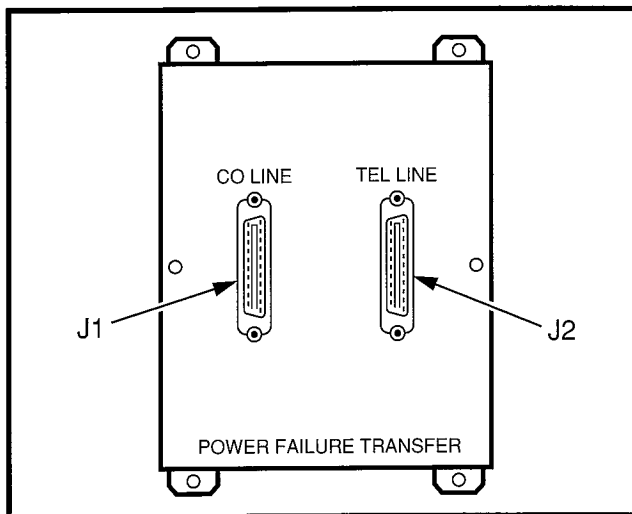


FIGURE 2-8—POWER FAILURE TRANSFER UNIT (DPFT)

permitting normal operation when the system is in service.

5.01 The DPFT is a self-contained module that mounts externally to the system's KSU, typically near the MDF. Connections to the CO lines, standard telephones and the cabinet are made with two 50-pin amphenol-type connectors on the DPFT.

5.02 The DPFT consists of eight normally open relays, connecting the telephones to PSTU (Standard Telephone Interface Unit) PCB circuits and the CO lines to PCOU (CO Line Unit) PCB circuits (Figure 2-9). If a power failure occurs, the relays close, connecting the telephones directly to the CO lines. Calls can then be placed from the selected standard telephones, over the CO lines, completely bypassing the system.

5.03 When the DPFT is reset after a transfer, existing PFT conversations are protected. Individual circuits are restored only when they become idle.

6 PRINTED CIRCUIT BOARD DESCRIPTIONS

6.00 Twelve types of PCBs are available for use in STRATA DK systems. A maximum of seven PCBs can be installed in DK24, nine in DK56, and fifteen in DK96.

6.01 With the exception of the PCTU and PCTUS1 PCBs, PCB size and connector provisions are standardized. All PCBs, including the PCTU/PCTUS1, measure 7.5 x 5.5 in (190 x 140 mm). The PCBs connect to the KSU's backplane with identical 40-pin male connectors. Except for the PCTU/PCTUS1 PCBs, the connectors are positioned in the same location on each board type.

6.02 PCB external connections are made to the Main Distribution Frame (MDF) using the following industry-standard connectors:

- **25-pair Amphenol Female:** Twenty-five-pair amphenol connectors connect electronic telephones, standard telephones and most peripherals.
- **Modular:** Modular jacks connect CO lines, E & M TIE lines, the Station Message Detail Re-

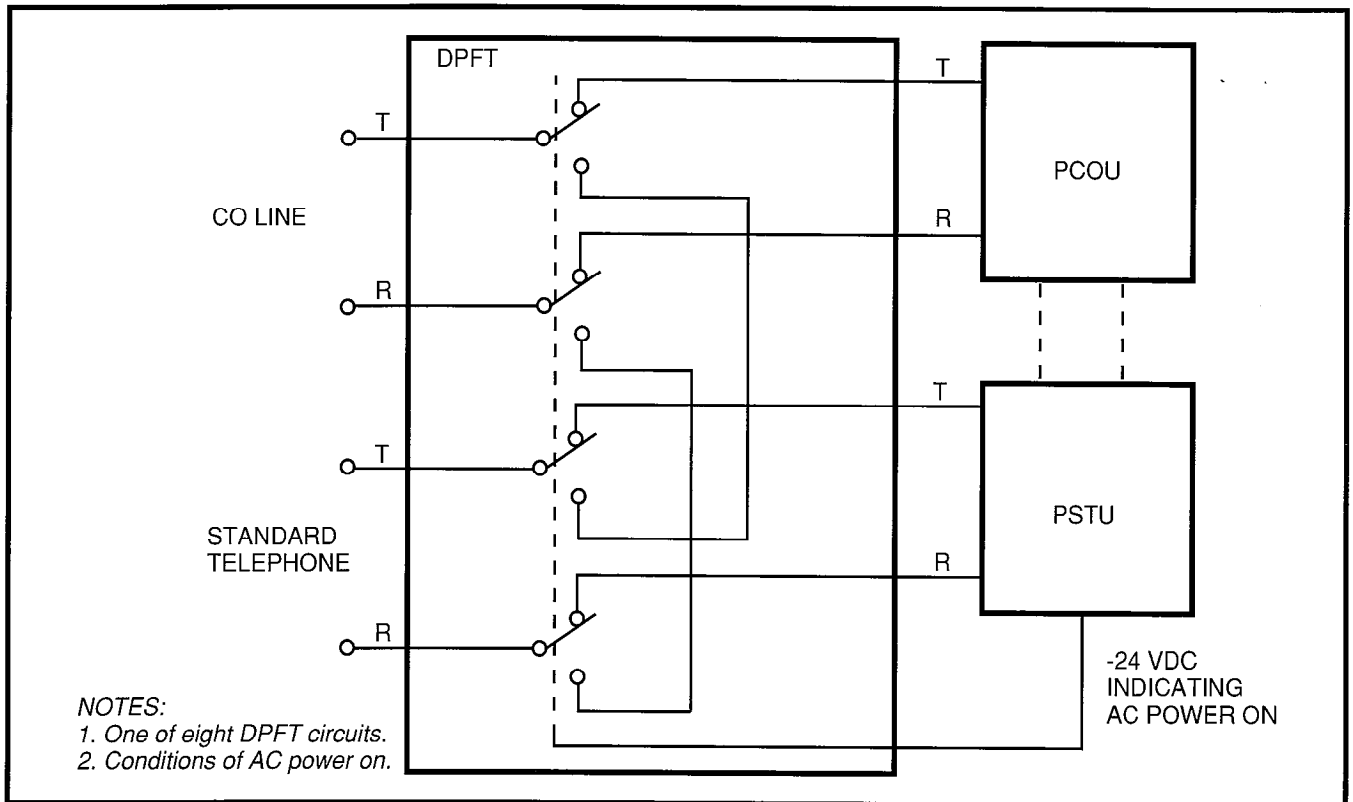


FIGURE 2-9—DPFT FUNCTIONAL BLOCK DIAGRAM

coding port (RS-232 signaling), and the Remote Administration and Maintenance port (RS-232 signaling).

- **Terminals:** Screw terminals connect MOH/BGM to the PCTU or PCTUS1, and spring-clip terminals connect peripherals to the PIOUS.

6.10 Printed Circuit Boards

6.11 The following paragraphs provide functional descriptions, along with applicable configuration and connection details, for all PCBs available for installation in STRATA DK systems. Refer to Figure 2-10 for a pictorial overview of each PCB's peripheral connections.

PCTU (Common Control Unit): The PCTU is a system controller PCB. PCTU1 is equipped with **Release 1** software and PCTU2 with **Release 2** software. The PCTU must be installed in DK56 and DK96, and is optional for DK24. The PCTU contains the system's main microprocessor and microprocessor bus, battery-protected memory circuits, time switch logic, conference logic, and

system tones. The PCTU also has a music-on-hold/background music source interface, and connectors to mount an optional DTMF receiver PCB (CRCU) for DISA, TIE lines, standard telephones and peripherals. See Table 2-B for more PCTU details.

PCTUS1 (Common Control Unit): The PCTUS1 is a reduced version of the PCTU. It is equipped with STRATA DK **Release 2** software features, but it supports fewer universal slots, stations and CO lines than the PCTU. The PCTUS1 is intended for use with the DK24 only.

NOTE:

See Table 2-B for a comparison of PCTU and PCTUS1 PCBs.

CRCU (DTMF Receiver Subassembly): The CRCU is an optional DTMF receiver PCB which mounts on the PCTU or PCTUS1 piggy-back style. It translates DTMF signals from Direct Inward Station Access (DISA) CO lines, TIE lines, standard telephones, or peripheral de-

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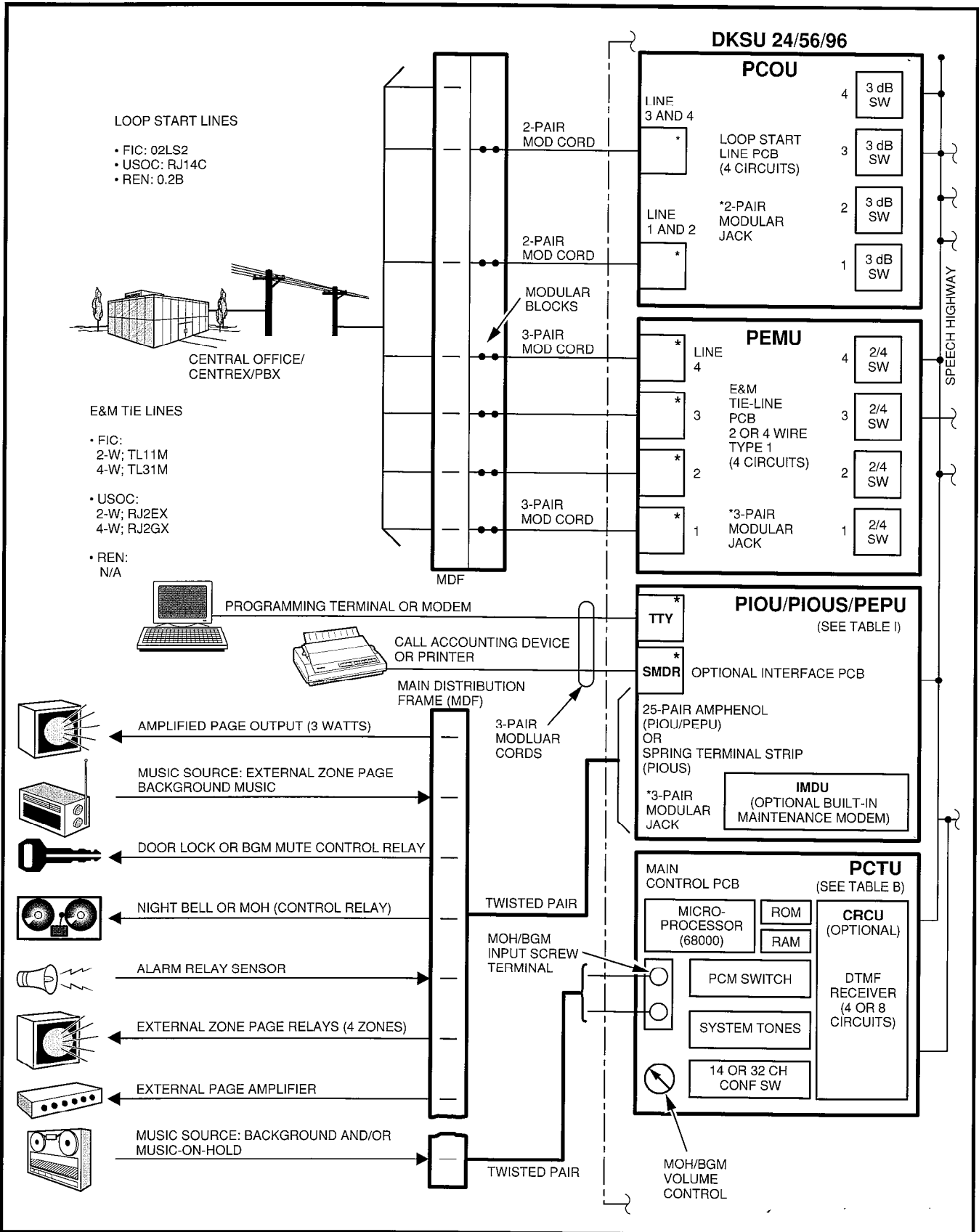
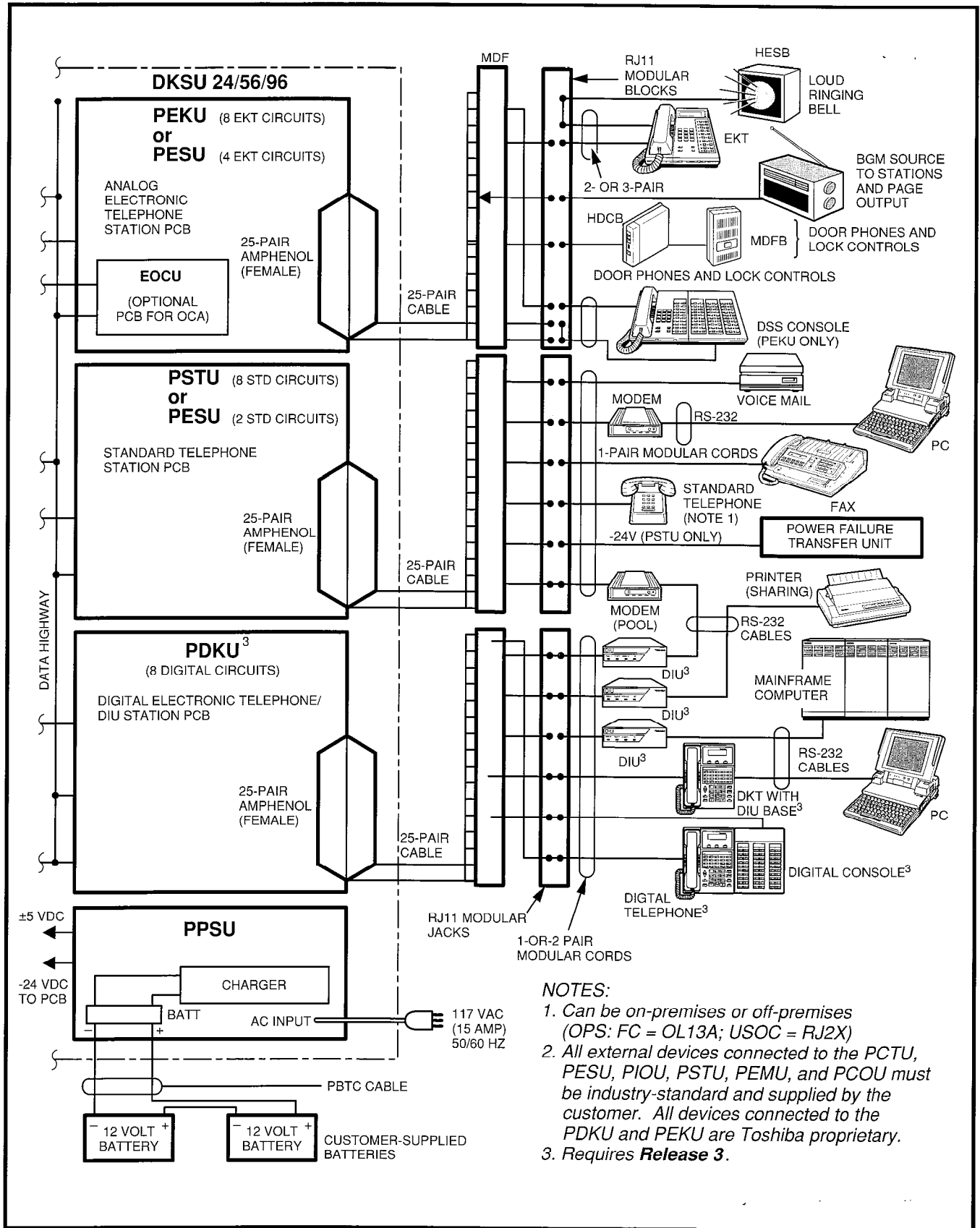


FIGURE 2-10—SYSTEM FUNCTIONAL BLOCK DIAGRAM



- NOTES:**
1. Can be on-premises or off-premises (OPS: FC = OL13A; USOC = RJ2X)
 2. All external devices connected to the PCTU, PESU, PIU, PSTU, PEMU, and PCOU must be industry-standard and supplied by the customer. All devices connected to the PDKU and PEKU are Toshiba proprietary.
 3. Requires Release 3.

FIGURE 2-10-SYSTEM FUNCTIONAL BLOCK DIAGRAM (continued)

TABLE 2-B
COMMON CONTROL UNIT DATA

PCTU Control Board	CPU Type	Clock Speed	RAM Memory Capacity	ROM Memory Capacity	Feature Set	Universal PCB Slot Capacity	Station Port Capacity	CO Line Capacity	Conference Capacity
PCTU1	68000/16 bit	8 MHZ	256K	512K	Release 1	14 max.	96 max.	36 max.	4 party/8
PCTU2	68000/16 bit	8 MHZ	256K	512K	Release 2	14 max.	96 max.	36 max.	4 party/8
PCTUS	68000/16 bit	8 MHZ	128K	512K	Release 2	6 max.	24 max.	16 max.	4 party/3
PCTU3	68000/16 bit	8 MHZ	384K	768K	Release 3	14 max.	96 max.	36 max.	4 party/8

NOTES:

1. PCTU2 replaces PCTU1.
2. Except for the ROM version, PCTU2 and PCTU1 are identical.
3. PCTU (1, 2, or 3) ROM is not interchangeable with PCTUS1 ROM.
4. All PCTU versions provide MOH/BGM input and volume control.
5. PCTU3 ROM is not interchangeable with PCTU1 or 2 ROM.

vices into data signals for the system. The CRCU option must be installed for the system to receive DTMF dialing. Both 4-circuit (CRCU-4) and 8-circuit (CRCU-8) units are available, depending on system traffic. The DTMF receivers are shared by users; they are seized for dialing, then released for the next call.

PIOU (Option Interface Unit): The PIOU provides a circuit interface with peripheral options as shown in Table 2-C.

PIOUS (Option Interface Unit): A reduced version of the PIOU, the PIOUS provides a circuit interface with peripheral options as shown in Table 2-C.

IMDU (Remote Maintenance Modem Subassembly): The IMDU is an optional built-in modem which provides the system with a link to off-site programming and maintenance equipment, such as a personal computer or ASCII terminal. The IMDU has an internal maintenance channel and does not require a dedicated CO line or station port. Data transmission speed can be set at 300 or 1200 BPS full duplex.

PEPU (External Page Interface Unit): A reduced version of the PIOU, the PEPU provides a circuit interface with peripheral options as shown in Table 2-C.

PESU (Standard/Electronic Telephone Interface Unit): This optional PCB provides the system

with a combination of two standard and four electronic telephone circuits. The standard telephone circuits may also be connected to optional hardware peripherals such as voice mail, auto attendant and fax machines. The PESU has a ring generator for the standard telephone circuits which can be set for high- or low-ring voltage. PESU electronic telephone circuits can be configured for off-hook call announce by installing an optional off-hook call announce upgrade unit (EOCU). The PESU supports HDCB and door phone/locks, but not DSS consoles or music-on-hold separation.

PCOU (CO Line Unit): The PCOU provides the system with four loop-start CO lines and a standard, built-in automatic busy redial (ABR) circuit. Each CO line can be programmed for either rotary or dial pulse. In addition, each CO line has a 3 dB pad option switch to control excessive loudness resulting from close proximity to the PBX or central office. Each CO line circuit provides built-in gas tubes for limited protection from lightning.

PCOU2 (CO Line Unit): The PCOU2 is a direct replacement for the PCOU. Their fit, form, and function are identical; however, for manufacturing reasons, the PCOU was phased out in favor of the PCOU2.

PEMU (E & M TIE Line Unit): The PEMU provides four E & M Type I signaling (2- or 4-wire, imme-

**TABLE 2-C
INTERFACE PCB OPTIONS**

INTERFACE OPTION	PIOU	PIOUS	PEPU
Unamplified Page Output (Single Zone, 600 ohms)	X, A	X, T	X, A
Amplified Page Output (Single Zone, 3 Watts, 8 ohms)	X, A		X, A
Zone Page Interface (Unamplified, 4 Zones)	X, A		
Night Transfer or Music- on-Hold Control Relay	X, A	X, T	X, A
Door Lock or External Amplifier Control Relay	X, A	X, T	X, A
Alarm Sensor	X, A	X, T	
RS-232 SMDR Output Jack	X, M	X, M	
RS-232 Maintenance Jack for a Local ASCII Terminal or External Modem	X, M	X, M	
Remote Maintenance Modem (IMDU)	X, P	X, P	

A = Amphenol Connector

P = Piggy-back PCB

X = Option equipped

M = 6-pair Modular Connector

T = Terminal Connector

diate start) TIE lines. Each PEMU reduces the system capacity by four CO lines and four station ports in DK56 and DK96, and by four CO lines and eight station ports in DK24.

PEKU (Electronic Telephone Interface Unit): The PEKU provides eight ports for electronic telephones. It can be configured for off-hook call announce by installing an optional off-hook call announce upgrade unit (EOCU). It can also be configured to support a DSS console, door phone control unit (HDCB), and/or BGM source interface.

EOCU (Off-hook Call Announce Upgrade Unit): The EOCU is an optional off-hook call announce upgrade unit which mounts on top of the PEKU or PESU piggy-back style. It is required on every PEKU or PESU that supports stations receiving off-hook call announce. The unit provides two off-hook call announce channels, which are

shared by all circuits on a PEKU or PESU.

PSTU (Standard Telephone Interface Unit): The PSTU provides an interface between standard telephones and the system. It adds eight standard telephone ports, and has a 20Hz, 190V peak-to-peak square wave ring generator (no load). In addition, the PSTU provides support for numerous Toshiba-supplied and customer-supplied peripherals, including:

- Toshiba-supplied (optional):
 - INTOUCH Digital Voice Messaging System
 - Power Failure Transfer Unit (DPFT)
- Customer-supplied (optional):
 - Auto Attendant device
 - Dictation Equipment
 - Facsimile
 - Modem
 - Voice Mail Device

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NOTE:

As of November 1989, the PSTU is equipped with a jumper plug to change the ring generator no load output from 190V peak-to-peak square wave (high) to 130V peak-to-peak square wave (low). The low setting is used with peripherals that are sensitive to high-ring voltage (almost all peripherals function with high-ring voltage).

7 SYSTEM CONTROLS AND INDICATORS

7.00 System controls and indicators are located inside the KSU. Controls and indicators may be accessed only by removing the cabinet's front cover. Controls and indicators are located on the power supply, KSU chassis, and on various PCBs.

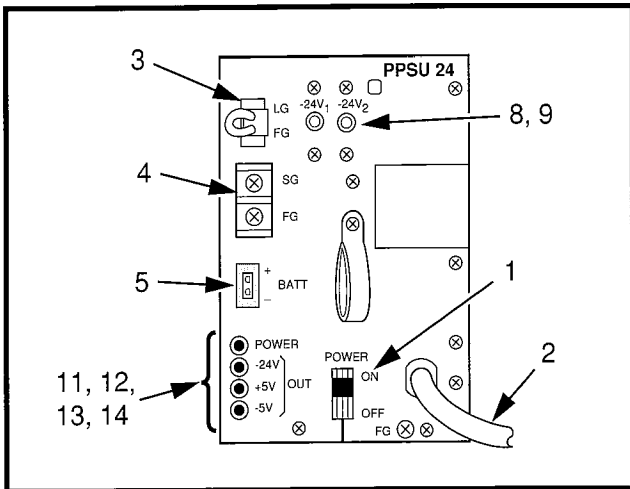


FIGURE 2-11—LOCATION OF DK24 CONTROLS AND INDICATORS

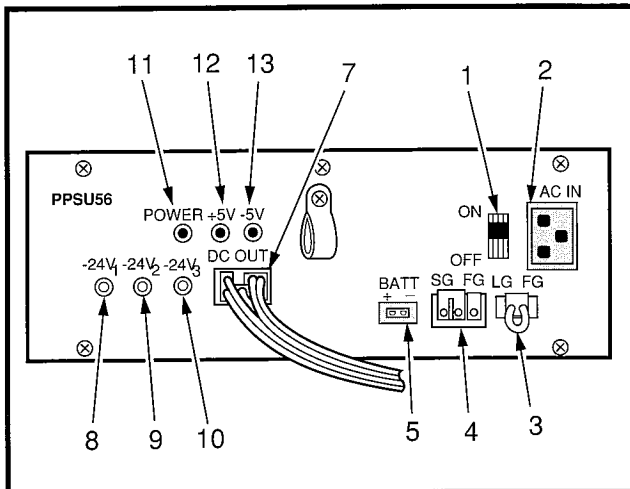


FIGURE 2-12—LOCATION OF DK56 CONTROLS AND INDICATORS

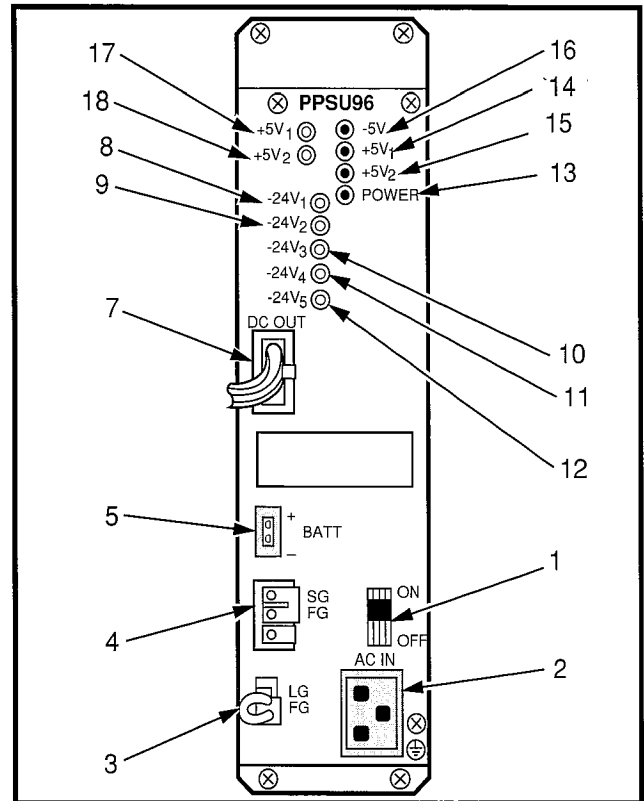


FIGURE 2-13—LOCATION OF DK96 CONTROLS AND INDICATORS

7.01 Controls and indicators for the DK24 model are shown in Figure 2-11 and described in Table 2-D; for DK56, see Figure 2-12 and Table 2-E, and for DK96, see Figure 2-13 and Table 2-F. PCB controls and indicators are shown in Figure 2-14 and described in Table 2-G.

8 PERIPHERAL EQUIPMENT

8.00 Electronic Telephones

8.01 Four 6500-series electronic telephones are compatible with the STRATA DK systems. They are the 6510 (two versions), the 6520, and the 6520SD. See the *General Description* for a more complete description of these phones.

NOTE:

All electronic telephones compatible with the analog STRATA/STRATA_e key telephone systems are also compatible with the STRATA DK systems and vice versa. However, some features or volume levels may vary.

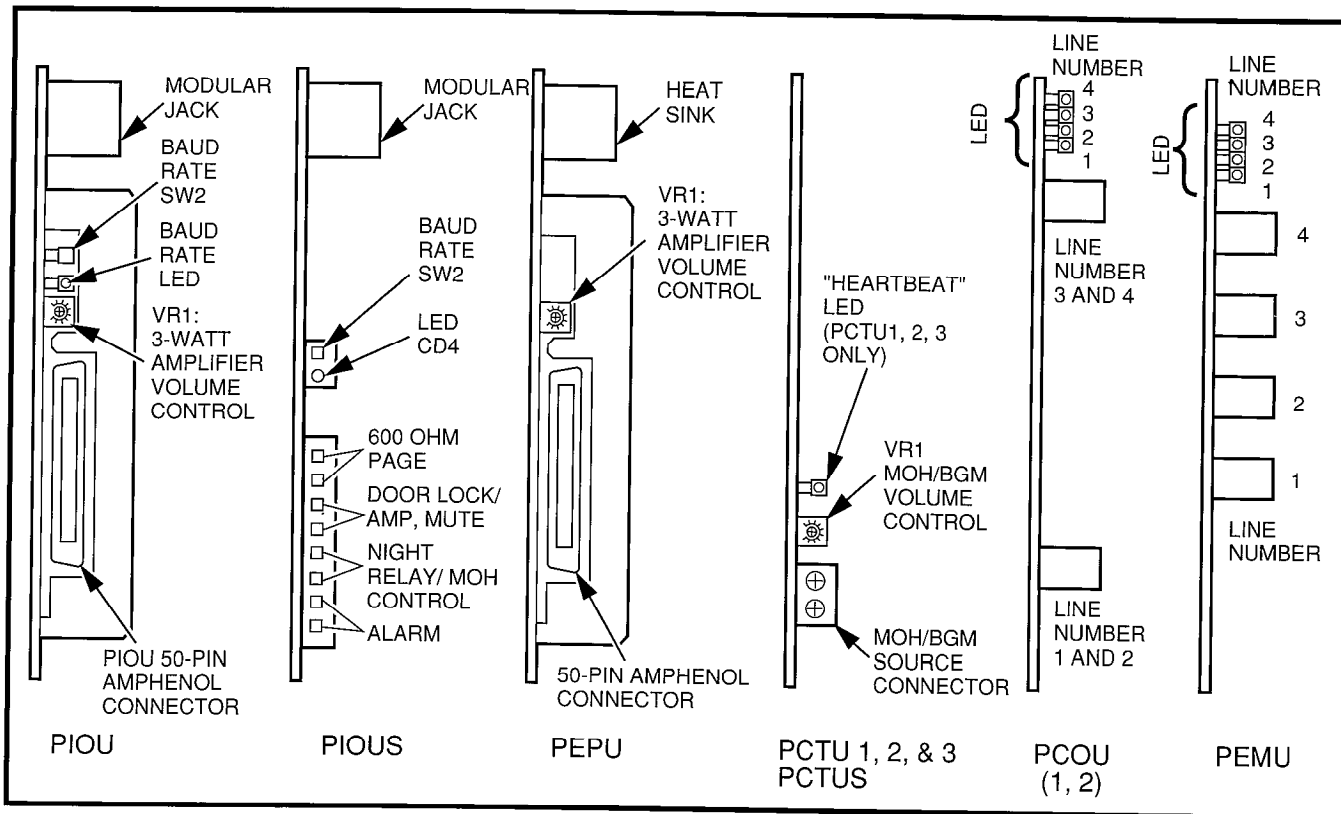


FIGURE 2-14—LOCATION OF PCB CONTROLS AND INDICATORS

8.10 Electronic Telephone Upgrade Options

8.11 All electronic telephones may be upgraded with off-hook call announce, loud ringing bell and headset capability. Any electronic telephone may use all available upgrade options simultaneously. All electronic telephones may be wall mounted without additional equipment. They are also hearing aid-compatible.

8.12 Each electronic telephone also features a standard modular handset cord, and is connected to the system with a 2-pair modular line cord (7-foot cord included). Various upgrade options, such as the off-hook call announce and loud ringing bell upgrade assemblies, require the telephone to be connected to the system with special wiring. A 3-pair modular line cord is required for off-hook call announce, and a custom external speaker cable (HESC-65) is required for the loud ringing bell.

HVSU and HVSI (Off-hook Call Announce Upgrade): Each electronic telephone may be upgraded to receive intercom handsfree answer-back calls when the handset is off-hook by

installing an OCA upgrade assembly. The assembly consists of two PCBs, the HVSU and the HVSI (Figure 2-15), which install inside the telephone base with plug-in connectors.

NOTE:

Only those telephones programmed to receive OCA announcements require the OCA upgrade.

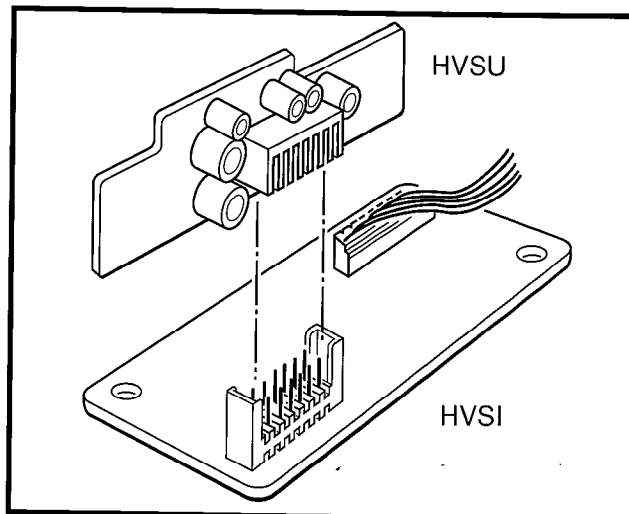


FIGURE 2-15—HVSU and HVSI

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TABLE 2-D
DK24 MODEL CONTROLS AND INDICATORS

CONTROL/INDICATOR (Figure 2-11 Item No.)	TYPE OF COMPONENT	DESCRIPTION
POWER Switch (1)	Two-position rocker switch	Power switch for application of AC input power from wall socket to KSU power supply
AC Power Cord (2)	10 3-prong plug with power cord	Cord for application of AC power from wall outlet
LG/FG Connector (3)	2-pin keyed male connector	Interface connector for LG/FG ground strap (ground strap must remain installed in LG/FG connector for all system applications)
SG/FG Terminal Block (4)	Two-terminal screw-type terminal block	Terminal connections for SG/FG ground strap (ground strap must remain installed on SG/FG terminal block for all system applications)
BATT +/- Connector (5)	2-pin keyed male connector	Interface connector for reserve power batteries
FG Terminal (not shown)	Combination slotted/Phillips screw	KSU frame ground terminal
-24V ₁ Circuit Breaker (8)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S01 and S02, S03
-24V ₂ Circuit Breaker (9)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S04, S05, and S06
POWER Indicator (11)	Green LED	Lights to indicate power switch is set to ON (AC input power is applied to power supply)
+5V Indicator (12)	Green LED	Lights to indicate presence of +5VDC output from power supply
-5V Indicator (13)	Green LED	Lights to indicate presence of -5VDC output from power supply
-24V Indicator (14)	Green LED	Lights to indicate presence of -24V output from power supply

TABLE 2-E
DK56 MODEL CONTROLS AND INDICATORS

CONTROL/INDICATOR (Figure 2-12 Item No.)	TYPE OF COMPONENT	DESCRIPTION
ON/OFF Switch (1)	Two-position rocker switch	Power switch for application of AC input power from wall socket to KSU power supply
AC IN Connector (2)	3-pin keyed male connector	Interface connector for application of AC power from wall outlet
LG/FG Connector (3)	2-pin keyed male connector	Interface connector for LG/FG ground strap (ground strap must remain installed in LG/FG connector for all system applications)
SG/FG Terminal Block (4)	Two-terminal screw-type terminal block	Terminal connections for SG/FG ground strap (ground strap must remain installed on SG/FG terminal block for all system applications)
BATT +/- Connector (5)	2-pin keyed male connector	Interface connector for reserve power batteries
FG Terminal (not shown)	Combination slotted/Phillips screw	KSU frame ground terminal
DC OUT Connector (7)	7-pin keyed male connector	Interface connector for application of power supply ± 5 VDC and -24VDC outputs to KSU's backplane
-24V ₁ Circuit Breaker (8)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S01 and S02
-24V ₂ Circuit Breaker (9)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S03, S04, and S05
-24V ₃ Circuit Breaker (10)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S06, S07, and S08
POWER Indicator (11)	Green LED	Lights to indicate ON/OFF switch is set to ON (AC input power is applied to power supply)
+5V Indicator (12)	Green LED	Lights to indicate presence of +5VDC output from power supply
-5V Indicator (13)	Green LED	Lights to indicate presence of -5VDC output from power supply

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TABLE 2-F
DK96 MODEL CONTROLS AND INDICATORS

CONTROL/INDICATOR (Figure 2-13 Item No.)	TYPE OF COMPONENT	DESCRIPTION
ON/OFF Switch (1)	Two-position rocker switch	Power switch for application of AC input power from wall socket to KSU power supply
AC IN Connector (2)	3-pin keyed male connector	Interface connector for application of AC power from wall outlet
LG/FG Connector (3)	2-pin keyed male connector	Interface connector for LG/FG ground strap (ground strap must remain installed in LG/FG connector for all system applications)
SG/FG Terminal Block (4)	Two-terminal screw-type terminal block	Terminal connections for SG/FG ground strap (ground strap must remain installed on SG/FG terminal block for all system applications)
BATT +/- Connector (5)	2-pin keyed male connector	Interface connector for reserve power batteries
FG Terminal (not shown)	Combination slotted/Phillips screw	KSU frame ground terminal
DC OUT Connector (7)	7-pin keyed male connector	Interface connector for application of power supply $\pm 5\text{VDC}$ and -24VDC outputs to KSU's backplane
-24V_1 Circuit Breaker (8)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S01 and S02
-24V_2 Circuit Breaker (9)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S03, S04, and S05
-24V_3 Circuit Breaker (10)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S06, S07, and S08
-24V_4 Circuit Breaker (11)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S09, S10, and S11
-24V_5 Circuit Breaker (12)	Push-to-reset circuit breaker	Circuit breaker for power supply -24VDC output to PCB slots S12, S13, and S14
POWER Indicator (13)	Green LED	Lights to indicate ON/OFF switch is set to ON (AC input power is applied to power supply)
$+5\text{V}_1$ Indicator (14)	Green LED	Lights to indicate presence of $+5\text{VDC}$ output from power supply (for KSU's upper PCB shelf backplane)

TABLE 2-F
DK96 MODEL CONTROLS AND INDICATORS (continued)

CONTROL/INDICATOR (Figure 2-13 Item No.)	TYPE OF COMPONENT	DESCRIPTION
+5V ₂ Indicator (15)	Green LED	Lights to indicate presence of +5VDC output from power supply (for KSU's lower PCB shelf backplane)
-5V Indicator (16)	Green LED	Lights to indicate presence of -5VDC output from power supply
+5V ₁ Circuit Breaker (17)	Push-to-reset circuit breaker	Circuit breaker for power supply +5VDC output to KSU's upper PCB shelf
+5V ₂ Circuit Breaker (18)	Push-to-reset circuit breaker	Circuit breaker for power supply +5VDC output to KSU's lower PCB shelf

TABLE 2-G
PCB CONTROLS AND INDICATORS

CONTROL/INDICATOR (Figure 2-14)	TYPE OF COMPONENT	DESCRIPTION
PIOU/PIOUS Baud Rate Selector (SW2)	Two-position, spring-loaded, locking push-button switch	Selects baud rate for TTY or modem; 300 baud is selected when switch is in locked position, 1200 baud is selected when switch is in released position
PIOU/PIOUS Baud Rate Indicator (CD4)	Red LED	Lights when 300 baud rate is selected, by Baud Rate Selector (5); goes off when 1200 baud rate is selected
PIOU Page Background Music Volume Control	Trim potentiometer (VR1)	Adjusts volume of 3-watt amplifier for page background music feature
PEMU E & M TIE Line Indicators	Four red LEDs	Light to indicate the applicable E & M TIE line is in operation
PCTU "Heartbeat" Indicator (CD3)	Red LED	Flashes to indicate operation (1/4 second on—1/4 second off)
PCTU/PCTUS1 Music-on-Hold/Background Music Volume Control (VR1)	Trim potentiometer	Adjusts volume for music-on-hold/background music feature
PCOU/PCOU2 CO Line Indicators	Four red LEDs	Lights to indicate the applicable CO line is in operation (NOTE: CO line indicators will not light unless PCOU is connected to a CO line)

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HHEU (Loud Ringing Bell/Headset Upgrade):

Each electronic telephone may also be upgraded to provide a loud ringing bell interface and a modular headset jack by installing a loud ringing bell/headset upgrade assembly (Figure 2-16). The assembly consists of a small PCB (HHEU) which installs on the main PCB, inside the telephone, with a plug-in connector (HESC-65).

- An external speaker/amplifier is directly connected to the upgraded phone. When the phone rings, the speaker sounds a loud tone that mimics the phone's ring. See the HESB (external speaker) option.
- Most standard headsets are compatible with the HHEU jack.

NOTE:

It is recommended not to equip the OCA feature when using an HHEU feature because all voice paths are switched over the electronic telephone speaker during an OCA call.

8.20 Direct Station Selection Console

8.21 The Direct Station Selection (DSS) console is an optional dedicated answering station. It is normally used on systems with a heavy volume of incoming calls. However, a DSS console may be used with one of four designated electronic telephones. Both DK56 and DK96 models can support up to four DSS consoles. DK24 can also support up to four DSS consoles, if its controller PCB is the PCTU; however, a DK24 with a PCTUS1 PCB can only support up to three DSS consoles. For more information on DSS console features, see the *General Description*.

8.22 A DSS console must be assigned to a particular station when the system configuration is defined in programming. All four DSS consoles can be assigned to a single station, or four different DSS consoles may be assigned to four different stations (or any intermediate combination). The same DSS console may not be assigned to more than one station.

8.23 Each DSS console requires two station ports (circuits 7 and 8) on an electronic telephone Inter-

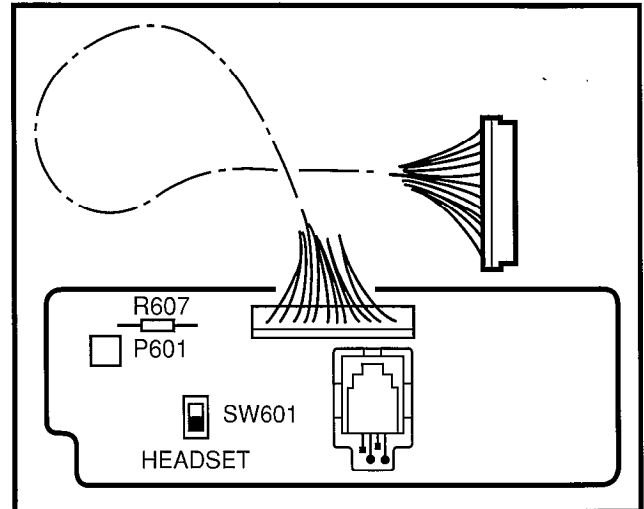


FIGURE 2-16—HHEU

face PCB (PEKU). Only one DSS console may be installed on a particular PEKU. DSS consoles can not be installed on PESU electronic telephone circuits 7 and 8.

8.30 Toshiba-supplied Peripherals

8.31 This section describes each peripheral item manufactured by Toshiba for use with the STRATA DK systems. Configuration and connection considerations are noted where applicable.

8.32 Door Phone. Up to 12 door phones may be installed on any STRATA DK system. Five of the door phones may be associated with the door lock. When used in this manner, the door phone is mounted outside a building, next to a locked door whose entry requires screening. A door phone can also function as a sound monitor—any electronic telephone can call the door phone's station number and listen to sounds within its immediate area. Up to three door phones or two door phones and one door lock can be connected to each HDCB door phone control unit (Figure 2-17). See the *General Description* for more details.

8.33 Door Lock Control. The door lock control allows a user to momentarily (three or six seconds) open an electronic door lock by pressing a button (**DRLK**) on an electronic telephone.

NOTE:

One door lock control is supported by any of the Option Interface PCBs (PIOU, or PIOUS,

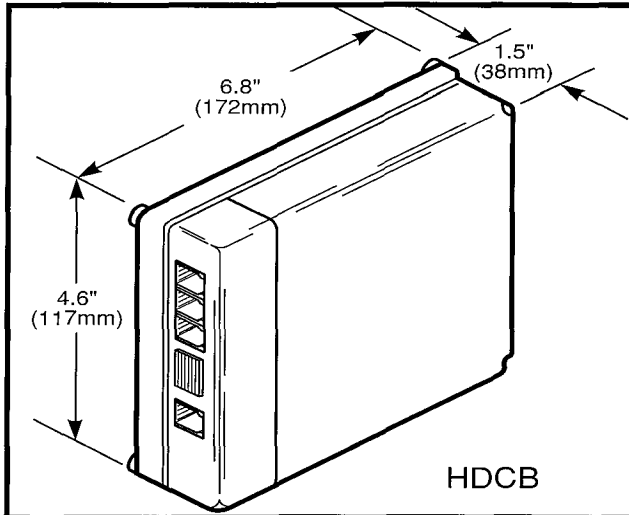


FIGURE 2-17—DOOR PHONE/LOCK CONTROL UNIT (HDCB)

or PEPU) and/or jack B of each HDCB† for up to five door lock controls.

8.34 External Speaker. The external speaker option is a 3-watt, 6 inch speaker with a built-in 3-watt amplifier. A +12VDC power supply (HACU-120) is provided with each external speaker, which connects to the speaker's back panel. An 8' cord is provided to plug in the power supply to a 117VAC, 60 Hz outlet. The HESB has three applications: paging speaker, talk-back speaker, and amplified ringing bell. See the *General Description* for more application details.

8.35 Voice Messaging System. The Messaging System helps a business significantly improve the effectiveness of its telephone communication. See the *General Description* for more feature details.

8.36 The STRATA DK systems use in-band DTMF tone signaling to interface with the INTOUCH system. The PSTU and/or PESU must be installed in the STRATA DK KSU in order to support the Voice Messaging System.

8.37 INTOUCH interfaces with the STRATA DK system through the MDF using standard connectors. Each voice mail port requires a 1-pair wiring connection to the MDF, and one port on the PSTU/PESU, as well as special programming in the STRATA DK to act as a voice mail port.

8.40 Customer-supplied Peripherals

8.41 The STRATA DK systems support many other commonly used peripheral devices which can be supplied by the customer. Examples of these devices are listed below, with the connecting system PCB noted in parentheses:

- Auto-attendant Device (PSTU and PESU)
- Dictation Equipment (PSTU and PESU)
- External Maintenance Modem (PIOU or PIOUS)
- Facsimile (PSTU and PESU)
- Local Maintenance Terminal (PIOU or PIOUS)
- Modem (PSTU and PESU)
- Paging System (PIOU or PIOUS or PEPU)
- Radio Paging Equipment (PSTU and PESU)
- Remote Maintenance Terminal (PIOU or IMDU)
- Standard Telephones (PSTU and PESU)
- SMDR Printer/Call Accounting Device (PIOU or PIOUS)
- Voice Mail Messaging System (PSTU and PESU)

9 RELEASE 3 INFORMATION

9.00 The following contains **Release 3** information relevant to Chapter 2's contents. Descriptions of the new printed circuit boards, the new digital telephones, digital telephone upgrade options, and new Toshiba-supplied peripherals are provided.

10 PRINTED CIRCUIT BOARDS (Release 3)

10.00 PDKU (Digital Telephone Interface Unit): The PDKU provides eight ports for digital telephones and or Data Interface Units. It can also be configured to support a DDSS console. The PDKU does not need an EOCU (off-hook call announce upgrade unit) to support digital telephones equipped with off-hook call announce capability. Also, the PDKU cannot support a door phone control unit (HDCB), and/or BGM source interface.

- The PDKU measures 7.5 by 5.5 inches (190 by 140 mm) and connects to the KSU's backplane with a 40-pin male connector.
- The PDKU connects to the Main Distribution Frame (MDF) using a 25-pair female amphenol connector.

†Release 2 and higher

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10.01 PCTU3 (Common Control Unit): The latest version of the common control unit is PCTU3, which contains **Release 3** software. The PCTU3 can be installed in DK96, DK56, and DK24. Like earlier PCTU versions, the PCTU3 contains the system's main microprocessor and microprocessor bus, battery-protected memory circuits, time switch logic, conference logic, and system tones. The PCTU3 also has a music-on-hold/background music source interface, and connectors to mount an optional DTMF receiver PCB (CRCU) for DISA, TIE lines, standard telephones, and peripherals.

- The PCTU3 measures 7.5 by 5.5 inches (190 by 140 mm) and connects to the KSU's backplane with a 40-pin male connector.

11 PERIPHERAL EQUIPMENT

11.00 Digital Telephones (Release 3)

11.01 There are two digital telephones, the 1020SD and the 1020H, compatible with the STRATA DK systems. See the *General Description* for a more complete description of these phones.

11.10 Digital Telephone Upgrade Options (Release 3)

11.11 Digital telephones may be upgraded to transmit and receive simultaneous voice and data. They may also be upgraded with off-hook call announce, loud ringing bell, and headset capability. If the telephone is upgraded to transmit and receive simultaneous voice and data, it cannot be upgraded with any of the other options. However, it can be upgraded simultaneously with off-hook call announce and loud ringing bell or headset capability.

11.12 Each digital telephone also features a standard modular handset cord, and is connected to the system with a single-pair modular line card (7 feet length cord included). No extra wire pair is required for the various upgrade options, but a custom external speaker cable (HESC-65A) is required for the loud ringing bell.

PDIU-DI (Integrated data interface unit): Digital telephones may be upgraded with a PDIU-DI to

receive and transmit simultaneous voice and data; data and voice calls can be made independently of each other. The PDIU-DI is easily installed, replacing the normal digital telephone base.

NOTES:

1. The PDIU-DI will function with all slots, except slots 11 ~ 14 in DK96.
2. PDKU circuits 1 ~ 7 can support PDIU-DIs.

DVSU (Off-hook Call Announce Upgrade): Each digital telephone may be upgraded to receive intercom handsfree answerback calls when the handset is off-hook by installing an OCA upgrade assembly. This assembly, called the DVSU, is installed inside the telephone base with plug-in connectors.

HHEU (Loud Ringing Bell/Headset Upgrade): Each digital telephone may also be upgraded to provide a loud ringing bell interface and a modular headset jack by installing a loud ringing bell/headset upgrade assembly. The assembly consists of a small PCB (HHEU) which is installed inside the telephone base with plug-in connectors.

11.20 Digital Direct Station Selection Console (Release 3)

11.21 The Digital Direct Station Selection Console (DDSS) is an optional, dedicated answering station incorporating a busy lamp field, and it can be used with electronic or digital telephones. It is normally used on systems with a heavy volume of incoming calls. A DDSS console may be used with one of four designated telephones. If equipped with a PCTU3, DK96, DK56, and DK24 can support up to four DDSS consoles (DK24, if equipped with the PCTUS, will not support DDSS consoles). For more information on DDSS console features, see the *General Description*.

11.22 A DDSS console must be assigned to a particular station when the system configuration is defined in programming. All four DDSS consoles can be assigned to a single station, or four different DDSS consoles may be assigned to four different

stations (or any intermediate combination). The same DDSS console can't be assigned to more than one station.

11.23 Each DDSS console requires one station port on the PDKU. Only one DDSS console can be installed on a PDKU. A digital station equipped with DDSS console(s) must be connected to the first circuit on the PDKU.

11.30 Stand-alone Data Interface Unit: PDIU-DS (Release 3)

11.31 The stand-alone data interface unit (PDIU-DS) is a stand-alone unit for making switched data connections for modem pooling, printer sharing, and host/mainframe computer accessing. LEDs on the front panel indicate transmission status. Each PDIU-DS requires one 2B+D station port on a PDKU and functions with one wire pair.

NOTES:

- 1. The PDIU-DS will function in all slots, except for slots 11 ~ 14 in DK96.*
- 2. PDKU circuits 1 ~ 7 can support PDIU-DSs.*
- 3. Modems, printers and mainframes are connected to the standard RS-232, DB25 connector on the PDIU-DS.*

11.40 Toshiba-supplied Peripherals (Release 3)

11.41 Each of the Toshiba-supplied peripherals are compatible with **Release 3**.

11.42 Door Phones. Digital telephones can call or be called by door phones. Like **Release 2**, the maximum number of door phones with **Release 3** is 12 for any system. The digital telephone Interface Unit (PDKU), however, cannot support an HDCB, door phone control unit; only the electronic telephone interface unit (PEKU) or PESU can.

11.43 Door Lock Control. By pressing a **DRLK** button on the digital telephone, a user can momentarily (three or six seconds) open a door lock.

11.44 External Speaker. With **Release 3**, users can continue to use their external speaker (HESB) with a variety of options (see Paragraph **8.34**).

11.45 Voice Messaging System. The efficiency of the Messaging System is further enhanced with **Release 3** (see the *General Description* and Paragraph **8.35** of this chapter for more details).

11.50 Customer-supplied Peripherals

11.51 Release 3 supports all of the customer-supplied features provided by **Releases 1** and **2** plus the Data Interface Units for peripherals such as terminals, personal computers, printers, modems, etc. It also supports external amplifiers for amplifying two-CO line tandem and conference calls (see Paragraph **13**, Section 200-096-208).

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1 GENERAL

1.00 This chapter defines the installation site requirements necessary to ensure a proper operating environment for STRATA DK systems. Also included are input power requirements, site considerations, cable lengths/network requirements, and grounding requirements.

2 INPUT POWER REQUIREMENTS

2.00 The systems require an input power source of 117VAC nominal (85VAC ~ 135VAC), 50/60 Hz, 15 amps. The AC outlet must be *dedicated* to system use, fused, and grounded (refer to Paragraph 5).

2.01 To avoid accidental power turn-off, it is recommended that an ON/OFF wall switch *not* be used on this dedicated AC circuit.

2.02 A reserve power source (two customer-supplied 12-volt batteries) may be connected to the system to serve as a power failure backup.

3 SITE CONSIDERATIONS

3.00 Clearance and Location Requirements

3.01 The KSU may be table-top or wall mounted. Figure 3-1 (DK24/56) and Figure 3-2 (DK96) show the minimum clearance requirements for both mounting options.

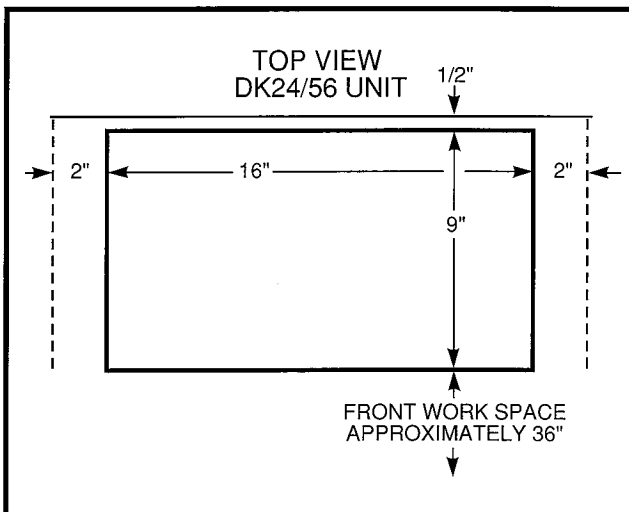


FIGURE 3-1—DK24/56 MINIMUM CLEARANCE REQUIREMENTS

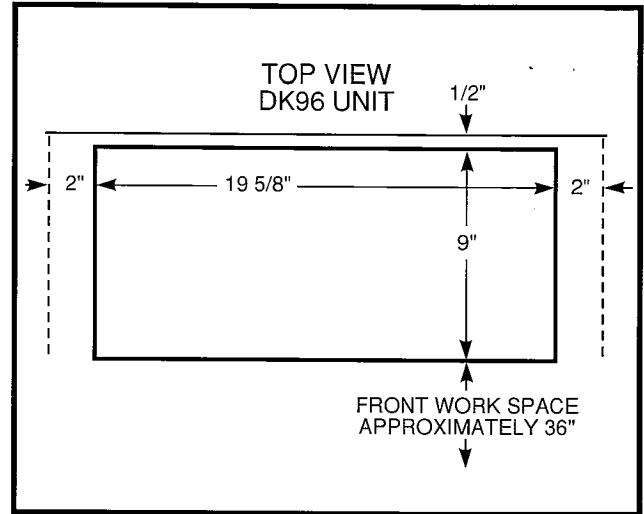


FIGURE 3-2—DK96 MINIMUM CLEARANCE REQUIREMENTS

3.02 The following conditions must be considered when selecting a location for the KSU:

The location **MUST BE**:

- Dry and clean
- Well ventilated
- Well illuminated
- Easily accessible

The location **MUST NOT BE**:

- Subject to extreme heat or cold
- Subject to corrosive fumes, dust, or other airborne contaminants
- Subject to excessive vibration
- Next to television, radio, office automation, or high frequency equipment

NOTE:

See Paragraph 6 for more site considerations.

3.03 If reserve power is to be installed, the batteries will require a well-ventilated location close (within nine feet) to the KSU (the Toshiba-supplied battery cable is 9 feet in length).

3.10 Electrical/Environmental Requirements and Characteristics

3.11 The electrical/environmental requirements and characteristics for each system are provided in Table 3C.

4 CABLE LENGTHS/NETWORK REQUIREMENTS

4.00 Table 3-A lists system loop requirements. Table 3-B lists system network requirements. The KSU must be located to allow compliance with the specified requirements.

5 GROUNDING REQUIREMENTS

5.00 The system requires a solid earth ground for proper operation. Failure to provide such a ground may lead to confusing trouble symptoms and, in extreme cases, system failure. The ground connection is provided by the "third wire ground" from the commercial power outlet.

NOTE:

The ground must be dedicated.

5.01 At most installations in the continental United States, the ground provided by the "third wire ground" at the commercial power outlet is satisfactory for system requirements. However, in a small percentage of installations, this ground may be installed incorrectly. Before installing a system, test the third wire ground for continuity by either measuring the resistance between the third prong terminal (earth ground) and a metal cold water pipe (maximum: 5 ohms), or by using a commercially available earth ground indicator.

5.02 If neither procedure is possible, perform the earth ground test procedure in Paragraph 5.10.

NOTE:

See Paragraph 7 for more grounding requirements.

5.10 Earth Ground Test

WARNING!

Hazardous voltages that may cause death or injury are exposed during the following test. Use great care when working with AC power line voltage.

1) Obtain a suitable voltmeter, and set it for a possible reading of up to 250 VAC.

2) Connect the meter probes between the two main AC voltage terminals (white and black wires) on the wall outlet. The reading obtained should be between 100 ~ 120 VAC.

3) Move one of the meter probes to the third terminal (green wire ground). Either the same reading or a reading of zero volts should be obtained.

4) If the reading is zero volts, leave one probe on the ground terminal and move the other probe to the second voltage terminal.

CAUTION!

If a reading of zero volts is obtained on both voltage terminals (white wire to green wire, black wire to green wire), the outlet is not properly grounded. Omit steps 5 and 6, and proceed directly to step 7.

5) If a reading of zero volts on one terminal, and a reading of 100 ~ 120 VAC on the other terminal is obtained, remove both probes from the outlet.

6) Set the meter to the "OHMS/Rx1" scale. Place one probe on the ground terminal, and the other probe on the terminal that produced a reading of zero volts. The reading should be less than 1 ohm.

CAUTION!

If the reading is more than one ohm, then the outlet is not adequately grounded.

7) If the above tests show the outlet is not properly grounded, the condition should be corrected (per Article 250 of the National Electrical Code) by a qualified electrician before the system is connected.

TABLE 3-A
LOOP REQUIREMENTS

Device Description		Max Loop Resistance (Including Device)	Max Distance from KSU to Device	Number of Wire Pairs ¹
PEKU (ckts 1 ~ 8) or PESU ² (ckts 5 ~ 8)	Electronic telephone, door phone/ control boxes	40 ohms	1000 ft. (303 m)	All need 2-pair. EKTs which receive OCA calls need 3-pair. ¹
PEKU (ckts 7 & 8)	DSS consoles	20 ohms	500 ft. (152 m)	
PSTU (ckts 1 ~ 8) or PESU ² (ckts 1 & 2)	Standard telephones, voice mail, auto attendant, etc.	300 ohms	Approx. 3000 ft. (909 m) with 150 ohm device. See manufacturer's product specifications for exact resistance of device.	1-pair
PDKU (ckts 1 ~ 8)	Digital telephones	40 ohms	1000 ft. (303 m)	1-pair
PDKU (ckt 8)	DDSS consoles	40 ohms	1000 ft. (303 m)	1-pair
PDKU (ckts 1 ~ 7)	PDIU-DI	40 ohms	1000 ft. (303 m)	Shares digital telephone wire-pair. ³
PDKU (ckts 1 ~ 7)	PDIU-DS	40 ohms	1000 ft. (303 m)	1-pair ³

NOTES:

1. Use 24 AWG twisted pairs.
2. PESU circuits 3 and 4 are not used.
3. Two-pair may be required to achieve maximum range (see Chapter 9).

TABLE 3-B
NETWORK REQUIREMENTS

TOSHIBA Circuit Board	Facility Interface Code	Network Jack	Ringer Equivalence
PCOU/PCOU2 (Loop Start Line)	02LS2	RJ14C	0.2B
PEMU (Type I, TIE Line) 2-wire	TL11M	R2JEX	N/A
4-wire	TL31M	RJ2GX	N/A
PSTU/PESU (circuits 1 & 2) (Off-premises Line)	OL13A	RJ21X	N/A

TABLE 3-C
SUMMARY OF ELECTRICAL/ENVIRONMENTAL CHARACTERISTICS

GENERAL

Primary Power Input AC AC Frequency DK24 power supply DK56 power supply DK96 power supply	85VAC ~ 135VAC 50/60 Hz 65 watts 140 watts 230 watts
Environmental Specifications Operating Temperature Operating Humidity Storage Temperature	32 ~ 104°F (0 ~ 40°C) 20 ~ 80% relative humidity (without condensation) -4 ~ 158°F (-20 ~ 70°C)
Power Supply DC Voltage Output Specification	-24VDC; -26.3 ~ -27.8 + 5VDC; + 4.5 ~ + 5.5 - 5VDC; - 4.5 ~ - 5.5
Battery Charger Characteristics	Charger; current limiting Nominal Float Voltage; 2.275 volts/cell Charge Current; 0.7 amps maximum Battery Discharge Cut-off Voltage; 20.5 ± 0.5V
PSTU (before November 1989) Ring Voltage Ringing Capability	Square Wave: 190 ± 20V peak-to-peak (no load) up to two ringers maximum per circuit.
PSTU2/PESU (circuits 1 & 2) Ring Voltage Ringing Capability	Square Wave: Low position 130 ± 20V peak-to-peak (no load) High position 190 ± 25V peak-to-peak (no load) Two ringers maximum per circuit, high or low position
BTU Rating DK24	PEKU 3 103 BTUs (30 wh) PCOU 2 PCTUS 1 PIOUS 1 Electronic Telephone 24
DK56	PEKU 5 205 BTUs (60 wh) PCOU 3 PCTU 1 Electronic Telephone 40
DK96	PEKU 9 348 BTUs (102 wh) PCOU 5 PCTU 1 Electronic Telephone 72

6 SITE CONSIDERATIONS (continued)

6.00 The following precautions should be adhered to when installing telephone wiring:

WARNING!

1. *Never install the telephone wiring during a lightning storm.*
2. *Never install the telephone jacks in wet locations unless the jack is specifically designed for wet locations.*
3. *Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.*
4. *Use caution when installing or modifying telephone lines.*

7 GROUNDING REQUIREMENTS (continued)

7.00 In addition to the grounding provisions in Paragraph 5, the following grounding provisions must be adhered to (Figure 3-3):

- 1) Redundant and independent equipment grounding conductors are to be installed between the product and the wiring system ground.
- 2) One of the equipment grounding conductors (ground 1) shall be an insulated grounding conductor that is not smaller in size and is equivalent in insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors, except that it is green with or without one or more yellow stripes. The grounding conductor is to be installed as part of the circuit that supplies that system and is to be connected to ground at the service equipment.
- 3) The other conductor (ground 2) shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70, but shall not depend on the cord and plug of the product.

7.10 Second Ground Test

WARNING!

Hazardous voltages that may cause death

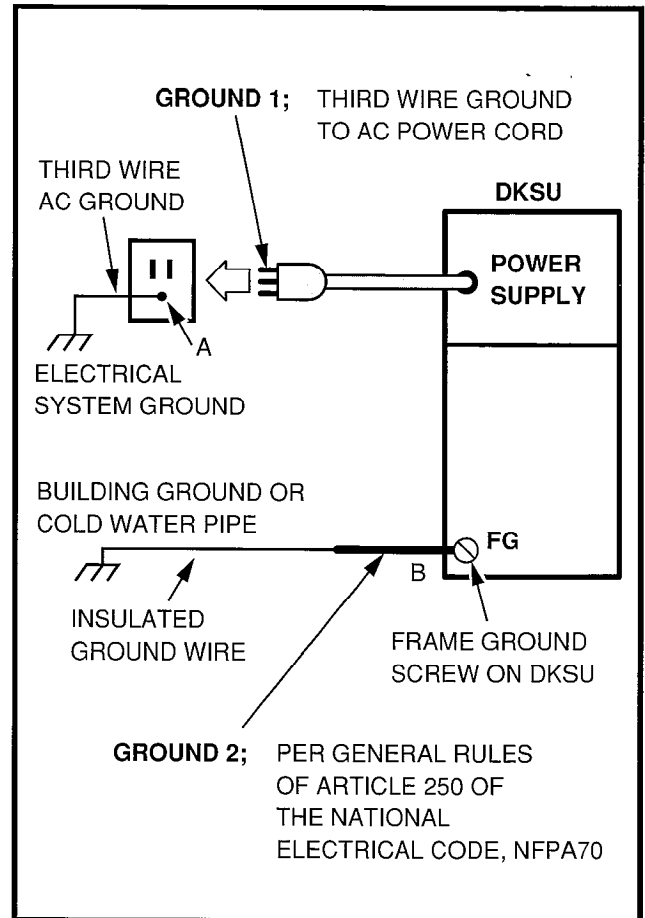


FIGURE 3-3 KSU GROUNDING DIAGRAM

or injury may be exposed during the following test. Use great care when working with AC power line voltage.

- 1) Refer to Figure 3-3.
- 2) Disconnect the AC plug of the system to make sure that the two earth ground paths are separated.
- 3) With a suitable volt/ohm meter, perform a reading between A and B. Verify that the readings do not exceed the figures listed below. If they do, the condition must be corrected by a qualified electrician before the system is connected.

A to B: 1 volt maximum
then
A to B: 1 ohm maximum

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Strata[®] *DK*

RELEASE 1, 2, and 3 INSTALLATION

CHAPTER FOUR SYSTEM CONFIGURATION

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4-2	HARDWARE CONFIGURATION EXAMPLE	4-28

1 INTRODUCTION

1.01 STRATA DK systems are flexible in their ability to meet varied system needs. A modular building block approach allows the addition of various parts to meet system needs and applications. A universal slot concept is used in the KSU, which means that a PCB slot in the KSU can accept any one of a number of different PCBs. This is contrasted with a dedicated slot approach (used in previous STRATA systems), where a particular slot can only accept a specific PCB, such as a CO line interface PCB. DK24 has six universal slots, DK56 has eight, and DK96 has 14. This increased flexibility in STRATA DK means that tradeoffs can be made between the number of CO lines and stations in a system application. This is illustrated in Figure 4-1.

1.02 Figure 4-1 shows that in most configurations, four CO lines can be traded for eight stations. Conversely, for every eight stations that are given up, four CO lines can be added. The maximum quantities of 16 CO lines for DK24, 20 CO lines for

DK56, and 36 CO lines for DK96 are based on squared systems. Software allows 16 CO lines with PCTUS1 and 36 CO lines with PCTU (1, 2, or 3). Similarly, the 24 station (PCTUS1) and 96 station (PCTU1, 2, or 3) limits are software limitations.

1.10 System Considerations

1.11 When no external options or TIE lines are installed and only CO lines and station PCBs are exchanged, the maximum configurations can be summarized in Table 4-A.

1.12 Table 4-A shows the maximum number of 1000-series digital telephone, 6500-series telephones, and/or standard telephones that can exist in each system. Due to power availability, the numbers decrease if using 2000-, 3000-, 6000-, or 6005-series electronic telephones, a PEMU PCB, or digital telephones with PDIU-DIs connected. When mixing different series telephones and/or if a PEMU PCB is installed, use the Configuration Guide, worksheet 7, to verify that the power supplied is greater than the power used.

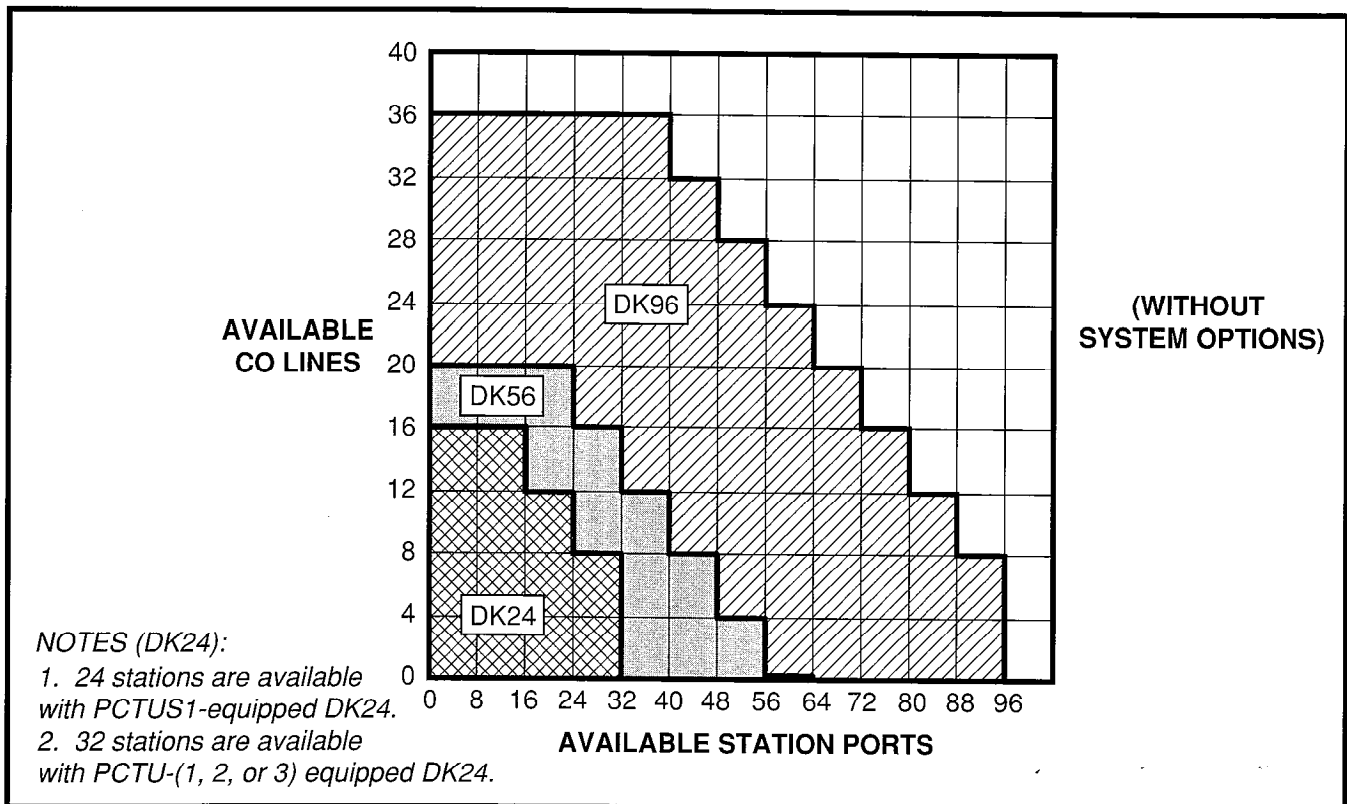


FIGURE 4-1—PCB CONFIGURATION CHART

Table 4-A
DK24/56/96 MAXIMUM CONFIGURATIONS

DK24 (PCTUS)		DK 24 (PCTU 1, 2, or 3)		DK56 (PCTU 1, 2, or 3)		DK96 (PCTU 1, 2, or 3)	
CO Lines	Stations	CO Lines	Stations	CO Lines	Stations	CO Lines	Stations
16	16	16	16	20	24	36	40
12	24	12	24	16	32	32	48
8	24	8	32	12	40	28	56
4	24	4	32 ³	8	48	24	64
0	24	0	32 ³	4	56	20	72
				0	64	16	80
						12	88
						8	96

NOTES:

1. The station capacities apply to any combination of standard telephones, 1000-series digital telephones and 6500-series electronic telephones (only). Station capacities using other Toshiba electronic telephones are given on worksheet 7.
2. Installing a TIE line (PEMU) PCB or an optional interface (PIOU/PIOUS/PEPU) PCB reduces available CO lines by four or available station ports by eight.
3. The DK24's 32-station limit is a result of power supply capacity.

1.13 System Control PCB Considerations. DK systems can be configured with one of four versions of control PCBs: PCTU1, PCTU2, PCTU3, or PCTUS1. The PCTU1, 2, and 3 have the same configuration capacity and can be used in all three system models. The PCTU1 provides **Release 1** features; the PCTU2 provides **Release 2** features; and the PCTU3 provides **Release 3** features. The PCTUS1 provides **Release 2** features, but has less system capacity than a PCTU (1, 2, or 3). The PCTUS is designed to function in DK24 only; if a PCTUS is installed in DK56 or DK96, the system will not operate correctly. The configuration capacities of each PCTU PCB are shown in Table 4-B. This table shows the maximum capacities of all the options, stations, and lines for each configuration. These capacities reflect maximum stand alone capacities and do not indicate combined capacity of the many possible configurations when mixing options, stations, and lines. Use the configuration worksheets to determine combined capacities.

1.14 The digital telephone interface unit PCB (PDKU) provides an interface for eight digital telephones. The PDKU also provides interface for the PDIU-DI and PDIU-DS data interface units. The electronic telephone interface unit PCB (PEKU) provides an interface for eight electronic telephone

circuits. The standard telephone interface unit PCB (PSTU) can accommodate eight standard telephones or like devices. The standard/electronic telephone interface unit PCB (PESU) supports up to two standard and four electronic telephones. The PESU is intended for configurations that require less than three standard telephone ports and/or less than five electronic telephone ports, on systems that mix standard and electronic telephones.

1.15 Up to four CO lines can be connected with the CO line unit PCB (PCOU).

1.16 With the exception of the control PCB which has its own dedicated slot, any of these PCBs can be used in any of the universal slots (DK24 has six universal slots, DK56 has eight, and DK96 has 14). Table 4-C shows all the PCBs which can be installed in universal slots and the maximum quantity of each PCB allowed per system. It is useful to consider some examples of system configuration as follows:

Example 1—A small business requires a system to handle six CO lines, 12 electronic telephones and three standard rotary type telephones.

- The PCB configuration (in addition to **Release 1** or **2** common equipment) is as follows:

Two PCOU PCBs
Two PEKU PCBs
One PSTU PCB

- Each of these PCBs requires one universal slot, so a total of five slots is required. Therefore, a DK24 can be used.

Example 2—A bank branch office needs nine CO lines, seven electronic telephones, five digital telephones, and 11 standard rotary type telephones.

- The PCB configuration (in addition to **Release 3** common equipment) is as follows:
Three PCOU PCBs
One PEKU PCB
One PDKU PCB
Two PSTU PCBs
- The configuration requires seven universal slots; therefore, DK24 is ruled out, because it has only six universal slots. Offering 14 universal slots, DK96 could be used, but it is a little too big for the office's needs at the moment. DK56, with its eight universal slots, could meet those needs immediately. Also, DK56 could accommodate some expansion of lines or stations in this case, since there would be one empty universal slot.

Example 3—A large travel agency needs 18 CO lines, 14 electronic telephones, 14 digital telephones, nine standard DTMF telephones and one FAX machine, all connected to one system.

- Since DTMF is required, an additional subassembly (CRCU) is needed to translate DTMF to signals that STRATA DK can understand. The CRCU is a subassembly that mounts on the common control PCB (PCTU), which is part of the STRATA DK common equipment. The PCTU has its own dedicated slot in the KSU separate from the available universal slots. In summary, an additional subassembly (CRCU) is required for DTMF but the maximum number of universal slots remains at six for DK24, eight for DK56, and 14 for DK96. Lastly, a FAX machine is treated like a standard telephone and can use DTMF dialing, since the capability exists in the system because of the standard DTMF telephones.
- The PCB configuration (in addition to com-

mon equipment) is as follows:

Five PCOU PCBs
Two PEKU PCBs
Two PDKU PCBs
One PSTU PCB
One PESU PCB
One CRCU subassembly

- Each of these PCBs, except for the CRCU, requires one universal slot. Therefore, a total of 11 slots are required. This is beyond the capacity of DK24 and DK56 (six and eight slots, respectively) but well within DK96's capacity.

2 OPTION INTERFACING

2.01 Numerous options, such as a paging amplifier, external page interface (one zone), relay control, etc., require an additional PCB called the PEPU. If even more options are required, such as multi-zone paging, alarm sensor, SMDR or remote maintenance, then the PIOUS or a PIOUS PCB would be needed. Table 4-D provides more details about the capabilities of these PCBs. Only one of these PCBs would be needed in a STRATA DK system because the PIOUS can do everything the PEPU or PIOUS can do and more. If any of these options are required, one universal slot is needed to accommodate the appropriate PCB, thereby reducing the maximum CO line/station capabilities by eight station ports or four CO lines. Only one option PCB is allowed per DK system.

2.10 DDSS and DSS Consoles

2.11 Up to four DSS consoles can be accommodated by DK24, DK56, or DK96 equipped with a PCTU1 or 2 (PCTU1 or 2 does not support DDSS consoles). Up to four DDSS consoles, or up to four DSS consoles, or any combination up to four can be accommodated by a DK24, DK56, or DK96 equipped with a PCTU3. A DK24 equipped with a PCTUS1 can support up to three DSS consoles only (PCTUS1 cannot support DDSS consoles). In addition, the application of DDSS consoles is flexible so that one to four DDSS consoles can be assigned to one digital or electronic telephone, or one DDSS console to each of four digital or electronic telephones, or any intermediate combination (this also applies to DSS consoles and electronic

telephones). Each DDSS console does not require a specialized interface PCB; instead, each DDSS console takes the place of one digital telephone on a PDKU PCB. However, only one DDSS console may be interfaced to a PDKU, and it must interface to circuit 8. Likewise, each DSS console does not require a specialized interface PCB; instead, each DSS console takes the place of two electronic telephones on a PEKU PCB. However, only one DSS console may be interfaced to a PEKU, and it must interface to circuits 7 and 8. Table 4-E provides more details regarding DDSS and DSS consoles.

Example 4—An end user requires nine CO lines, 15 electronic telephones, one DSS console and external paging.

- If external paging speakers can be driven with 3 watts or less, then the PEPU PCB can be employed as the paging amplifier. Since each DSS console requires the equivalent of two electronic telephones for interface, a total of 17 equivalent electronic telephones must be interfaced and, therefore, three PEKU PCBs are needed. Aside from common equipment, the PCBs required for this configuration are as follows:
Three PCOU PCBs
Three PEKU PCBs
One PEPU PCB
- A total of seven universal slots are needed (which is within the maximum of DK56's eight universal slots).

Example 5—A mid-sized business needs 15 CO lines, 12 digital telephones, two DDSS consoles, 14 electronic telephones, two DSS consoles, external paging system interface to drive an existing 8-ohm speaker, and SMDR.

- Because SMDR is a requirement, the PIOUS amplified page output and SMDR interface will be needed. This unit can also handle the external paging system interface requirement. Two DDSS consoles require the equivalent of two digital telephone circuits in addition to the 12 digital telephones, for a total of 14 digital telephone circuits; this results in the installation of two PDKU PCBs. Two DSS consoles require the equivalent of four electronic telephones, for a total of 18 electronic telephone circuits; this results in

the installation of three PEKU PCBs. The final PCB configuration (in addition to common equipment) is:

- Four PCOU PCBs
 - Three PEKU PCBs
 - Two PDKU PCBs
 - One PIOUS PCB
- The total universal slots needed equals 10, so that a DK96 would be sold to this business.

2.20 Data Interface Units (PDIU-DI and PDIU-DS)

2.21 Integrated Data Interface Unit (PDIU-DI): Digital telephones may be equipped with a PDIU-DI. The PDIU-DI is not a stand-alone unit, and must be attached to a digital telephone. Each system can support a maximum number of PDIU-DIs, as shown in Table 4-B. The PDIU-DI and the digital telephone it is integrated into share the same circuit on the PDKU PCB.

2.22 Stand-alone Data Interface Unit (PDIU-DS): Each PDIU-DS requires one circuit on a PDKU PCB. A PDIU-DS can be connected to any circuit on a PDKU, and as many as eight can be connected to a PDKU. Unlike the PDIU-DI, the PDIU-DS does not share a circuit with a digital telephone. Therefore, each PDIU-DS reduces the digital telephone maximum capacity by one. Each system can support a maximum number of PDIU-DSs, as shown in Table 4-B.

NOTE:

1. *The PDIU-DI and PDIU-DS will function with all slots, except slots 11 ~ 14 in DK96.*
2. *PDKU circuits 1 ~ 7 can support PDIU-DIs and PDIU-DSs.*

Example 6—A small law firm requires three CO lines, 10 digital telephones (all of which will be equipped with a PDIU-DI connected to a personal computer) and two PDIU-DSs connected to modems.

- The telephones will require 10 PDKU circuits and the modem/PDIU-DSs two more. The PDIU-DIs do not require a dedicated circuit, because they share one with the digital telephones to which they are connected. A total of 12 digital circuits are required for this configuration; therefore, two PDKUs would

be needed. The three CO lines can be handled by one PCOU PCB.

The two modems are configured in a system modem pool and if no dedicated CO lines are provided, then one standard telephone (PSTU/PESU) station port is required for each; therefore a PESU or PSTU would be needed. The PCBs required for this configuration are as follows:

- Two PDKUs
- One PCOU
- One PESU or PSTU
- A total of four universal stations needed. A DK24 would suffice for this configuration.

Example 7—Two tenants in one building require, on a combined basis, 13 CO lines, 23 electronic telephones, eight standard DTMF telephones, a FAX machine, four DSS consoles, remote maintenance, and an interface to their alarm system.

- The PIOUS PCB can provide remote maintenance for their telephone system and also act as an alarm sensor to alert employees through electronic telephones. An IMDU subassembly on the PIOUS fulfills the need of a modem for remote maintenance, but does not deduct from the universal slot count. The four DSS consoles need to be interfaced as eight electronic telephones in addition to the 23 electronic telephones (resulting in a total of 31 equivalent electronic telephones). Therefore, a total of four PEKU PCBs would be installed, which would each have a DSS console connected. One FAX machine in addition to eight standard telephones means that one PSTU and one PESU PCB are needed. Because DTMF is coming *into* the system, a CRCU needs to be installed, but does not deduct from the universal slots available. The total PCB requirement (in addition to common equipment) is as follows:
 - Four PCOU PCBs
 - Four PEKU PCBs
 - One PSTU PCB
 - One PESU PCB
 - One PIOUS PCB
 - One IMDU subassembly
 - One CRCU subassembly
- A total of 11 universal slots are required, so

a STRATA DK96 can fill the bill.

2.30 Door Phones

2.31 Up to 12 door phones (MDFB) can be accommodated by either a DK24, DK56, or a DK96 equipped with a PCTU (1, 2, or 3). However, DK24 equipped with PCTUS1 can support only nine door phones. A door phone control (HDCB) interface unit is required for every three door phones. Each HDCB is interfaced to a STRATA DK system via the PEKU or PESU PCB, and must occupy circuit 5 on either PCB. For system configuration, each HDCB must be considered equivalent to an electronic telephone as far as consuming station capacity. Table 4-E provides more details regarding HDCB configuration.

2.40 E & M TIE Lines

2.41 Each PEMU PCB provides interface to four TIE lines. Up to four TIE lines can be accommodated by DK24, up to eight by DK56, and up to twelve by DK96. TIE lines (PEMU) are the same as CO lines (PCOU), when considering the maximum total outside lines in a system. The maximum lines per system are 16 for DK24, 24 for DK56, and 36 for DK96. In addition, each PEMU uses up station ports so that the software-limited station capacity of a system is reduced with every PEMU added. The number of station ports consumed by the PEMU depends on the type of PCTU used. If a PCTU (1, 2, or 3) is installed, the PEMU reduces the system station capacity by four. If a PCTUS1 is installed, each PEMU reduces the station capacity by eight. This is of concern only in a DK24 system that requires more than 16 stations. Each PEMU added to a system uses up one universal slot.

NOTE:

DK24's limit of four TIE lines (one PEMU) is due to power supply capacity. Do not exceed this limit.

2.50 Off-hook Call Announce

2.51 If upgraded, each digital and electronic telephone can receive off-hook call announce (OCA) calls. In addition, PEKU PCBs supporting elec-

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tronic telephones with OCA must also be upgraded with an EOCU subassembly. However, PDKU PCBs supporting digital telephones with OCA require no such upgrade. Telephones calling to an OCA-equipped digital or electronic telephone do not require an upgrade.

- To receive OCA calls, a digital telephone must be upgraded with a subassembly called DVSU. Each digital telephone can be so equipped.
- To receive OCA calls, an electronic telephone must be upgraded with two subassemblies, HVSU and HVSI. Each electronic telephone can be so equipped; there is no limit. Also, each PEKU or PESU PCB supporting telephones equipped for OCA must be upgraded with an EOCU. This means that every electronic telephone which must receive an OCA call must be connected to a PEKU or PESU equipped with the EOCU subassembly. Therefore, OCA-equipped electronic telephones should be kept in groups of four in concert with a particular PESU and in groups of eight with a particular PEKU. Since the EOCU is a subassembly on the PEKU or PESU, it does not reduce the number of available universal slots.
- All system slots, except DK96's 11~14 and DK24's 05 and 06 with PCTUS1, support telephone OCA receiving.

2.60 Data and Modems with Release 1 or 2

2.61 Passing data at up to 9600 bits per second through the STRATA DK standard telephone ports is possible. To accomplish this function, an external, commercially available modem is required. Most typically, the modem will be housed in a personal computer and have its own two-wire modular connection. It is interfaced to STRATA DK via a PSTU or PESU PCB as if it were a standard telephone. The IMDU modem discussed previously in Example 6 can only be used with the PIOUS or PIOUS PCB for remote maintenance.

IMPORTANT NOTE:

For data applications requiring more functions than that provided by a personal computer and modem, it is recommended to use the STRATA DK data interface units, PDIU-DI and PDIU-DS. This includes data applications such as modem pooling, printer sharing, PC-to-PC file transfer, etc.

Example 8—A sizable business needs 15 CO lines, three E&M TIE lines, 37 electronic telephones, two DSS consoles, four door phones, three standard telephones, a FAX machine, three modems, off-hook call announce for seven of the 37 electronic telephones, and three-zone paging. The customer also wishes to use the Direct Inward System Access (DISA) feature.

- The four door phones require two HDCBs since each HDCB has a maximum of three door phones. Each HDCB interfaces as an equivalent electronic telephone. The two DSS consoles count as the equivalent of four electronic telephones, in addition to the two for the HDCBs and the 37 actual electronic telephones, resulting in 43 equivalent electronic telephones. The system, therefore, requires six PEKU PCBs. One of the PEKUs needs an EOCU PCB to accommodate the seven electronic telephones that will have off-hook call announce. This particular PEKU should be one that does *not* interface a DSS console, because the DSS console interfaces as the equivalent of two electronic telephones, so only six electronic telephones could have the OCA feature. These seven electronic telephones should, therefore, have certain station numbers in order to save the extra expense of additional EOCU PCBs.
- The equivalent of seven standard telephones need to be interfaced, so only one PSTU is required. A CRCU PCB will be required for the DISA feature, since DTMF tones will be coming *into* the KSU. Therefore, the standard telephones and like devices can use DTMF without any additional cost. If only one zone of external paging is needed, a PEPU or PIOUS PCB could do the job. But three zones are required, so a PIOUS PCB will be installed. For 15 CO lines, four PCOU PCBs are needed. Only one PEMU PCB is required for the three TIE lines. The PEMU uses up four stations from the total station capacity, but no extra hardware is required because of this, and this system is very far from using the maximum station capacity so it is not of concern here.
- In summary, the total PCB requirement (in addition to common equipment) is as follows:

- Four PCOU PCBs
- One PEMU PCB
- Six PEKU PCBs
- One PSTU PCB
- One PIOUS PCB
- One EOCU subassembly
- One CRCU subassembly

- A total of 13 universal slots (one for each of the PCBs with the prefix "P") will be used in this DK96 system. It is working with 18 telephone lines and 48 station devices so it is quite a large system. Another five electronic telephones could be added without requiring use of another universal slot.

2.70 Miscellaneous

2.71 Other hardware items may be needed in a particular system configuration. These include the DPFT power failure transfer unit, used to connect CO lines to standard telephones in the event of a power outage; the HESB speaker/amplifier, which may interface with an digital or electronic telephone; the HHEU headset interface, which may be required to hook up an HESB or a headset to a digital or 6500-series electronic telephone; an HESC-65 cable, to connect the HESB to a 6500-series electronic telephone; a PBTC-3M cable, for connection to reserve batteries or a PPTC connector for an SMDR printer, TTY, or remote maintenance terminal interface. More details on these miscellaneous items can be found in Table 4-F, the *General Description*, and other Installation chapters.

NOTE:

An HESC-65A only is required to connect a digital telephone to an HESB; this cable can also be used with 6500-series electronic telephones.

2.80 Ports

2.81 Interfaces to each of some devices (such as telephones) in the STRATA DK system can be referred to as ports. Therefore, a PEKU, PDKU, PSTU, and PESU PCB can be said to have station ports (see Note 2). STRATA DK system programming uses port numbers to identify which device will be equipped with desired features or operation.

The first port number is 00 and can continue up to 95 with a PCTU (1, 2, or 3) PCB and up to 23 with a PCTUS PCB. Port 00 is usually intercom station 200, and is designated as the primary system attendant station. Intercom numbering can be completely flexibly assigned, but is best left to the consecutive standard numbering of 200 ~ 295 with PCTU (1, 2, and 3) and 200 ~ 223 with PCTUS1. User guides are written using this standard plan, and LCD digital and electronic telephone busy fields will be meaningful only if the last two digits of the intercom number are consecutive, starting with 00.

NOTES:

1. Each PEMU uses four station ports and four CO lines; however, if the PEMU is installed in a DK24 with a PCTUS1 PCB, only 16 station ports are available for station interface using PEKU, PSTU, or PESU PCBs, because the PCTUS assigns, eight station ports to the PEMU PCB.
2. Each PESU provides two standard and four electronic telephone ports for a total of six station ports; however, two nonfunctioning ports (circuits 3 and 4) are automatically assigned to the PESU so a total of eight station ports are allocated to each PESU PCB installed.

2.90 CO Lines

2.91 Telephone network CO lines interface to the STRATA DK PCOU PCB. Four circuits are provided by each PCOU. These circuits are identified as CO lines in DK system software and are not considered as ports but are in addition to ports when considering total system station and line capacity.

NOTE:

Each PEMU uses four CO lines in system software as well as four PCTU1, 2, 3 or eight PCTUS ports in system software.

3 WORKSHEETS

3.00 To use a methodical step-by-step procedure to configure a system, worksheets are provided in this section. Use of these worksheets will automatically consider all of the various factors.

CONFIGURATION GUIDE, WORKSHEET 1

Customer: _____ Location: _____

Complete Worksheet 1 before proceeding with other worksheets.

A1. DSS consoles required (refer to HDSS in Table 4-E): (A1) HDSS _____

A2. Door phones/locks required (refer to HDCB in Table 4-E): (A2) HDCBs _____

A3. Electronic telephones required (refer to PEKU and PESU in Table 4-C):

6510H _____ B or W + 6510S _____ B or W + 6520S _____ B or W + 6520SD _____ B or W

NOTE:

If upgrading an existing STRATA DK system using 2000-/3000-/6000-/6005-series electronic telephones and/or if the system requires TIE lines (PEMU), refer to the System Power Check, Worksheet 7.

(A3) Total electronic telephones _____

A4. Does the customer require separate music sources for music-on-hold (MOH) and background music (BGM). Yes or no? (A4) _____. If separate sources are required, one PEKU port is needed for the BGM source connection.

A5. External amplifier for two-CO line amplified conference (4 maximum).

(A5) Two-CO line conference amplifiers: _____

NOTE:

External amplifiers are customer-supplied.

AA1. DDSS consoles required (refer to DDSS in Table 4-E): (AA1) DDSS _____

AA2. PDIU-DSs required (refer to PDIU-DS in Table 4-E): (AA2) PDIU-DS _____

AA3. Digital telephones with or without PDIU-DI data interface unit base required (refer to PDKU in Table 4-C):

1020H _____ + 1020SD _____ = (AA3) Total digital telephones _____

NOTE:

If upgrading an existing STRATA DK system to add digital telephones with PDIU-DI base and/or if the system requires TIE lines (PEMU), refer to the System Power Check, Worksheet 7.

B1. Number of standard telephones required (refer to PSTU and PESU in Table 4-C).

(B1) Standard telephones: _____

WORKSHEET 1 (continued)

B2. Number of auxiliary devices/ports, i.e., voice mail ports, auto attendant ports, fax machines, modems (refer to PSTU and PESU in Table 4-C).

(B2) Auxiliary devices: _____

C. Number of CO lines required (refer to PCOU in Table 4-C): _____

D. Number of E&M TIE lines required (refer to PEMU in Table 4-C): _____

E. Does the customer require options that interface with a PIOU, PIOUS, or PEPU PCB? Yes _____
No _____ (refer to Table 4-D). Enter optional interface PCB type:

Optional Interface PCB: _____

F. Does the customer require other optional features (yes or no for each): battery backup __, power failure transfer unit __, DTMF signals from standard telephone ports __, off-hook call announce __, headsets __, built-in remote maintenance __, loud ringing bell __, talkback amplifier __, external page amplifier/speaker __, door phones __, door lock controls __, PDIU-DI __.

NOTE:

These options are configured on Worksheet 6 after completing Worksheets 2 ~ 5.

G. Complete Worksheets 2 ~ 5.

CONFIGURATION GUIDE, WORKSHEET 2
 (PEKU/PDKU PCB requirements)

Customer _____ Location _____

B. PEKU PCBs (eight station ports)

1. Determine the total PEKU ports required using Chart 1.

CHART 1—PEKU PORT REQUIREMENTS

Equipment Type:	Equipment Quantity	X	(Ports/ per)	=	Ports Used
DSS consoles: (see Worksheet 1, A1)	(A1) _____	X	2	=	_____.
HDCB controllers: (see Worksheet 1, A2)	(A2) _____	X	1	=	_____.
Electronic telephones: (see Worksheet 1, A3)	(A3) _____	X	1	=	_____.
BGM/MOH separation: (see Worksheet 1, A4)	(A4) _____	X	1	=	_____.
Conference amplifiers: (see Worksheet 1, A5)	(A5) _____	X	2	=	_____.
				Total PEKU Ports	= _____.

2. Determine the minimum PEKU PCBs required using Chart 2.

CHART 2—MINIMUM PEKU PCB REQUIREMENTS

Total Ports (Chart 1)	01 ~ 08	09 ~ 16	17 ~ 24	25 ~ 32	33 ~ 40	41 ~ 48	49 ~ 56	57 ~ 64	65 ~ 72	73 ~ 80	81 ~ 88	89 ~ 96
Minimum PEKU PCBs (Am)	1	2	3	4	5	6	7	8	9	10	11	12

3. Determine the actual PEKU PCBs required using Charts 1 and 2 as follows:
 Actual PEKUs (AT) = (Am) or (A1) or (A2) whichever is the largest number.

Actual PEKU PCBs = _____ (AT)

4. **PESU:** In a configuration that requires less than five electronic telephone station ports, a PESU PCB may be used in place of a PEKU PCB. The PESU supports HDCBs and a BGM source connection as well as electronic telephones. It does not support a DSS console. Normally, only one PESU is installed in a system (see PSTU, Worksheet 3).

CONFIGURATION GUIDE, WORKSHEET 2 (continued)
(PEKU/PDKU PCB requirements)

Customer _____ Location _____

AA. PDKU PCBs (eight station ports)

1. Determine the total PDKU ports required using Chart 1A.

CHART 1A—PDKU PORT REQUIREMENTS

Equipment Type:	Equipment Quantity	X	(Ports/ per)	=	Ports Used
DDSS consoles: (see Worksheet 1, AA1)	(AA1) _____	X	1	=	_____ .
PDIU-DSs: (see Worksheet 1, AA2)	(AA2) _____	X	1	=	_____ .
Digital telephones (with or without PDIU-DIs): (see Worksheet 1, AA3)	(AA3) _____	X	1	=	_____ .
Total PDKU Ports				=	_____ .

2. Determine the minimum PDKU PCBs required using Chart 2A.

CHART 2A—MINIMUM PDKU PCB REQUIREMENTS

Total Ports (Chart 1A)	01 ~ 08	09 ~ 16	17 ~ 24	25 ~ 32	33 ~ 40	41 ~ 48	49 ~ 56	57 ~ 64	65 ~ 72	73 ~ 80	81 ~ 88	89 ~ 96
Minimum PDKU PCBs (AAm)	1	2	3	4	5	6	7	8	9	10	11	12

3. Determine the actual PDKU PCBs required using Charts 1A and 2A as follows:
Actual PDKUs (AAT) = (AAm) or (AA1) whichever is the largest number.

Actual PDKU PCBs = ____ (AAT)

**CONFIGURATION GUIDE, WORKSHEET 3
(PSTU/PESU PCB requirements)**

B. PSTU PCBs (eight station ports)

1. Determine the total PSTU ports required using Chart 3.

CHART 3—PSTU PORT REQUIREMENTS

Equipment Type:	Equipment Quantity	X	Ports	=	Ports Used
Standard telephones: (see Worksheet 1, B1)	(B1) _____	X	1	=	_____.
Other devices: (see Worksheet 1, B2)	(B2) _____	X	1	=	_____.
	Total PSTU Ports				= _____.

2. Determine the actual PSTU PCB requirements using Chart 4.

CHART 4—ACTUAL PSTU PCB REQUIREMENTS

Total Ports (Chart 3)	01 ~ 08	09 ~ 16	17 ~ 24	25 ~ 32	33 ~ 40	41 ~ 48	49 ~ 56	57 ~ 64	65 ~ 72	73 ~ 80	81 ~ 88	89 ~ 96
PSTU PCBs	1	2	3	4	5	6	7	8	9	10	11	12

Actual PSTU PCBs = ____ (BT1)

3. **PESU:** In a configuration requiring less than two PSTU station ports, a PESU PCB can be used in place of a PSTU PCB. Normally, only one PESU is installed in a system.

Actual PESU PCBs ____ (BT2)

CONFIGURATION GUIDE, WORKSHEET 4

C. PCOU PCBs (four CO lines)

1. Enter the number of CO lines required from Paragraph C of Worksheet 1.

CO lines _____

2. Determine the number of PCOU PCBs using Chart 5.

CHART 5—ACTUAL PCOU PCB REQUIREMENTS

CO Lines (C) above	01 ~ 04	05 ~ 08	09 ~ 12	13 ~ 16	17 ~ 20	21 ~ 24	25 ~ 28	29 ~ 32	33 ~ 36
PCOU PCBs	1	2	3	4	5	6	7	8	9

Actual PCOU PCBs = _____(CT)

D. PEMU PCBs (four TIE lines)

1. Enter the number of TIE lines from Paragraph D of Worksheet 1.

TIE lines _____

2. Determine the number of PEMU PCBs using Chart 6.

CHART 6—ACTUAL PEMU PCB REQUIREMENTS

TIE Lines (D) above	01 ~ 04	05 ~ 08	09 ~ 12
PEMU PCBs	1	2	3

Actual PEMU PCBs = _____(DT)

E. PIOUS/PIOU/PEPU PCBs (see Paragraph E of Worksheet 1)

Enter type of optional interface from Paragraph E of Worksheet 1 if required. Only one per system.

Actual Interface PCB _____(ET)

CONFIGURATION GUIDE, WORKSHEET 5

F. System and Slot Check

1. Add total PCB/slot requirements (from Worksheets 2 ~ 4): AT + AAT + BT1 + BT2 + CT + DT + ET
= ____ PCB/slot total.

IMPORTANT NOTE!

One or two additional slots should always be considered for future growth.

2. If total is six or less, use **DK24** and **PCTUS1** with the following considerations:
 - a. Total PEKU/PSTU/PESU PCBs combined: three or less (no PEMU equipped).
 - b. Total PEKU/PSTU/PESU PCBs combined: two or less (PEMU equipped).
 - c. Total PCOU PCBs: four or less.
 - d. Total PEMU PCBs: one or less. DK24 with PCTUS ____
 - e. DSS consoles: three or less.
 - f. HDCB controllers: three or less.
 - g. If using 2000-/3000-/6000-/6005-series electronic telephones and/or a PEMU, use Power Check, Worksheet 7.

3. If total is six or less, use **DK24** and **PCTU (1, 2, or 3)** with the following considerations:
 - a. Total PDKU/PEKU/PSTU/PESU PCBs combined: four or less (no PEMU equipped).
 - b. Total PDKU/PEKU/PSTU/PESU PCBs combined: three or less (PEMU equipped).
 - c. Total PCOU PCBs: six or less.
 - d. Total PEMU PCBs: one or less. DK24 with PCTU1, 2, or 3 ____
 - e. Combined DDSS and DSS consoles: four or less.
 - f. HDCB controllers: four or less.
 - g. If using 2000-/3000-/6000-/6005-series electronic telephones, PDIU-DIs, and/or a PEMU, use Power Check, Worksheet 7.

4. If total is eight or less, use **DK56** and **PCTU (1, 2, or 3)** with the following considerations:
 - a. PDKU/PEKU/PSTU/PESU PCBs combined: eight or less.
 - b. PCOU PCBs: eight or less.
 - c. PEMU PCBs: two or less.
 - d. PEMU and PCOU: eight or less. DK56 with PCTU1, 2, or 3 ____
 - e. Combined DDSS and DSS consoles: four or less.
 - f. HDCB controllers: four or less.
 - g. If using 2000-/3000-/6000-/6005-series electronic telephones, PDIU-DIs, and/or a PEMU, use Power Check, Worksheet 7.

5. If this total is above eight, use **DK96** and **PCTU (1, 2, or 3)** with the following considerations:
 - a. PDKU/PEKU/PSTU/PESU PCBs combined: 12 or less.
 - b. PCOU PCBs: nine or less.
 - c. PEMU PCBs: three or less
 - d. PEMU and PCOU: nine or less. DK96 with PCTU1, 2, or 3 ____
 - e. Combined DDSS and DSS consoles: four or less.
 - f. HDCB controllers: four or less.
 - g. If using 2000-/3000-/6000-/6005-series electronic telephones, PDIU-DIs, and/or a PEMU, use Power Check, Worksheet 7.

NOTE:

PDKU and DDSS require PCTU3.

CONFIGURATION GUIDE, WORKSHEET 6
(miscellaneous option requirements)

G. CRCU PCBs (refer to Table 4-F):

1. A CRCU (-4 or -8) must be installed on the PCTUS1 or PCTU2 or PCTU3 PCB if the customer has TIE lines, DISA CO lines, or is using standard telephones or voice mail type devices connected to PSTU or PESU standard telephone ports.
2. For normal traffic, a CRCU-4 (providing four DTMF receiver circuits) will be sufficient. However, for extremely high traffic requirements, a CRCU-8 (providing eight DTMF receiver circuits) may be required.

CRCU-4_____ or CRCU-8_____

NOTE:

Only one CRCU can be used per system.

H. EOCU (refer to Table 4-F):

An EOCU must be installed on each PEKU and/or PESU that is connected to electronic telephones receiving off-hook voice announcements (OCA).

Actual EOCU PCBs_____

NOTES:

1. *One EOCU for each PEKU or PESU that supports electronic telephones that must receive OCA.*
2. *Be sure that proper consideration is given to where the PEKU or PESU is placed to provide the most efficient use of the 8-circuit EOCU. The PESU only provides four electronic telephone ports; the DSS consoles take away two ports on a PEKU; an HDCB takes away one port on a PESU or PEKU.*
3. *An EOCU (OCA) will not function in slots 11 ~ 14 on DK96 and slots 05 ~ 06 on DK24 with PCTUS1.*

I. DVSU (refer to Table 4-F):

One DVSU is required for each digital telephone receiving OCA.

Actual DVSU _____

J. HVSU/HVSI (refer to Table 4-F):

One HVSU and one HVSI is required for each electronic telephone receiving OCA.

Actual HVSU_____ and HVSI_____

K. IMDU PCB (refer to Table 4-F):

One IMDU PCB must be installed on the PIOU or PIOUS PCB to provide built-in remote maintenance capability.

IMDU PCB _____

L. HHEU PCB (refer to Table 4-F):

One HHEU PCB must be installed in each digital and electronic telephone that supports a headset or connects to an HESB providing a loud ringing bell.

Actual HHEU PCBs_____

CONFIGURATION GUIDE, WORKSHEET 6 (Continued)

M. HESC-65A (refer to Table 4-F):

One HESC-65A modular connecting cable is required to connect the HESB to the HHEU in each digital telephone requiring the loud ringing bell option. The HESC-65A can also be used to connect HHEU-equipped 6500-series electronic telephones to HESBs for the loud ringing bell option.

Actual HESC-65A _____

N. HESC-65 Cable (refer to Table 4-F):

One HESC-65 modular connecting cable is required to connect the HESB to the HHEU in each electronic telephone requiring the loud ringing bell option.

Actual HESC-65: _____

O. HESB Amplifier/Speaker (refer to Table 4-E):

1. One HESB is required for each digital and electronic telephone providing the loud ringing bell option.
2. One HESB is optional to provide single-zone external page connected to either a PIOU, PIOUS, or PEPU (customer-supplied amplifiers/speakers may be used in place of HESB).
3. One HESB is optional to provide a talkback amplifier/page speaker connected to a PIOU, PIOUS, or PEPU (a customer-supplied talkback amplifier/page speaker may be used in place of HESB).

Actual HESB: _____

P. PBTC-3M Cable:

One PBTC-3M cable is required for each system that requires battery backup (batteries are customer-supplied).

PBTC-3M _____

Q. PPTC Adaptor (Modular to RS-232)

A PPTC is required (one each) to connect a printer or call accounting device to the PIOU or PIOUS SMDR port; or to connect a modem or ASCII terminal to the PIOU or PIOUS maintenance port (TTY).

PPTC _____

R. DPFT Unit:

The DPFT provides a means to connect eight selected CO lines to standard telephones in the event of a power failure.

DPFT _____

S. MDFB:

The MDFB door phone unit plugs into the HDCB control box to provide a door phone. Three MDFBs can be connected to each HDCB. The MDFB may also be connected to the HESB amplifier/speaker to provide page talkback.

MDFB _____

T. PDIU-DI (refer to Table 4-B):

Digital telephones must be equipped with a PDIU-DI to transmit and receive voice and data.

Actual PDIU-DIs _____

CONFIGURATION GUIDE, WORKSHEET 7
(System Power Check)

Total Power Used:

Equipment Type:	Equipment Quantity	X	Power Used (Factor)	=	Power Used
1000-series digital telephone	_____	X	(1.0)	=	_____.
2000-series electronic telephone	_____	X	(2.0)	=	_____.
3000-series electronic telephone	_____	X	(2.5)	=	_____.
6000-series electronic telephone	_____	X	(2.0)	=	_____.
6005-series electronic telephone	_____	X	(2.0)	=	_____.
6500-series electronic telephone	_____	X	(1.0)	=	_____.
DDSS/DSS console*	_____	X	(0.8)	=	_____.
PDIU-DI	_____	X	(0.5)	=	_____.
PDIU-DS	_____	X	(0.8)	=	_____.
Standard telephone	_____	X	(1.0)	=	_____.
PEMU PCB	_____	X	(8.0)	=	_____.
Total Power Used					

* All series.

Power Supplied:

Power Supply	Power Supplied
PPSU 24	32
PPSU 56	80
PPSU 96	144

Power Criteria:

Power Supplied — **Total Power Used:** Must be greater than zero.

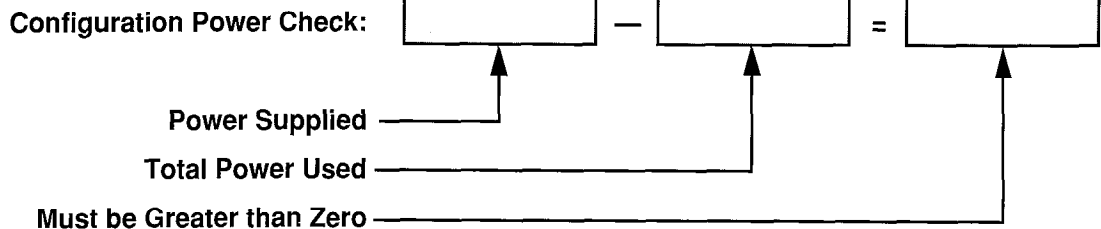


TABLE 4-B
SYSTEM CONTROL PCB (PCTU) CONFIGURATION INFORMATION

Control Board Version	PCTU1/PCTU2/PCTU3	PCTUS
System Compatibility	DK24/56/96	DK24 only
DK Feature Set	PCTU1-Release 1 PCTU2-Release 2 PCTU3-Release 3	Release 2
Universal PCB Slot Capacity	6 max with DK24 8 max with DK 56 14 max with DK96	6 max
Station Port Capacity	32 max with DK24 56 max with DK 56 96 max with DK96	24 max
CO Line Capacity (squared systems)	16 max with DK24 20 max with DK 56 36 max with DK96	16 max
TIE Line Capacity	4 max with DK24 8 max with DK 56 12 max with DK96	4 max
DSS or DDSS Consoles (or combination)	4 max	3 max
Door Phones	12 max	9 max
Door Lock Controls	5 max (R2 and R3) 1 max (R1)	4 max
Simultaneous Multi-party Conference	8 max	3 max
CRCU (-4 or -8) Option	1 max	1 max
PCTU MOH/BGM Connection	1 max	1 max
PDIU-DI (PCTU3 only)	21 max with DK24 53 max with DK56 80 max with DK96	Not Supported
PDIU-DS (PCTU3 only)	24 max with DK24 56 max with DK56 80 max with DK96	Not Supported
Personal Message/Memo Memory for LCD Stations	16 stations max (see Note 1)	6 stations max (see Note 1)
Alternate BGM Connection	1 max (R2 and R3)	1 max
Simultaneous External Amplified Two-CO Line Conference Calls	4 max (R3)	Not Supported

NOTES:

1. This only applies to LCD personal memory; all stations in any DK system can be an LCD telephone.
2. In the DK24 and DK56 PDIU-DIs and PDIU-DSs are limited by the system power capacity per worksheet 8; both DIUs are limited to slots 01~ 10 in the DK96.

TABLE 4-C
UNIVERSAL SLOT/PCB CAPACITIES

Printed Circuit Board	Circuits per Printed Circuit Board	PCB Maximum Capacities (Ports/Lines)				Interface to:
		DK24		DK56	DK96	
		PCTUS1	PCTU (1/2/3)	PCTU (1/2/3)	PCTU (1/2/3)	
PDKU (requires PCTU3)	8/Digital Telephone (Ports, Digital) (without PDIU-DI) (with PDIU-DI)	3 (24) (N/A) (N/A)	4 (32) (32) (21) ⁵	8 (64) (64) (53) ⁵	12 (96) (96) (80) ⁵	<ul style="list-style-type: none"> • Digital Telephones • DSS Consoles • PDIU-DI • PDIU-DS
PEKU ¹	8/Electronic Telephone (Ports, Electronic)	3 (24)	4 (32)	8 (64)	12 (96)	<ul style="list-style-type: none"> • Electronic Telephones • HDCB Door Phone Box • DSS Consoles • BGM Source • EOCU PCB for OCA • Amplified Conference
PSTU	8/Standard Telephone (Ports, Standard)	3 (24)	4 (32)	7 (56)	12 (96)	<ul style="list-style-type: none"> • Standard Telephones • Voice Mail Ports • FAX • Dictation Machine • Off-premises Stations • Other similar devices
PESU ² (requires PCTU2 and above)	2/Standard Telephone 4/Electronic Telephone (Ports Standard/ Electronic)	3 (6/12)	5 (10/20)	8 (16/32)	12 (24/48)	Standard: Same as PSTU Electronic: Same as PEKU (see Note 2)
PCOU	4/CO Lines (Lines)	4 (16)	5 (20)	7 (28)	9 (36)	<ul style="list-style-type: none"> • Central Office Loop-Start Lines
PEMU ³	4/TIE Lines (Lines)	1 (4)	1 (4)	2 (8)	3 (12)	<ul style="list-style-type: none"> • E&M TIE Lines – Type I - Signaling – 2 or 4 wire transmission – Immediate start
PIOU,⁴ PIOUS or PEPU	See Table 4-F	1	1	1	1	See Table 4-F

NOTES:

1. The appropriate capacities apply to 1000-series digital and 6500-series electronic telephones only. If other Toshiba electronic telephones (2000-, 3000-, 6000-) are used, refer to Paragraph 1.12.
2. The PESU provides two standard telephone circuits identical to PSTU circuits and four electronic telephone circuits identical to PEKU circuits. Normally only one PESU is installed in a system that requires a mix of standard and electronic telephone circuits. A PESU is installed instead of a PSTU, if only one or two standard telephone circuits are needed. A PESU is installed instead of a PEKU if only four or less electronic telephone circuits are needed. The PESU supports the door phone option and the BGM source but not DSS consoles.
3. The maximum number of PEMU PCBs is determined by the system's power supply capability (caution: do not exceed the numbers shown); also; if a PEMU is installed in a DK24 with a PCTUS PCB, only 16 station ports are available for telephones.
4. Only one type of peripheral interface PCB (PIOU, PIOUS, PEPU) may be installed per system.
5. The number of digital telephones with PDIU-DIs is limited by the system's power capacity per Worksheet 7. Also, PDIU-DIs are limited to slots 01 ~ 10 in DK96 (see Table 4-B for details).

TABLE 4-D
OPTIONAL INTERFACE PCB INFORMATION

Interface Option	PIOU	PIOUS	PEPU
Unamplified Page Output (Single zone, 600 ohms duplex)	X	X	X
Amplified Page Output (Single zone, 3 watts, 8 ohms)	X		X
Zone Page Interface (Unamplified, 4 zones)	X		
Night Transfer or Music-on-Hold, Control Relay	X	X	X
Door Lock or External Amplifier Control Relay	X	X	X
Alarm Sensor	X	X	
SMDR Output (RS-232/6-wire modular connector)	X	X	
Maintenance Port for a Local ASCII Terminal or External Modem (RS-232/6-wire modular connector)	X	X	
Remote Maintenance Modem (IMDU subassembly, no external connector)	X	X	

NOTE:
"X" indicates the option is provided.

TABLE 4-E
OPTIONAL ADD-ON UNIT CONFIGURATION

Option Unit	Interface PCB	Capacity	Function
HDSS (DSS console)	PEKU (circuits 7 & 8)	4/system (PCTU1, 2, or 3) 3/system (PCTUS1)	Provides a 60-button console that functions with electronic telephones. Buttons are flexibly assigned as CO line, speed dial and DSS.
HDCB (door phone/lock control)	PEKU or PESU (circuit 5)	4/system (PCTU1, 2, or 3) 3/system (PCTUS1)	Each HDCB provides interface for up to three door phones (MDFBs) or two door phones and one door lock.
MDFB (door phone)	HDCB	12/system (PCTU1, 2, or 3) 9/system (PCTUS1)	<ul style="list-style-type: none"> • Door monitor with two-way talk path to system telephones. • Doorbell that rings designated digital and electronic telephones. • Microphone for talkback amplifier with HESB.
HESB (amplified speaker)	PIOU/PIOUS/PEPU for page/speaker/amplifier Electronic telephone with HHEU PCB for loud ringing bell	1 per PIOU/PIOUS/PEPU 1 per electronic telephone (with HHEU PCB)	External page amplifier and speaker (talkback with MDFB). Loud ringing bell.
DDSS console	PDKU (circuit 8)	4 per system with PCTU3	Provides a 60-button DDSS console that functions with digital telephones. Buttons are flexibly assigned as CO line, speed dial, and DSS.
PDIU-DI *	Digital telephone	1 per digital telephone with PCTU3 (see Table 4-B)	Used for transmitting and receiving data between terminals, personal computers, and devices connected to other PDIUs. The PDIU-DI is also used to provide personal computer access to outside dial up data services and/or bulletin boards via modem pooling.
PDIU-DS *	PDKU (any circuit)	8 per PDKU with PCTU3 (see Table 4-B)	For making switched data connections for modem pooling, printer sharing, and host/mainframe computer accessing.

DSS CONSOLE NOTES:

1. No additional hardware is required to use the DSS/DDSS consoles.
2. The DDSS and DSS consoles are assigned to associated digital and electronic telephones in programming.
3. DDSS or DSS consoles cannot be connected to PESU electronic circuits.
4. DDSS or DSS consoles can be flexibly assigned to designated electronic and digital telephone stations; up to four DSS and/or DDSS consoles may be assigned to a designated electronic or digital telephone station.

DOOR PHONE NOTES:

1. A maximum of four door phone control boxes (HDCBs) are allowed per system, equipped with a PCTU (1, 2, or 3) or three HDCBs with a PCTUS1, to support up to twelve or nine door phones (MDFBs), respectively.
2. One electronic telephone (PEKU/PESU) port, always the 5th circuit port, is required per door phone control box (HDCB).
3. HDCBs can only be connected to PEKU or PESU port numbers 04, 12, 20, and 28.
4. One door lock control can be configured on each HDCB in place of one door phone.
5. PDKU does not support HDCB/MDFB door phones.

* PDIU-DI and PDIU-DS capacity is limited by system power (PPSU) or universal slots availability (see Table 4-B for details).

TABLE 4-F
OPTIONAL SUBASSEMBLY PCB CONFIGURATION

Subassembly PCB	Main PCB (Mount)	Capacity	Function
EOCU ¹	PEKU or PESU	One for each PEKU or PESU that supports OCA	Provide off-hook call announce path for all electronic telephone circuits of main PCB
CRCU (4 or 8 circuits)	PCTU (1, 2, or 3) or PCTUS1	One per PCTU/system	Provides DTMF receiver for DISA, standard telephone/VM circuits and TIE lines
IMDU	PIOU and PIOUS	One per PIOU or PIOUS/system	Remote maintenance interface with built-in modem
HHEU	6500-series electronic telephone and 1000-series digital telephone	One per electronic or digital telephone	Interface for headset and loud ringing bell ²
HVSU	6500-series electronic telephone	One per electronic telephone	Interface for electronic telephone to receive off-hook call announce
HVSI	6500-series electronic telephone	One per electronic telephone	Interface for electronic telephone to receive off-hook call announce
DVSU	1000-series digital telephone	One per digital telephone	Interface for digital telephone to receive off-hook call announce

NOTES:

1. An EOCU (OCA) will not function in slots 11 ~ 14 on DK96 or slots 05 ~ 06 on DK24 with PCTUS1.
2. One HESC-65 cable (for electronic telephones) or one HESC-65A cable (for digital or electronic telephones) is required to connect the HHEU to the HESB for the loud ringing bell option.

4 SYSTEM HARDWARE CONFIGURATION

4.00 General

4.01 The following provides guidelines to configure the system's PCB slots, including the recommended order in which the PCBs and PCB options should be assigned to specific slots.

4.02 This section does not detail the physical installation nor the wiring of PCBs or options. It is provided as a guide to plan and record the system hardware configuration. Installation practices for PCBs are provided in Chapter 6, and the DDSS, DSS console, and door phone options are in Chapter 7.

4.03 The quantity of each type of PCB and option must be determined by the guidelines given in Worksheets 1 ~ 7 prior to using the following guidelines.

4.10 System Hardware Assignment Record

4.11 Locate the record sheet for **Program 03** in the Basic System Record Sheets, Section **200-096-300**. The system's PCB configuration should be recorded on this record sheet.

NOTE:

Record sheets are also available separately from the manual.

4.12 On the **Program 03** record sheet, record the following information for PCBs: slot assignments, option assignments, code assignments, station port assignments, and line number assignments. The recommended procedures for recording this information is in Paragraphs **3.13 ~ 3.18** (refer to Figure 4-2 for an example of each item to be recorded).

4.13 PCB slot assignments—Record in the PCB type row on **Program 03's** record sheet (in the order shown below) the type of PCB that should be installed in each slot.

- **PCTU:** Assign the PCTU to the PCTU slot, **slot 00**.

NOTE:

PCTU codes 91, 92, and 93 apply to all PCTU types (PCTU1, PCTU2, PCTU3, and PCTUS1).

- **PDKU and PEKU:** Assign all PDKU and PEKU PCBs, starting with **slot 01** and continuing in numerical order without skipping slots until all PDKU and PEKU PCBs are assigned.
- **PSTU:** Assign all PSTU PCBs, starting with the **lowest numbered empty slot** and continuing without skipping slots until all PSTU PCBs are assigned.
- **PESU:** Assign all PESU PCBs, starting with the **lowest numbered empty slot** and continuing without skipping slots until all PESU PCBs are assigned.
- **PCOU:** Assign all PCOU PCBs, starting with the **lowest numbered empty slot** and continuing without skipping slots until all PCOU PCBs are assigned.
- **PEMU:** Assign all PEMU PCBs, starting with the **lowest numbered empty slot** and continuing without skipping slots until all PEMU PCBs are assigned.
- **PIOU/PIOUS/PEPU:** Assign the PIOU, PIOUS, or PEPU PCBs in **slot 06** of DK24, in **slot 08** of DK56, or in **slot 14** of DK96.

NOTE:

The same code (41) is used for either PIOU, PIOUS, or PEPU.

4.14 PCB Option Assignments—Some PCBs may have subassembly options (PCTU/CRCU, PIOU(S)/IMDU, PEKU/EOCU, PESU/EOCU) or special peripheral equipment (PDKU/DDSS, PEKU/DSS, PEKU/HDCB, PESU/HDCB) connected to selected ports. These options require special PCB identification codes in **Program 03**; therefore, it is necessary to record each option (in the options row) on the record sheet.

- **CRCU:** If the PCTU is to be equipped with a CRCU, record the CRCU-4 or CRCU-8 under the PCTU slot. A special PCB code is required for the PCBs that support the CRCU option.
- **EOCU:** If a PEKU is required to support off-hook call announce, record EOCU under the appropriate PEKU slots. A special PCB code is required for PEKU PCBs that support the EOCU option. An EOCU (OCA) will not function in slots 11 ~ 14 on DK96 and slots 05 and 06 on DK24 with PCTUS1.

INSTALLATION-CONFIGURATION

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NOTE:

The above also applies when the EOCU is installed on a PESU PCB.

- **DSS:** If a PEKU is required to support a DSS console, record DSS1, DSS2, DSS3, and/or DSS4, as needed, under the appropriate PEKU slots. Start with DSS1 in the lowest DSS-supporting PEKU slot, and continue, as required, to DSS4 in the highest PEKU slot that is to support a DSS console. A special PCB code is required for PEKU PCBs that support the DSS console option (refer to DSS console hardware configuration notes at the end of this section).

NOTE:

The above also applies when connecting DDSSs to PDKU PCBs.

- **HDCB:** If a PEKU is required to support a door phone control box, record HDCB 04, HDCB 12, HDCB 20, and HDCB 28 under the appropriate PEKU slots. Start with HDCB 04 in the first PEKU slot, and continue without skipping a PEKU slot, as required, to HDCB 28 in the fourth PEKU slot. A special PCB code is not required for PEKU PCBs that support the HDCB option (refer to door phone hardware configuration notes at the end of this section).

NOTE:

The above also applies when HDCBs are connected to PESU PCBs.

- **IMDU:** If the PIOUS is to be equipped with a remote maintenance modem, record IMDU under the PIOUS slot. A special PCB code is not required for PIOUS PCBs that support the IMDU option.

NOTE:

The above also applies when the IMDU is installed on a PIOUS PCB.

- **PDIU-DS:** If one or more PDIU-DS is connected to a PDKU, record the port it interfaces with under the appropriate PDKU slot. A special PCB code is not required for PDKUs that support PDIU-DSs.

- **PDIU-DI:** If a PDIU-DI is connected to a digital telephone, the PDIU-DI and the digital telephone will share the same PDKU station port. A special PCB code in **Program 03** is not required for PDKU PCBs that support digital telephones with PDIU-DIs.

4.15 PCB Code Assignments—Each PCB type has an identification code that must be entered in **Program 03**. If the PCB supports an option, a special PCB code may have to be entered to identify the PCB plus the option. Record the appropriate PCB code in the PCB code row of the **Program 03** record sheet. Use the sequential order shown below:

- **PCTU (1, 2, 3, or S):** Assign the appropriate PCB code (91, 92, or 93) to the PCTU slot:
 - PCB Code 91: PCTU without CRCU
 - PCB Code 92: PCTU with CRCU-4
 - PCB Code 93: PCTU with CRCU-8
- **PDKU:** Assign the appropriate PCB code (62 or 64) to all PDKU slots:
 - PCB Code 62: PDKU without DDSS
 - PCB Code 64: PDKU with DDSS
- **PEKU:** Assign the appropriate PCB code (21, 22, 23, or 24) to all PEKU slots:
 - PCB Code 21: PEKU without options
 - PCB Code 22: PEKU with EOCU
 - PCB Code 23: PEKU with DSS
 - PCB Code 24: PEKU with DSS and EOCU
- **PSTU:** Assign PCB code 31 to all PSTU slots.
- **PESU:** Assign appropriate PCB code (25 or 26) to all PESU slots:
 - PCB Code 25: PESU without EOCU
 - PCB Code 26: PESU with EOCU

NOTE:

A special code is not required for the HDCB if connected to a PEKU or PESU.

- **PCOU:** Assign PCB code 11 to all PCOU slots.
- **PEMU:** Assign PCB code 13 to all PEMU slots.
- **PIOUS/PIOUS/PEPU:** Assign PCB code 41 to the PIOUS, PIOUS, or PEPUS slot.

NOTE:

A special code is not required for the IMDU if equipped on the PIOUS or PIOUS.

4.16 Station Port Assignments—Station ports are provided by the PDKU, PEKU, PSTU, and PESU PCBs. Each PDKU, PEKU, or PSTU PCB provides eight station ports. The PESU provides six functioning station ports, although it is allocated eight (see Paragraph 2.60). Each PEMU uses four or eight station ports to support TIE lines. Each of the PCBs must have station port numbers assigned. Record the station port numbers in the station port numbers row on **Program 03**'s record sheet. Record information for each slot equipped with a PDKU, PEKU, PSTU, PESU, or PEMU PCB in the order shown below:

- **PDKU and/or PEKU station ports:** Assign station port numbers, starting with ports 00 ~ 07 under **slot 01**, advancing incrementally at eight port numbers per PDKU and/or PEKU slot. Assign the numbers in numerical order until station ports are assigned to all PDKU and/or PEKU slots.
- **PSTU station ports:** Assign station port numbers, starting where the last station port number stopped, advancing incrementally at eight port numbers per PSTU slot. Assign the numbers in numerical order until station ports are assigned to all PSTU slots.
- **PESU station ports:** Assign station port numbers, starting where the last station port number stopped, advancing incrementally at eight port numbers per PESU slot. Assign the numbers in numerical order until station ports are assigned to all PESU slots.

NOTE:

PESU circuits 1 and 2 are standard telephone ports; 3 and 4 are not used but allocated to the PESU slot, and circuits 5 ~ 8 are electronic telephone ports.

- **PEMU station ports:** Assign station port numbers, starting where the last station port number stopped, advancing incrementally at four port numbers per PEMU slot. Assign the numbers in numerical order until station ports are assigned to all PEMU slots.

NOTE:

If a PEMU is installed in a PCTUS1-controlled DK24, only 16 station ports will be available for

station interface using PDKU, PEKU, PESU, and PSTU PCBs. If it is installed in a PCTU (1, 2, or 3)-controlled DK24, 24 stations will be available, because of power supply capacity.

4.17 CO Line Number Assignments—Line circuits are provided by the PCOU and PEMU PCBs. Each PCOU provides four line circuits for CO loop start line connections, and each PEMU provides four line circuits to support TIE lines (each of the PCBs must have line numbers assigned). Record CO line numbers in the CO/TIE line numbers row on **Program 03**'s record sheet. Record information for each slot equipped with a PCOU or PEMU in the order shown below:

- **PCOU line numbers:** Assign CO line numbers, starting with lines 01 ~ 04 in the lowest numbered PCOU slot, advancing incrementally at four line numbers per PCOU slot. Assign the numbers in numerical order until CO lines are assigned to all PCOU slots.
- **PEMU line numbers:** Assign TIE line numbers, starting with the next line above the highest PCOU line, advancing incrementally at four line numbers per PEMU slot.

4.18 PCB Additions—To add PCBs to an existing installation, assign the PCBs in the order described above. *Start with the lowest numbered empty slot and continue without skipping a slot* until all PCBs are assigned. Then, using the guidelines described above, record the new PCB configuration information on the record sheet for **Program 03**.

NOTE:

PEMU PCBs should be first moved to higher slot numbers to create the necessary number of empty slots for additions. Be sure to reprogram for the new PEMU positions, including new station number assignments for the PEMU(s).

4.20 Door Phone Hardware Configuration Notes

- A maximum of 12 door phones are allowed per system with PCTU (1, 2, or 3) and nine with PCTUS1. Each door phone must be connected to an HDCB.
- A maximum of three door phones may be con-

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nected to one HDCB.

- A maximum of four HDCBs are allowed per system with PCTU(1, 2, or 3) and three with PCTUS1.
- One PEKU or PESU circuit, always circuit number 5, is required per HDCB. PDKU does not support the HDCB.
- HDCBs can only be connected to PEKU or PESU port numbers 04, 12, 20, and 28.
- Always install HDCBs to PEKU or PESU PCBs that are in lower slot numbers than PEMU PCBs. This is required to maintain alignment of PEKU and/or PESU circuit 5 and PEKU and/or PESU port numbers 04, 12, 20, and 28.
- HDCBs do not require a special PCB code in **Program 03**.
- HDCB assignments are found in **Programs 77-1, 77-2, and 79**.
- Door phones can be programmed to ring at any digital and electronic telephone (no limit within the system).
- Door phones do not ring standard telephones.
- Cut **W9** on all PEKUs and PESUs that support an HDCB.

4.30 DSS/DDSS Console Hardware Configuration Notes

- A maximum of four DDSS consoles or four DSS consoles (or any combination up to four) is allowed per system with PCTU(1, 2, or 3) and three with PCTUS.
- DDSS consoles operate with PCTU3 only, while DSS consoles operate with PCTU1, 2, or 3 or PCTUS.
- DDSS consoles normally operate in conjunction with digital telephones. Each DDSS console is assigned to an associated digital telephone (on circuit 1 of the same PDKU), which in turn are referred to as a DDSS/attendant telephone.
- DSS consoles normally operate in conjunction with electronic telephones. Each DSS console is assigned to an associated electronic telephone (on circuit 1 of the same PEKU), which in turn are referred to as a DSS/attendant telephone.
- DDSS consoles will operate with electronic telephones and DSS consoles will operate with digital telephones.
- One PDKU PCB is required for each DDSS/

attendant telephone.

- One PEKU PCB is required for each DSS/attendant telephone.
- DDSS consoles are always connected to PDKU circuit 8, and the associated digital telephone is always connected to PDKU circuit 1 (for a total of two PDKU ports per DDSS console/attendant telephone).
- DSS consoles are always connected to PEKU circuits 7 and 8, and the associated attendant telephone is always connected to PEKU circuit 1 (for a total of three PEKU ports per DSS console/attendant telephone).
- PDKU/DDSS slots are identified and assigned in **Program 03** with special PCB code 64 (refer to Figure 4-2).
- PEKU/DSS slots are identified and assigned in **Program 03** with special PCB codes 23 or 24 (refer to Figure 4-2).
- DSS consoles and attendant telephones are automatically assigned as DSS1/ATT1, DSS2/ATT2, DSS3/ATT3, or DSS4/ATT4, starting with the lowest DSS/PEKU slots and continuing, in consecutive order, to the highest DSS/PEKU slot (this also applies to DDSS consoles and attendant telephones).
- Each DSS console is assigned to the attendant telephone connected to the same PEKU PCB supporting that DSS console; however, DSS consoles may be flexibly reassigned (in **Program 28**) to any of the designated attendant telephones allowing a maximum of four DSS consoles assigned to one attendant telephone (this also applies to digital telephones).
- DSS console buttons may be flexibly assigned (in **Program 29**) as CO line buttons, DSS (hot line) buttons, and speed dial buttons.

4.40 Data Interface Unit (DIU) Configuration Notes

- The integrated data interface unit (PDIU-DI) shares the same wire pair and PDKU station circuit with the digital telephone to which it is connected. The PDIU-DI requires a PCTU3 control PCB. The PDIU-DI capacity is shown in Table 4-B.
- The PDIU-DI is a DCE type device that normally connects to a personal computer serial commu-

nications port or ASCII terminal.

- The stand-alone data interface unit (PDIU-DS) requires one PDKU station circuit and one or two pair of wires (see Chapter 9 for wiring information). PDIU-DS capacity is shown in Table 4-B.
- PDIU-DSs may be configured as a DTE or DCE type device and connect to modems, printers, or host mainframe computers.

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DK 96 (Top Shelf)

SLOT NO.	01	02	03	04	05	06	07	08
PCB CODE	23	24	24	23	64	62	31	11
PCB TYPE	PEKU	PEKU	PEKU	PEKU	PDKU	PDKU	PSTU	PCOU
OPTIONS	DSS1/ATT1 HDCB 04	DSS2/ATT2 HDCB 12 EOCU(5)	DSS3/ATT3 EOCU(6)		DDSS4/ ATT4 PDIU-DI (1-6)	PDIU-DS (4 and 5)		
STA. PORT NO.s	00 ~ 07	08 - 15	16 - 23	24 - 31	32 - 39	40 - 47	48 - 55	—
CO/TIE LINE NO.s	—	—	—	—	—	—	—	01-04

**DK 96
(Bottom Shelf)**

SLOT NO.	00	09	10	11	12	13	14
PCB CODE	92	11	11	25	13	00	41
PCB TYPE	PCTU	PCOU	PCOU	PESU	PEMU		PIDU
OPTIONS	CRCU4						IMDU
STA. PORT NO.s	—	—	—	56-63	64-67		—
CO/TIE LINE NO.s	—	05-08	09-12	—	13-16		—

**PCB CODE
Reference Table**

PCB	CODE	PORTS/TYPE
PCTU	91	NONE
PCTU CRCU4	92	NONE
PCTU CRCU8	93	NONE
PIOU/PIOUS PEPU	41	NONE
PEKU	21	8/STA.
PEKU EOCU	22	8/STA.
PEKU w/DSS	23	8/STA.
PEKU EOCU w/DSS	24	8/STA.
PSTU	31	8/STA.
PCOU	11	4/CO
PEMU	13	4/CO 4/STA.
NONE	00	NONE
PESU	25	8/STA.
PESU EOCU	26	8/STA.
PDKU	62	8/STA.
PDKU w/DDSS	64	8/STA.

FIGURE 4-2—HARDWARE CONFIGURATION EXAMPLE

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CHAPTER FIVE KSU INSTALLATION

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1 GENERAL

1.00 This chapter provides the procedures necessary to install the DK KSUs. The chapter includes mounting considerations, grounding instructions, and instructions to test the power supply. Instructions to remove and replace the power supply are also provided.

2 KSU INSTALLATION

2.00 The KSU may be either wall-mounted or table-top mounted. The following paragraphs provide procedures for both mounting options.

2.01 To optimize airflow and ventilation:

- Ensure that the installation site provides the minimum clearances specified in Installation Site Requirements, Section **200-096-203**, Paragraph **3**.
- Do not block the ventilation holes at the rear and both sides of the KSU.

2.10 Wall Mounting

- 1) Install the three wall-mounting brackets (packed in the shipping carton with the KSU) on the rear of the KSU in both upper corners, and at the bottom center. Secure each bracket to the KSU with the back panel screws and the screws supplied with the brackets (see Figure 5-1).

NOTE:

The KSU back panel should not be removed.

- 2) Mark the appropriate mounting screw locations on the wall by using Figure 5-1, or hold the KSU against the wall at the selected mounting location. Mark the positions of the holes in the flat part of each mounting bracket where they contact the wall. Mounting screws will be installed at these locations.

NOTE:

Wall anchors are required for dry-wall surfaces where studs do not align with the mounting screw locations (see Figure 5-6).

- 3) Install two 1.25-inch long panhead wood screws approximately half way into the wall at the upper mounting bracket locations.

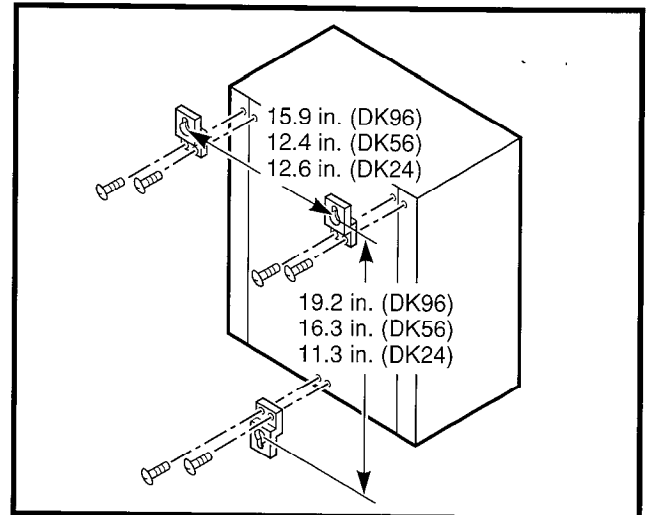


FIGURE 5-1

WALL MOUNTING BRACKET INSTALLATION

- 4) Hang the KSU from the top two mounting screws.
- 5) Install a third 1.25-inch panhead wood screw through the hole in the bottom mounting bracket.
- 6) Tighten the three mounting screws firmly to secure the KSU to the wall.

2.20 Table-top Mounting

2.21 Table-top mounting requires no special installation procedures. However, it is suggested that the top wall-mounting brackets be installed to ensure adequate ventilation at all times.

NOTE:

Do not install the KSU directly on the floor.

2.30 KSU AC Power and Ground

2.31 Ensure the system AC power and earth ground complies with the requirements listed in Installation Site Requirements, Section **200-096-203**, prior to connecting the AC power plug.

NOTE:

The AC power must be dedicated to the KSU. Do not use power/ground intended for another piece of equipment.

2.32 Ensure that **SG/FG** and **LG/FG** ground straps are installed.

3 POWER SUPPLY TEST PROCEDURE

3.00 Perform the power supply test procedure with all PCBs removed from the KSU.

NOTE:

Refer to System Description, Section 200-096-202, for illustrations and descriptions of KSU controls and indicators.

- 1) Plug the AC power cable into the **AC IN** connector and to the AC wall socket.

NOTE:

The DK24 power cable is permanently connected to the power supply.

- 2) Lightly press all power supply circuit breakers to ensure they have not accidentally opened during shipment.
- 3) Set the power supply power switch to **ON**. Ensure that the power supply indicators light as follows:

- **DK24:**

- **POWER** indicator
- **-24V** indicator
- **+5V** indicator
- **-5V** indicator
- **-24V₁ ~ V₂** (circuit breakers)

- **DK56:**

- **POWER** indicator
- **+5V** indicator
- **-5V** indicator
- **-24V₁ ~ V₃** (circuit breakers)

- **DK96:**

- **POWER** indicator
- **-5V** indicator
- **+5V₁** indicator
- **+5V₂** indicator
- **-24V₁ ~ V₅** (circuit breakers)

- 4) Using a multimeter (set to the appropriate range), measure the voltages at the pins of the **DC OUT** connector for DK56/DK96 or the **P1** backplane connector for DK24 as shown in Figures 5-2, 5-3, or 5-4. Ensure that the voltages fall within the ranges specified. If a measured voltage falls outside of the acceptable range, remove the DC power plug from the power supply **DC OUT** connector (DK56/96) or **P1** backplane con-

connector (DK24) and measure again. If a measured voltage is still unacceptable, replace the power supply (refer to Paragraph 4).

DC Voltage	Range Specifications
-24V:	-26.3 ~ -27.8
-5V:	-4.5 ~ -5.5
+5V:	+4.5 ~ +5.5

3.01 To test the power supply voltages with all circuit boards installed, install the circuit boards and then use the procedure in Paragraph 3.00 for the PPSU56/96, but follow the four steps below to test the PPSU24.

- 1) Loosen the four screws holding the panel on the back of the KSU.
- 2) Lift the panel up and pull it off of the KSU.
- 3) On the lower left side of the backplane PCB (PMB-824), the test points for the various voltages are marked. Refer to Figure 5-5.
- 4) Using the multimeter (set to the appropriate range), measure the voltages at the designated test points.

NOTE:

The multimeter test probes must have sharp tips to penetrate solder mask on backplane PCB.

4 POWER SUPPLY REMOVAL AND REPLACEMENT

4.00 The following paragraphs provide procedures necessary to remove and replace faulty power supplies.

4.10 Power Supply Removal

4.11 DK24. Refer to Figure 5-2 and remove the power supply in accordance with the following steps:

- 1) Remove screws (2) on right side of the KSU.
- 2) Slide the power supply out and gently remove it from the KSU.

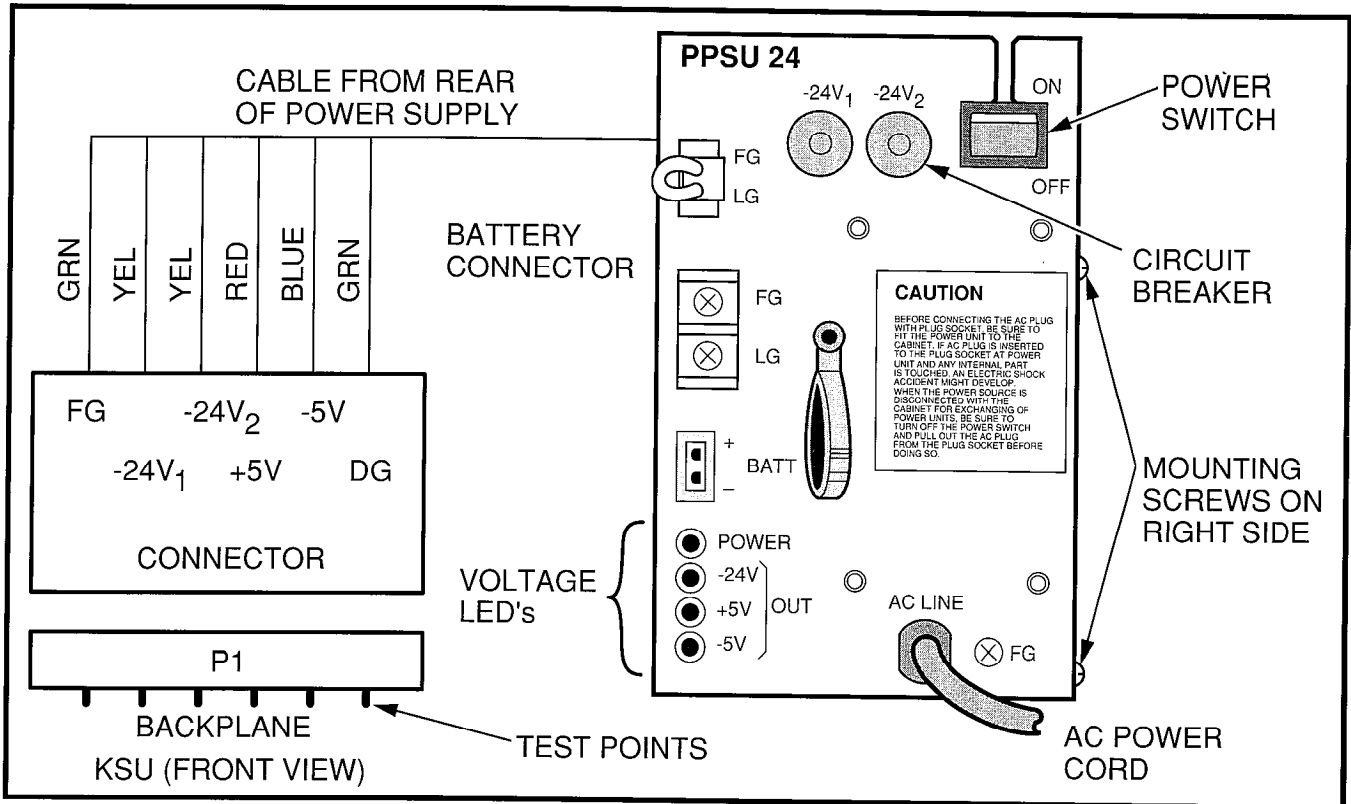


FIGURE 5-2—PPSU24 FRONT PANEL AND DC OUT TEST POINTS

3) Reach behind the power supply and disconnect the cable at the **P1** backplane connector

4.12 DK56/96. Refer to Figures 5-3 and 5-4 and remove the power supply in accordance with the following steps:

- 1) Squeeze the locking tab on the **DC OUT** plug, and remove the plug from the **DC OUT** connector.
- 2) Remove the four combination slotted/Phillips mounting screws from the power supply front panel.
- 3) Slide the power supply out.

4.20 Power Supply Replacement

4.21 DK24 Refer to Figure 5-2 and replace the PPSU24 in accordance with the following steps:

- 1) Slide the power supply partially in to the right end of the PCB slot shelf.

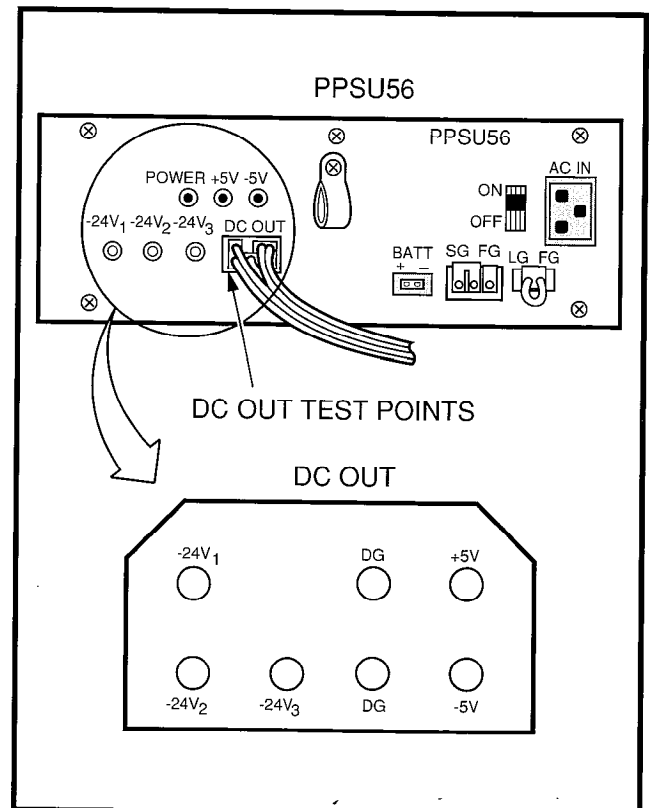


FIGURE 5-3—PPSU56 FRONT PANEL AND DC OUT TEST POINTS

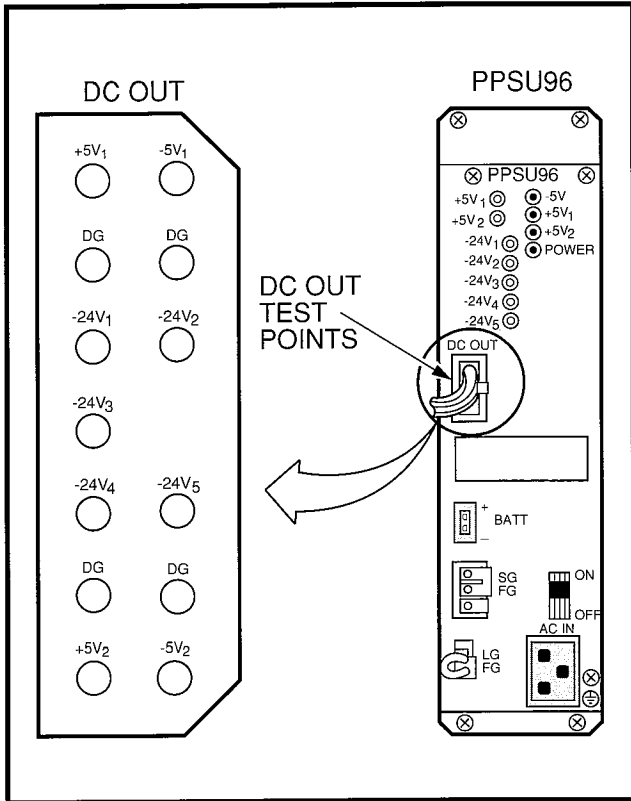


FIGURE 5-4—PPSU96 FRONT PANEL AND DC OUT TEST POINTS

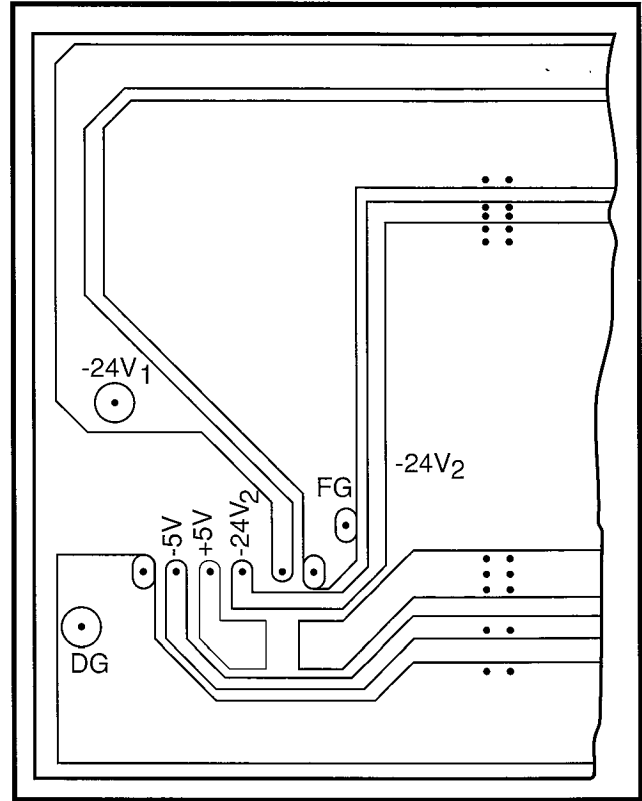


FIGURE 5-5—LOWER LEFT OF DK24, BACKPLANE PCB (PMB-824)

- 2) Reach behind the power supply, and connect the cable from the rear of the power supply into connector **P1** on the KSU backplane.
- 3) Slide the power supply completely into the slot and secure it with screws (2) on the right side of the KSU.

4.22 DK56/96. Refer to Figures 5-3 or 5-4, and replace the power supply in accordance with the following steps:

- 1) Slide the new power supply into the opening in the KSU.
- 2) Align the mounting screw holes on the power supply's front panel with the holes in the KSU's power supply mounting bracket.
- 3) Secure the power supply with the four combination slotted/Phillips screws.
- 4) Insert the **DC OUT** cable plug into the **DC OUT** connector (this is a keyed plug that can only be

inserted one way). Insert the plug into the connector until its locking tab engages.

5 CIRCUIT BREAKER DISTRIBUTION

5.00 Refer to Fault Finding, Section **200-096-500**, Tables B, C, and D for circuit breaker distribution.

6 VOLTAGE TROUBLESHOOTING

6.00 Refer to Fault Finding, Section **200-096-500**, Paragraph 6, for voltage troubleshooting.

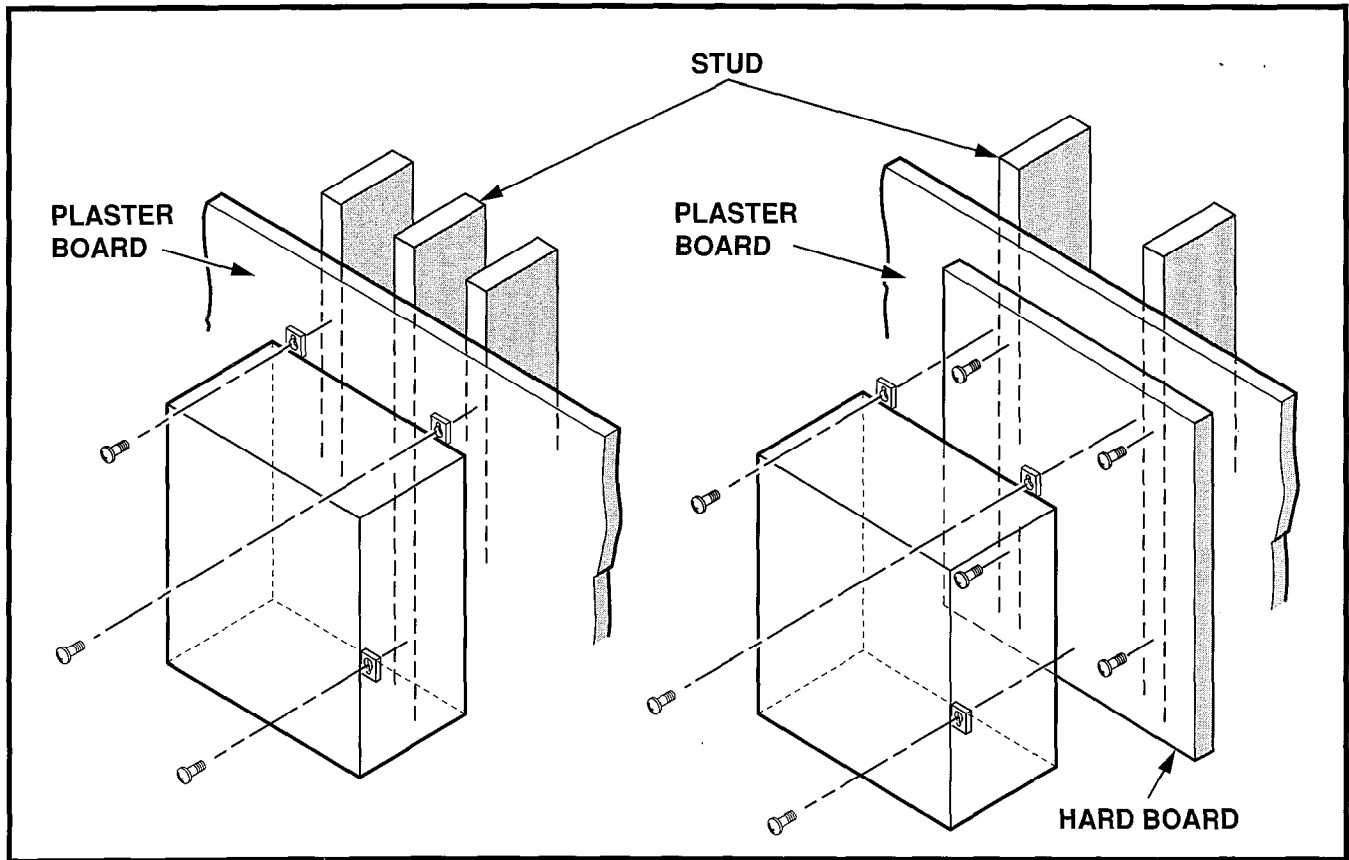


FIGURE 5-6—KSU WALL MOUNTING

NOTE:

If mounting the KSU directly to a wall, be sure to align screws with studs behind the wall; if using a hard board between the KSU and the wall, install screws first to hard board, and then secure hard board to the wall, making certain that screws are aligned with studs.

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RELEASE 1, 2, and 3 INSTALLATION

CHAPTER SIX PRINTED CIRCUIT BOARD INSTALLATION

IMPORTANT!

It is strongly advisable to install PCBs in the positions and the manner specified in Paragraph 2.10.

IMPORTANT INITIAL INSTALLATION NOTES:

These minimum installation steps must be carried out for proper system operation.

- 1. Set PCTU jumper plug for BATTERY OPERATION; otherwise, all programmed customer data will be lost on power down.*
- 2. Place PEPU, PIOUS, or PIOUS PCB in highest slot number of KSU.*
- 3. Place all other PCBs in KSU from lowest slot number to highest in the following order:
PCTU or PCTUS
PEKU or PDKU (starting at Slot 01)
PSTU/PSTU2
PESU
PCOU/PCOU2
PEMU*
- 4. Run Program 90. Initialize Programs 00 ~ 97, and turn power OFF for 5 seconds, then turn power back ON.*
- 5. Run Program 92.*
- 6. Enter the hardware configuration with Program 03, exit the programming mode, and turn power OFF for 5 seconds, then turn power back ON.*

WHEN LATER ADDING KSU PCBs:

- 1. Move PEMU PCBs to a higher slot number to create empty slots for additions.*
- 2. Install new PCBs and reprogram with Program 03. Change PEMU station numbers or reassign stations.*
- 3. Program new features, options, etc. created by new additions.*

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1 GENERAL

1.01 This chapter provides procedures for installation of STRATA DK system printed circuit boards (PCBs). This includes installation instructions, PCB optional configuration information, and wiring and programming considerations for each PCB.

1.02 Begin PCB installation only after completion of KSU installation.

NOTE:

Be sure the power supply has been tested, and the ground has been checked.

2 PCB INSTALLATION OVERVIEW

2.01 STRATA DK system KSUs are shipped with only the power supply installed. No PCBs are included. PCBs must be installed in accordance with the configuration information obtained and developed in System Configuration, Section **200-096-204**.

2.10 PCB Installation Considerations

2.11 The PCTU or PCTUS1 (DK24 only) PCB must be installed in the PCTU slot. PCB slots S01 ~ S06 (DK24), PCB slots S01 ~ S08 (DK56), and PCB slots S01 ~ S14 (DK96) are universal; any of the optional PCBs may be installed in any available slot, as long as the system is programmed to recognize the chosen configuration. However, it is recommended that station PCBs (PEKUs, PSTUs, PESUs), and CO line/E & MTIE line PCBs (PCOUs and PEMUs) be installed in a certain order. Use of these configuration recommendations will reduce reprogramming in future system expansion, and keep the system station and CO line numbering scheme simple.

2.12 DK24/56/96 PCB Configuration Recommendations. First install station PCBs (PEKU, PSTU, and PESU) from left to right and then CO line/E & M TIE line PCBs (PCOUs and PEMUs) from left to right, and optional PCBs (PIOU, PIOUS or PEPU) from right to left, so that vacant slots are in the middle.

2.20 Recommended Universal PCB Slot Assignments

2.21 The following steps describe the recommended installation order and slot assignments for STRATA DK system station, line, and peripheral PCBs. Installation order is the same for all systems.

- 1) Install all PEKU PCBs, from left to right, starting with slot 01. Do not skip slots.
- 2) Then install all PSTU PCBs, from left to right, starting with the lowest numbered empty slot. Do not skip slots.
- 3) Then install all PESU PCBs, from left to right, starting with the lowest numbered empty slot. Do not skip slots.

NOTE:

Normally, one PESU is installed instead of a PEKU or PSTU in configurations that require less than three standard telephone ports or less than five electronic telephone ports.

- 4) Then install all PCOU PCBs, from left to right, starting with the lowest numbered empty slot. Do not skip slots.
- 5) Then install all PEMU PCBs, from left to right, starting with the lowest numbered empty slot. Do not skip slots.
- 6) Install a PIOU, PIOUS, or PEPU in the last slot (slot 06 in DK24, slot 08 in DK56, or slot 14 in DK96).

2.30 Station and Line Expansion

2.31 If station or line PCBs (PEKU, PSTU, PESU, PCOU, and/or PEMU) must be added to an existing installation, install the PCBs in the order recommended in Paragraph **2.20**, starting with the lowest numbered empty slot. For example, if it is necessary to add eight standard telephones and four CO lines, install a PSTU PCB in the lowest numbered empty slot and then a PCOU PCB in the next empty slot. Do not skip slots.

2.32 If PEKU, PSTU, PESU and/or PCOU PCBs are added, it is advisable to move any PEMU PCBs to the right to make room for the new PCBs.

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NOTE:

For initial system programming, install an electronic telephone station PCB (PEKU) in slot 01, and connect a 20-button LCD electronic telephone to port 05. It is suggested that a live telephone not be connected to port 05 to avoid accidentally entering the programming mode.

2.40 PCB Option Considerations

2.41 STRATA DK PCBs may be configured for a variety of hardware and software options. Hardware options are defined as either internal (generally related to optional PCB subassemblies) or external (related to connection of peripheral equipment such as background music, voice mail, etc). Hardware and software options for each PCB are identified in the individual PCB installation procedures in this chapter.

2.42 PCB Hardware Options. Each PCB must be configured for the applicable hardware options prior to installation of the PCB in the KSU. Configuration instructions for internal hardware options are provided in the individual PCB installation procedures in this chapter. Configuration instructions for external hardware options are provided in Peripheral Installation, Section **200-096-208**.

2.43 PCB Software Options. PCBs are configured for software options through programming, after installation of the PCBs in the KSU. A programming overview for each PCB is provided in the individual PCB installation procedures in this chapter. Refer to the Programming Procedures, Section **200-096-300**, for detailed programming instructions.

2.50 PCB Installation Power Supply Considerations

2.51 Whenever removing or installing PCBs, observe the following requirements:

- 1) The power supply **must** be OFF whenever removing or installing the PCTU PCB.
- 2) It is recommended that the power supply be

OFF, whenever possible, when removing or installing PEKU, PSTU, PESU, PCOU, PEMU, PIOU, PIOUS, and PEPU PCBs.

**3 COMMON CONTROL UNIT
(PCTU OR PCTUS1)**

3.00 General

3.01 The Common Control Unit (PCTU) PCB provides centralized control for the KSU. The PCTU incorporates a 68000-type microprocessor and contains custom time switch and conference LSI circuitry. One PCTU must be installed in STRATA DK24, DK56, and DK96 models.

3.02 There are three PCTU versions (PCTU1, PCTU2, and PCTUS1). The capacity and/or function of each PCTU model is different, so it is important to use the correct PCTU in each DK system.

3.03 PCTU1/PCTU2 is intended for use with DK56/96, but may also be used in DK24. The PCTUS1 may **only** be used in DK24. The detailed differences between the PCTU versions are described in Paragraph **6.10** and Table 2-B of Section **200-096-202**.

NOTE:

Any further reference to the PCTU in this section applies to PCTU1, PCTU2, AND PCTUS1.

3.04 The PCTU may be equipped with an optional 4- or 8-circuit DTMF receiver (CRCU-4 or CRCU-8), allowing the PCTU to receive tone dialing. DTMF signals transmit from DISA, CO lines, TIE lines and PSTU/PESU standard ports, and the PCTU converts these signals to digital data for the STRATA DK system CPU.

3.05 PCTU and PCTUS1 controls, indicators, and interface connectors are shown in Figures 6-1 and 6-2 and described in Table 6-A.

3.10 PCTU Hardware Options

3.11 The PCTU supports the following hardware options:

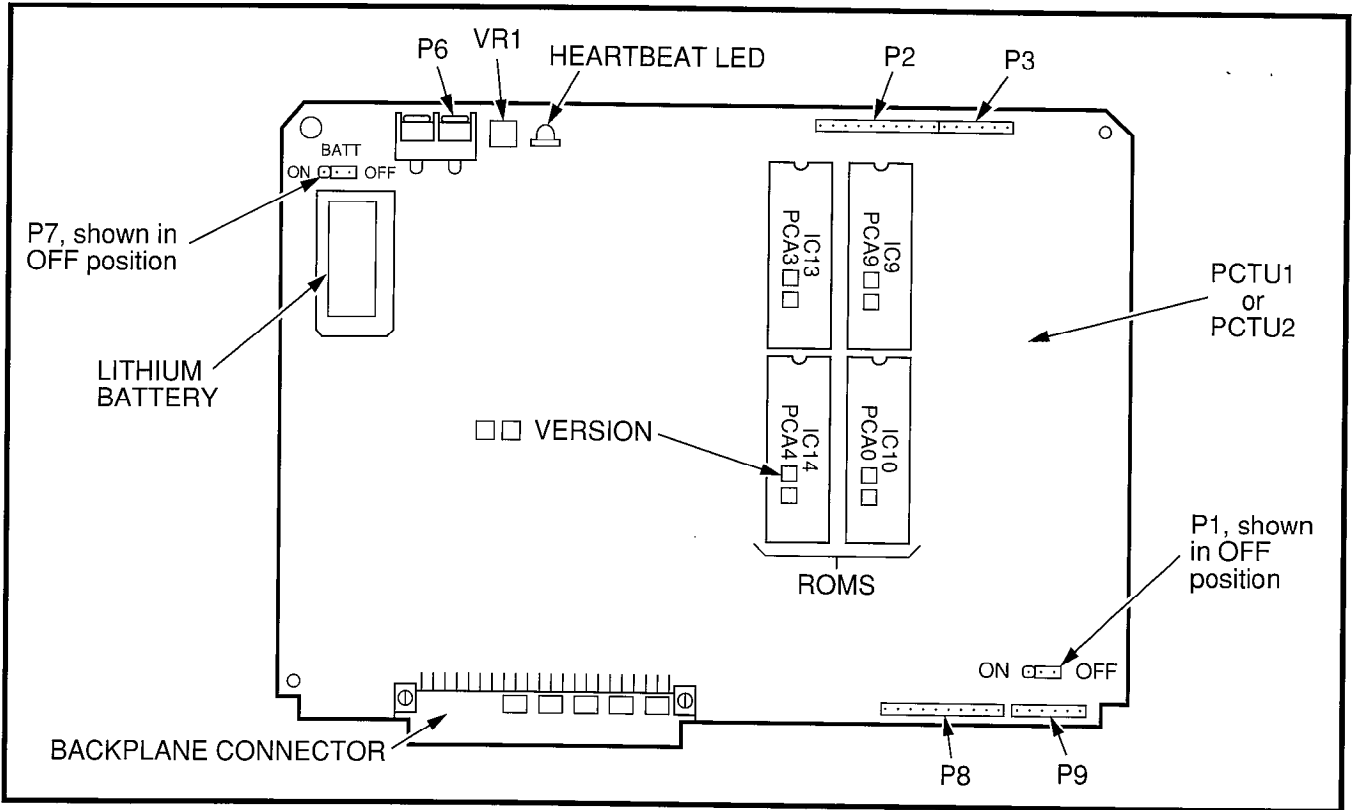


FIGURE 6-1—PCTU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

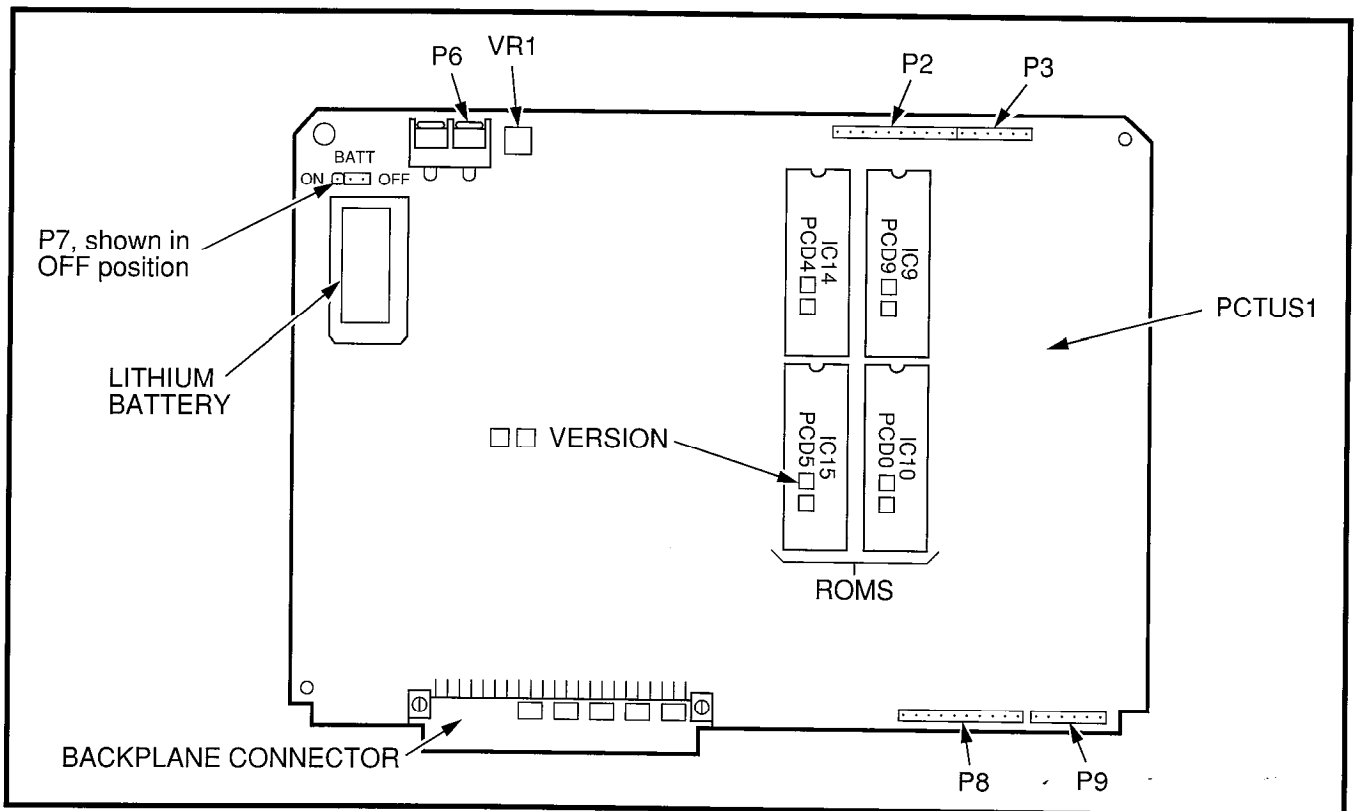


FIGURE 6-2—PCTUS1 CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

TABLE 6-A
PCTU AND PCTUS CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

CONTROL/INDICATOR/ CONNECTOR (Figures 6-1 & 6-2)	TYPE OF COMPONENT	DESCRIPTION
PCTU ON/OFF Jumper P1	Three-terminal jumper plug	Enables PCTU (1 & 2 only) PCB for operation. Should always be in ON position.
DTMF Receiver Connector P2	10-pin connector	Interface connector for optional DTMF Receiver P2 Unit subassembly (used in conjunction with P3, P8, and P9).
DTMF Receiver Connector P3	6-pin connector	Interface connector for optional DTMF Receiver P3 Unit subassembly (used in conjunction with P2, P8, and P9).
MOH/BGM Music Source Connector P6	Two-terminal connector	Interface connector for Music-on-Hold (MOH)/Background Music source.
BATT Battery Strap P7	Three-terminal jumper plug	Interface connector for on-board lithium battery that protects configuration data stored in system RAM.
DTMF Receiver Connector P8	10-pin connector	Interface connector for optional DTMF Receiver P8 Unit subassembly (used in conjunction with P2, P3, and P9).
DTMF Receiver Connector P9	6-pin connector	Interface connector for optional DTMF Receiver P9 Unit subassembly (used in conjunction with P2, P3, and P8).
MOH/BGM Music Source Volume Control VR1	Trim potentiometer	Adjusts volume for Music-on-Hold/Background Music feature.
Heartbeat Indicator	Red LED	Flashes to indicate operation (1/4-second on—1/4-second off); (PCTU1, 2, or 3 only).

- Internal Options
 - DTMF Receiver Unit, four circuit (CRCU-4)
 - DTMF Receiver Unit, eight circuit (CRCU-8)
- External Options
 - Music-on-Hold/Background Music (connected to **P6** and **VR1** level control)

NOTE:

Refer to *Peripheral Equipment Installation, Section 200-096-208*, for installation of external options.

3.12 DTMF Receiver Unit (CRCU-4 or CRCU-8)

Installation. Install the DTMF Receiver Unit (CRCU) in accordance with the following steps:

CAUTION!

Do not remove insulating shield from back of PCTU PCB. If shield comes off, do not allow the back of the PCB to contact metal.

- 1) Remove the PCTU and CRCU from their protective packaging.

NOTE:

PCTU connectors **P2**, **P3**, **P8**, and **P9** are positioned to allow installation of the CRCU (-4 or -8) only in the proper position.

- 2) Mate CRCU connectors **J1**, **J2**, **J3**, and **J4**

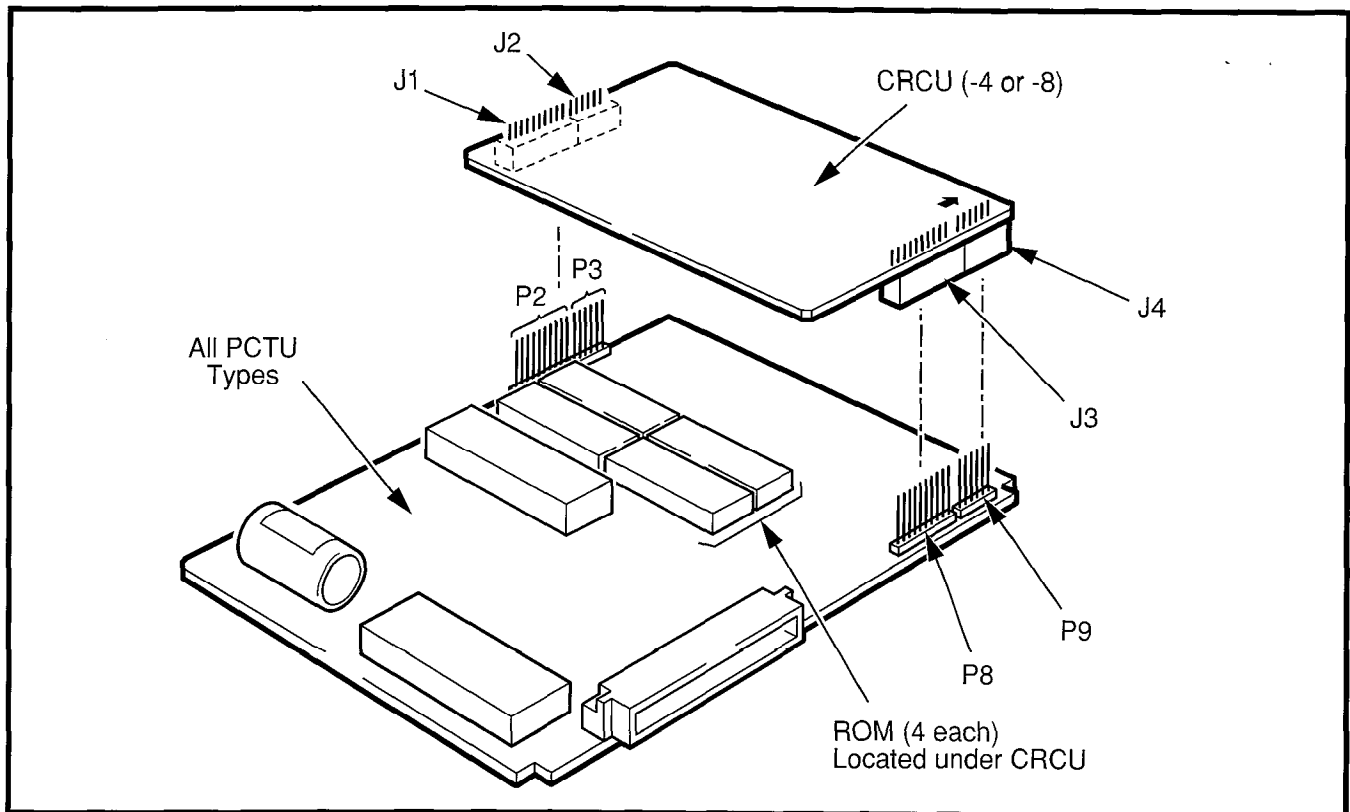


FIGURE 6-3—DTMF RECEIVER UNIT (CRCU) INSTALLATION

with PCTU connectors **P2**, **P3**, **P8**, and **P9** (refer to Figure 6-3).

- 3) Apply firm, even pressure to CRCU to ensure proper mating of connectors.

3.20 PCTU Installation Procedures

3.21 Install the PCTU in accordance with the following steps:

CAUTION!

Do not remove plastic insulating shield from back of PCTU PCB. If shield comes off, do not allow the back of the PCB to contact metal.

- 1) Remove the PCB from its protective packaging.
- 2) Set the PCTU **P1** switch to the **ON** position (PCTU,1 or 2 only, not on PCTUS1).
- 3) Set the PCTU **P7** battery strap (**BATT**) to the **ON** position.

NOTE:

*The PCTU is shipped from the factory with the **P7** battery strap in the **OFF** position. Ensure it is moved to the **ON** position when installing the PCTU to protect customer configuration information stored in the PCTU RAM.*

- 4) Ensure the PCTU has been configured for the appropriate hardware options (refer to Paragraph 3.10).

NOTE:

Ensure the PCTU's component side is facing right when installing it in the KSU.

IMPORTANT NOTE:

*The power supply must be **OFF** when installing the PCTU PCB.*

- 5) Insert the PCTU into slot 00, labeled **PCTU**, and apply firm, even pressure to ensure proper mating of connectors:
- 6) After installing the PCTU, gently pull the PCB

outward. If the connectors are properly mated, a slight resistance will be felt.

NOTES:

1. Do not adjust trimmer capacitor **C4**. The capacitor is factory-calibrated.
2. When transporting the PCTU, keep the **P7** battery strap in the **ON** position if it is desired to save the configuration data stored in PCTU RAM (the battery will protect RAM for approximately six years); otherwise, to conserve the lithium battery, move **P7** to the **OFF** position. When packaging the PCTU, use only a non-conductive material enclosure, such as plain paper. Conductive material can cause the internal battery to discharge and erase memory in the PCB.

3.30 PCTU Wiring

3.31 Refer to MOH/BGM Wiring Diagram, Section **200-096-208**, for PCTU wiring/interconnecting details.

3.40 PCTU Programming Overview

3.41 After initially installing a new and unused PCTU, all on-board RAM memory needs to be erased by running **Programs 90** and **92**. If RAM contains configuration or feature data from previous programming that should be retained, either do not run these programs or use them selectively. See the Programming Procedures, Section **200-096-300**.

3.42 The following parameters may be specified, through programming, for the PCTU:

Program 03

- Specify code 91 to indicate a normal PCTU.
- Specify code 92 or 93 to indicate a PCTU with DTMF Receiver Unit (CRCU-4 or CRCU-8, respectively) option installed.

NOTE:

Codes 91, 92, and 93 apply to both the PCTU and PCTUS1.

Program 12

- Select the seize time of the CRCU circuit.

4 ELECTRONIC TELEPHONE INTERFACE UNIT (PEKU)

4.00 General

4.01 The Electronic Telephone Interface Unit (PEKU) provides eight ports for electronic telephones. Depending on system configuration, DK24 can support up to four PEKUs with PCTU (1 or 2) and three PEKUs with PCTUS1; DK56 can support up to eight PEKU PCBs, and DK96 up to twelve PEKU PCBs.

4.02 The number of electronic telephones that can be connected to PEKU PCBs in a system depends on the series of telephones used. This is due to power capacity. It is recommended that the current 6500-series be used, because this series consumes the least amount of power. The maximum number of 6500-series electronic telephones allowed in DK24 is 32, in DK56 is 64, and in DK96 is 96. If using an electronic telephone series other than, or mixed with, the 6500-series, see the configuration chapter, Section **200-096-204**, worksheet 7.

4.03 The PEKU can be configured for Off-hook Call Announce (to receive OCA calls) by installing an Off-hook Call Announce Unit (EOCU). It can also be configured to support a DSS console, a Door Phone/Lock Control Box (HDCB), and an external Background Music (BGM) source connector. DSS consoles, HDCBs, and the BGM source, are wired directly to the PEKU and require no additional hardware, but do require specific ports/circuits.

4.04 PEKU controls and interface connectors are shown in Figure 6-4 and described in Table 6-B.

4.10 PEKU Hardware Options

4.11 The PEKU supports the following hardware options:

Internal Options

- Off-hook Call Announce Unit (EOCU)

External Options

- DSS console
- Door Phone/Lock
- BGM source connection

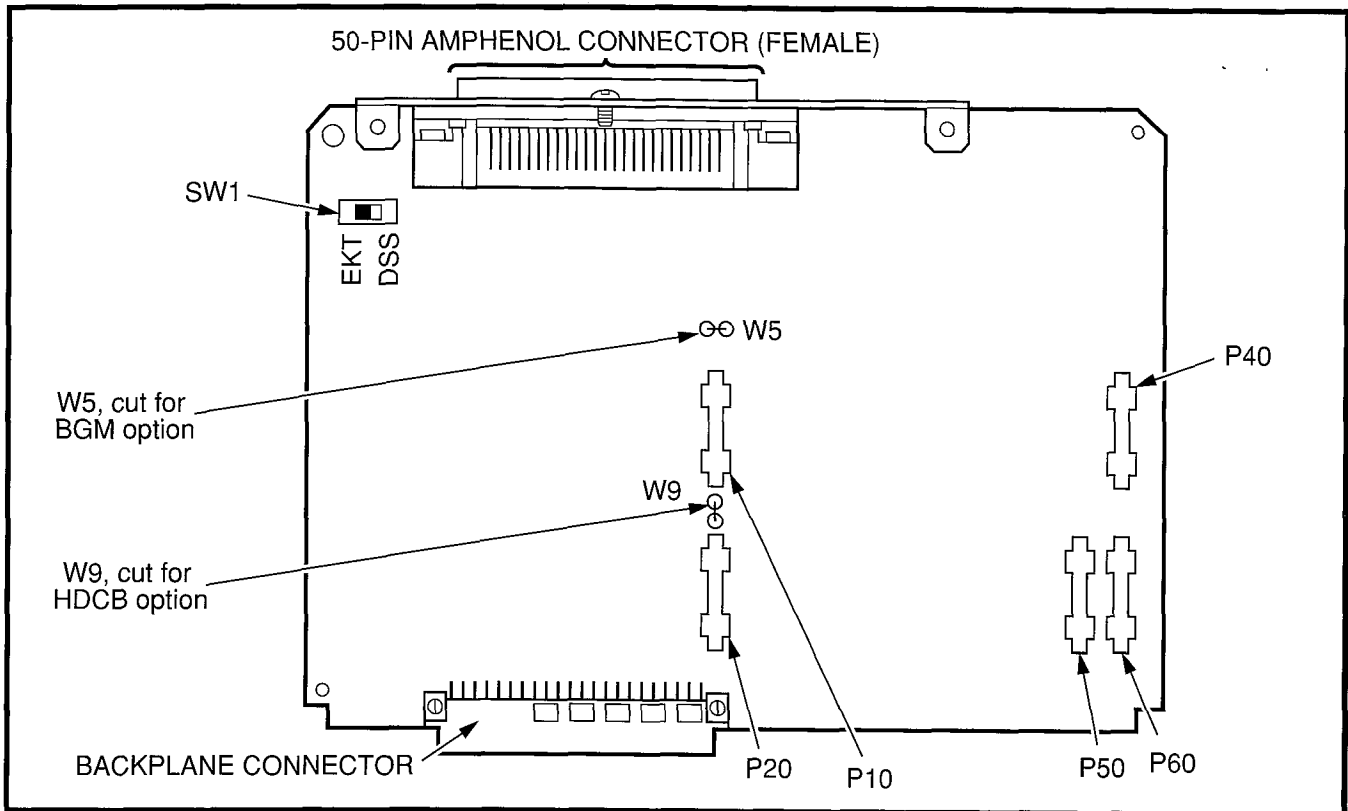


FIGURE 6-4—PEKU CONTROLS AND INTERFACE CONNECTORS

NOTE:

Refer to Telephone Installation, Sections 200-096-207 and 200-096-208, for installation of external options.

4.12 Off-hook Call Announce (EOCU) Installation. Install the Off-hook Call Announce Unit (EOCU) in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.

NOTE:

PEKU connectors **P10**, **P20**, **P40**, **P50**, and **P60** are positioned to allow installation of the EOCU only in the proper position (see Figure 6-4).

- 2) Mate EOCU connectors **J10**, **J20**, **J40**, **J50**, and **J60** with PEKU connectors **P10**, **P20**, **P40**, **P50**, and **P60** (refer to Figure 6-5).
- 3) Apply firm, even pressure to EOCU to ensure proper mating of connectors.

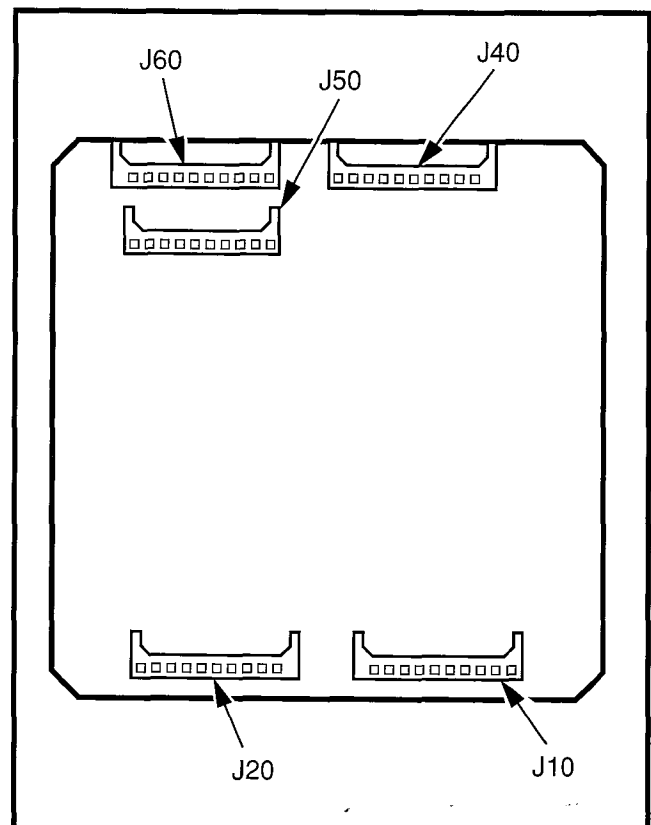


FIGURE 6-5—OFF-HOOK CALL ANNOUNCE UNIT (EOCU) INSTALLATION

TABLE 6-B
PEKU CONTROLS AND INTERFACE CONNECTORS

CONTROL/INDICATOR/ CONNECTOR (Figure 6-4)	TYPE OF COMPONENT	DESCRIPTION
Off-hook Call Announce P10	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P20, P40, P50, and P60).
Off-hook Call Announce P20	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P40, P50, and P60).
Off-hook Call Announce P40	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P50, and P60).
Off-hook Call Announce P50	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P40, and P60).
Off-hook Call Announce P60	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P40, and P50).
DSS/EKT DSS Console/ Electronic Telephone SW1 Switch	Two-position slide switch	Configures PEKU for operation with either a DSS console or electronic telephones.
Door Phone W9 Jumper Wire	White jumper wire	When cut, configures PEKU for installation of an optional HDCB.
BGM source connection W5 Jumper Wire	White jumper wire	When cut, configures PEKU for BGM source connection (PEKU must be installed in slot 01, port 02, circuit 3).

- 4) Use a 3-pair cable for making connections between the PEKU and the Off-hook Call Announce (OCA) electronic telephone. Refer to Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details.
- 5) Refer to Telephone Installation, Section **200-096-207**, for procedures to upgrade electronic telephones for OCA.

4.13 DSS Console Configuration. Configure the PEKU to support a DSS console in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.

- 2) Set the **SW1 DSS/EKT** switch to **DSS**.
- 3) Refer to Telephone Installation, Section **200-096-207**, for installation procedures for the DSS console. Each DSS console requires dedicated use of circuits 7 and 8 of a particular PEKU PCB.

4.14 Door Phone/Lock Configuration. Configure the PEKU to support a Door Phone and/or Door Lock in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) If an HDCB will be connected to the PEKU, cut

the **W9** Door Phone jumper wire on the PEKU PCB.

- 3) Refer to Telephone Installation, Section **200-096-207**, for installation procedures for the HDCB, control box and associated door phones (MDFBs).
- 4) Each HDCB requires dedicated use of circuit 5 of a particular PEKU PCB.

4.15 Background Music Configuration. Configure the PEKU to support a background music source in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Cut the **W5** (BGM) jumper wire on the PEKU PCB.
- 3) Refer to Peripherals Installation, Section **200-096-208**, for installation procedures for BGM connection.

NOTE:

The PEKU must be installed in slot 01 to allow a BGM connection.

- 4) In **Program 10-2**, set **LED 09 ON** to enable the PEKU (port 02) BGM source to be sent to electronic telephone speakers and/or PIOUS, PIOUS, PEPU PCBs.

4.20 PEKU Installation Procedures

4.21 Install the PEKU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Ensure the PEKU has been configured for the appropriate hardware options (refer to Paragraph **4.10**).

NOTE:

Ensure the PEKU's component side is facing right when installing it in the KSU.

- 3) Insert the PEKU into the appropriate slot (refer to Paragraph **2.12**), and apply firm, even

pressure to ensure proper mating of connectors.

- 4) After installing the PEKU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

4.30 PEKU Wiring

4.31 Refer to PEKU Wiring Diagrams, Section **200-096-290**, for wiring/interconnecting details.

4.40 PEKU Programming Overview

4.41 The following parameters may be specified, through programming, for the PEKU:

Program 03

- Specify code 21 to indicate a station line PEKU.
- Specify code 22 to indicate a PEKU configured for OCA.
- Specify code 23 to indicate a PEKU configured for a DSS console.
- Specify code 24 to indicate a PEKU configured for OCA and a DSS console.
- Door phones do not require a special code.

Program 10-2

- Used for BGM connection.

Programs 28 and 29

- Used for DSS assignments.

Programs 77-1 and 77-2

- Used for HDCB assignments.

5 STANDARD TELEPHONE INTERFACE UNIT (PSTU)

5.00 General

5.01 The Standard Telephone Unit (PSTU) provides an interface between standard telephones or two-wire devices and the system. Each PSTU PCB adds eight standard telephone lines to the system. There is no limit, other than the station size constraints of the PCTU PCB, to the number of PSTU PCBs that can be installed in the system.

NOTE:

For the system to recognize the DTMF tones generated by a standard telephone (or any other device connected to a PSTU port), a DTMF Receiver Unit (CRCU-4 or CRCU-8)

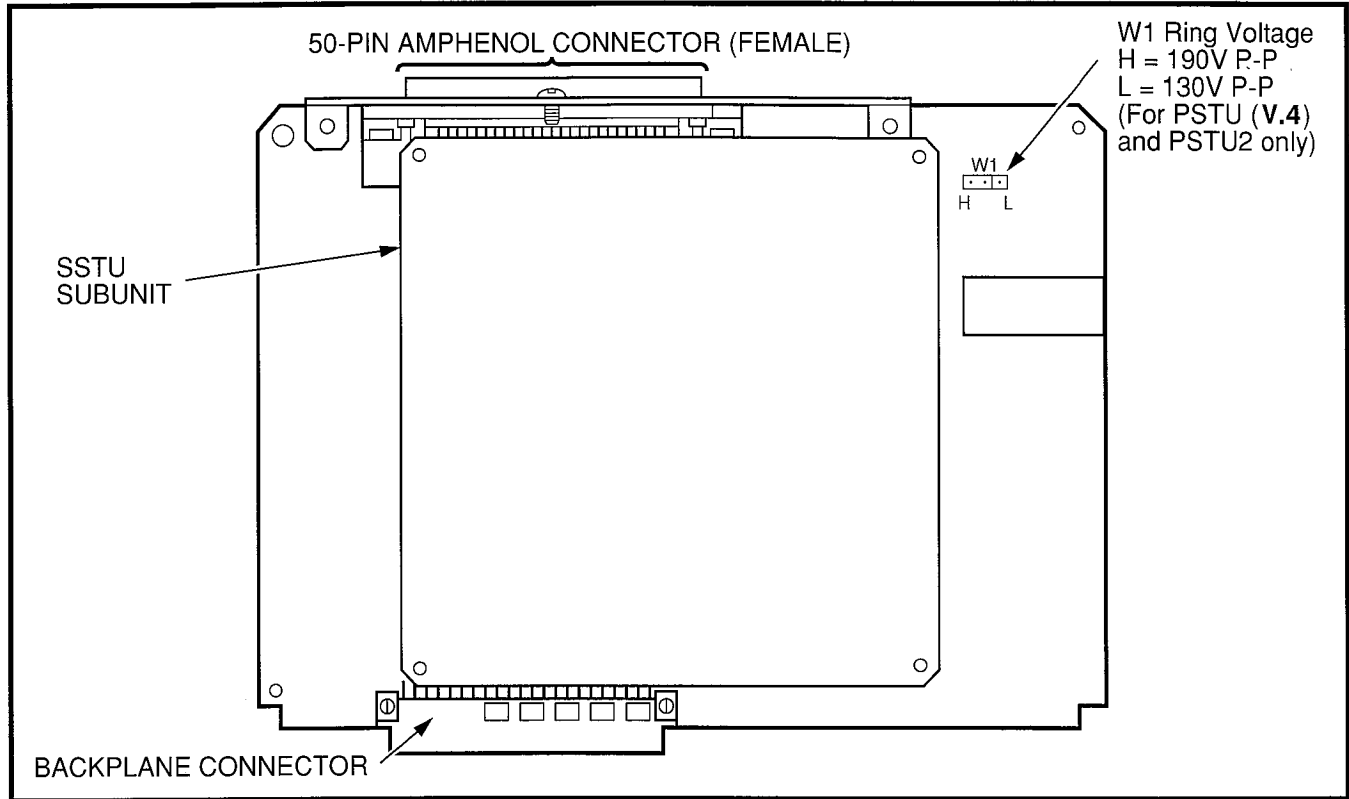


FIGURE 6-6—PSTU (1/2) AND SUBUNIT (SSTU)

must be installed on the Common Control Unit (PCTU) (refer to Paragraph 3).

5.02 PSTU controls are shown in Figure 6-6 and described in Table 6-C.

5.10 PSTU (1 and 2) Hardware Options

5.11 There are two PSTU versions (1 and 2): They are identical except for the ring generator. The ring generator on the original version (V.3) of PSTU1 is fixed at a 190V P-P level, while the ring generator on PSTU1 (V.4) and PSTU2 can be set for 130V P-

P or 190V P-P. The **W1** jumper plug is used to set the voltage level. Most standard telephones and two-wire devices require the 190V P-P level; however, some devices may experience ring-trip with 190V P-P and they require the 130V P-P level.

NOTE:
PSTU1 (V.4) became available in November 1989. PSTU1(V.3) was discontinued.

5.12 Set the PSTU1 (V.4) or PSTU2 ring generator level as required:

- **W1** set to H (190V P-P).

**TABLE 6-C
PSTU CONTROLS AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-6)	TYPE OF COMPONENT	DESCRIPTION
Ring Voltage W1 Jumper Plug (PSTU1 (V.4) and PSTU2 only)	Three-terminal jumper	Sets ring generator voltage level for all circuits (PSTU2 only). H = 190V P-P L = 130V P-P

- **W1** set to L (130V P-P).
- Two ringers maximum per port (H or L).

5.20 PSTU Installation Procedures

5.21 Install the PSTU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging. The protective shield on the back of the PSTU is designed to protect the installer from potentially hazardous ring voltage. Do not remove this shield.
- 2) Ensure that the PSTU subunit (SSTU) is securely attached to the PSTU (refer to Figure 6-6).

NOTE:

***W1**, the ring generator level option, should be set in the H position (factory) for initial installation.*

- 3) Insert the PSTU into the appropriate slot, and apply firm, even pressure to ensure proper mating of connectors.
- 4) After installing the PSTU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

5.30 PSTU Wiring

5.31 Refer to PSTU Wiring Diagram, Section **200-096-209**, for wiring/interconnecting details.

5.32 The PSTU is registered for use with 0L13A type lines for off-premises stations.

5.40 PSTU Programming Overview

5.41 The following parameters may be specified, through programming, for the PSTU:

Program 03

- Specify code 31 for all slots that have PSTUs installed.

Program 31

- Used to configure all PSTU ports connected to

Voice Mail or Auto Attendant devices (see Voice Mail Installation, Section **200-096-208**, for more details).

Program 10-2

- Used to set standard telephone ringing option.

6 STANDARD/ELECTRONIC TELEPHONE INTERFACE UNIT (PESU)

6.00 General

6.01 The Standard/Electronic Telephone Unit (PESU) provides two standard interface circuits (1 and 2) identical to PSTU circuits for connection between standard telephones, or two wire devices, and the system. It also provides four electronic telephone interface circuits (5 ~ 8) identical to PEKU circuits for connecting electronic telephones, BGM, or one HDCB. The PESU provides a ring generator for circuits 1 and 2 (with a ring voltage of either 190V P-P or 130V P-P).

- The PESU does not support a DSS console connection.
- The PESU provides connectors to mount the EOCU for OCA to electronic telephones.
- The PESU supports HDCB and BGM connection.
- PESU Requires **Release 2** software.

NOTE:

A CRCU (-4 or -8) must be installed on the PCTU or PCTUS1 for the system to recognize DTMF tones sent from standard telephones or other two-wire devices that are connected to the PESU.

6.02 The maximum number of PESUs allowed per system is shown below:

System	PESUs	Std	Electronic	
			Telephone	PCTU
DK24	3	6	12	(S1)
DK24	5	10	20	(1 or 2)
DK56	8	16	32	(1 or 2)
DK96	12	24	48	(1 or 2)

6.03 The PESU controls and interface connectors are shown in Figure 6-7 and described in Table 6-D.

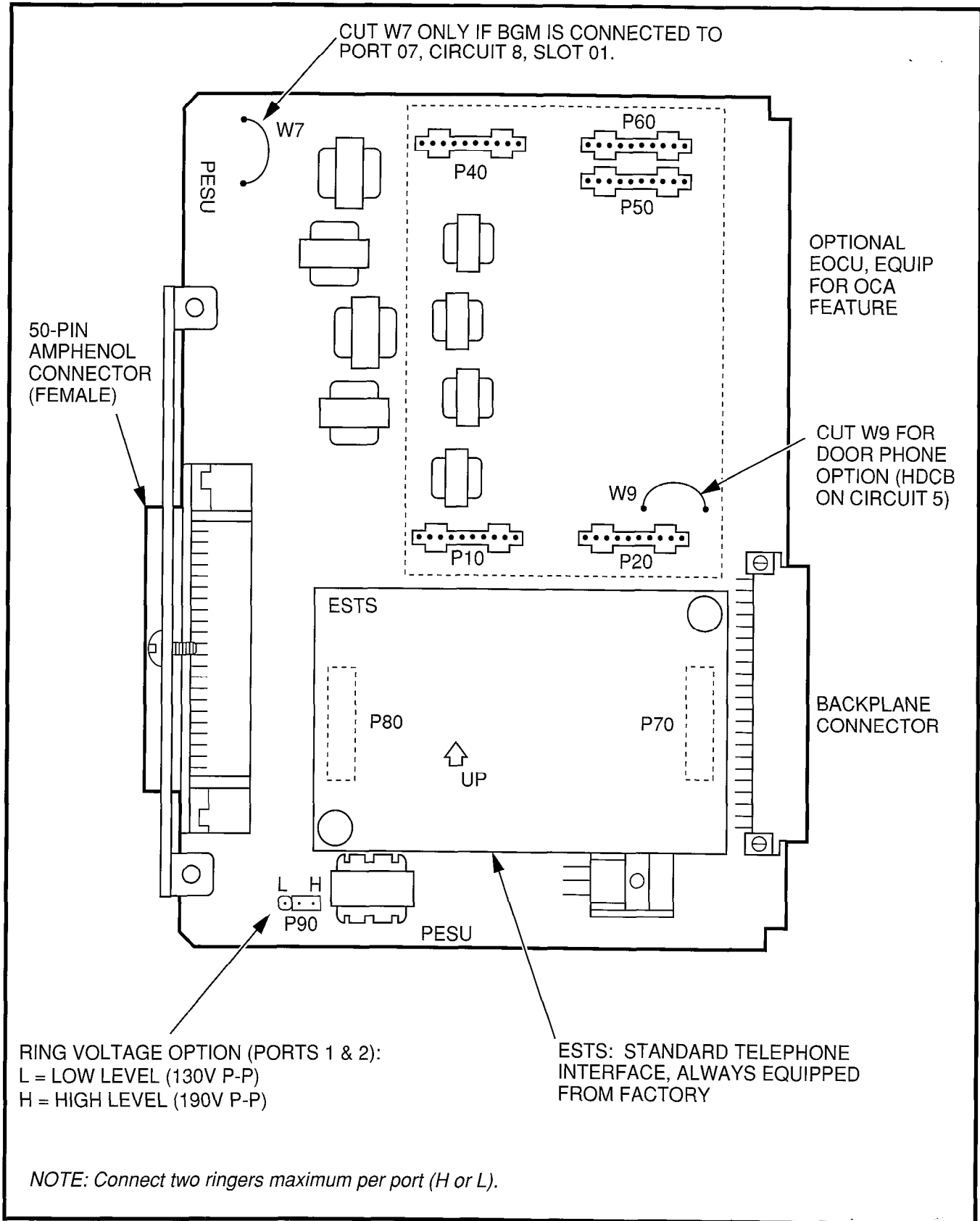


FIGURE 6-7—PESU PCB OPTION LOCATION AND IDENTIFICATION

**TABLE 6-D
PESU CONTROLS AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-7)	TYPE OF COMPONENT	DESCRIPTION
Off-hook Call Announce P10	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P20, P40, P50, and P60).
Off-hook Call Announce P20	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P40, P50, and P60).
Off-hook Call Announce P40	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P50, and P60).
Off-hook Call Announce P50	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P40, and P60).
Off-hook Call Announce P60	10-pin connector	Interface connector for optional Off-hook Call Announce subassembly connector (used in conjunction with P10, P20, P40, and P50).
Ring Voltage Jumper Plug P90	Three-terminal jumper	Sets ring generator voltage level for circuits 1 and 2. H = 190V P-P (factory setting) L = 130V P-P
Door Phone W9 Jumper Wire	White jumper wire	When cut, configures PESU, circuit 5 for installation of an optional HDCB.
BGM W7 Jumper Pack	White jumper wire	When cut, configures PESU, port 07, circuit 8, for BGM source connection (slot 01 only)

6.10 PESU Hardware Options

6.11 The PESU supports the following hardware options:

- **Internal option:** Off-hook Call Announce (EOCU).
- **External option:** Door Phone/Lock.

NOTE:
Refer to Telephone Installation, Section 200-096-207, for installation of external options.

6.12 Off-hook Call Announce (EOCU) Installation. Install the Off-hook Call Announce in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.

NOTE:
PESU connectors **P10**, **P20**, **P40**, **P50**, and **P60** are positioned to allow installation of the EOCU only in the proper position (refer to Figure 6-7).

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- 2) Mate the EOCU connectors **J10, J20, J40, J50,** and **J60** with the PESU connectors **P10, P20, P40, P50,** and **P60** (refer to Figure 6-7).
- 3) Apply firm, even pressure to the EOCU to ensure proper mating of connectors.
- 4) Use 3-pair cable for connecting the PESU and the OCA electronic telephone (refer to Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details).
- 5) Refer to Telephone Installation, Section **200-096-207**, for procedures to add OCA to electronic telephones.

6.20 PESU Installation Procedures

6.21 Install the PESU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging. The protective shield on the back of the PESU is designed to protect the installer from potentially hazardous ring voltage. Do not remove this shield.
- 2) Ensure that the PESU subunit (ESTS) is securely attached to the PESU (refer to Figure 6-7).
- 3) If the electronic telephones connected to the PESU must receive OCA calls, install the EOCU subassembly PCB on the PESU per Paragraph **6.12**.
- 4) If an HDCB is connected to PESU circuits, cut **W9**.
- 5) If BGM is connected to port 07, circuit 8, slot 01, cut **W7**.
- 6) Ensure that the ring voltage option, **P90**, is set to the "H" position for initial installation. The "L" position is used if devices connected to the PESU trip ring voltage before answer.
- 7) Insert the PESU into the appropriate slot, and apply firm, even pressure to ensure proper

mating of connectors.

- 8) After installing the PESU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

6.30 PESU Wiring

6.31 Refer to PESU Wiring Diagram, Section **200-096-209**, for wiring/interconnecting details.

6.40 PESU Programming Overview

6.41 The following parameters may be specified, through programming, for the PESU:

Program 03

- Specify code 25 for all slots that have PESUs without EOCU.
- Specify code 26 for all slots that have PESUs equipped with EOCU.

NOTE:

A special code is not required to connect an HDCB or BGM to a PESU.

Program 31

- Configures the PESU circuits 1 and 2 for connection to Voice Mail or Auto Attendant devices.

Program 10-2

- Sets the standard telephone ring cadence for normal or distinctive ringing and BGM source connection.

Programs 77-1 and 77-2

- Assigns an HDCB to a PESU port

7 CO LINE UNIT (PCOU)

7.00 General

7.01 Each CO Line Unit (PCOU) PCB adds four CO lines to the system. The PCOU provides Ring Detection, Dial Outpulsing and Hold; as well as Automatic Busy Redial circuitry. Each CO line can be programmed for DTMF or dial pulse. Depending on system configuration, DK24 can support up to four PCOUs, DK56 up to five, and DK96 up to nine.

NOTE:

There are two PCOU versions (1 and 2). They are identical in fit/form/function and are interchangeable in all DK system models.

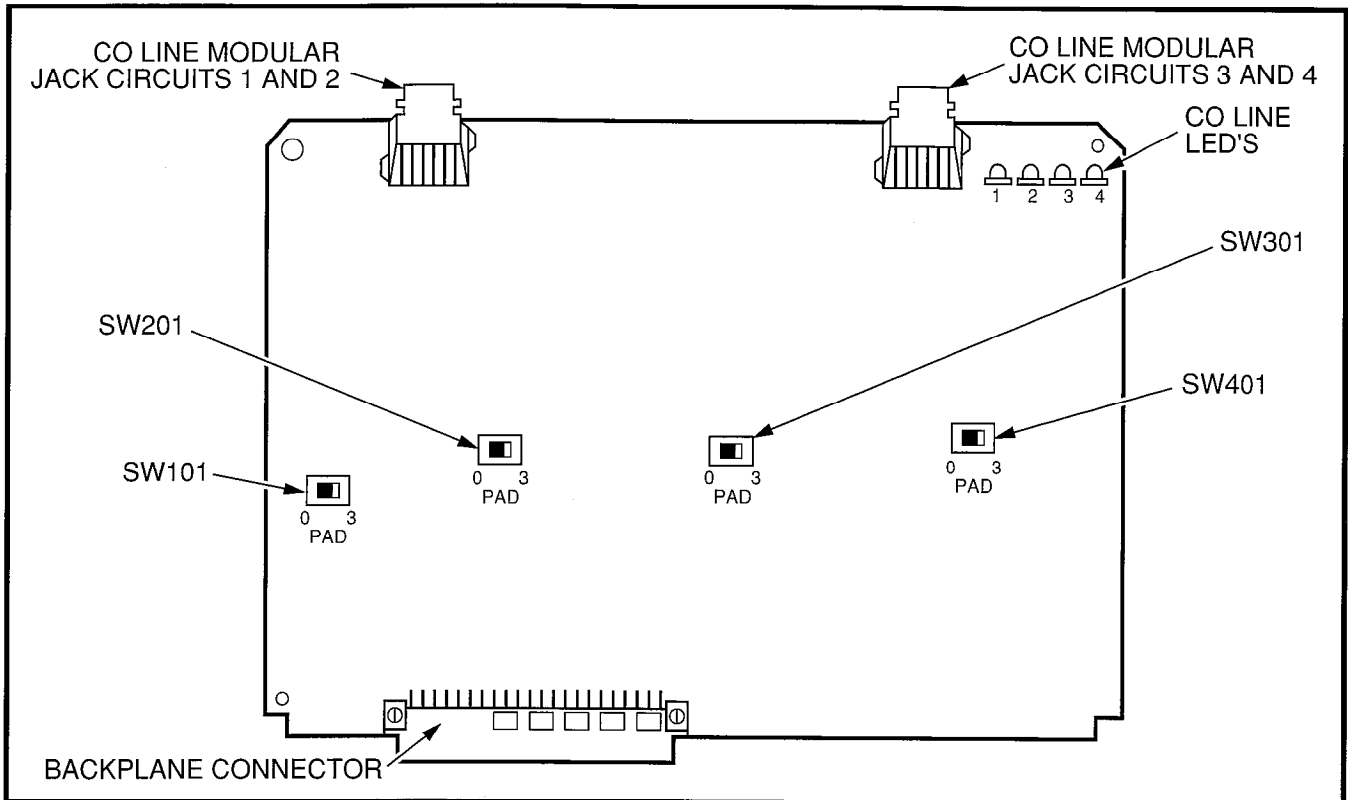


FIGURE 6-8—PCOU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

7.02 PCOU controls, indicators, and interface connectors are shown in Figure 6-8 and described in Table 6-E.

7.10 PCOU Hardware Options

7.11 There are no hardware options supported by the PCOU.

7.20 PCOU Installation Procedures

7.21 Install the PCOU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.

NOTE:

The dB PAD switches **SW101** through **SW401** control excessive loudness resulting from close proximity to the CO or PBX telephone office by providing a -3 dB signal level drop to, or from, the PBX or CO when set to the **3** position. Switches are factory-set to the **0** (0 dB signal level drop) position.

- 2) If the KSU is located within one mile of the PBX or CO telephone office, set dB PAD switches **SW101** through **SW401** to the **3** (-3 dB signal level drop) position.

NOTE:

Ensure the PCOU's component side is facing right when installing it in the KSU.

- 3) Insert the PCOU into the appropriate slot (refer to Paragraph 7.21), and apply firm, even pressure to ensure proper mating of connectors.
- 4) After installing the PCOU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

7.30 PCOU Wiring

7.31 Refer to PCOU Wiring Diagram, Section 200-096-209, for wiring/interconnecting details.

7.40 PCOU Programming Overview

7.41 The following parameters may be specified,

**TABLE 6-E
PCOU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-8)	TYPE OF COMPONENT	DESCRIPTION
CO Line Circuit 1 Indicator CD112	Red LED	Lights to indicate CO line circuit 1 is in operation (NOTE: CO line indicator will not light unless PCOU is connected to a CO).
CO Line Circuit 2 Indicator CD212	Red LED	Lights to indicate CO line circuit 2 is in operation (NOTE: CO line indicator will not light unless PCOU is connected to a CO).
CO Line Circuit 3 Indicator CD312	Red LED	Lights to indicate CO line circuit 3 is in operation (NOTE: CO line indicator will not light unless PCOU is connected to a CO).
CO Line Circuit 4 Indicator CD412	Red LED	Lights to indicate CO line circuit 4 is in operation (NOTE: CO line indicator will not light unless PCOU is connected to a CO).
J1 Connector	Modular connector	Interface connector for CO line circuits 1 and 2.
J2 Connector	Modular connector	Interface connector for CO line circuits 3 and 4.
PAD Switch SW101	Two-position slide	Enables -3dB signal level drop for CO line circuit 1.
PAD Switch SW201	Two-position slide	Enables -3dB signal level drop for CO line circuit 2.
PAD Switch SW301	Two-position slide	Enables -3dB signal level drop for CO line circuit 3.
PAD Switch SW401	Two-position slide	Enables -3dB signal level drop for CO line circuit 4.

through programming, for the PCOU:

Program 03

- Specify code 11 for the applicable PCB slots where each PCOU is installed.

Program 10-1

- Allows/denies two-CO Line Conference and DISA.

Program 15

- Assigns DTMF/DP Dialing, Tenant Service, DISA, and a number of additional attributes to each CO line.

Program 16

- Assigns CO lines to groups 81 ~ 89, and dial 9

group.

Program 40

- Assigns stations access to CO lines (incoming and outgoing access).

Program 41

- Assigns stations access to CO lines (outgoing only).

Program 42-0, 1-8

- Assigns behind PBX/CENTREX operation to each CO line.

Programs 45 ~ 48

- Defines Toll Restrictions for any CO line.

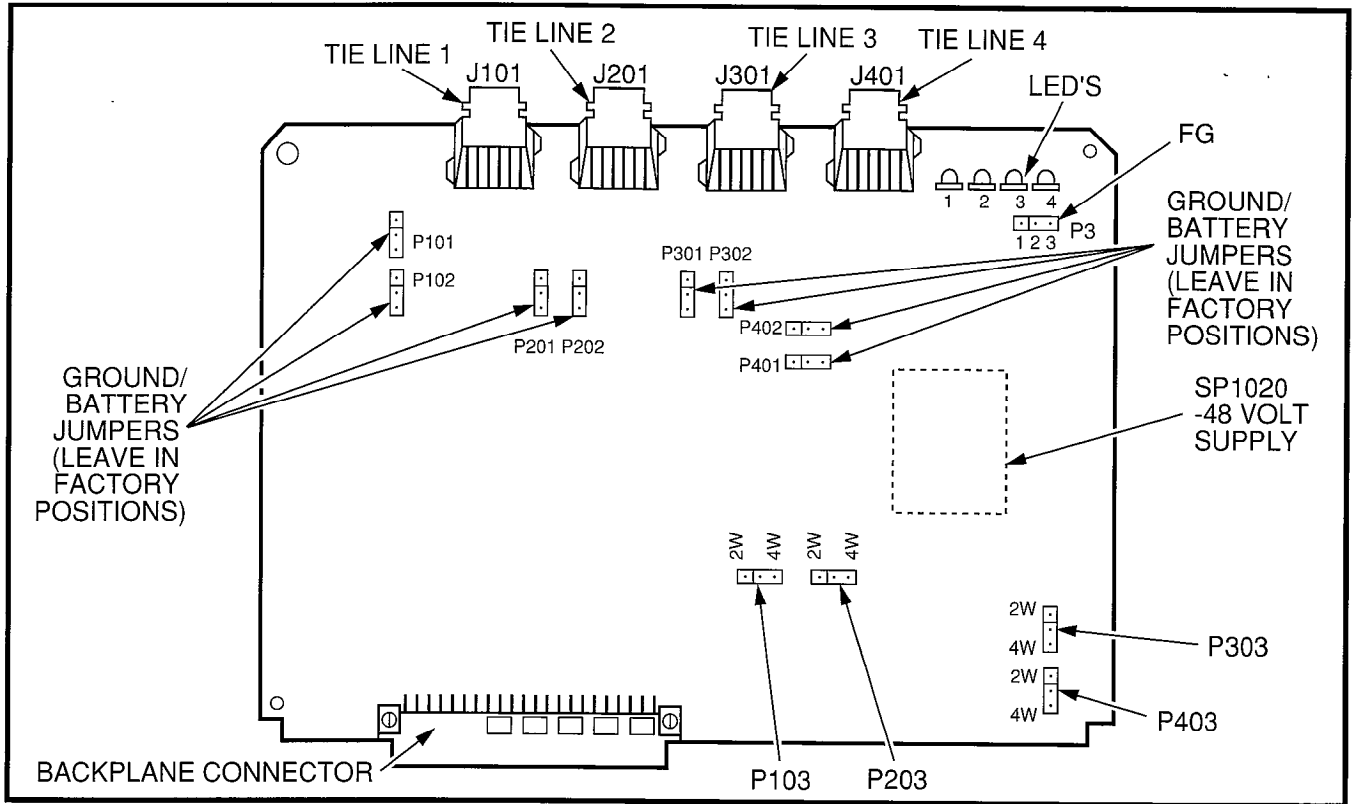


FIGURE 6-9—PEMU CONTROLS AND INDICATORS

Programs 50 ~ 56

- Defines Least Cost Routing using CO lines.

Program 78

- Assigns special ringing of CO lines: Night Ring Over Page, DISA, IMDU.

Programs 81 ~ 89

- Assigns CO lines to ring selected stations.
- Assigns Delayed Ringing to any CO line.

Program 93

- Assigns names to CO lines.

8 E & M TIE LINE UNIT (PEMU)

8.00 General

8.01 Each E & M Tie Line Unit (PEMU) PCB provides four TIE line interface circuits.

- PEMU TIE lines may be configured for either 2- or 4-wire transmission with Type I signaling.
- The TIE lines provide immediate start operation only.
- Each PEMU reduces system capacity by four CO lines and four or eight station ports.
- DK24 supports a maximum of one PEMU PCB, DK56 a maximum of two, and DK96 a maximum of three.

NOTES:

1. For the system to recognize the DTMF tones generated by incoming TIE lines, a CRCU (-4 or -8) must be installed on the PCTU/PCTUS1 (refer to Paragraph 3).
2. The PEMU PCB uses four CO lines and four station ports in software. Only 24 station ports are available with the PCTUS1; however, in a DK24, only 16 station ports (not 20) will be available to stations connected to PESU, PEKU, or PSTU PCBs. A PCTU is required to support up to 24 stations and 4 TIE lines in a DK24.

8.02 PEMU controls, indicators, and interface connectors are shown in Figure 6-9 and described in Table 6-F.

8.10 PEMU Hardware Options

8.11 There are no additional hardware options supported by the PEMU.

8.20 PEMU Installation Procedures

**TABLE 6-F
PEMU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-9)	TYPE OF COMPONENT	DESCRIPTION
TIE Line Circuit 1 Indicator CD102	Red LED	Lights to indicate TIE line 1 is in operation.
TIE Line Circuit 2 Indicator CD202	Red LED	Lights to indicate TIE line 2 is in operation.
TIE Line Circuit 3 Indicator CD302	Red LED	Lights to indicate TIE line 3 is in operation.
TIE Line Circuit 4 Indicator CD402	Red LED	Lights to indicate TIE line 4 is in operation.
E & M TIE Line Connector J101	Modular connector	Interface connector for E & M TIE line circuit 1.
E & M TIE Line Connector J201	Modular connector	Interface connector for E & M TIE line circuit 2.
E & M TIE Line Connector J301	Modular connector	Interface connector for E & M TIE line circuit 3.
E & M TIE Line Connector J401	Modular connector	Interface connector for E & M TIE line circuit 4.
FG Jumper P3	Three-terminal jumper	Enables or disables -48V ground to FG.
GND/BAT Jumper P101	Three-terminal jumper	M-lead origination for TIE line 1 (must be in BAT position per FCC requirements).
GND/BAT Jumper P102	Three-terminal jumper	M-lead origination for TIE line 1 (must be in BAT position per FCC requirements).
GND/BAT Jumper P201	Three-terminal jumper	M-lead origination for TIE line 2 (must be in BAT position per FCC requirements).
GND/BAT Jumper P202	Three-terminal jumper	M-lead origination for TIE line 2 (must be in BAT position per FCC requirements).
GND/BAT Jumper P301	Three-terminal jumper	M-lead origination for TIE line 3 (must be in BAT position per FCC requirements).
GND/BAT Jumper P302	Three-terminal jumper	M-lead origination for TIE line 3 (must be in BAT position per FCC requirements).
GND/BAT Jumper P401	Three-terminal jumper	M-lead origination for TIE line 4 (must be in BAT position per FCC requirements).

TABLE 6-F
PEMU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS (continued)

CONTROL/INDICATOR (Figure 6-9)	TYPE OF COMPONENT	DESCRIPTION
GND/BAT Jumper P402	Three-terminal jumper	M-lead origination for TIE line 4 (must be in BAT position per FCC requirements).
2W/4W Jumper P103	Three-terminal jumper	Selects 2- or 4-wire configuration for E & M TIE line circuit 1.
2W/4W Jumper P203	Three-terminal jumper	Selects 2- or 4-wire configuration for E & M TIE line circuit 2.
2W/4W Jumper P303	Three-terminal jumper	Selects 2- or 4-wire configuration for E & M TIE line circuit 3.
2W/4W Jumper P403	Three-terminal jumper	Selects 2- or 4-wire configuration for E & M TIE line circuit 4.

8.21 Install the PEMU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Determine if the E & M TIE lines will be configured as 2- or 4-wire. Set **2W/4W** switches **P103**, **P203**, **P303**, and **P403** to the appropriate positions.
- 3) Set the **FG** jumper **P3** to the **2-3** position.
- 4) Set all **GND/BAT** jumpers to the **BAT** position for connection to the telephone network.

NOTE:

*The **GND** position is used to connect PEMU circuits back-to-back on premises only, 1000 feet maximum (E & M lead wires must be crossed).*

- 5) Insert the PEMU into the appropriate slot (refer to Paragraph **2.21**), and apply firm, even pressure to ensure proper mating of connectors.
- 6) After installing the PEMU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

8.30 PEMU Wiring

8.31 In Section **200-096-209**, refer to PEMU (2W or 4W) wiring diagram for wiring/interconnecting

details, and to secondary protector diagram for secondary protector information.

8.40 PEMU Programming Overview

8.41 The following parameters may be specified, through programming, for the PEMU:

Program 03

- Specify code 13 for applicable PCB slots where each PEMU is installed.

Program 10-1

- Allows or denies two-CO Line Conference.

Program 15

- Assigns tandem connections to TIE lines.

Program 17

- Assigns Page/Handsfree Answerback.

NOTE:

When a PEMU is installed in a system, it automatically assumes the next consecutive CO line and station port numbers. If the system is equipped with a PCTU(1 or 2), the PEMU assumes four CO line and four station port numbers. However, with a PCTUS1, only 16 station ports will be available for stations connected to a PEKU, PESU, or PSTU PCB.

**9 OPTION INTERFACE UNIT
(PIOU AND PIOUS)**

9.00 General

9.01 The Option Interface Unit (PIOU or PIOUS)

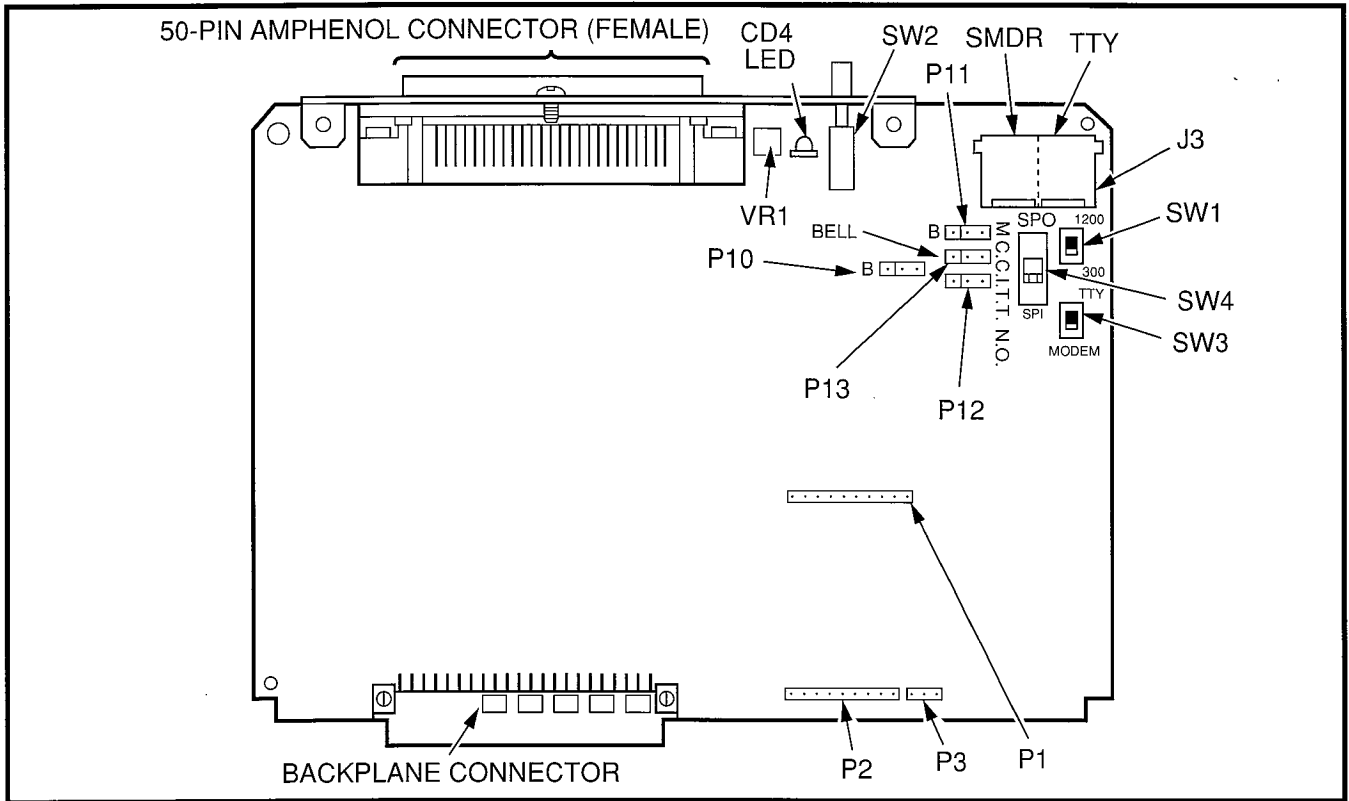


FIGURE 6-10—PIUO CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

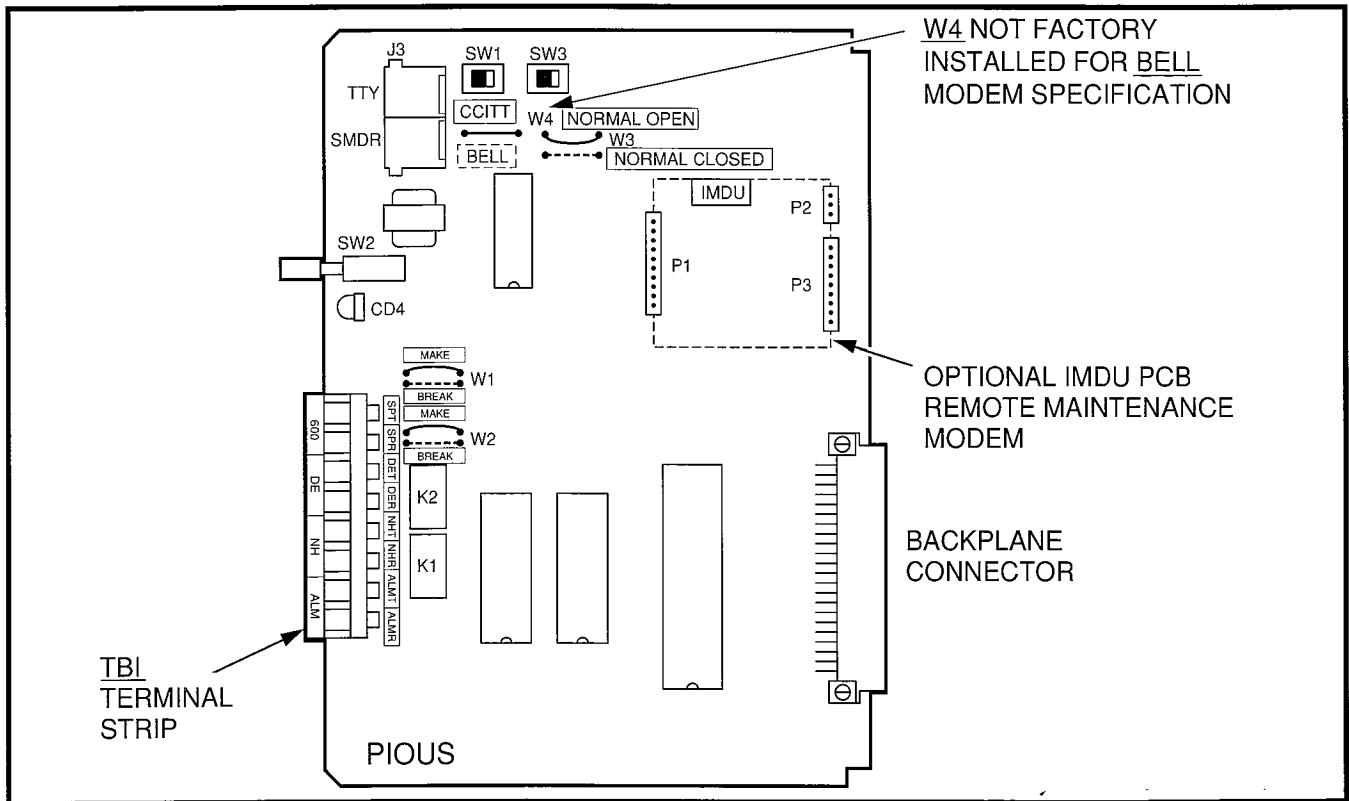


FIGURE 6-11—PIUO PCB SWITCH/JUMPER, OPTION LOCATION

**TABLE 6-G
PIOU CONTROLS AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-10)	TYPE OF COMPONENT	DESCRIPTION
SMDR/TTY Interface Connector J3	Dual modular connector	Interface connector for SMDR printer/call accounting device and maintenance terminal/modem.
IMDU Connector P1	10-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
IMDU Connector P2	9-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
IMDU Connector P3	3-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
M/B Make/Break Jumper Plug P10	Three-terminal jumper plug	External Page/Door Lock Control Relay MAKE or BREAK jumper plug.
M/B Make/Break Jumper Plug P11	Three-terminal jumper plug	Night/Hold Relay MAKE or BREAK jumper plug.
Alarm Sensor N.O./N.C. Jumper Plug P12	Three-terminal jumper plug	Alarm sensor normally open or normally closed jumper plug.
CCITT/BELL Jumper Plug P13	Three-terminal jumper plug	IMDU or external modem operating specification jumper plug.
SMDR Baud Rate Switch SW1	Two-position slide switch	Selects baud rate (300 or 1200 bps) for SMDR printer or call accounting device.
TTY Baud Rate Switch SW2	Two-position locking push-button switch	Selects baud rate (300 or 1200 bps) for Remote Maintenance Modem piggy-back module (IMDU) or external TTY jack.
Modem/TTY Switch SW3	Two-position slide switch	Enables PIOU for operation with IMDU modem or TTY jack.
SPO/SPI Internal/External Amplifier Switch SW4	Two-position slide switch	Selects built-in 3-watt amplifier (SPI) or 600-ohm output (SPO) for external page/BGM operation.
Volume Control VR1	Trim potentiometer	Adjusts volume of built-in 3-watt amplifier.

provides a circuit interface with the system peripheral options. A maximum of one PIOU or PIOUS PCB can be installed in the system. The PIOU and PIOUS support the same options, except the PIOUS does not support Built-in Amplifier or Zone Paging (see Paragraph 9.11).

NOTE:

If a PIOU is installed, then a PIOUS cannot be installed, and vice versa.

9.02 PIOU controls, indicators, and interface connectors are shown in Figure 6-10 and de-

**TABLE 6-H
PIOUS CONTROLS AND INTERFACE CONNECTORS**

CONTROL/INDICATOR/ CONNECTOR (Figure 6-11)	TYPE OF COMPONENT	DESCRIPTION
SMDR/TTY Interface Connector J3	Dual modular connector	Interface connector for SMDR printer/call accounting device and maintenance terminal/modem.
IMDU Connector P1	10-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
IMDU Connector P2	9-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
IMDU Connector P3	3-pin connector	Interface connector for Remote Maintenance Modem piggy-back module.
M/B Make/Break Jumper W1	Wire jumper	External Page/Door Lock Control Relay MAKE or BREAK jumper.
M/B Make/Break Jumper W2	Wire jumper	Night/Hold Relay MAKE or BREAK jumper.
Alarm Sensor N.O./N.C. W3	Wire jumper	Alarm sensor normally open or normally closed jumper.
CCITT/BELL Jumper W4*	Wire jumper	IMDU or external modem operating specification jumper plug. (BELL = NO W4)
SMDR Baud Rate Switch SW1	Two-position slide switch	Selects baud rate (300 or 1200 bps) for SMDR printer or call accounting device.
TTY Baud Rate Switch SW2	Two-position locking push-button switch	Selects baud rate (300 or 1200 bps) for Remote Maintenance Modem piggy-back module (IMDU) or external TTY jack.
Modem/TTY Switch SW3	Two-position slide switch	Enables PIOUS for operation with IMDU modem or TTY jack.

*Most modems in USA require BELL specification: W4 not factory-installed.

scribed in Table 6-G. PIOUS information is provided in Figure 6-11 and Table 6-H.

9.10 PIOU and PIOUS Hardware Options

9.11 The PIOU and PIOUS support the following hardware options:

Internal Options

- Remote Maintenance Modem Unit (IMDU)

External Options

- Built-in Paging Amplifier (PIOU only)
- Door Lock Control or External Amplifier Control

- Alarm Sensor
- External Paging 600Ω (duplex) Interface
- Zone Page, 4-zones (PIOU only)
- Local Maintenance Terminal or Modem
- Music-on-Hold Control or Night Relay Control
- SMDR Printer or Call Accounting Port
- Remote Maintenance Port

NOTE:

Refer to Peripheral Equipment Installation, Section 200-096-208, for installation of external options.

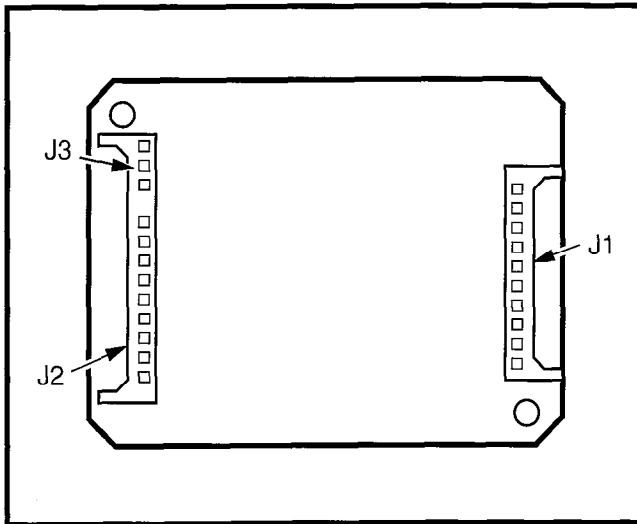


FIGURE 6-12—REMOTE MAINTENANCE MODEM UNIT (IMDU) INSTALLATION

9.12 Remote Maintenance Modem Unit (IMDU) Installation. Install the Remote Maintenance Modem Unit (IMDU) in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Set the **SW2** baud rate switch on the front panel to **300** or **1200**, as appropriate, after the PIOU has been installed in the KSU (in-300 bps—out-1200 bps).
- 3) Set **SW3** to MODEM position for IMDU operation.
- 4) Set the **P13** jumper plug on the PIOU to the BELL position; or, cut the **W4** jumper on the PIOUS for BELL operation.
- 5) Mate IMDU connectors **J1**, **J2**, and **J3** with PIOU or PIOUS connectors **P1**, **P2**, and **P3** (refer to Figure 6-12).

NOTE:

*PIOU or PIOUS connectors **P1**, **P2**, and **P3** are positioned to allow installation of the IMDU only in the proper position.*

- 6) Refer to Programming Procedures, Section **200-096-300**, **Program 77-1**, and set LED 14 to ON to enable IMDU operation.

NOTE:

The IMDU default station intercom number is 19.

- 7) Apply firm, even pressure to IMDU to ensure proper mating of connectors.

NOTE:

*Refer to Remote Maintenance Procedures, Section **200-096-400**, for information regarding the IMDU.*

9.20 PIOU and PIOUS Installation Procedures

9.21 Install the PIOU or PIOUS in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Ensure the PIOU or PIOUS has been configured for the appropriate hardware options (refer to Paragraph **9.10** and Section **200-096-208**).

NOTE:

Ensure the PIOU's or PIOUS' component side is facing right when installing it in the KSU.

- 3) Insert the PIOU or PIOUS into the last slot (slot 06 for DK24, slot 08 for DK56, and slot 14 for DK96), and apply firm, even pressure to ensure proper mating of connectors.
- 4) After installing the PIOU or PIOUS, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

9.30 PIOU and PIOUS Wiring

9.31 Refer to Peripheral Equipment Installation, Section **200-096-208**; and Wiring Diagrams, Section **200-096-209**, for PIOU/PIOUS wiring/interconnecting details.

9.40 PIOU and PIOUS Programming Overview

9.41 The following parameters may be specified,

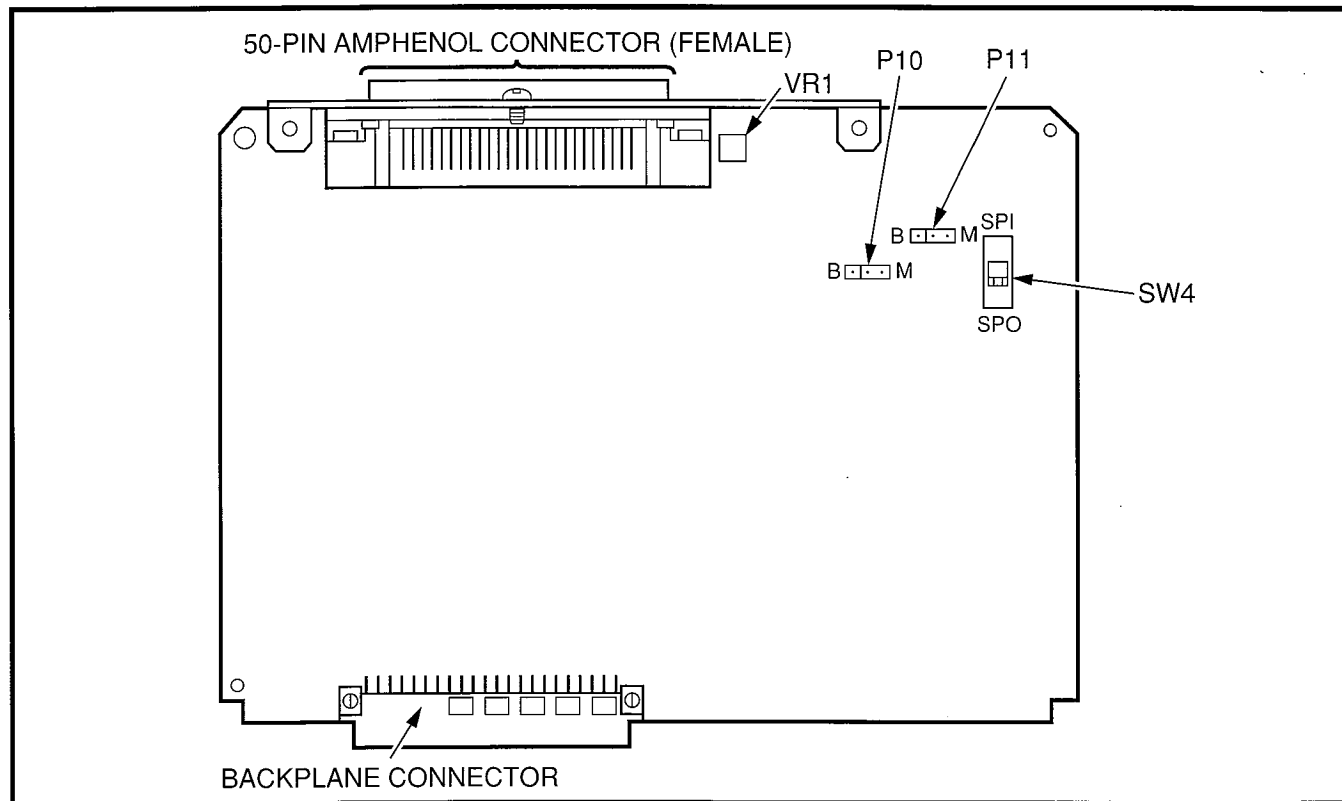


FIGURE 6-13—PEPU CONTROLS, INDICATORS, AND INTERFACE CONNECTORS

through programming, for the PIOU and PIOUS:

Program 77-1

- Assigns relay control and IMDU options.

Program 60

- Assigns SMDR options.

Program 10-2

- Enables External Page with All Call Page (access code 39 only, not AC button).

Program 78

- Enables Night Ringing over External Page.

10 EXTERNAL PAGE INTERFACE UNIT (PEPU)

10.00 General

10.01 The External Page Interface Unit (PEPU) provides a circuit interface with the system peripheral options. The PEPU is similar to the PIOU, but supports fewer peripherals. In general, PEPU-supported peripherals are related to paging and relay control functions.

NOTE:

If a PIOU or PIOUS is installed, then a PEPU

cannot be installed.

10.02 PEPU controls, indicators, and interface connectors are shown in Figure 6-13 and described in Table 6-1.

10.10 PEPU Hardware Options

10.11 The PEPU supports the following hardware options:

External Options

- Built-in Paging Amplifier
- Door Lock Control or External Amplifier Control
- External Paging 600Ω (duplex) Interface (one zone)
- Music-on-Hold Control or Night Relay Control

NOTE:

Refer to Peripheral Equipment Installation, Section 200-096-208; and Wiring Diagrams, Section 200-096-209, for installation of external options.

10.12 PEPU does not include the following PIOU options:

TABLE 6-1
PEPU CONTROLS AND INTERFACE CONNECTORS

CONTROL/INDICATOR/ CONNECTOR (Figure 6-13)	TYPE OF COMPONENT	DESCRIPTION
M/B Make/Break Jumper Plug P10	Three-terminal jumper plug	External Page/Door Lock Control Relay MAKE or BREAK jumper plug.
M/B Make/Break Jumper Plug P11	Three-terminal jumper plug	Night/Hold Relay MAKE or BREAK jumper plug.
SPI/SPO Internal/External Amplifier Switch SW4	Two-position slide switch	Selects built-in 3-watt amplifier or 600-ohm output for External Page/BGM operation.
Volume Control VR1	Trim potentiometer	Adjusts volume of built-in 3-watt amplifier.

- Alarm Sensor
- Four-zone Page
- SMDR Port
- Remote Maintenance Modem or ASCII terminal Connector
- IMDU Connection

10.20 PEPU Installation Procedure

10.21 Install the PEPU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Ensure the PEPU has been configured for the appropriate hardware options (refer to Paragraph **10.10** and Section **200-096-208**).

NOTE:

Ensure the PEPU's component side is facing right when installing it in the KSU.

- 3) Insert the PEPU into the last slot (slot 06 of DK24, slot 08 for DK56, and slot 14 for DK96), and apply firm, even pressure to ensure proper mating of connectors.
- 4) After installing the PEPU, gently pull the PCB

outward. If the connectors are properly mated, a slight resistance will be felt.

10.30 PEPU Wiring

10.31 Refer to Peripheral Equipment Installation, Section **200-096-208**; and Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details.

10.40 PEPU Programming Overview

10.41 The following parameters may be specified, through programming, for the PEPU:

Program 77-1

- Assigns relay control options.

Program 10-2

- Assigns External Page to All Call Page (access code 39 only, not AC button).

Program 78

- Enables Night Ringing over External Page.

11 INSTALLATION-PCB FOR RELEASE 3

11.01 The following contains **Release 3** information. This information includes complete installation instructions for the new digital telephone interface PCB, the PDKU. In addition, the instructions for the other PCBs, including the PCTU, are updated to reflect the new software release.

12 PCB INSTALLATION OVERVIEW (RELEASE 3)

12.01 PCB slot installation considerations discussed in Paragraph 2 are the same with **Release 3**, except for one change: with **Release 3**, the PDKU PCB or the PEKU PCB should be installed in slot 1—previously only the PEKU was recommended. It does not matter whether it's the PEKU or the PDKU installed in slot 1. However, it is recommended that they be the first PCBs installed from left to right.

13 PDKU (RELEASE 3)

13.00 General

13.01 The Digital Telephone Interface Unit (PDKU) provides eight ports/circuits for digital telephones. Depending on system configuration, DK24 (with PCTU3 only, not PCTUS1) can support up to four PDKUs, DK56 can support up to eight PDKUs, and DK96 can support up to 12. The PDKU can also be configured for PDIU-DIs, PDIU-DSs, and a DDSS console. DDSS consoles and PDIU-DSs are wired

directly to the PDKU and require no additional hardware, but do require their own dedicated ports/circuits. The PDIU-DI shares with its accompanying digital telephone the same wire pair and circuit on the PDKU. The PDKU (Figure 6-14) has no controls.

13.10 PDKU Hardware Options

13.11 The PDKU supports the hardware options noted below. Unlike the other PCBs, there are no controls on the PDKU that need to be set for options.

Internal option:

- none

External option:

- DDSS console
- PDIU-DS
- PDIU-DI

13.12 Hardware Configuration

13.13 DDSS Console Configuration. Refer to Telephone Installation, Chapter 7, for installation procedures for the DDSS console. Each DDSS

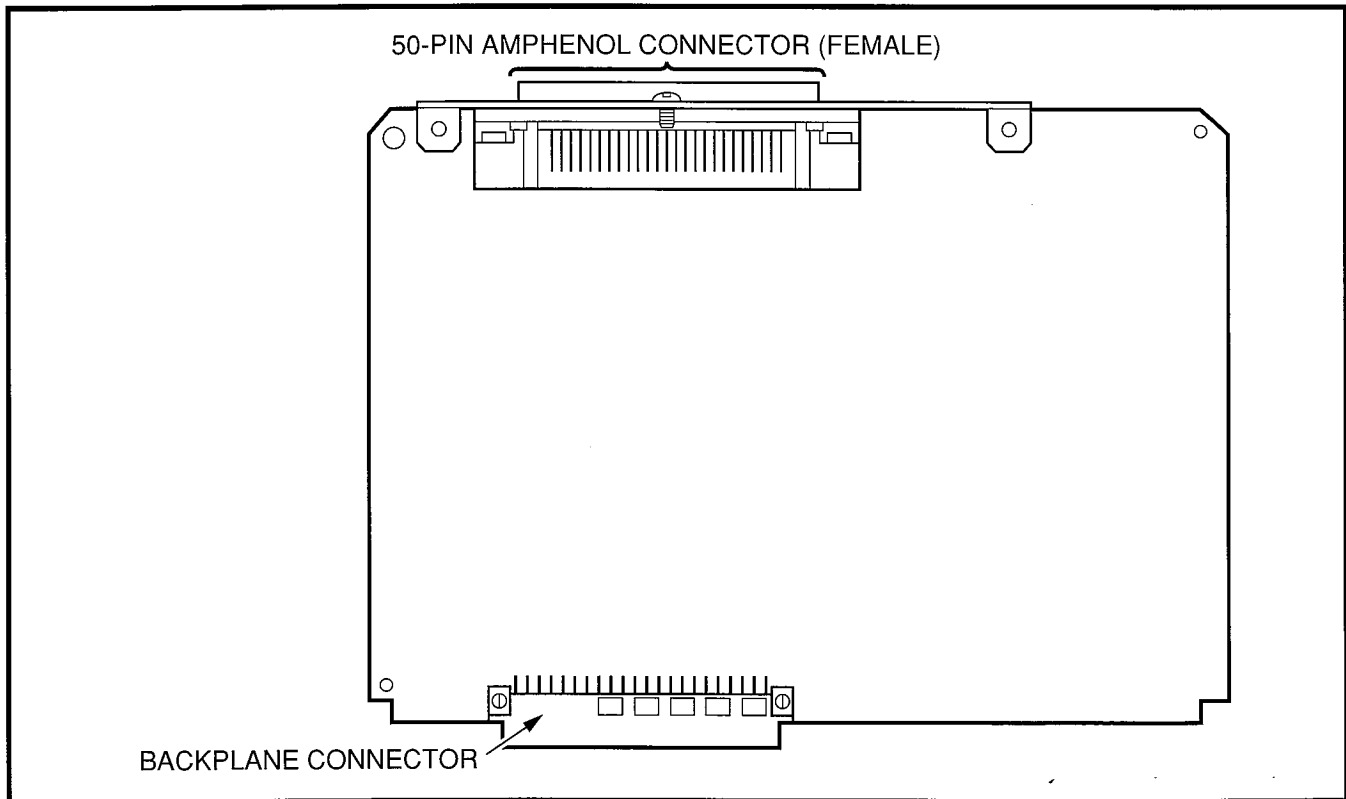


FIGURE 6-14—PDKU INTERFACE CONNECTION

console requires dedicated use of circuit 8 of a particular PDKU PCB.

13.14 PDIU-DS Configuration. Refer to Peripherals Installation, Chapter 8, for installation procedures for the PDIU-DS. A PDIU-DS can be connected to circuits 1 ~ 7 on a PDKU; the circuit must be dedicated to the PDIU-DS.

13.15 PDIU-DI Configuration. Refer to Telephone Installation, Chapter 7, and Peripherals Installation, Chapter 8, for installation procedures for the PDIU-DI. PDIU-DIs can be equipped with any digital telephone connected to PDKU circuits 1 ~ 7, but the quantity is limited (see Table 4-B in Chapter 4).

13.20 PDKU Installation Procedures

13.21 Install the PDKU in accordance with the following steps:

- 1) Remove the PCB from its protective packaging.
- 2) Insert the PDKU into the appropriate slot, and apply firm, even pressure to ensure proper mating of connectors.

NOTE:

Ensure the PDKU's component side is facing right when installing it in the KSU.

- 4) After installing the PDKU, gently pull the PCB outward. If the connectors are properly mated, a slight resistance will be felt.

13.30 PDKU Wiring

13.31 Refer to PDKU Wiring Diagrams, Chapter 9, for wiring/interconnecting details.

13.40 PDKU Programming Overview

13.41 The following parameters may be specified, through programming, for the PDKU:

Program 03

- Specify code 62 to indicate a station line PDKU.
- Specify code 64 to indicate a PDKU configured for a DDSS console.

Programs 20, 21, and 22

- Use to configure PDIU-DIs and PDIU-DSs.

Programs 28 and 29

- Use for DDSS assignments.

Program 30

- Adjusts initial off-hook volume level for digital telephone handsets.

Program 92-5

- Initializes initial ringing, speaker, and muted ring volume levels of digital telephones.

14 PCTU (RELEASE 3)

14.01 For PCTU3 (Figure 6-15) installation instructions, see Paragraph 3. The PCTU3 PCB has the same station and CO line capacity and performs the same function as the PCTU1 and PCTU2: It provides centralized control for the KSU. PCTU3 is intended for use with DK56 and DK96; it can also be used with DK24.

NOTE:

The P1 jumper, which is on the PCTU1 and 2, is not on the PCTU3. Its function is automatic with PCTU3 (see Table 6-A).

15 PEKU (RELEASE 3)

15.00 For PEKU installation instructions, see Paragraph 4. PCTU3 supports the same number of PEKUs, electronic telephones, and options as PCTU1 and PCTU2.

15.01 Alternate Background Music (BGM) Configuration. With Release 3, a BGM source can be connected to a PEKU in any slot. With Program 19, identify the slot. Adhere to all other steps in Paragraph 4.15.

15.02 External Amplifier Connection. With Release 3, a customer-supplied two way external amplifier may be connected to PEKU ports. With Program 10-3, identify these ports. See Chapter 8 for amplifier installation information.

16 PSTU (RELEASE 3)

16.00 For PSTU installation instructions, see Paragraph 5. PCTU3 supports the same number of

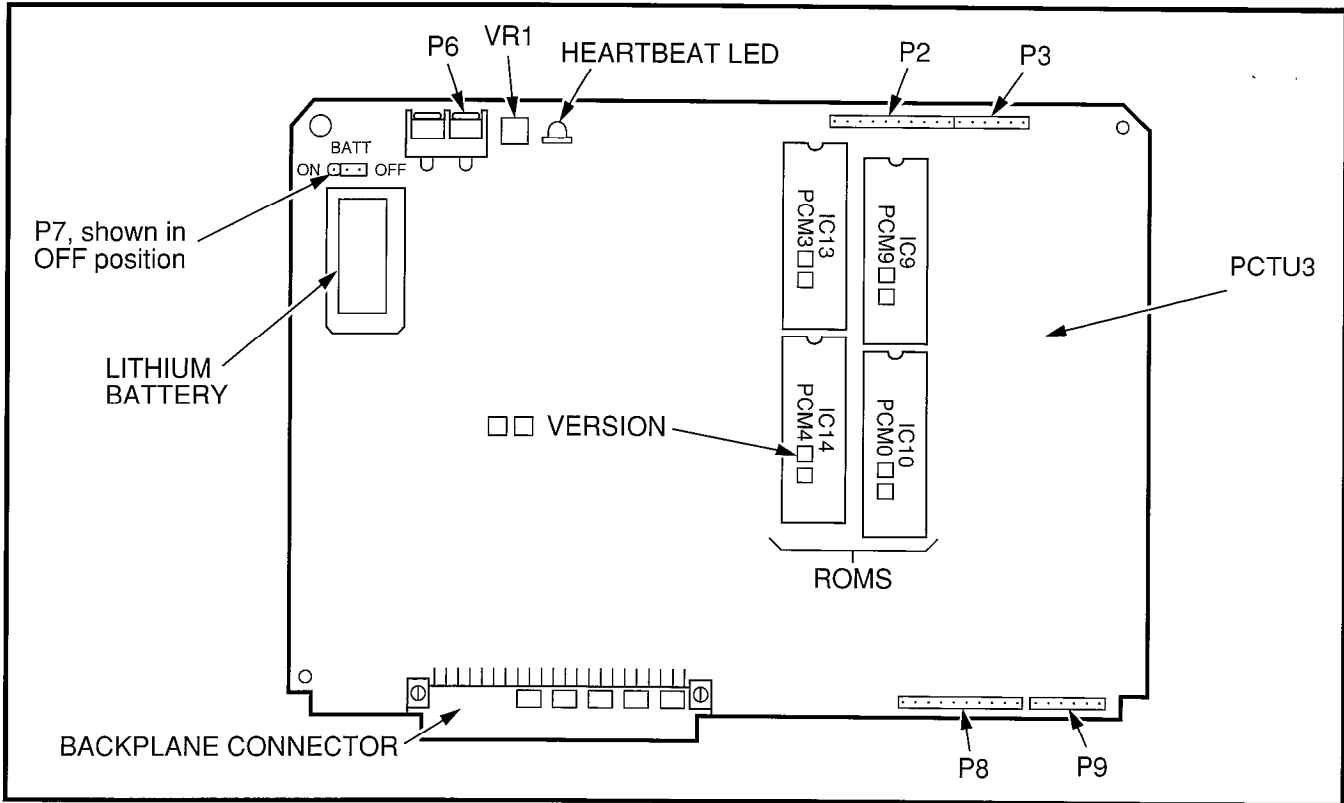


FIGURE 6-15—PCTU3 CONTROLS, INDICATORS, AND INTERFACE CONNECTOR

PSTUs as PCTU1 and PCTU2. It also supports the same hardware options and has the same programming parameters.

17 PESU (RELEASE 3)

17.00 For PESU installation instructions, see Paragraph 6. PCTU3 supports the same number of PESUs as PCTU1 and PCTU2. It also supports the same hardware options and has the same programming parameters.

17.01 PESU Programming Overview. With **Release 3**, a BGM source can be connected to a PESU in any slot. With **Program 19**, identify that slot (see Paragraph 6.40).

18 PCOU (RELEASE 3)

18.00 For PCOU installation instructions, see Paragraph 7. PCTU3 supports the same number of PCOUs as PCTU1 and PCTU2. It also has the same PCOU programming parameters.

19 PEMU (RELEASE 3)

19.00 For PEMU installation instructions, see Paragraph 8. PCTU3 supports the same number of PEMUs as PCTU1 and PCTU2. It also supports no hardware options and has the same programming parameters.

20 PIOU AND PIOUS (RELEASE 3)

20.00 For PIOU and PIOUS installation instructions, see Paragraph 9. Like PCTU1 and 2, PCTU3 supports only one PIOU or one PIOUS. It supports the same PIOU and PIOUS hardware options and has the same programming parameters with one addition: PCTU3 allows night ringing over selected PIOU page zones by Tenant 1 and/or Tenant 2 CO lines in **Program 77-1**.

21 PEPU (RELEASE 3)

21.00 For PEPU installation instructions, see Paragraph 10. Like PCTU1 and 2, PCTU3 supports only one PIOU, or one PIOUS, or one PEPU. It supports the same PEPU hardware options and has the same programming parameters.

Strata[®] *DK*

RELEASE 1, 2, and 3 INSTALLATION

CHAPTER SEVEN TELEPHONE INSTALLATION

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1 GENERAL

1.00 This chapter provides the general instructions to connect electronic telephones, digital telephones, standard telephones (including door phones and door locks), and DSS/DDSS consoles to DK systems.

1.01 The chapter also includes procedures to upgrade electronic and digital telephones for Loud Ringing Bell/Headset Interface and Off-hook Call Announce capability, and to wall-mount electronic and digital telephones.

2 ELECTRONIC TELEPHONE UPGRADE OPTIONS

2.00 Electronic telephones may be upgraded to include a Loud Ringing Bell/Headset Interface and Off-hook Call Announce capability.

2.01 Loud Ringing Bell/Headset (HHEU) Upgrade. The Loud Ringing Bell/Headset (HHEU) upgrade enables an external speaker (HESB) and a headset to be connected to the electronic telephone. In this configuration, the HESB serves as a loud ringing bell.

NOTE:

Refer to *Peripheral Equipment Installation, Section 200-096-208*, for installation procedures for the HESB.

2.02 Off-hook Call Announce (OCA) Upgrade. The Off-hook Call Announce (HVSU/HVSI) upgrade allows the telephone to receive calls when the handset is off the hook.

2.10 Electronic Telephone Upgrade Installation

2.11 HHEU Upgrade Installation. Install the Loud Ringing Bell/Headset (HHEU) upgrade in accordance with the following steps:

NOTE:

If the telephone is equipped with the Loud Ringing Bell/headset (HHEU) and OCA (HVSU/HVSI) upgrades, the HHEU version must be HHEU1A, V.2 or later.

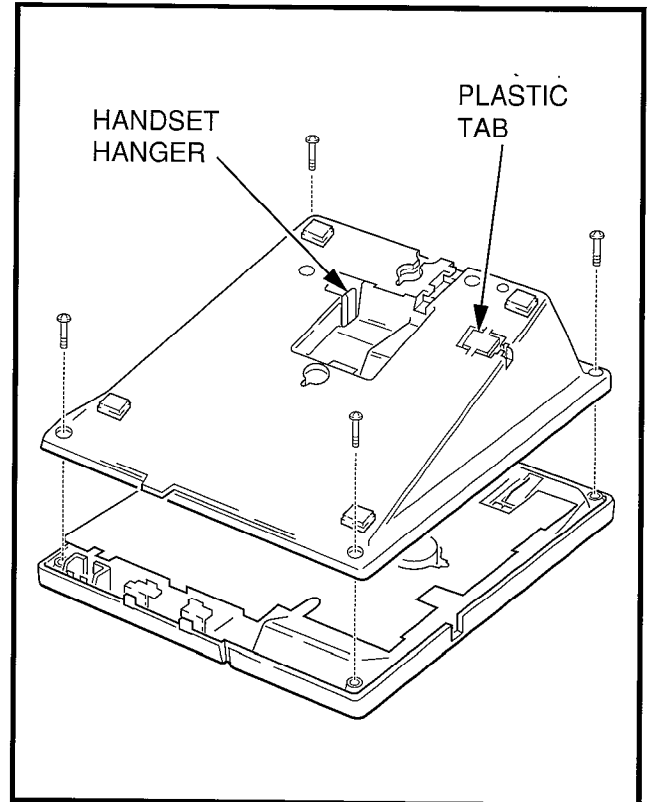


FIGURE 7-1—REMOVING ELECTRONIC TELEPHONE BASE

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.
- 2) Using a screwdriver or other suitable tool, remove the plastic tab located on the back of the base (Figure 7-1). The HHEU modular connector will be accessed through this opening.
- 3) On the HHEU, set the **SW601** switch to the Headset position for HESB and/or headset connection (Figure 7-2).
- 4A) Connect the HESC-65 or HESC-65A cable (either one) to **P601** of the HHEU if the Loud Ringing Bell option is required (see Figure 7-4), and refer to HESB Option Installation, Section **200-096-208**.
- 4B) For the telephone speaker only (not the headset receiver) to receive OCA, cut one side of the **R607** resistor on the HHEU and then remove the resistor so that no electrical connection exists. (see Figure 7-2).

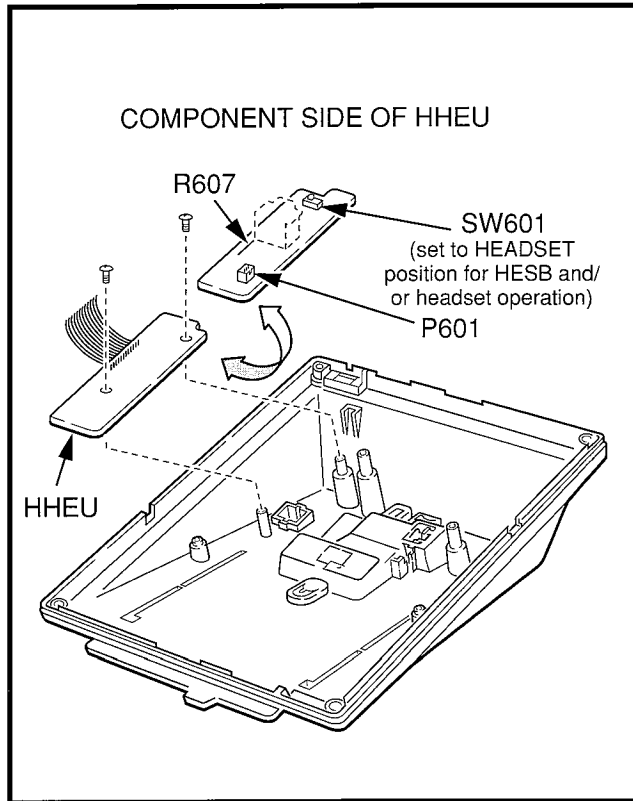


FIGURE 7-2—HHEU INSTALLATION

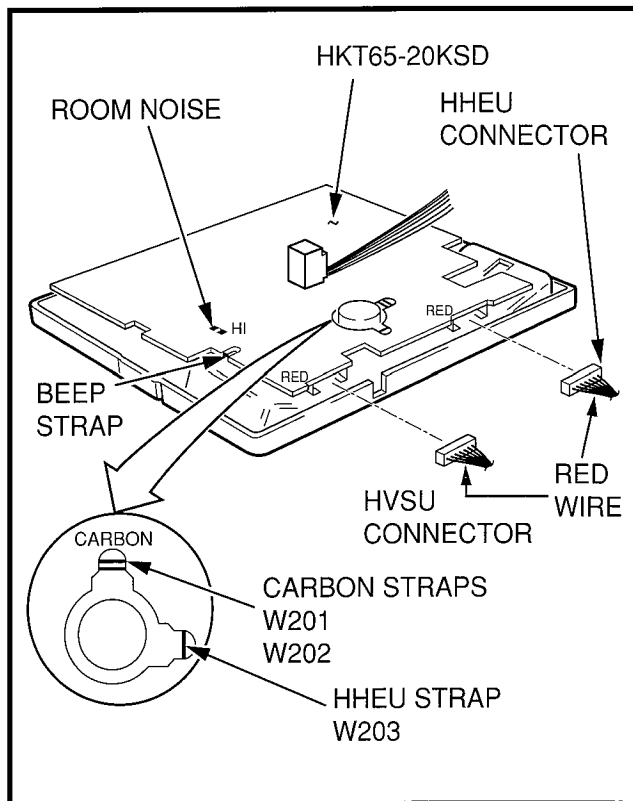


FIGURE 7-3—ELECTRONIC TELEPHONE PCB CONNECTIONS

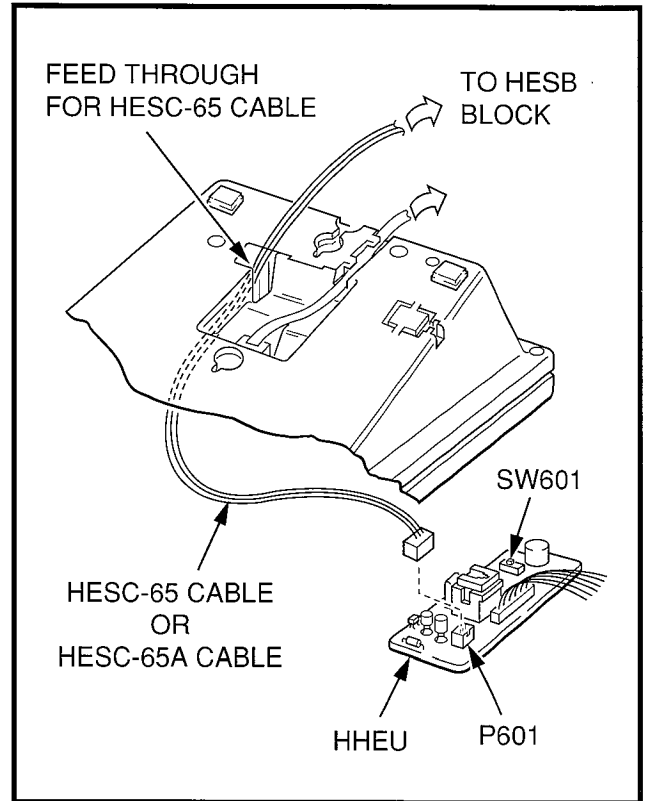


FIGURE 7-4—HESC-65 CABLING

- 5) Position the HHEU PCB on the standoffs inside the base (Figure 7-2), and secure with the two screws provided.
- 6) Connect the HHEU PCB to the electronic telephone PCB as shown in Figure 7-3.
- 7) Cut HHEU strap shown in Figure 7-3.

NOTE:

HHEU strap must be replaced if the HHEU PCB is removed from the telephone.

- 8) Reinstall the electronic telephone base and secure it with its four captive screws.

2.12 HVSU/HVSI Upgrade Installation. Install the off-hook call announce (HVSU/HVSI) upgrade in accordance with the following steps:

- 1) Remove the base as described in Paragraph 2.11.

NOTE:

Exercise care when assembling the HVSU PCB to the HVSI PCB to prevent damage to the connector pins; also, verify that the HVSU

PCB is aligned with the silk-screened image on the HVSI PCB.

- 2) Align the **P5** connector on the HVSI PCB with its receptacle on the HVSU PCB (Figure 7-5). Apply firm, even pressure to the PCBs to ensure that the connectors mate properly (they click).
- 3) Position the HVSU/HVSI assembly on the standoffs inside the base, and secure with the two screws provided.
- 4) Connect the HVSU/HVSI PCBs to the electronic telephone PCB as shown in Figure 7-3.
- 5) Reinstall the electronic telephone base and secure it with its four captive screws.

2.20 Carbon Handset Option

2.21 If a carbon type handset is used with the 6500-series electronic telephone, it is necessary to cut two jumper straps located on the main PCB inside the telephone. To cut the jumpers:

- 1) Remove the base as described in Paragraph 2.11.
- 2) Refer to Figure 7-3, and locate the carbon straps **W201** and **W202**. Cut both straps.
- 3) Reinstall the electronic telephone base and secure it with its four captive screws.

2.30 Beep Strap

2.31 If the beep strap is cut, the beep sound that occurs whenever the feature or dialpad buttons are pressed is eliminated (refer to Figures 7-1 and 7-3).

- 1) Remove the four captive screws securing the 6500-series electronic telephone base to the telephone and remove the base.
- 2) Locate and cut the beep strap.
- 3) Reinstall the electronic telephone base and secure in place using the four captive screws.

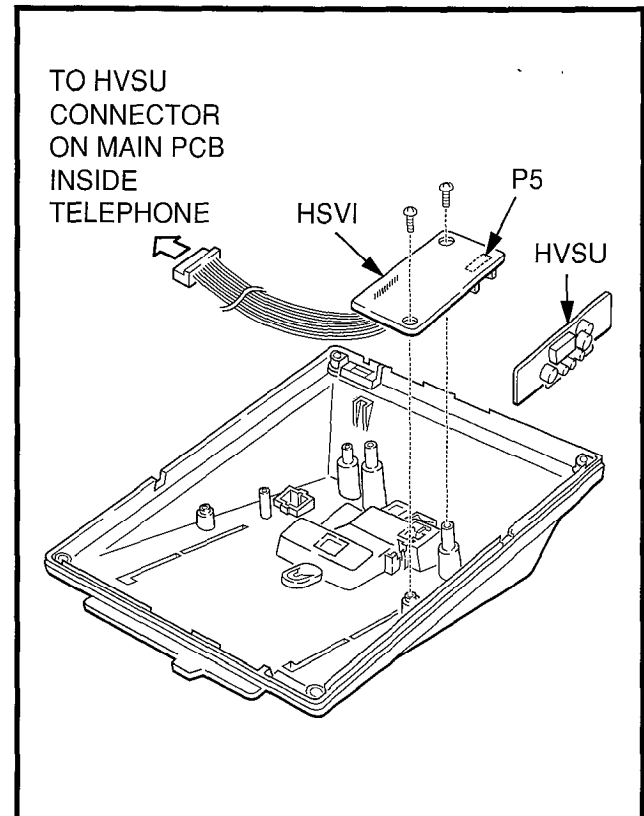


FIGURE 7-5—HVSI/HVSU INSTALLATION

2.40 Microphone/Speaker Threshold (speakerphone only)

2.41 If the speaker cuts off frequently because high ambient noise levels interrupt conversations during handsfree operation, set the Room Noise switch to the HI position (see Figures 7-1 and 7-3).

- 1) Remove the four captive screws securing the 6500-series electronic telephone base to the telephone and remove the base.
- 2) Locate the Room Noise switch and push it carefully to the HI position using a paper clip or tip of a pencil.
- 3) Reinstall the electronic telephone base and secure in place using the four captive screws.

3 STATION INSTALLATION REQUIREMENTS

3.00 Wiring Diagrams, Chapter 9, provide point-to-point wiring diagrams for connecting electronic

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telephones, standard telephones, DSS consoles, and door phones/locks to STRATA DK systems. The following paragraphs provide general requirements for telephone installation.

3.01 Refer to the Programming Procedures, Section **200-096-300**, for programming requirements and procedures.

3.10 Electronic Telephone Connections

3.11 Electronic telephones are connected to the PEKU or PESU PCB (via the MDF) with standard twisted-pair jacketed telephone cable. Two-pair wiring, as a minimum, is required for telephone connection. However, 3-pair wiring is recommended to permit future upgrades, such as Off-hook Call Announce. To accommodate the electronic telephone line cord, the cable should be terminated in a modular station connector block (RJ-25) at the station location. The standard modular electronic telephone cord length is 7 feet (the maximum allowed length is 25 feet).

NOTE:

See Section **200-096-209** for secondary protector information.

3.12 The overall length of the station cable run from the KSU to the telephone must not exceed 1,000 feet (305 M), if using 24 AWG cable.

CAUTION!

When installing the station cable, do not run parallel to and within 3 feet of an AC power line. AC power lines should be crossed at right (90°) angles only. In particular, avoid running station wire pairs near devices that generate electrical noise, such as neon or fluorescent light fixtures.

3.13 Electronic Telephone Wall Mounting. Electronic telephones may be mounted on a wall or any other flat, vertical surface to which the base can be secured. When selecting the mounting site, consider the electronic telephone's weight and the additional stresses to which the mounting will be subjected. Wall mount electronic telephones in accordance with the following steps:

NOTE:

All electronic and digital telephone models are wall mounted in the same manner.

- 1) Remove the base as described in Paragraph **2.11**.
- 2) Using a suitable cutter, remove the handset hanger from the base (refer to Figure 7-1). Insert the handset hanger in the slot provided on the front of the telephone (Figure 7-6). The hanger fits in the notch on the handset.
- 3) Rotate the telephone base 180° and secure it to the telephone with its four captive screws (Figure 7-7).
- 4) Connect the electronic telephone to the wall modular connector with a cord approximately four inches long (available at most telephone supply companies). Route the cord into the hollow portion of the base.
- 5) Mount the electronic telephone on the wall mounting modular connector plate.



FIGURE 7-6—HANDSET HANGER INSTALLATION

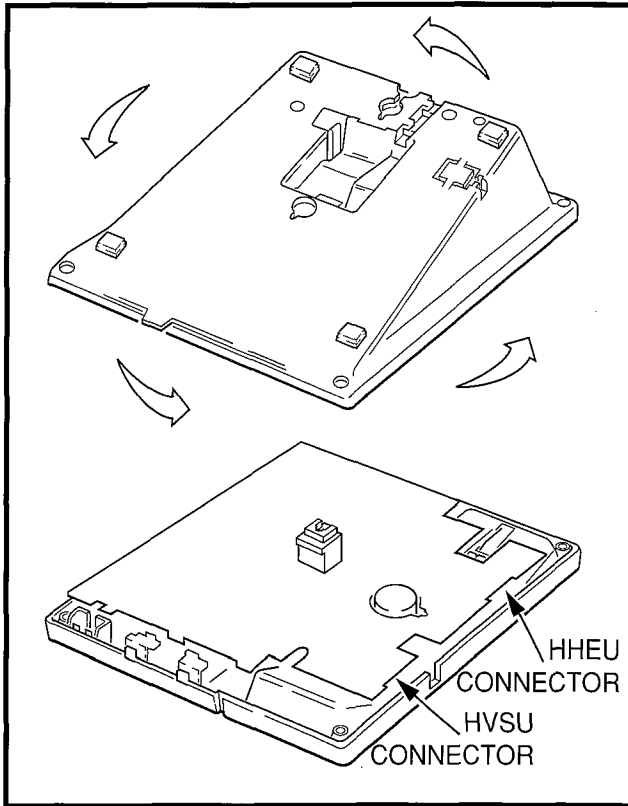


FIGURE 7-7—ELECTRONIC TELEPHONE WALL MOUNTING BASE ROTATION

3.20 Standard Telephone Connections

3.21 Standard telephones are connected to PSTU or PESU (via the MDF) with standard twisted-pair jacketed telephone cable. Single-pair wiring is required for telephone connection (refer to Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details).

NOTE:

See Section **200-096-209** for secondary protector information.

3.22 The standard telephone cable's overall loop resistance, connected on- or off-premises, is 300 ohms maximum, including the telephone resistance. This also applies to all devices connected to PESU or PSTU standard telephone circuits.

3.23 A standard telephone connected off-premises via the telephone network should interface with

OL13A lines (or equivalent) and connect to an RJ21X FIC jack (or equivalent).

3.30 DSS Console Connections

3.31 DSS consoles must be located adjacent to an electronic telephone (preferably an LCD model). DSS consoles are connected to the PEKU (via the MDF) using standard 2-pair, twisted pair, jacketed telephone cable. To connect the console use only the data pair of circuits 7 and 8. To accommodate the DSS console connection, the instrument end of the cable should be terminated in a modular station connector block (RJ-11). Refer to Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details.

3.32 The overall length of the DSS console cable run from the KSU to the console must not exceed 500 feet (152 M), if using 24 AWG cable.

CAUTION!

When installing the DSS console cable, do not run parallel to and within 3 feet of an AC power line. AC power lines should be crossed at right (90°) angles only. Avoid running DSS console wire pairs near devices that generate electrical noise, such as neon or fluorescent light fixtures.

3.33 DSS Console Configuration

3.34 The following considerations should be made when installing DSS consoles:

- A PEKU PCB is required to use the DSS console. (The DSS switch on the PEKU must be set to DSS.)
- PESU does not support DSS consoles.
- A maximum of four DSS consoles are allowed per system (three in a DK24 if a PCTUS is used).
- Two PEKU ports are required for each DSS console (always circuits 7 and 8).
- Only one DSS console may be connected to a PEKU.

3.35 DSS Programming Overview

Program 28

- Assigns DSS console(s) to electronic telephones.

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Program 29

- Assigns DSS console's individual button functions.

3.40 HDCB Door Phone/Lock Control Box Installation

3.41 The HDCB Door Phone Control Box supports three door phones (MDFB), or two door phones and one door lock control. Wiring connections for the HDCB are the same as for an electronic telephone.

3.42 The overall combined length of the HDCB and MDFB cable run from the KSU to the telephone must not exceed 1,000 feet (305 M), if using 24 AWG cable.

CAUTION!

When installing the HDCB or MDFB cable, do not run parallel to and within 3 feet of an AC power line. AC power lines should be crossed at right (90°) angles only. Avoid running the HDCB/MDFB wire pairs near devices that generate electrical noise, such as neon or fluorescent light fixtures.

3.43 Refer to Wiring Diagrams, Section 200-096-209, for wiring/interconnecting details. The following considerations should be made when installing door phones:

- A maximum of four HDCBs are allowed per system with PCTU(1, 2, or 3); three HDCBs are allowed with PCTUS.
- One electronic telephone (PEKU or PESU) port (always the 5th circuit port) is required for each HDCB.
- HDCBs can only be connected to PEKU or PESU port numbers 04, 12, 20, and 28.
- Only one HDCB may be connected to a PEKU or PESU.
- Cut jumper W9 on any PEKU/PESU PCB which will support an HDCB.

NOTE:

PDKUs do not support HDCBs.

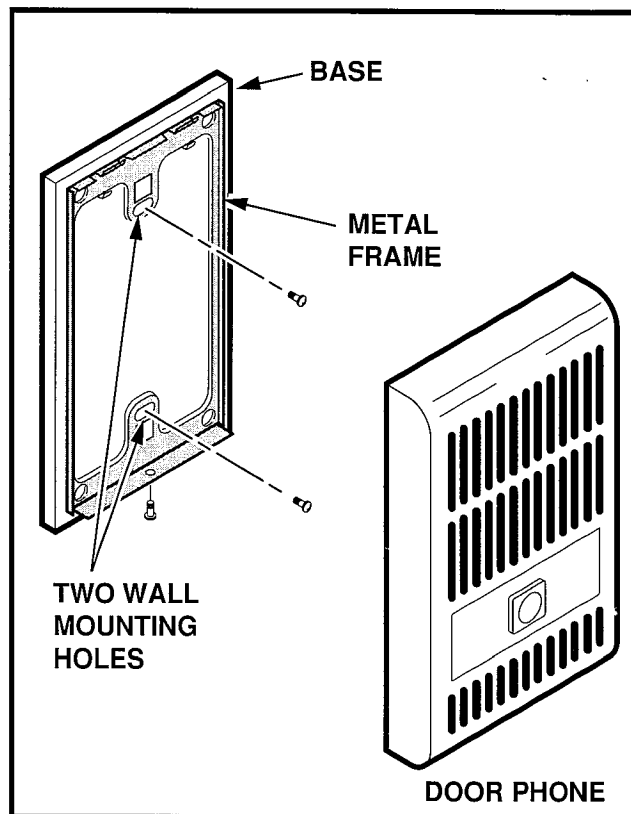


FIGURE 7-8—DOOR PHONE INSTALLATION

3.44 Door Phone/Lock Programming Considerations

Program 03

- PEKU or PESU slots supporting door phones do not require a special PCB code.

Program 77-1

- Assigns HDCB port numbers and Night Ringing over External Page.

Program 77-2

- Busy-out unused MDFB positions; identify which HDCBs support the Door Lock option.

Program 39

- Assigns the **DRLK1** ~ **DRLK4** buttons to electronic and digital telephones.

3.50 Door Phone Installation

3.51 Mount door phones (MDFBs) to a wall or vertical surface in accordance with the following steps (Figure 7-8):

- 1) Remove the screw from the bottom of the cover. Detach the cover from the base and metal frame.
- 2) Position the metal frame and base to the mounting surface and secure with two 1-inch panhead wood screws.
- 3) Attach cover to the metal frame and base.

4 DIGITAL TELEPHONE UPGRADE OPTIONS

4.00 The following contains digital telephone installation instructions. It includes step-by-step directions and drawings on how to upgrade digital telephones to transmit and receive simultaneous voice and data calls. Instructions are also provided for the loud ringing bell/headset and off-hook call announce upgrades.

4.01 Simultaneous Voice and Data (Integrated Data Interface Unit: PDIU-DI) Upgrade. PDIU-DI-equipped digital telephones can transmit and receive simultaneous voice and data calls made independently of each other. Asynchronous devices, such as personal computers and terminals, can be connected to the standard RS-232 connector of the PDIU-DI. Station users are able to transmit and receive RS-232 data over the PDIU-DI equipped telephone's single twisted wire pair.

4.02 Data calls can be manually dialed with a **DATA** button and disconnected with a **DRLS** button (see **Program 39**); or, if the PDIU-DI equipped digital telephone is connected to a personal computer or ASCII terminal, standard "AT" dialing commands may be dialed from the terminal's or computer's keyboard to place data or voice calls. PDIU-DI equipped digital telephones may also be assigned a **MODEM** button (see **Program 39**) to reserve a modem or monitor modem availability and status.

NOTES:

1. If the digital telephone is equipped with a PDIU-DI, it cannot be wall-mounted or upgraded for loud ringing bell/headset or off-hook call announce.

2. The PDIU-DI will function in all systems, except for slots 11 ~ 14 in DK96.
3. The PDIU-DI can be connected to any digital telephone connected to PDKU circuits 1 ~ 7.

4.03 Loud Ringing Bell/Headset. The loud ringing bell/headset upgrade (HHEU) enables an external speaker (HESB) and/or a headset to be connected to the digital telephone. In this configuration, the HESB serves as a loud ringing bell.

NOTE:

A Toshiba HESC-65A cable is required to connect the HHEU in a digital telephone to the HESB. The HHEU must be version **V3.0** or later for HESB operation (not required for headset operation).

4.04 Off-hook Call Announce (DVSU). The off-hook call announce (OCA) upgrade allows a digital telephone to receive calls when the handset is off-hook. To receive OCA calls, a digital telephone must be upgraded with a DVSU; the telephone making the call does not require a DVSU. (The DVSU's function in the digital telephone is the same as the HVSU/HVSI assembly's function in the electronic telephone.) An additional wire pair is not required for digital telephones that receive OCA calls.

NOTE:

The HHEU must be version **V3.0** or later for digital telephones supporting both the loud ringing bell/ headset and OCA upgrades.

4.10 Digital Telephone Upgrade Installation

4.11 PDIU-DI Installation. Install the PDIU-DI in accordance with the following steps:

- 1) Loosen the four captive screws securing the digital telephone base, and remove it.
- 2) Refer to Figure 7-9, and insert the two PDIU-DI wire connectors into the digital telephone's bottom PCB, observing the red wire for correct positioning.
- 3) On the digital telephone cut the DIU strap: **W302** on DKT 1020H or **W401** on DKT 1020SD (see Figure 7-9).

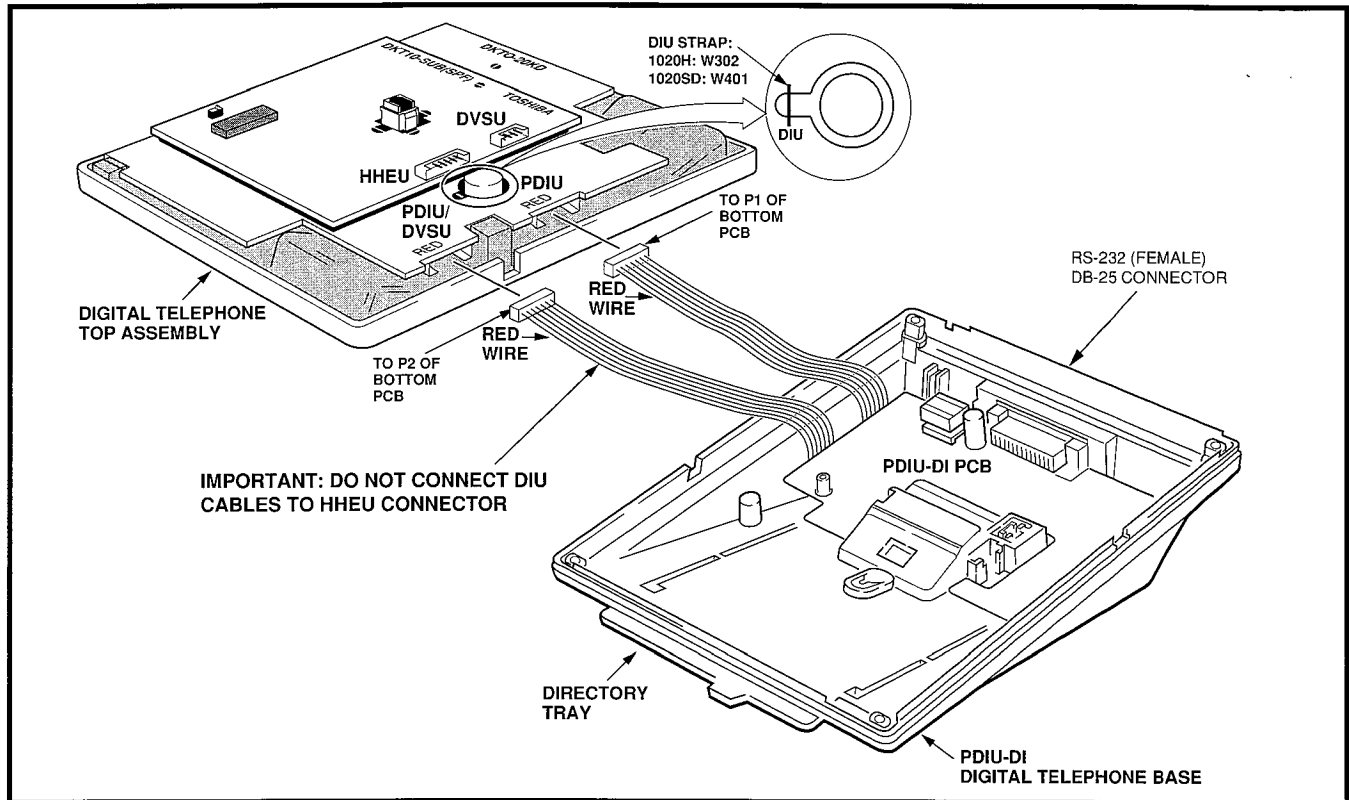


FIGURE 7-9—PDIU-DI/DIGITAL TELEPHONE INSTALLATION

NOTE:

The DIU strap must be replaced if the PDIU-DI is removed from the telephone.

- 4) Attach the PDIU-DI to the bottom of the digital telephone and secure with the four captive screws (Figure 7-1).
- 5) Remove the telephone number directory tray from the original telephone base and install it on the PDIU-DI telephone base (Figure 7-9). Bend tray by squeezing its sides so it bows slightly to remove and reinstall.

NOTES:

1. The PDIU-DI and accompanying digital telephone share the same wire pair and PDKU port.
2. To install data devices to the PDIU-DI, RS-232 connector, see Chapter 8, PDIU-DI/PDIU-DS Data Device Installation.

4.12 PDIU-DI Programming Overview

Program 03

- No special code required.

Program 39

- Assigns the **DATA**, **DRLS**, and **MODEM** buttons.

Programs 20 and 22

- PDIU configuration.

4.13 HHEU Upgrade Installation. Install the loud ringing bell/headset (HHEU) upgrade in accordance with the following steps:

NOTE:

The HHEU installed in a digital telephone must be V.3 or greater.

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.
- 2) Using a screwdriver or other suitable tool, remove the plastic tab located on the back of the base (Figure 7-1); the HHEU modular connector for the headset will be accessed through this opening.

- 3) Set the **SW601** switch on the HHEU to **HEADSET** for the headset/loud bell application (Figure 7-10).
- 4A) Connect the HESC-65A cable to P601 of the HHEU if the loud ringing bell option is required (see Figure 7-10).
- 4B) If the headset receiver is not to receive OCA, cut one side of the **R607** resistor on the HHEU (Figure 7-10) and then remove the resistor to eliminate electrical contact.
- 5) Position the HHEU PCB on the standoffs inside the base (Figure 7-10), and secure with the two screws provided.
- 6) Connect the HHEU PCB to the telephone's upper PCB (Figure 7-11), labelled DKT10-SUB(SPF).
- 7A) Refer to Figure 7-11, and locate the EXSP, **W305**, strap on the upper PCB, and cut it if an HHEU will be connected to an HESB for the loud ringing bell option.

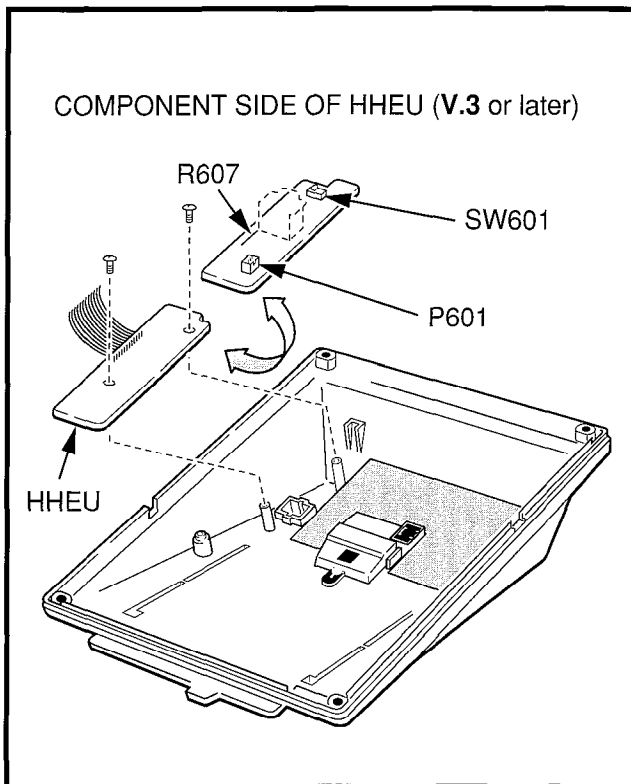


FIGURE 7-10—HHEU INSTALLATION FOR DIGITAL TELEPHONE

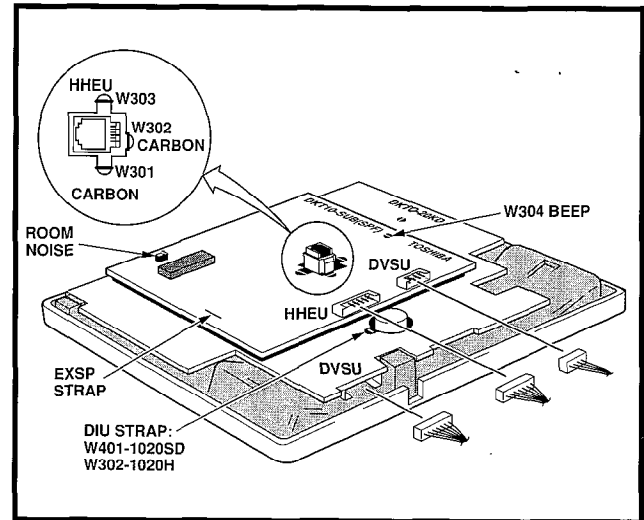


FIGURE 7-11—DIGITAL TELEPHONE PCB CONNECTIONS AND STRAPS

- 7B) Refer to Figure 7-11, and locate the HHEU strap, **W303**, on the upper PCB, and cut it if an HHEU will be connected to a headset.
- 8) Reinstall the telephone base (Figure 7-1), and secure it with its four captive screws.

NOTES:

1. The HESC-65A cable is for 1000-series digital telephones and 6500-series electronic telephones. The HESC-65 cable is for 6500-series electronic telephones only.
2. If using the HESB as a loud ringing bell, refer to Section **200-096-208**, External Speaker (HESB) Options, for wiring details.

4.14 DVSU Upgrade Installation. Install the off-hook call announce (DVSU) upgrade in accordance with the following steps.

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.
- 2) Loosen the four captive screws securing the metal plate to the standoffs inside the base where the DVSU will be installed (Figure 7-12). Remove the metal plate, which can be discarded.

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- 3) Position the DVSU PCB on the standoffs (Figure 7-12), and secure with the four screws provided.
- 4) Connect the DVSU wire plugs to the connectors labelled DVSU on both of the telephone's PCBs (Figures 7-11 and 7-12).

IMPORTANT NOTE!

Make sure that the DVSU wire plugs are connected to the proper connectors.

- 5) Reinstall the telephone base (Figure 7-1), and secure it with its four captive screws.

4.15 Carbon Straps: If a carbon-type handset or headset is used with the digital telephone, two jumper straps on the telephone's upper PCB, labelled DKT-SUB(SPF), must be cut. To cut the straps:

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.

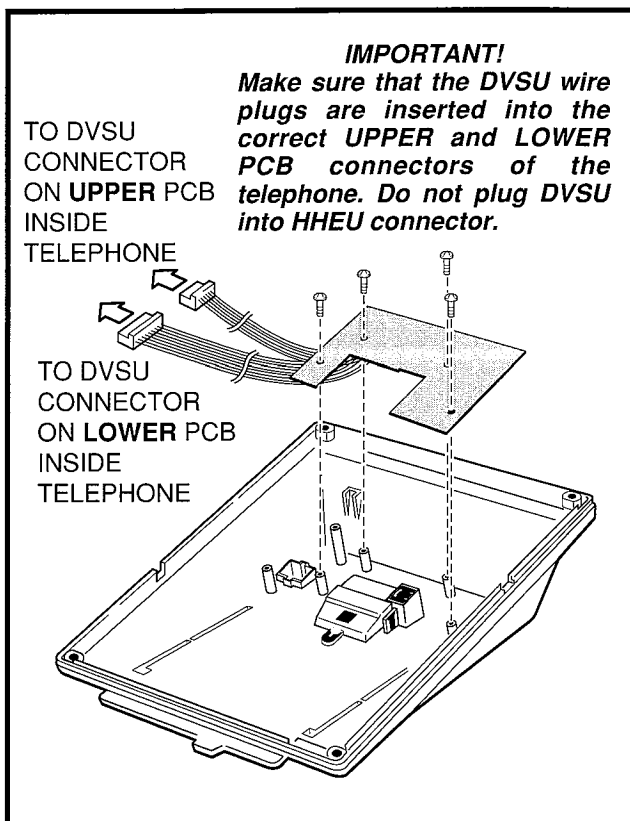


FIGURE 7-12—DVSU INSTALLATION

- 2) Refer to Figure 7-11, and locate the CARBON straps, **W301** and **W302**, and cut them.
- 3) Reinstall the telephone base (Figure 7-1), and secure it with its four captive screws.

4.16 Beep Strap. A beep is emitted whenever a dialpad button or flexible button is pressed. This beep can be eliminated if the BEEP strap is cut. To cut the strap:

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.
- 2) Refer to Figure 7-11, and locate the BEEP strap, **W304**, on the telephone's upper PCB, labelled DKT10-SUB(SPF), and cut it.
- 3) Reinstall the telephone base (Figure 7-1), and secure it with its four captive screws.

4.17 Microphone/Speaker Threshold (speakerphone only). If the speaker cuts off frequently during handsfree operation because of high ambient noise levels, set the ROOM NOISE switch to the high position. To set the switch:

- 1) Loosen the four captive screws securing the telephone base (Figure 7-1), and remove the base.
- 2) Refer to Figure 7-11, locate the ROOM NOISE switch on the telephone's upper PCB, labelled DKT10-SUB(SPF), and push it carefully to the high (H) position.
- 3) Reinstall the telephone base (Figure 7-1), and secure it with its four captive screws.

4.18 Wall Mounting. Digital telephones mount on walls and other vertical surfaces the same way electronic telephones do. See Paragraph **3.13**.

NOTE:

Digital telephones equipped with PDIU-DIs cannot be wall mounted.

4.20 Digital Telephone Connections

4.21 Wiring Diagrams, Section 200-096-209, provide point-to-point MDF wiring diagrams for connecting digital telephones, DDSS consoles, and PDIU-DSs to STRATA DK systems. Refer to Programming Procedures, Section 200-096-300, for programming requirements and procedures. The following paragraphs provide general requirements for telephone installation.

WARNING!

1. **Never install the telephone wiring during a lightning storm.**
2. **Never install the telephone jacks in wet locations unless the jack is specifically designed for wet locations.**
3. **Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.**
4. **Use caution when installing or modifying telephone lines.**

4.22 Digital telephones are connected to the PDKU (via the MDF) with standard twisted-pair jacketed telephone cable. Single-pair wiring is sufficient unless the system must operate on reserve power or in the case of a digital telephone with a PDIU-DI. In these cases, two-pair wiring should be used for extra power (see Section 200-096-209 for details). To accommodate the digital telephone line cord, the cable should be terminated in a modular station connector block (RJ-11) at the station location. The standard modular digital telephone cord length is 7 feet (the maximum allowed length is 25 feet).

4.23 The overall length of the station cable (single pair) run from the KSU to the telephone or PDIU-DS must not exceed 1,000 feet (305 M) if using 24 AWG cable and being powered by the PPSU. If operating on battery backup or if PDIU-DIs are installed, a second pair of wires is required for stations to operate effectively at 1000 feet (see digital telephone and DIU MDF wiring requirements in Section 200-096-209).

CAUTION!

When installing the station cable, do not run parallel to and within 3 feet of an AC

power line. AC power lines should be crossed at right (90°) angles only. In particular, avoid running station wire pairs near devices that generate electrical noise, such as neon or fluorescent light fixtures.

4.30 DDSS Console Connections

4.31 DDSS consoles must be located adjacent to a digital or electronic telephone (preferably an LCD model). DDSS consoles are connected to the PDKU (via the MDF) using standard twisted single-pair or two-pair jacketed telephone cable (maximum 1000 feet, 303 M). The console uses only circuit 8 on the PDKU. To accommodate the DDSS console connection, the instrument end of the cable should be terminated in a modular station connector block (RJ-11). Refer to Wiring Diagrams, Section 200-096-209, for wiring/interconnecting details, including cable length limitations.

CAUTION!

When installing the station cable, do not run parallel to and within 3 feet of an AC power line. AC power lines should be crossed at right (90°) angles only. In particular, avoid running station wire pairs near devices that generate electrical noise, such as neon or fluorescent light fixtures.

4.32 **DDSS Console Configuration.** The following considerations should be made when installing DDSS consoles:

- A PDKU PCB is required to use the DDSS console.
- A maximum of four DDSS consoles are allowed per system.
- One PDKU circuit is required for each DDSS console (always circuit 8).
- Only one DDSS console may be connected to a PDKU.

4.33 DDSS Programming Overview

Program 03

- Code 64 identifies PDKU slots that support DDSS consoles.

Program 28

- Assigns DDSS console(s) to digital telephones.

Program 29

- Assigns DDSS console's individual button functions.

4.40 PDIU-DI Connections

4.41 A digital telephone with an integrated data interface unit (PDIU-DI) requires one wire pair and one PDKU circuit (See Paragraph **4.20** for digital telephone wiring information and Section **200-096-208** for instructions on how to connect peripheral devices to PDIU-DIs).

4.50 PDIU-DS Connections

4.51 The stand-alone data interface (PDIU-DS) is connected to a single dedicated PDKU circuit with

standard twisted-pair jacketed telephone cable. Single-pair wiring is sufficient, unless the system must operate on reserve power. In this case, two-pair wiring should be used (see Section **200-096-208** for more wiring information and instructions on how to connect peripheral devices to PDIU-DSs).

NOTE:

PDIU-DSs can be connected to PDKU circuits 1 ~ 7.

Strata[®] *DK*

RELEASE 1, 2, and 3 INSTALLATION

CHAPTER EIGHT PERIPHERALS INSTALLATION

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IMPORTANT!

Digital telephones can access all features available to electronic telephones.

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1 GENERAL

1.00 This chapter provides procedures necessary to connect optional peripheral equipment to STRATA DK systems. The installation instructions for each peripheral option include hardware requirements, PCB configuration, interconnection/wiring requirements, and programming considerations, as applicable.

1.01 Peripheral equipment is connected to system PCBs. Refer to PCB Installation, Section **200-096-206**, for PCB installation instructions and PCB configuration information.

1.02 Figures are located in the middle and at the end of this chapter.

2 RESERVE POWER/POWER FAILURE OPTIONS

2.00 STRATA DK systems offer two options to protect system operation in the event of a power failure; the Reserve Power option, and the Power Failure Emergency Transfer option.

2.10 Reserve Power Option

2.11 STRATA DK system power supplies provide the capability of connecting a reserve power source (battery backup) to ensure uninterrupted system operation in the event of a power failure. A pre-assembled interface cable for installation of the Reserve Power option is available from Toshiba (PBTC-3M).

2.12 Refer to KSU Installation, Section **200-096-205**, for site requirements for the reserve power batteries.

IMPORTANT NOTE!

Local ordinances may dictate battery type and installation details.

2.13 Reserve Power Installation. Install the Reserve Power option in accordance with the following steps (refer to Figure 8-1):

- 1) Connect the **PBTC-3M** black jumper wire from the positive terminal of one 12VDC battery to the negative terminal of the second 12VDC battery.

- 2) Ensure that a serviceable 10-ampere fuse is installed in the in-line fuse holder of the **PBTC-3M** battery cable.

- 3) Connect the white lead of the **PBTC-3M** battery cable to the open positive terminal of the 12VDC battery. Connect the black lead to the open negative terminal of the second 12VDC battery.

IMPORTANT NOTE!

The KSU must be connected to the AC power source, and the power supply ON/OFF switch set to ON prior to the final step of connecting the reserve power batteries to the power supply via the BATT +/- receptacle. If the batteries are connected after AC power is lost, reserve power will not function.

- 4) Connect the **PBTC-3M** battery cable two-prong male plug to the power supply BATT +/- receptacle.
- 5) To test reserve power operation, disconnect the system AC power plug with the power supply power **ON/OFF** switch in the **ON** position. The system should continue to operate without any interruption.

NOTE:

See Paragraph 14 for battery care requirements.

2.20 Power Failure Emergency Transfer Option

2.21 The Power Failure Transfer Unit (DPFT) provides a means of automatically connecting up to eight selected CO lines directly to designated standard telephones in the event of a power failure. The DPFT allows normal operation of the selected CO lines and standard telephones when the system is in service. When power is restored, each telephone is independently reconnected to the system after that telephone is finished with its direct CO line call. The DPFT is normally installed on the Main Distribution Frame (MDF).

2.22 A circuit diagram of the DPFT is shown in Figure 8-2.

2.23 Power Failure Emergency Transfer Installation. Install the DPFT in accordance with the following steps:

- 1) Mount the DPFT on or near the MDF.

NOTE:

Refer to Wiring Diagrams, Section 200-096-209, Figures 9-14 and 9-15 for MDF interconnecting tables.

- 2) Using 25-pair cables with amphenol-type connectors (female for DPFT connector **J1**, male for DPFT connector **J2**), connect the DPFT to two 66-type quick-connect blocks.
- 3) Connect the CO lines selected for emergency use to the DPFT **J1**-block "CO-TIP" and "CO-RING" terminals.
- 4) Connect the PCOU or PCOU2 circuits related to the emergency CO lines to the DPFT **J1**-block "PCOU-TIP" and "PCOU-RING" terminals.
- 5) Connect the standard telephone stations selected for emergency use to the DPFT **J2**-block "TEL-TIP" and "TEL-RING" terminals.
- 6) Connect the PSTU or PESU (circuits 1 & 2) circuits related to the emergency standard telephones to DPFT **J2**-block "PSTU-TIP" and "PSTU-RING" terminals.
- 7) Connect the DPFT to the PSTU DG and -24V terminals (refer to Wiring Diagrams, Section 200-096-209, for PSTU and PCOU wiring/interconnecting details).

NOTE:

The -24V and DG ground terminals are available on PSTU only, not on PESU.

- 8) To test the operation of the DPFT, turn the system power switch **OFF**, and verify that CO dial tone is available at each standard telephone connected to the DPFT. Also, call back to each telephone using an outside line.

3 MUSIC-ON-HOLD/BACKGROUND MUSIC OPTIONS

3.00 STRATA DK systems provide a Music-on-Hold option for CO/E & M TIE lines, and digital,

electronic and standard telephones connected to the system. A variety of Background Music options are also provided (refer to Figure 8-3).

3.10 Music-on-Hold (MOH) Option

3.11 The Music-on-Hold (MOH) option allows connection of an external music source, such as a tape recorder or tuner, to the system for MOH. The PCTU and PCTUS1 PCBs provide the interface for connection of the external music source. The PIOU, PIOUS, or PEPU MOH relay provides on/off control for the MOH source. MOH source and MOH relay contact specifications are:

- **MOH Source Specifications**

- Input Impedance: 600 ohms
- Input Voltage (recommended levels)
Minimum: 0.14 VRMS (-15 dBm)
Maximum: 0.77 VRMS (0 dBm)

- **Relay Contact Specifications**

- Voltage: 24VDC maximum
- Current: 1 ampere maximum

IMPORTANT NOTICE! **MUSIC-ON-HOLD**

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors, and Publishers (ASCAP), or other similar organization, if copyrighted music is transmitted through the Music-on-Hold feature of this telecommunications system. Toshiba America Information Systems, Inc., hereby disclaims any liability arising out of the failure to obtain such a license.

3.12 Music-on-Hold Installation. Install the Music-on-Hold option in accordance with the following steps (refer to Figure 8-3):

- 1) Connect the external music source to PCTU or PCTUS1 connector terminal **P6**.
- 2) Rotate the PCTU or PCTUS1 volume control (**VR1**) to adjust Music-on-Hold volume: clockwise increases volume; counterclockwise decreases volume. Listen to the CO line on-hold when setting MOH to the proper volume.
- 3) If MOH relay control is required, access **Program 77-1**. Set **LED 05** to **ON** to configure the

MOH/Night Transfer Control relay for the MOH function. This feature requires the installation of a PIOU, PIOUS, or PEPU PCB.

- 4A) Set PIOU or PEPU jumper plug **P11** to **MAKE** or **BREAK** position as required:
- **MAKE (M)**—Shorts the normally open contacts (pins 9 and 34) when MOH is activated.
 - **BREAK (B)**—Opens the normally closed contacts (pins 9 and 34) when MOH is activated.
- 4B) Solder PIOUS jumper **W2** to **MAKE** or **BREAK** position if required:
- **MAKE (M)**—Shorts the normally open contacts (NHT and NHR) when any CO line is in the hold condition.
 - **BREAK (B)**—Opens the normally closed contacts (NHT and NHR) when any CO line is in the hold condition.
- 5) MOH (CO line or intercom hold) is applied from the PCTU or PCTUS through the KSU cabinet's backplane to the PEMU, PCOU, PEKU, PESU, and PSTU to provide Music-on-Hold for E & M TIE lines, CO lines, electronic/digital telephones, and single-line stations, respectively.
- 6) MOH is also applied through the PCTU Page/Background Music (BGM) control to provide BGM to electronic/digital telephone speakers and external page (refer to Paragraph 3.20).

3.20 Background Music (BGM) Options

3.21 The Background Music options allow music to play over optional external speakers (external page system) and/or electronic telephone speakers. The system allows BGM to be configured any of the three ways described below:

- 1) Configuration A—one music source: This configuration allows BGM and MOH to share the same music source (see Figure 8-4). With this configuration, the MOH/BGM music source is connected to terminal **P6** of the PCTU or PCTUS PCB. The music source is sent to CO lines/stations on hold, to electronic/digital

telephone speakers with BGM turned on (via **INT 4 8 1** or **BGM** button) and to the external page system via the PIOU, PIOUS, or PEPU optional interface unit (only one optional interface PCB can be installed in a DK system).

- 2) Configuration B—two music sources: This configuration allows the MOH source to be connected to **P6** of the PCTU or PCTUS PCB (as in Configuration A) and a separate BGM source to be connected to circuit 3 of a PEKU or circuit 8 of a PESU PCB (see Figure 8-5). With this configuration, the MOH source is sent only to CO lines/stations on hold, while the BGM source is sent directly to electronic/digital telephone speakers and to the external page system via the PIOU, PIOUS, or PEPU optional interface unit.
- 3) Configuration C—three music sources: This configuration allows the MOH source to be connected to **P6** of the PCTU or PCTUS1 (as in Configuration A). The digital or electronic telephone BGM source is connected to circuit 3 of a PEKU or circuit 8 of a PESU PCB (as in Configuration B), and a separate BGM source is sent to the external page speakers via the PIOU PCB (see Figure 8-6). When a separate BGM source is connected to the PIOU, two customer-supplied amplifiers are required to drive the external speakers. One amplifier drives the speakers for BGM when page is idle and the other amplifier drives the speakers during page. The PIOU switches BGM or page to the external speakers via the zone relays (the PIOUS and PEPU do not provide zone relays, therefore Configuration C is not possible with these PCBs).

3.22 MOH Source as Background Music Installation. Install the MOH/Background Music option in accordance with the following steps (refer to Figure 8-3):

- 1) Ensure that the Music-on-Hold option is installed in accordance with Paragraph 3.12.
- 2) The output of the PCTU or PCTUS1 page/BGM control is applied through the backplane

to the output select switch (**SW4**) on the PIOUS or PEPU.

- 3) Set the **SW4** switch to either **SPO** or **SPI**, as required:
 - **SPO**—Directs external page and non-amplified BGM to the HESB or external amplifier (pins 13 and 38).
 - **SPI**—Directs external page and BGM through the on-board 3-watt amplifier to the external speaker output (pins 25 and 50).

NOTE:

The PIOUS provides non-amplified BGM/page output only (SPT and SPR, see Figure 8-8).

- 4) When using an HESB or external amplifier for paging/BGM, adjust volume using the HESB or amplifier volume control.
- 5) When using the internal amplifier for paging/BGM, adjust the volume using the volume control (**VR1**) on the PIOUS/PEPU PCB.

3.23 BGM Source to PEKU or PESU Installation. A BGM source can be connected to either a PEKU or PESU. This music will be sent to all electronic/digital telephones and to the external page system via PIOUS, PIOUS, or PEPU. This BGM source is separated from the MOH source connected to the PCTU or PCTUS PCB. Connect the BGM source to the PEKU or PESU in accordance with the following steps (Figure 8-5):

NOTE:

***Releases 1 and 2** require that the BGM PEKU or PESU must be in slot 01; **Release 3** allows the BGM PEKU or PESU to be in any slot as signed in **Program 19**.*

- 1) Using the programming electronic telephone or a terminal, set **LED 09** to **ON** in **Program 10-2** if the BGM source connects to PEKU, circuit 3. If the BGM source is connected to PESU, circuit 8, set **LED 10** to **ON** in **Program 10-2**. If using PCTU3, identify the BGM slot via **Program 19**.

- 2) Connect the tip and ring circuit 03 of a PEKU to the 600 Ω output of the BGM source per Figure 8-5 or connect the BGM output to circuit 8, of a PESU PCB.
- 3) If BGM is connected, cut **W5** on the PEKU or **W7** on the PESU PCB that BGM is connected to.
- 4) Using the BGM source's volume control, adjust the BGM volume to the desired level while listening to BGM via an electronic telephone speaker and/or the external page speakers. When BGM is sent to external speakers via a PIOUS or PIOUS or PEPU PCB, use the external amplifier volume control to balance the BGM and page volume levels.

3.24 External Background Music Installation.

The external background music options are closely associated with the external paging options. Refer to Paragraph 6 for external paging amplifier installation.

4 RELAY CONTROL OPTIONS

4.00 Two relays are provided on PIOUS, PIOUS, and PEPU PCBs to control the operation of peripheral equipment (see Figures 8-7 and 8-8):

- External Page/Door Lock Relay (DET/DER)
- Night Transfer/Music-on-Hold Relay (NHT/NHR)

4.01 Each relay may be configured to provide one of two possible control functions. Additionally, each relay may be configured as normally open (MAKE) or normally closed (BREAK). Electrical specifications for the relay contacts are:

Voltage:

- 24VDC maximum

Current:

- 1 ampere maximum

CAUTION!

Do not connect relays directly to 120VAC power source.

NOTE:

Refer to the *Programming Procedures, Section 200-096-300*, as necessary when instructed to program the *PIOU, PIOUS, or PEPU* in the following paragraphs.

4.10 External Page/Door Lock Relay Options with PIOU, PIOUS, or PEPU.

4.11 The External Page/Door Lock Relay may be programmed for either the external page function or the door lock control function (refer to Figures 8-6 and 8-7).

4.12 When configured in **Program 77-1** for the external page function, the relay controls an external music source connected to the PIOU, PIOUS or PEPU to provide background music over external speakers. When a paging announcement is made over the external speakers, the external page relay mutes the background music.

4.13 When configured in **Program 77-1** for the door lock control function, the relay controls an external door lock. When a station's door lock button (DRLK 0) is pressed, the door lock control relay unlocks the door for 3 or 6 seconds, as specified in programming.

4.14 External Page Control. Configure the PIOU, PIOUS, or PEPU for the external page mute function in accordance with the following steps (refer to Figure 8-7 or 8-8):

- 1) Access **Program 77-1**. Set **LED 07** to **OFF** to configure the external page/door lock relay for the external page function.
- 2A) Set the jumper plug **P10** on the PIOU or PEPU jumper plug to the **MAKE** or **BREAK** position as required:
 - **MAKE**—Shorts the normally open contacts (pins 7 and 32) when external page is activated.
 - **BREAK**—Opens the normally closed contacts (pins 7 and 32) when external page is activated.
- 2B) Solder the jumper **W1** on the PIOUS to the **MAKE** or **BREAK** position as required:
 - **MAKE**—Shorts the normally open contacts (DET and DER) when external page is activated.

- **BREAK**—Opens the normally closed contacts (DET and DER) when external page is activated.

- 3) Refer to Figures 8-7 and 8-8 for wiring/interconnecting details. Connect the PIOU, PIOUS, or PEPU to the MDF as required for the external paging function.

4.15 Door Lock Control (PIOU or PIOUS or PEPU).

Configure the PIOU, PIOUS, or PEPU for the door lock control function in accordance with the following steps (refer to Figure 8-9):

NOTE:

Only one door lock control is available using an optional interface PCB (PIOU, PIOUS, or PEPU), because only one interface PCB is allowed.

- 1) Access **Program 77-1**. Set **LED 07** to **ON** to configure the external page/door lock relay for the door lock control function.
- 2) Access **Program 77-1**. Set **LED 20** to **OFF** for a 3-second door lock activation time, or set **LED 20** to **ON** for a 6-second door lock activation time.
- 3A) Set the **P10** jumper plug on the PIOU or PEPU to the **MAKE** or **BREAK** position, as required:
 - **MAKE**—Shorts the normally open contacts (pins 7 and 32) when a station's door lock button is pressed.
 - **BREAK**—Opens the normally closed contacts (pins 7 and 32) when a station's door lock button is pressed.
- 3B) Solder the **W1** jumper plug on the PIOUS to the **MAKE** or **BREAK** position as required:
 - **MAKE**—Shorts the normally open contacts (DET and DER) when a station's door lock button is pressed.
 - **BREAK**—Opens the normally closed contacts (DET and DER) when a station's door lock button is pressed.
- 4) Refer to Figure 8-9 for wiring/interconnecting details. Connect the PIOU, PIOUS, or PEPU to the MDF as required for the door lock control function.

4.16 Door Lock Control (HDCB). With **Release 2** software, the B output jack of each HDCB can be

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configured to provide one door lock control; this allows up to four door lock controls to be provided by HDCBs if the system is equipped with a PCTU2 or three door lock controls if with a PCTUS1 (see Figure 8-10). Each door lock control installed reduces the system's door phone capacity by one. Any electronic telephone can be programmed with door lock buttons that can control any of the door locks that are connected to properly configured HDCBs. Configure each HDCB door lock control as follows:

- 1) Cut jumper **W9** of the particular PEKU or PESU that will connect to the HDCB.
- 2) Connect circuit 5 VT/VR and DT/DR pairs to the HDCB HKSU modular jack per Figure 9-3.
- 3) Connect the door lock wire pair to the HDCB modular B-jack (pins 3 & 4) per Figure 9-3.
- 4) On the HDCB, set **SW1** to the **DOOR** position.
- 5) On the HDCB, set **SW2** to the **LOCK** position.
- 6) In **Program 77-1**, set the door lock activation for three or six seconds, and enable the PESU or PEKU ports for HDCB connection.
- 7) In **Program 77-2**, enable the HDCB B-jack for door lock operation.
- 8) In **Program 39**, assign **DRLK 1** ~ **DRLK 4** buttons to the desired stations per the customer's record sheet.
- 9) Check each **DRLK** button from each station: The HDCB modular B-jack (pins 3 & 4) will momentarily close (three or six seconds) when the appropriate **DRLK** button is pressed.

4.17 HDCB/DRLK Assignments Guide

PEKU or PESU	Port No.	HDCB No.	Program 39 Key Assignments
First (fifth circuit)	04	1	DRLK 1 , Code 72
Second (fifth circuit)	12	2	DRLK 2 , Code 73
Third (fifth circuit)	20	3	DRLK 3 , Code 74
Fourth (fifth circuit)	28	4	DRLK 4 , Code 75 (PCTU2 only)

NOTES:

1. See **Programs 39, 77-1, and 77-2** to program assignments.
2. HDCB hardware option settings for door lock control operation:
 - Set **SW1** (jumper) to **DOOR** position.
 - Set **SW2** (switch) to **LOCK** position.
3. Doorlock 4 is not available with the PCTUS1.

4.20 Night Transfer/Music-on-Hold Relay Options with PIOU, PIOUS, or PEPU

4.21 The NHT/NHR relay may be programmed for either the night relay or the MOH relay function (refer to Figures 8-7 and 8-8).

4.22 When configured for the night transfer function with **Program 77-1**, the relay activates if the system is in the NIGHT mode. The relay may be programmed to activate continuously when the **NT1** key (only) is set to NIGHT mode (for indirect answering machine control); or to pulsate at 1-second ON/3-seconds OFF (for a night bell) when incoming CO lines ring (NT1 = tenant 1 CO lines; NT2 = tenant 2 CO lines) per **Program 15**.

4.23 When configured for the Music-on-Hold function with **Program 77-1**, the relay activates any time a CO line is on hold. In this configuration, the relay is normally used to control the Music-on-Hold source.

4.24 Night Transfer Relay Control. Configure the PIOU, PIOUS, or PEPU for the Night Transfer Relay function in accordance with the following steps (refer to Figures 8-7 and 8-8):

- 1) Access **Program 77-1**. Set **LED 05** to **OFF** to configure the Night/Hold Relay for the Night Relay function.
- 2) Access **Program 77-1**. Set **LED 06** to provide continuous or pulsating relay activation as follows:
 - **OFF**—Programs the relay for continuous activation when **NT1** button (only) is set.
 - **ON**—Programs the relay for pulsating activation when the **NT1** or **NT2** button is set to NIGHT mode and a tenant 1 or tenant 2 CO line rings.

NOTE:

CO lines must be enabled in **Program 78** for the NT pulsating relay function.

- 3) Access **Programs 87, 88, and 89** to set the CO lines that will activate the relay (when the system is in the NIGHT mode).
- 4) Access **Program 39** to program a Night Transfer button (NT1 or NT2) on all telephones that are to transfer the system into the NIGHT mode.
- 5) Access **Programs 29-1 ~ 29-4** to program a Night Transfer button (NT1 or NT2) on all DSS consoles that are to transfer the system into the NIGHT mode.

NOTE:

Program 29-4 is not available when a PCTUS1 PCB is installed.

- 6) If tenant operation is required, access **Program 15** to set the CO lines for tenant 1 (**NT1**) or tenant 2 (**NT2**) operation.
- 7A) Set the **P11** jumper plug on the PIOU or PEPU to the **MAKE** or **BREAK** position, as required:
 - **MAKE**—Shorts the normally open contacts (pins 9 and 34) when the night relay is activated.
 - **BREAK**—Opens the normally closed contacts (pins 9 and 34) when the night relay is activated.
- 7B) Solder the jumper **W2** on the PIOUS to the **MAKE** or **BREAK** position, as required:
 - **MAKE**—Shorts the normally open contacts (NHT and NHR) when the night relay is activated.
 - **BREAK**—Opens the normally closed contacts (NHT and NHR) when night relay is activated.
- 8) Refer to Figures 8-7 and 8-8 for wiring/interconnecting details. Connect the PIOU, PIOUS, or PEPU to the MDF as required for the night relay function.

NOTE:

Door phones programmed to ring over external page in night mode (**Program 77-1**) do not activate the NT relay.

4.25 MOH Relay Control. Configure the PIOU, PIOUS, or PEPU for the MOH relay function in accordance with the following steps (refer to Figures 8-7 and 8-8):

- 1) Access **Program 77-1**. Set **LED 05** to **ON** to configure the Night/MOH relay for the MOH relay function.
- 2A) Set the **P11** jumper plug on the PIOU or PEPU to the **MAKE** or **BREAK** position, as required:
 - **MAKE**—Shorts the normally open contacts (pins 9 and 34) when any CO line is on hold.
 - **BREAK**—Opens the normally closed contacts (pins 9 and 34) when any CO line is on hold.
- 2B) Solder the **W2** jumper on the PIOUS to the **MAKE** or **BREAK** position, as required:
 - **MAKE**—Shorts the normally open contacts (NHT and NHR) when any CO line is on hold.
 - **BREAK**—Opens the normally closed contacts (NHT and NHR) when any CO line is in on hold.
- 3) Refer to Figures 8-7 and 8-8 for wiring/interconnecting details. Connect the PIOU, PIOUS, or PEPU to the MDF as required for the MOH relay function.

5 EXTERNAL SPEAKER UNIT (HESB) OPTIONS

5.00 STRATA DK systems provide three options utilizing an HESB:

5.01 Loud Ringing Bell Option. The Loud Ringing Bell option allows the voice first or ringing signal tone to be amplified without the use of other manufacturers' equipment. The voice first and signal tone can be amplified on all 6500-series electronic

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telephones and 1000-series digital telephones equipped with HHEU PCBs (refer to Section **200-096-207**). The HESB automatically turns off once the ringing call or voice first has been manually answered from the electronic or digital telephone. This turn-off feature prevents audio feedback problems.

5.02 Amplified Speaker Option. The Amplified Speaker option allows the HESB to be configured as a paging speaker. The HESB is connected to the PIOU, PIOUS, or PEPU 600-ohm page output to provide an amplified external speaker.

5.03 Talkback Amplified Speaker Option. The Talkback Amplified Speaker option allows a talkback speaker to be provided in areas where a telephone is not needed, such as in conjunction with a door phone. In this configuration, the HESB is connected to the PIOU, PIOUS, or PEPU 600 Ω (duplex) output and is used as the amplifier and speaker. The door phone unit (MDFB) is connected to the HESB, and serves as a microphone to provide talkback operation (the MDFB pushbutton is inoperative, and the unit serves only as a microphone for talkback).

NOTE:

The PIOU, PIOUS, and PEPU 600 Ω (duplex) page output is compatible with most commercially available talkback amplifiers.

5.10 System Hardware Requirements

5.11 System hardware requirements vary depending on the HESB option selected. Refer to the following installation procedures for the system hardware requirements for each option.

5.20 HESB Option Installation

5.21 Loud Ringing Bell Installation. Install the HESB Loud Ringing Bell option in accordance with the following steps (refer to Figure 8-11 for electronic or 8-11A for digital telephones).

- 1) Connect a jumper between terminals 6 and 7 on the HESB **TB1** terminal block.
- 2) Connect a jumper between terminals 5 and 8 on the HESB **TB1** terminal block.
- 3) Connect a jumper between terminals 4 and 5 on the HESB **TB2** terminal block.

NOTES:

1. HESB connections made in steps 4 ~ 7 may be accomplished using the HESB **VOICE** modular jack instead of the **TB1** terminal block.
2. Install an HHEU PCB and HESC-65 cable in the 6500-series electronic telephone per Section **200-096-207** before proceeding with steps 4 and 5.
- 4) Connect terminal 1 of the HESB **TB1** terminal block to the red (+) wire of the HESC-65 cable using a modular block per Figure 8-11.
- 5) Connect terminal 2 of the HESB **TB1** terminal block to the green (-) wire of the HESC-65 cable using a modular block per Figure 8-11.
- 6) Connect terminal 3 of the HESB **TB1** terminal block to pin 3 of the electronic telephone's modular block (VOICE-TIP).
- 7) Connect terminal 4 of the HESB **TB1** terminal block to pin 4 of the electronic telephone's modular block (VOICE-RING).
- 8) Connect the HACU-120 power supply's **+12V** lead to terminal 1 of the HESB **TB2** terminal block, and connect the power supply's **0V** lead to terminal 2.
- 9) Plug the provided power cord into the power supply and to a 117VAC, 60Hz power source.

NOTE:

See Figure 8-24 for HESB wall mounting instructions.

5.22 Loud Ringing Bell Test. Test the Loud Ringing Bell installation in accordance with the following steps:

- 1) Make a CO or station call to the station configured for the loud ringing bell.
 - Ringing will be heard over the HESB.
- 2) Adjust the HESB volume control to the desired level.
- 3) If ringing is heard at the station, but not over the HESB, perform the following check while the station is ringing:
 - a) Using a suitable voltmeter, measure voltage across terminals 1 (+) and 2 (-) of the HESB **TB1** terminal block.
 - Voltage indication should be 4.5 ~ 5.0 VDC.

NOTE:

Ringling stops once the call is manually answered. There should be NO voltage potential across terminals 1 and 2.

- b) If voltage is not as specified during ringing, check that the electronic telephone wiring connections to the HESB have been made properly (wires to terminals 1 and 2 of the HESB **TB1** terminal block may have been reversed).

5.23 Amplified Speaker Installation. Install the HESB Amplified Speaker option in accordance with the following steps (refer to Figure 8-12):

- 1) Connect a jumper between terminals 1 and 2 of the HESB **TB1** terminal block.
- 2) Connect a jumper between terminals 6 and 7 of the HESB **TB1** terminal block.
- 3) Connect a jumper between terminals 5 and 8 of the HESB **TB1** terminal block.
- 4) Connect a jumper between terminals 3 and 4 of the HESB **TB2** terminal block.
- 5) Connect a jumper between terminals 5 and 6 of the HESB **TB2** terminal block.
- 6A) Connect the PIOU or PEPU 600-ohm page output (pins 13 and 38) to terminals 3 and 4 of the HESB **TB1** terminal block.
- 6B) Connect the PIOUS 600-ohm page output (SPT and SPR) to terminals 3 and 4 of the HESB **TB1** terminal block.
- 7) Connect the power supply's **+12V** lead to terminal 1 of the HESB **TB2** terminal block, and connect the **0V** lead to terminal 2.
- 8) Plug the provided power cord into the power supply and to a 117VAC, 60Hz power source.
- 9) Set the PIOU or PEPU **SW4** switch to the **SPO** position.

5.24 Amplified Speaker Test. Test the amplified speaker installation in accordance with the following steps:

- 1) Make an external page.
 - Page should be heard over the HESB.
- 2) Adjust the HESB volume control to the desired level.

5.25 Talkback Amplified Speaker Installation. Install the HESB Talkback Amplified Speaker option in accordance with the following steps (refer to Figure 8-13):

- 1) Connect a jumper between terminals 1 and 2 of the HESB **TB1** terminal block.
- 2) Connect a jumper between terminals 3 and 4 of the HESB **TB2** terminal block.
- 3) Connect a jumper between terminals 5 and 6 of the HESB **TB2** terminal block.

NOTE:

*HESB connections made in steps 4 ~ 7 may be accomplished using the HESB **VOICE** and door phone modular jack instead of the **TB1** terminal block.*

- 4) Connect terminal 7 of the HESB **TB1** terminal block to pin L1 of the MDFB.
- 5) Connect terminal 8 of the HESB **TB1** terminal block to pin L2 of the MDFB.
- 6) Connect terminal 9 of the HESB **TB1** terminal block to pin 1 of the MDFB.
- 7) Connect terminal 10 of the HESB **TB1** terminal block to pin 2 of the MDFB.
- 8A) Connect the PIOU or PEPU 600-ohm page output (pins 13 and 38) to terminals 3 and 4 of the HESB **TB1** terminal block.
- 8B) Connect the PIOUS 600-ohm page output (SPT and SPR) to terminals 3 and 4 of the HESB **TB1** terminal block.
- 9) Set the PIOU or PEPU **SW4** switch to the **SPO** position.
- 10) Connect the HACU-120's **+12V** lead to terminal 1 of the HESB **TB2** terminal block, and connect the **0V** lead to terminal 2.

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- 11) Plug the provided power cord into the power supply and to a 117 VAC, 60Hz power source.

5.26 Talkback Amplified Speaker Test. Test the Talkback Amplified Speaker installation in accordance with the following steps:

- 1) Make an external page.
 - Page will be heard over the HESB.
- 2) Verify that someone speaking into the door phone can be heard at the paging station (with this application, pressing the door phone button is not required to talkback through the door phone).

6 EXTERNAL PAGE OPTIONS

6.00 System Hardware Requirements

6.01 STRATA DK systems offer a variety of external page options. Additionally, a BGM option is available with each external page option. DK systems support:

- Paging with BGM (same amplifier).
- Zone paging with BGM (separate amplifiers).
- Zone paging with BGM (multiple amplifiers).

NOTE:

The PIOU PCB only is equipped with zone paging.

6.02 Either a PIOU, PIOUS, or PEPU PCB is required to support the external paging/BGM options. The PIOU will support any of the paging/BGM options. The PEPU and PIOUS will support only the paging with BGM (same amplifier) option.

6.10 External Page Option Installation

6.11 All paging connections are made via the PIOU or PEPU amphenol connectors or the PIOUS **TB1** terminal to the MDF.

6.12 Page (single zone) with BGM (same amplifier). In this configuration, paging and BGM are amplified by a common customer-supplied paging amplifier. When the external page access code is dialed, the external page control relay is activated, which applies a short (or open) to the amplifier mute control to mute the music. Install this option in accordance with the following steps (refer to Figure 8-14):

- 1) Connect the input no. 1 from the paging amplifier to pins 13 (SPR) and 38 (SPT) of the PIOU or PEPU; or connect to SPT and SPR of the PIOUS.
- 2) Connect the paging amplifier mute terminal to pins 7 and 32 of the PIOU or PEPU; or connect to DET and DER of the PIOUS.
- 3) Connect the music source to the input no. 2 of the paging amplifier.
- 4) Connect the speaker to the paging amplifier output.
- 5) Verify that the PIOU or PEPU **P10** jumper plug is in the **MAKE** position or that the PIOUS **W1** jumper wire is in the **MAKE** position.

6.13 Zone Page with BGM (separate amplifiers). This configuration provides multiple-zone paging capability. The output of the paging amplifier is routed back to the PIOU, where it is switched to one of four sets of speakers by PIOU relays **K1** through **K4**. The relay selected is determined by the access code dialed by the station user. Default access codes are:

- K1/zone 1 = 35
- K2/zone 2 = 36
- K3/zone 3 = 37
- K4/zone 4 = 38
- All zones = 39

NOTE:

Multi-zone page output rating is 30W/maximum at 300 ohms.

6.14 An all zone page code (39) is also available as an option (see **Program 10-2**). When the all page code is dialed, all four relays are activated to permit simultaneous paging to all speaker zones and all electronic telephone speakers. Install this option in accordance with the following steps (refer to Figure 8-15):

- 1) Connect the input from the paging amplifier to pins 13 (SPR) and 38 (SPT) of the PIOU.
- 2) Connect the BGM music source to the music amplifier input.
- 3) Connect the paging amplifier output to the "M"

contact's PIOUS relays **K1 ~ K4** and the "C" terminal of zone 1 ~ zone 4 speakers.

- 4) Connect the BGM music amplifier output to terminal 23 (PG COMMON) of the PIOUS, and to zone 1 ~ zone 4 speakers.

6.15 Zone Page with BGM (multiple amplifiers).

This configuration also provides multiple-zone paging capability, as in Paragraph 6.13. However, separate amplifiers are used for each zone. Install this option in accordance with the following steps (refer to Figure 8-16):

- 1) Connect the inputs from the paging amplifiers to pins 13 (SPR) and 38 (SPT) of the PIOUS.
- 2) Connect the music source to the music amplifier input.
- 3) Connect the paging amplifier outputs to PIOUS relays **K1 ~ K4** and zone 1 ~ zone 4 speakers.
- 4) Connect the music amplifier output to terminal 23 (PG COMMON) of the PIOUS, and to the "C" terminal of zone 1 ~ zone 4 speakers.
- 5) Connect zone 1 ~ zone 4 speakers "A" terminal to the "B" contact of the PIOUS relays **K1 ~ K4** respectively.

6.16 Night Ringing over External Page Zones (PIOUS only). To allow the night ringing signal to be sent over zone paging, install the paging amplifier in accordance with the following steps (refer to Figure 8-17). (Steps 1 ~ 6 are performed at the MDF.)

- 1) Cross-connect the amplifier input to pins 13 (SPR) and 38 (SPT) of the PIOUS PCB.
- 2) Cross-connect the amplifier output A to the PGIN1 ~ PGIN4 connector from the PIOUS.
- 3) Cross-connect the amplifier output B to the zone 1 ~ zone 4 speaker common line.
- 4) Cross-connect the PIOUS PGOUT1 ~ PGOUT4 to zone 1 ~ zone 4 speakers.
- 5) Cross-connect the amplifier output A to pin 9 (NHR) of the PIOUS.

- 6) Cross-connect a jumper from pin 34 (NHT) to pin 23 (PG COMMON) from the PIOUS PCB.
- 7) In **Program 77-1**, set **LED 05** to **OFF** and **06** to **ON**. Set **LED 08** to **ON** if door phones are to ring over external page when the system is in NIGHT mode.
- 8) In **Program 78**, enable the CO lines that are to ring via external page when the system is set in the NIGHT mode.
- 9) In **Program 39**, assign the **NT1** or **NT2** buttons to electronic telephones per the System Record Sheets (see Note 2).
- 10) Press the **NT1** or **NT2** button on an electronic telephone to set the system into the NIGHT mode. Test by calling into the system on a CO line assigned (**Program 78**) to night ring over external page.
 - When ringing sounds (see Note 2) over the page, press **INT 5 3 5** to answer.

NOTES:

1. All zones will ring with this option; night ringing to selected zones is not possible.
2. The **NT1** or **NT2** buttons put CO lines in NIGHT ring mode per **Program 15**; NT1-TENANT 1/NT2-TENANT 2 CO line assignment.

7 STATION MESSAGE DETAIL RECORDING (SMDR) PRINTER/CALL ACCOUNTING DEVICE OPTIONS

7.00 An SMDR printer or call accounting device may be connected to the system to provide a hard-copy record of station activity (incoming, outgoing, and transferred calls account code entries) on CO lines or a printout of the customer data base. Call record data is printed out at the completion of each call, provided the call was at least 10 seconds in length. Program SMDR with **Program 60**, and use **Program 97** to have the SMDR printer display the customer data base.

7.01 SMDR will send out special names for the following types of calls:

- **MSS:** Prints on DISA or DISC calls to stations (see Note).

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- **MODM:** Prints on calls to the IMDU remote maintenance modem (station 19).
- **DISA:** Prints on DISA calls to CO lines when calling through the system CO-to-CO.

NOTE:

MSS will print only on DISA or DISC calls that are answered 10 seconds after the DK dial tone is sent to the calling party. If the call is answered before 10 seconds, the call will register as a normal incoming call and the MSS/transfer portion of the call will not print out.

7.02 Figure 8-18 shows a sample SMDR printout and describes the contents of each column of the printout. The following examples show several call record samples and describe the sequence of events which occurred to generate the call records.

NOTE:

SMDR printout "time of day" and day/month/year (DD/MM/YY) is the same as the system clock time/date set by the station connected to port 00. SMDR DD/MM/YY will print out each time 50 call records are generated.

SMDR PRINTOUT EXAMPLES

Direct Inward System Access (DISA) CO Lines

NOTE:

DISA station calls print out as MSS.

EXAMPLE 1—Ring, No Answer DISA Call
Call Sequence A

- Outside caller rings CO line 03 (CO line 03 is programmed as a DISA line).
- Line 03 returns intercom dial tone to caller after two ring cycles (5 ~ 6 seconds).
- Caller does nothing.
- After 32 seconds, call is disconnected.
- Printout **A** prints after disconnect at 4:59.

PRINTOUT A

03 MSS 04:59 00:00:32 00:06

EXAMPLE 2—DISA Internal Station Call

Call Sequence B

- Outside caller rings CO line 03 (CO line 03 is programmed as a DISA line).

- Line 03 returns intercom dial tone to caller after two ring cycles (5 ~ 6 seconds).
- Caller dials 203.
- After 48 seconds from start of call, station 203 answers.
- Printout **B** prints after station 203 answers the call at 4:32.

NOTE:

MSS will not print if the call is answered within 10 seconds from when the caller receives dial tone.

PRINTOUT B

03 MSS 04:32 00:00:48 00:05 203

EXAMPLE 3—DISA Outgoing CO Line Call

NOTE:

DISA CO line calls print out as DISA.

Call Sequence C

- Outside caller rings CO line 01 (line 01 is programmed as DISA).
- Line 01 returns intercom dial tone after two ring cycles (5 ~ 6 seconds).
- Caller dials 703 to access CO line 03 (outgoing).
- Caller dials the DISA security code and receives CO dial tone.
- Caller dials the telephone number and converses when the call is answered.
- Caller hangs up.
- The call releases, and Printout **C** prints after the call disconnects at 12:22.

NOTES:

1. *If the CO provides the auto release (AR) signal (see **Program 15**), the call disconnects when either party hangs up.*
2. *If the auto release signal is not returned, the CO lines will remain seized until the DISA disconnect timer releases the call (approximately five minutes).*

PRINTOUT C

Auto Release signal:

03 DISA 12:22 00:02;01 (outgoing)
01 DISA 12:22 00:02;01 (incoming)

Disconnect Timer:

01 DISA 12:24 00:04;57 (incoming)
03 DISA 12:24 00:04;57 (outgoing)

7.03 System Program Data Printout. If a printer is connected to the SMDR port, customer program information stored in the PCTU or PCTUS1 RAM may be printed out for reference by using **Program 97** (see Paragraph 7.14).

7.10 SMDR Hardware Requirements

7.11 A DK system must be equipped with a PIOU or PIOUS PCB to support the SMDR printer/call accounting device option. Connection of the printer or call accounting device to the PIOU or PIOUS PCB is accomplished with a 3-pair modular cord (7 feet maximum) and a PPTC connector adaptor (refer to Figure 8-19 for details). Call record data is ASCII-formatted, 8 bits, no parity, 1-stop bit.

7.12 The PIOU or PIOUS contains a call record buffer which stores call record data (for up to 50 calls) when the printed or call accounting device is turned off, or when no device is connected to the SMDR port. No further call records are stored after the buffer is filled. When the printer or call accounting device is made operational, an "ERROR BUFFER OVERFLOW" message is printed to indicate that the buffer was full, and that some call information may have been lost.

7.13 SMDR Programming Considerations

7.14 Selectable programming options for the SMDR printer or call accounting device are:

Program 60

- Item 3—Selects the records of outgoing calls or outgoing and incoming calls to be printed.
- Item 4—Selects digit length of account code (4 to 15 digits).
- Item 5—Allows only long distance call records to be printed.

Program 97

- Allows system program data to be printed via the SMDR port (refer to Figure 8-20 for an example printout).

NOTES:

1. An SMDR printer must be connected to the SMDR port to use the printout option selected by **Program 97**.
2. Call record data is lost when program data is printed out using **Program 97**.

7.20 SMDR Printer/Call Accounting Device Installation

7.21 Install the SMDR printer/call accounting device option in accordance with the following steps (refer to Figures 8-19, 9-17, and 9-19):

- 1) Connect the interface cable and the PPTC adaptor from the PIOU or PIOUS SMDR port to the SMDR printer or call accounting device DB25 connector.
- 2) Set the PIOU or PIOUS **SW1** switch to the appropriate baud rate (300 or 1200 bps), as determined by the baud rate of the printer or call accounting device.
- 3) Set the printer or call accounting device to 8-bits/no parity/one stop bit.
- 4) Program (**Program 60**) the system for the required SMDR printer/call accounting device options (refer to Paragraph 7.13 and the Programming Procedures, Section 200-096-300).

8 MAINTENANCE TERMINAL OPTIONS

8.00 A customer-supplied maintenance terminal may be connected to the system (PIOU or PIOUS) either locally or remotely. The maintenance terminal (ASCII terminal) allows system programming and testing to be accomplished. Also, the IMDU modem or an external maintenance modem (300 or 1200 baud full-duplex) can be connected to allow system programming and testing to be accomplished from a remote location.

NOTE:

An external modem is required for Remote Maintenance if an IMDU is not installed on the PIOU or PIOUS. The IMDU has a built-in maintenance channel for remote connection; however, an external modem requires a CO line, PSTU or PESU port.

8.10 Maintenance Terminal/External Modem Option System Hardware Requirements

8.11 The STRATA DK system must be equipped with a PIOU or PIOUS PCB to support the maintenance terminal/external modem options. Connecting the maintenance terminal or external mainte-

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nance modem to the PIOU or PIOUS PCB is accomplished with a standard 3-pair modular cord and a PPTC adaptor connected to the PIOU or PIOUS TTY jack (refer to Figure 8-21).

NOTE:

If the IMDU modem is used, the PPTC adaptor or modular cord is not required.

8.20 Local Maintenance Terminal Installation

8.21 Install the ASCII terminal in accordance with the following steps (refer to Figure 8-21):

- 1) Connect the 3-pair modular cable (or 24 AWG twisted pairs) and the PPTC adaptor from the PIOU or PIOUS TTY port to the remote maintenance terminal DB25 connector.
- 2) Set the PIOU or PIOUS **SW2** switch to match the modem or terminal baud rate:
 - Push in for 300 bps (baud rate indicator **CD4** is lighted); let out (by pushing again) for 1200 bps (**CD4** is not lighted).
- 3) Set the PIOU or PIOUS **SW3** switch to the **TTY** position.
- 4) Set the **P13** jumper plug on the PIOU to the **BELL** configuration, or cut the **W4** jumper on the PIOUS (also for **BELL** configuration).

NOTE:

*The **P13** (PIOU) and **W4** (PIOUS) **CCITT** configurations are not normally used in the USA.*

- 5) Programming and system testing, via the maintenance terminal, is described in the Remote Maintenance Procedures, Section **200-096-400**.

NOTE:

If the electronic telephone connected to port 05 is in the program mode, programming from the maintenance terminal is not allowed.

8.30 Remote Maintenance Option Installation

8.31 IMDU Maintenance Modem. The IMDU modem mounts on the PIOU or PIOUS PCB and

provides 300 or 1200 bps, full-duplex communication for remote maintenance. If the IMDU is employed, a dedicated CO line, PSTU, or PESU connection is not required. Connection of the remote maintenance terminal is through existing system CO lines via intercom number 19. Refer to the PIOU or PIOUS portion of Section **200-096-206** for details on hardware installation and programming requirements. Remote Maintenance Procedures, Section **200-096-400**, provides more information about using the IMDU for remote maintenance.

8.32 External Maintenance Modem Installation.

Install the external modem in accordance with the following steps (refer to Figure 8-21):

NOTE:

*The Toshiba **PPTC RS-232 modular-to-DB25 adaptor** is factory-configured for ASCII terminal connection. Pins 2 and 3 of the adaptor must be reversed for external modem connection.*

- 1) Connect the modular cord from the PIOU or PIOUS TTY port to the PPTC adaptor and then to the external maintenance modem RS-232 25-pin connector.
- 2) Connect the external maintenance modem line-side to a dedicated CO line (tip and ring) or to a dedicated PSTU or PESU standard telephone port (tip and ring). Refer to Wiring Diagrams, Section **200-096-209**, for wiring/interconnecting details.
- 3) Set the PIOU or PIOUS **SW2** switch to match the modem or terminal baud rate:
 - Push in for 300 bps (baud rate indicator **CD4/LED** is lighted); let out for 1200 bps (**CD4** is not lighted).
- 4) Set the PIOU or PIOUS **SW3** switch to the **TTY** position.

NOTE:

*The PIOU or PIOUS **SW3** switch is set to the **MODEM** position for IMDU operation only.*

- 5) Set the **P13** jumper plug on the PIOU to the **BELL** configuration, or cut the **W4** jumper on the PIOUS (also for **BELL** configuration).

NOTE:

The **P13** (PIOU) or **W4** (PIOUS) **CCITT** configurations are not normally used in the USA.

- 6) Programming and system testing, via the external maintenance modem, is described in the Remote Maintenance Procedures, Section **200-096-400**. Access to the external maintenance modem is accomplished as follows:
- If the modem is connected to a dedicated CO line, call the CO line number to establish modem communication.
 - If the modem is connected to a PSTU or PESU port, call a DK CO line that can be transferred to (or programmed to ring) the PSTU or PESU modem port to establish modem communication.

9 VOICEMAIL/AUTO ATTENDANT OPTIONS

9.00 System Hardware Requirements

9.01 Systems may be configured to support a Toshiba INTOUCH Digital Voice Messaging System, a customer-supplied voice mail messaging system, or auto attendant.

9.02 The STRATA DK system must be equipped with a PSTU or PESU PCB to support the voice mail or auto attendant option. The PSTU is equipped with eight standard telephone circuits, and the PESU is equipped with two. A CRCU (-4 or -8) subassembly must be installed on the PCTU or PCTUS1 PCB. The voice mail/auto attendant option may be connected to any standard telephone circuit at the MDF block.

9.10 INTOUCH Digital Voice Messaging System

9.11 STRATA DK systems are designed to support the full range of features offered by the INTOUCH Digital Voice Messaging System. INTOUCH provides various call routing, message handling, and information management features, including:

- Automated Attendant
- Call Forward to Voice Mailbox
- Message Waiting Indication
- Voice Mail Control from Electronic Telephone

- System Monitoring
- Feature Integration

9.12 A block diagram of voice mail/auto attendant-to-PSTU or -PESU connection is shown in Figure 8-22. See section **200-096-206** for PSTU and PESU installation.

9.13 STRATA DK/INTOUCH Programming Considerations. Some features of STRATA DK system programming are unique to INTOUCH, and are not available for customer-supplied voice mail messaging systems. These programming features are:

- **Answer (A) Tone.** The STRATA DK stations will send an answer tone to INTOUCH when the station answers an INTOUCH call.
- **Disconnect (D) Tone.** The STRATA DK stations will send a disconnect tone to INTOUCH when the station hangs up while connected to INTOUCH.

NOTE:

*Both answer and disconnect tones provide more efficient INTOUCH port use. Always enable these options. Both options are enabled by accessing **Program 31**, and setting **LED 15** to **ON** (LEDs 16 and 17 must also be ON to allow A and D tones).*

- **B Tone Signals.** Stations send a recall (B) tone to INTOUCH whenever INTOUCH answers a transfer (camp-on) recall from a station that did not answer an INTOUCH blind transfer. (The B tone notifies INTOUCH that the call is a recall and not a new call, allowing INTOUCH to respond with the appropriate greeting.) For this feature to operate, INTOUCH must be equipped with **Version B.06** software or above; and the DK PSTU or PESU voice mail ports must have LEDs 19 and 20 turned **ON** in **Program 31**.

9.14 INTOUCH Installation. Use the above information in concert with Paragraphs **9.23** and **9.24** to install INTOUCH.

9.20 Customer-supplied Voice Mail Messaging Systems

9.21 STRATA DK systems are designed to support a wide range of customer-supplied voice mail

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messaging systems. Depending on the voice mail system used, some of the features available with INTOUCH (refer to Paragraph 9.10) may be available with the customer-supplied system.

9.22 Voice Mail (PSTU or PESU Port) Programming Considerations

9.23 Voice mail (all types) PSTU or PESU port programming is accomplished using **Programs 31** and **10-2** (refer to Programming Procedures, Section **200-096-300**, for details). Voice mail (VM) programming features are:

- **VM Groups**—This feature groups VM PSTU or PESU ports together so that message waiting set/cancel signals appear to originate from the lowest port in the VM group. All VM ports connected to a particular VM machine should be set in the *same* VM group (**Program 31**, LEDs 05 ~ 08).
- **Message Waiting Set/Cancel**—If the VM machine has the ability to dial a code, plus the appropriate station numbers to set or cancel the message waiting LEDs on electronic telephones, program the VM machine to dial the following sequences (**Program 10-2**, LED 04):
 - 1) To set a MW LED, the VM machine must dial **63** + station number.
 - 2) To cancel a MW LED, the VM machine must dial **64** + station number.

NOTE:

Only dial codes 63 and 64 are set in the VM device configuration; the VM device will dial the station number automatically to set/cancel the MW LED.

- **No Conference VM**—Prevents undesired three-party connections during VM call transfers. All VM ports should be set for No Conf (**Program 31**, LED 09).
- **Privacy Override Deny**—Prevents stations from overriding (breaking in) in-progress VM calls (**Program 31**, LED 18).
- **End-to-End Signaling**—Allows VM port DTMF operation. All VM ports should be set for end-to-end signaling (**Program 31**, LED 17).

NOTE:

The CRCU (-4 or -8) must be installed on the

PCTU or PCTUS1 to allow End-to-End Signaling.

- **Receive Auto Call Forward ID Codes**—Provides auto digits from call forwarded stations to direct callers to stations' mailboxes. All VM ports should be set to receive auto ID code (**Program 31**, LED 16).

9.24 Voice Mail Program Checklist. The following items should be verified before programming voice mail:

- 1) Set INTOUCH Maintenance Menu system parameters to "D" = STRATA DK (see INTOUCH *Installation and Maintenance Manual* for other parameter settings).
- 2) STRATA DK programs:
 - **Program 92:** Initialization clears voice mail auto dial codes.
 - **Program 03:** Verify that a CRCU (-4 or -8) is installed on the PCTU to allow the VM/AA to send DTMF tones.
 - **Program 04:** Assigns station numbers to VM/AA ports (initialized numbers recommended).
 - **Program 05:** First digit of special codes 63 and 64 (initialized numbers recommended).
 - **Program 10-1:** Set the system for voice first, and program the VM/AA device to dial the suffix as "1" after station numbers.
 - **Program 10-2:** Set LEDs 04 for set/cancel operation and 06 ON for the VM to detect 80 msec. tones.
 - **Program 13:** If the VM/AA device is the message center, set the lowest VM port as the message center.
 - **Program 31:** Turn LEDs 05, 09, and 15 ~ 20 ON for the PESU or PSTU ports that are connected to the INTOUCH VM/AA ports. Do not set these options for standard telephone or electronic telephone station ports.

NOTE:

A, D, and B tones should be enabled only for VM/AA devices that respond to these tones.

- **Program 33:** Set the PESU and PSTU ports that are connected to the VM/AA ports

to a hunting sequence, starting with the lowest port hunting to the next highest port, etc. The last hunt should be to an attendant.

- **Program 35:** LEDs 01 and 02 must be ON for stations to receive the message indication (MW LED flashing) from a VM device.
- **Program 36:** Set fixed call forward to VM/AA port per customer requirements.
- **Program 37:** Set the timer for the VM/AA ports to 22 seconds minimum to allow call forward no answer to work on VM transferred calls.
- **Program 39:** Set the MW/FL, CFF, RDL and SDS buttons on the electronic telephones that will be used to communicate with the VM/AA device.
- **Programs 81 ~ 89:** Verify that the ringing assignments to the VM/AA devices are set per customer requirements.
- **Programs 16, 40, 41, 45 ~ 48 and 50 ~ 56:** Verify that outgoing CO line access is allowed on VM ports to allow the VM/AA beeper notification feature to operate.

9.25 Voice Mail System Installation. Install the voice mail messaging system in accordance with the following steps:

- 1) Ensure that the PSTU or PESU PCB is installed in the system per Section **200-096-206**.
- 2) Connect the voice mail messaging system to the selected PSTU or PESU standard telephone port (refer to Wiring Diagrams, Section **200-096-290**, for PSTU and PESU wiring/interconnecting details).
- 3) Program the system for the required voice mail messaging features (refer to Paragraphs **9.13** and **9.22**).
- 4) Ensure that a CRCU (-4 or -8) is installed on the PCTU or PCTUS1 PCB, and verify that the PCTU code in **Program 03** is for CRCU operation as required.
- 5) Perform additional voice mail messaging system programming as applicable (refer to customer-supplied installation/programming manuals).

NOTE:

Some voice mail devices may ring trip when called; in this case, set the ring voltage jumper to L (low position) on the PESU or PSTU2 PCB connected to the voice mail device.

10 ALARM SENSOR INSTALLATION

10.00 The PIOU or PIOUS PCB provides a circuit that can be set to detect a relay open or closed condition from a facility alarm system. When the sensor is activated, all electronic telephones will sound an alarm signal. The electronic telephone alarm signal can be reset by any electronic telephone with an alarm reset button (see **Program 39**).

10.01 Alarm Sensor Options. Jumper plug **P12** on the PIOU is used to set the alarm sensor to detect an open or closed condition from the facility alarm system. Set **P12** as follows (refer to Figure 8-23):

- To detect a closed condition, set **P12** to the **N.O.** position.
- To detect an open condition, set **P12** to the **N.C.** position.

10.02 Jumper **W3** on the PIOUS is used to set the alarm sensor to detect an open or closed condition from the facility alarm system. Solder the **W3** jumper wire as follows (refer to Figure 8-22):

- To detect a closed condition, solder **W3** to the normal open position.
- To detect an open condition, solder **W3** to the normal closed position.

10.03 Alarm Sensor Wiring. Refer to Figure 8-23, and connect the facility alarm system relay contacts to the PIOU/PIOUS PCB.

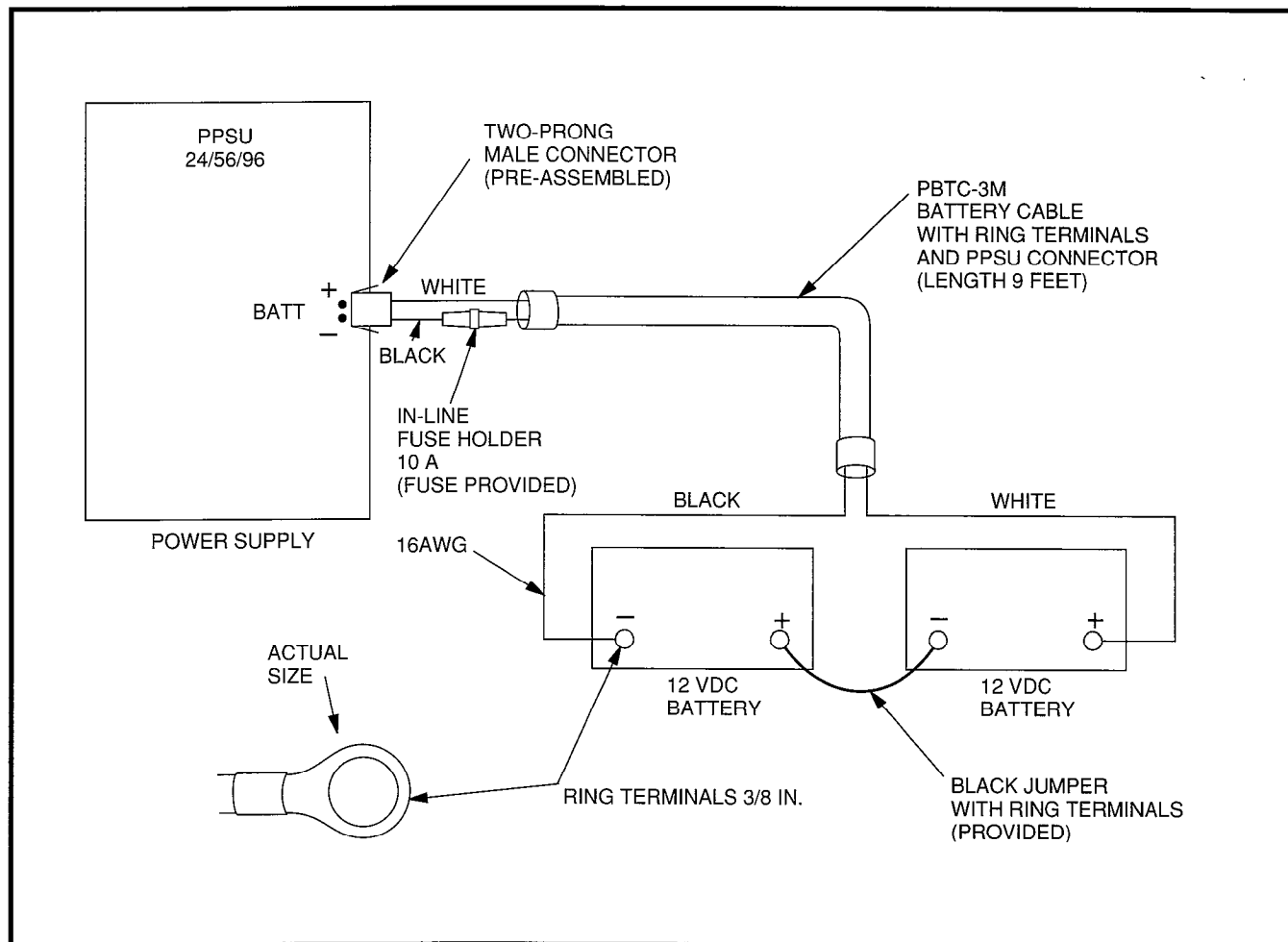
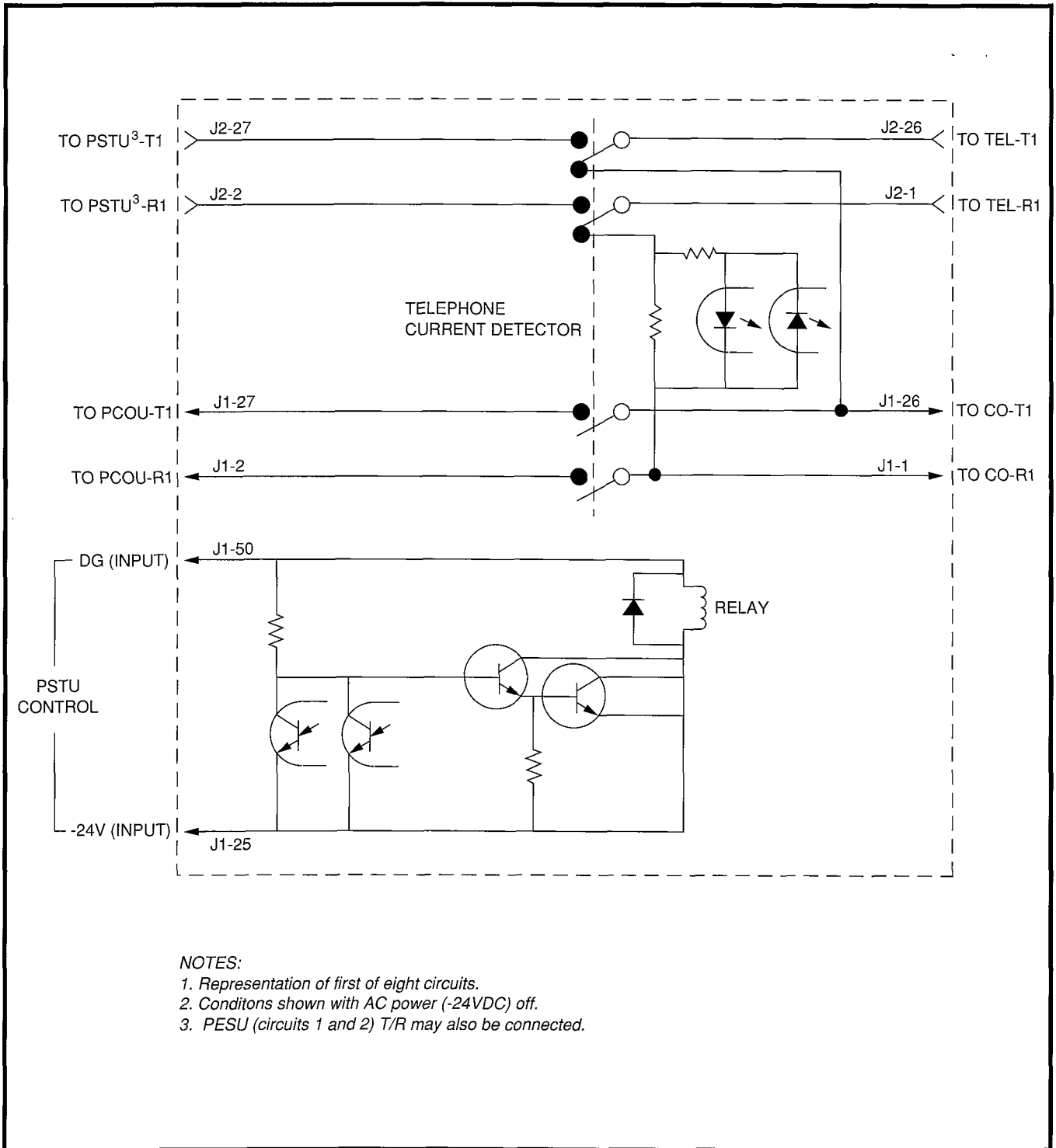


FIGURE 8-1—RESERVE POWER/BATTERY WIRING



- NOTES:
1. Representation of first of eight circuits.
 2. Conditions shown with AC power (-24VDC) off.
 3. PESU (circuits 1 and 2) T/R may also be connected.

FIGURE 8-2—DPFT CIRCUIT DIAGRAM

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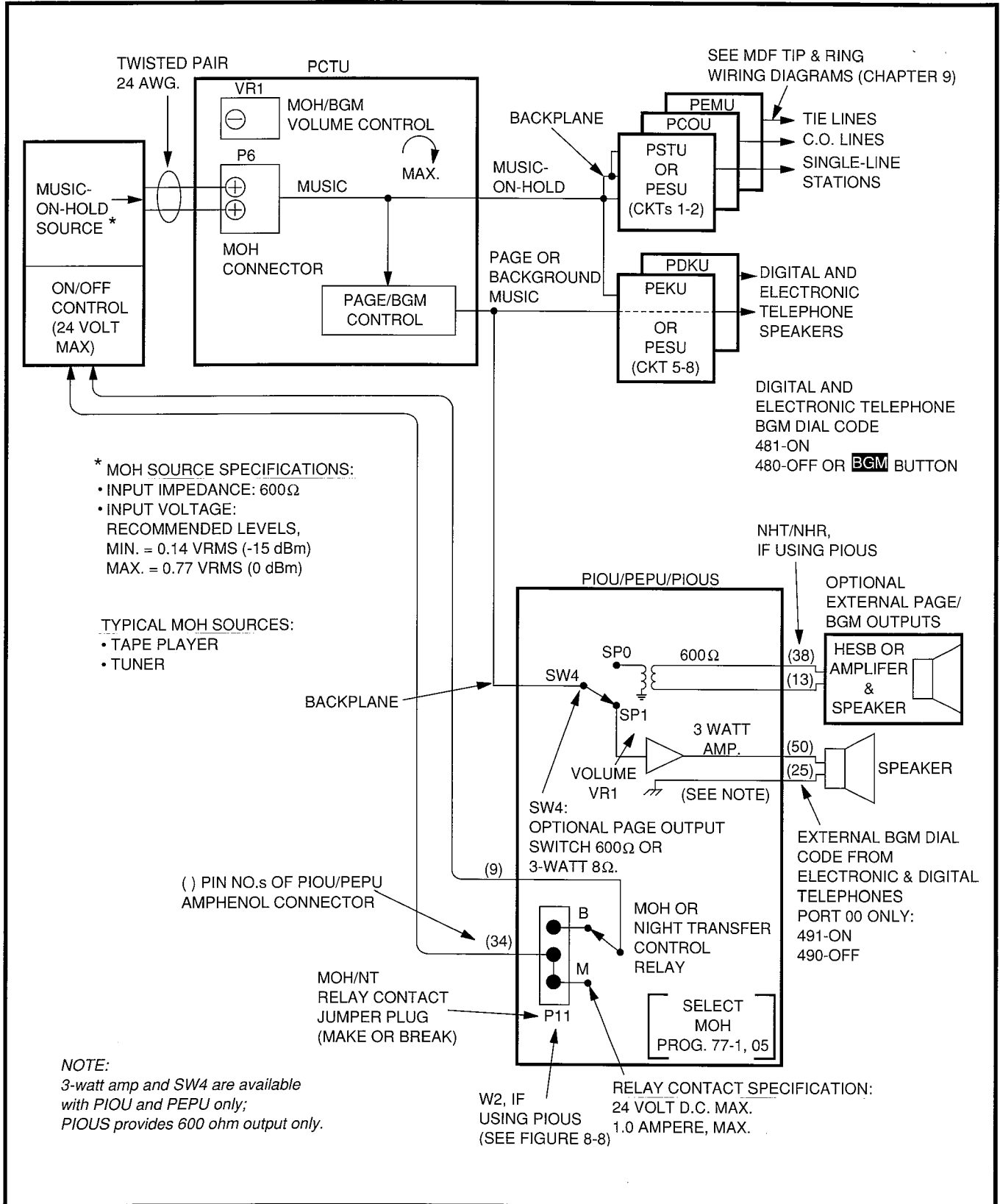


FIGURE 8-3—MUSIC-ON-HOLD AND BACKGROUND MUSIC FUNCTIONAL DIAGRAM
(SEE MDF WIRING DIAGRAM FOR DETAILS)

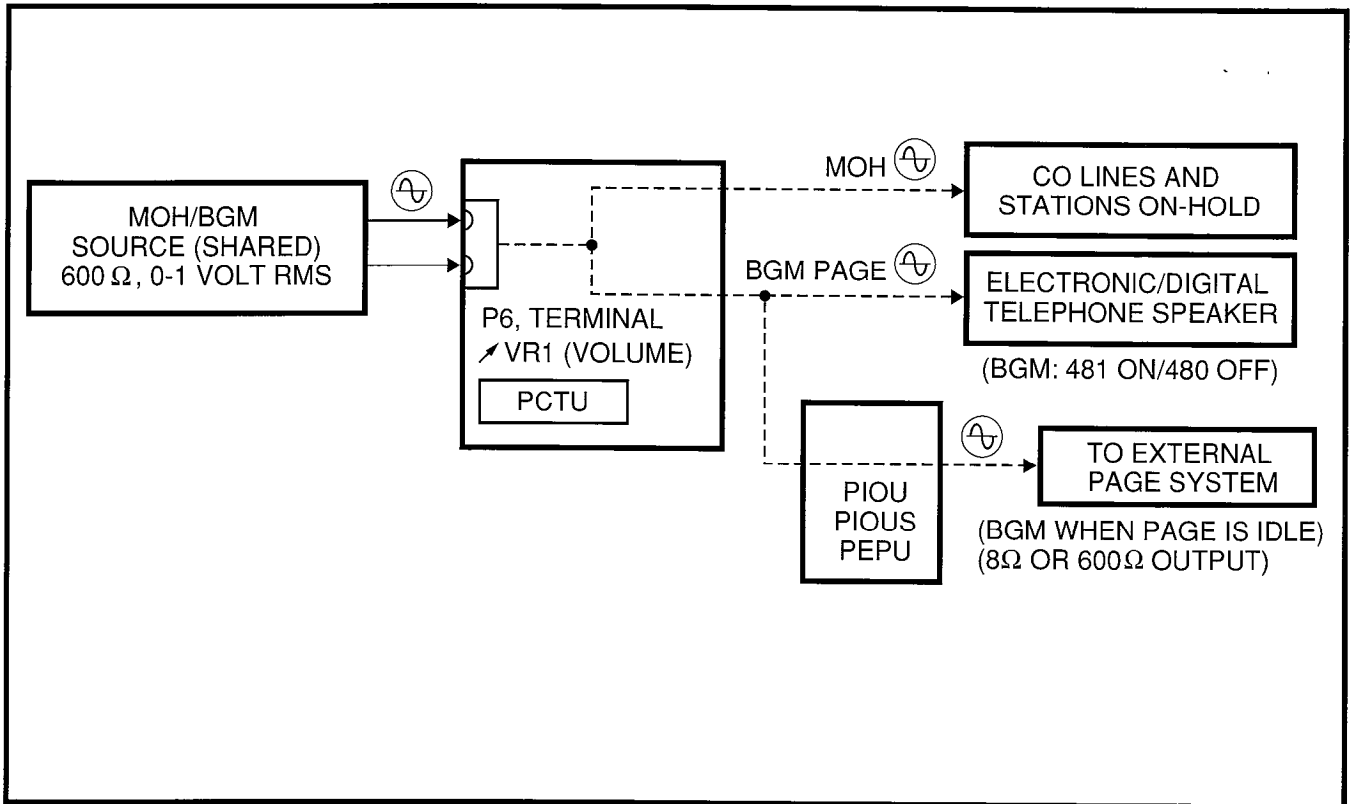


FIGURE 8-4—MUSIC SOURCE CONFIGURATION A

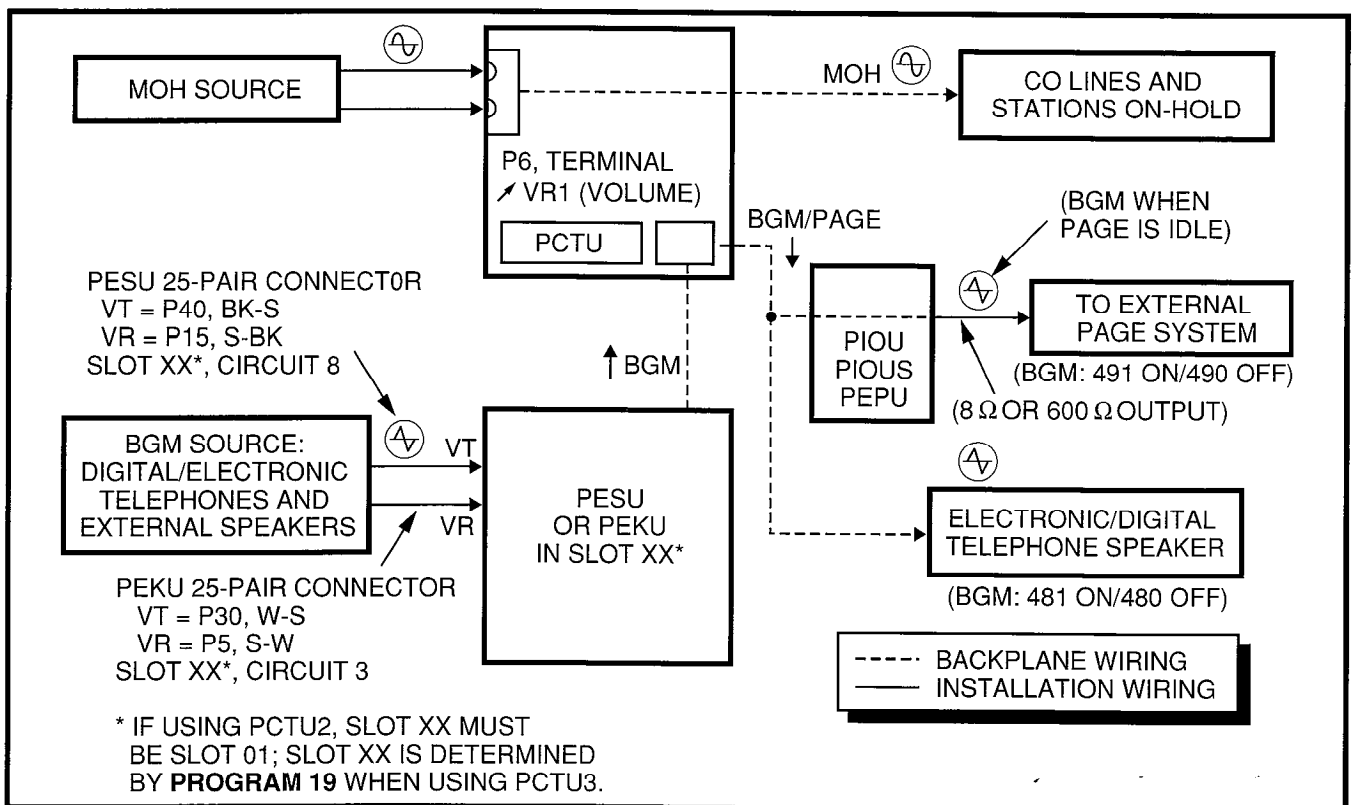


FIGURE 8-5—MUSIC SOURCE CONFIGURATION B

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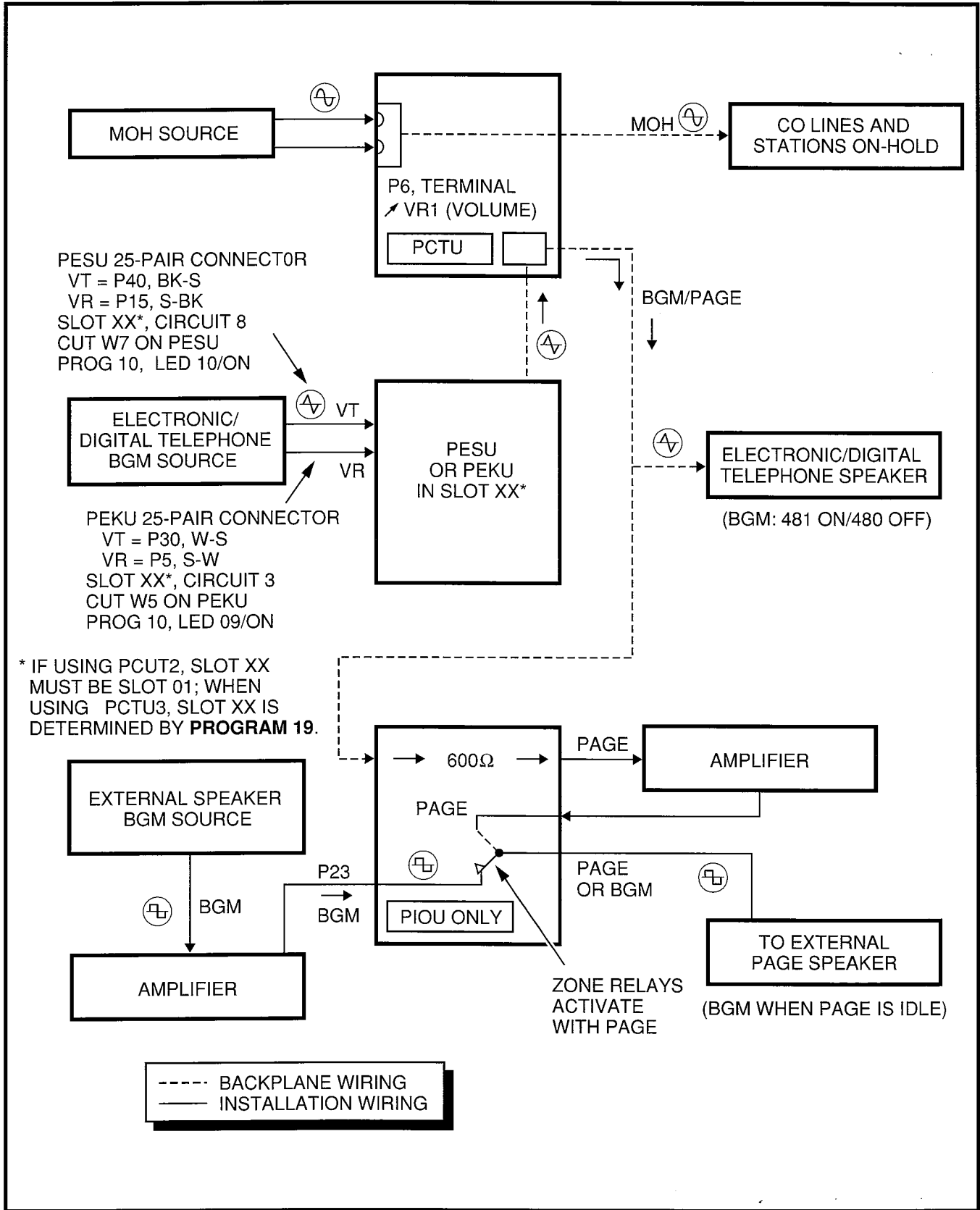


FIGURE 8-6—MUSIC SOURCE CONFIGURATION C

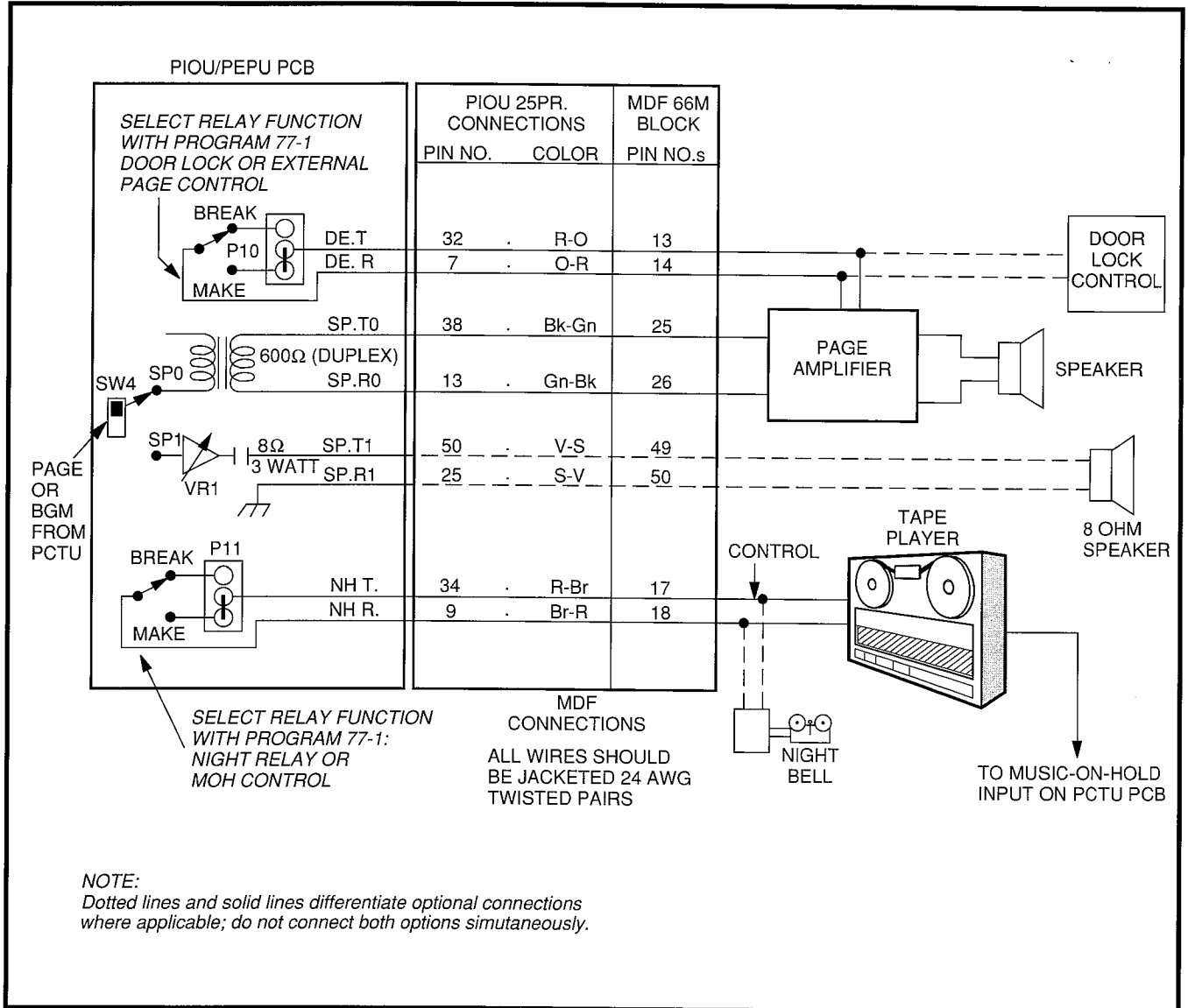


FIGURE 8-7—PIUO/PEPU RELAY CONTROL FUNCTIONAL WIRING DIAGRAM

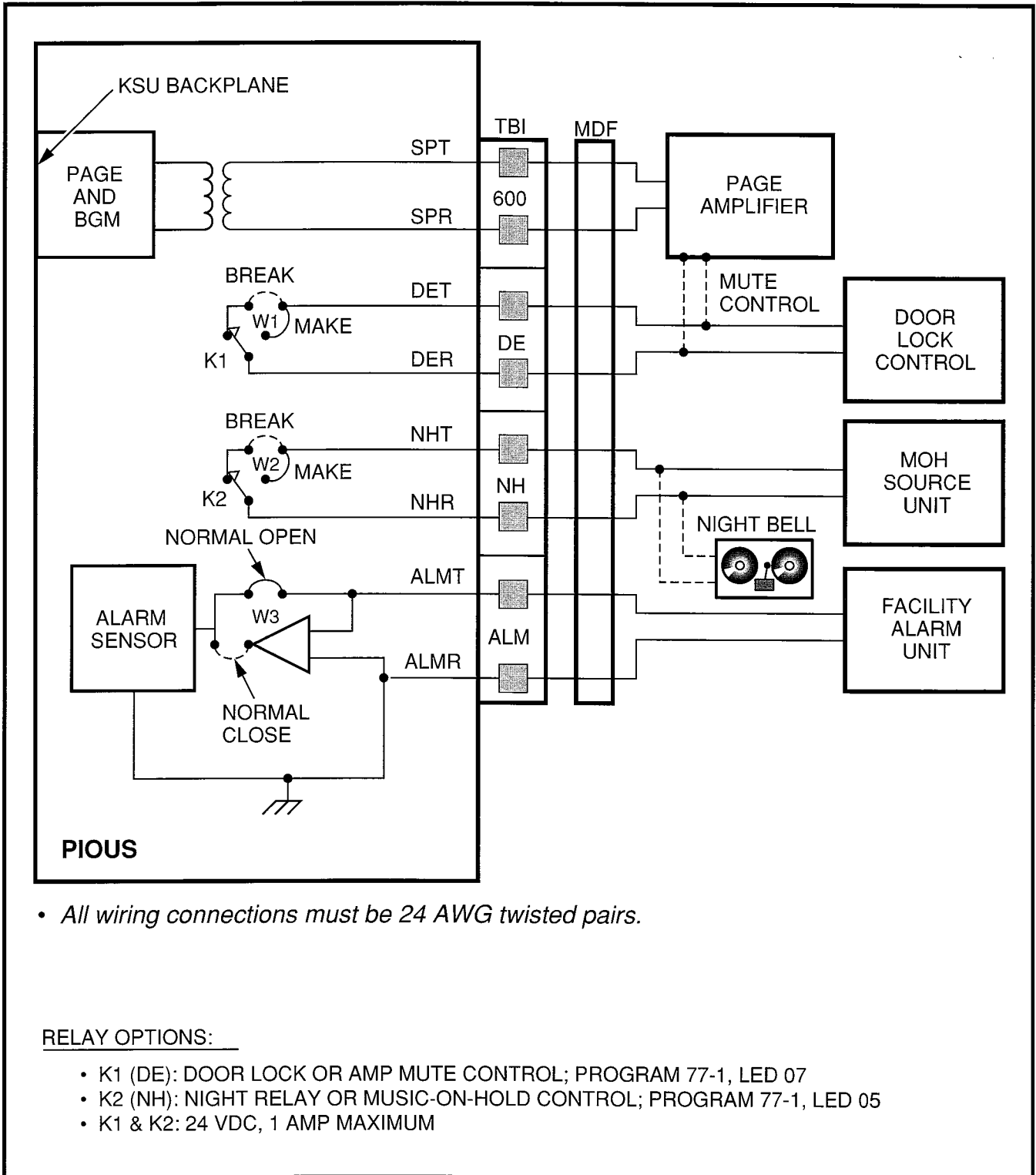


FIGURE 8-8—PIOUS RELAY CONTROL FUNCTIONAL WIRING DIAGRAM

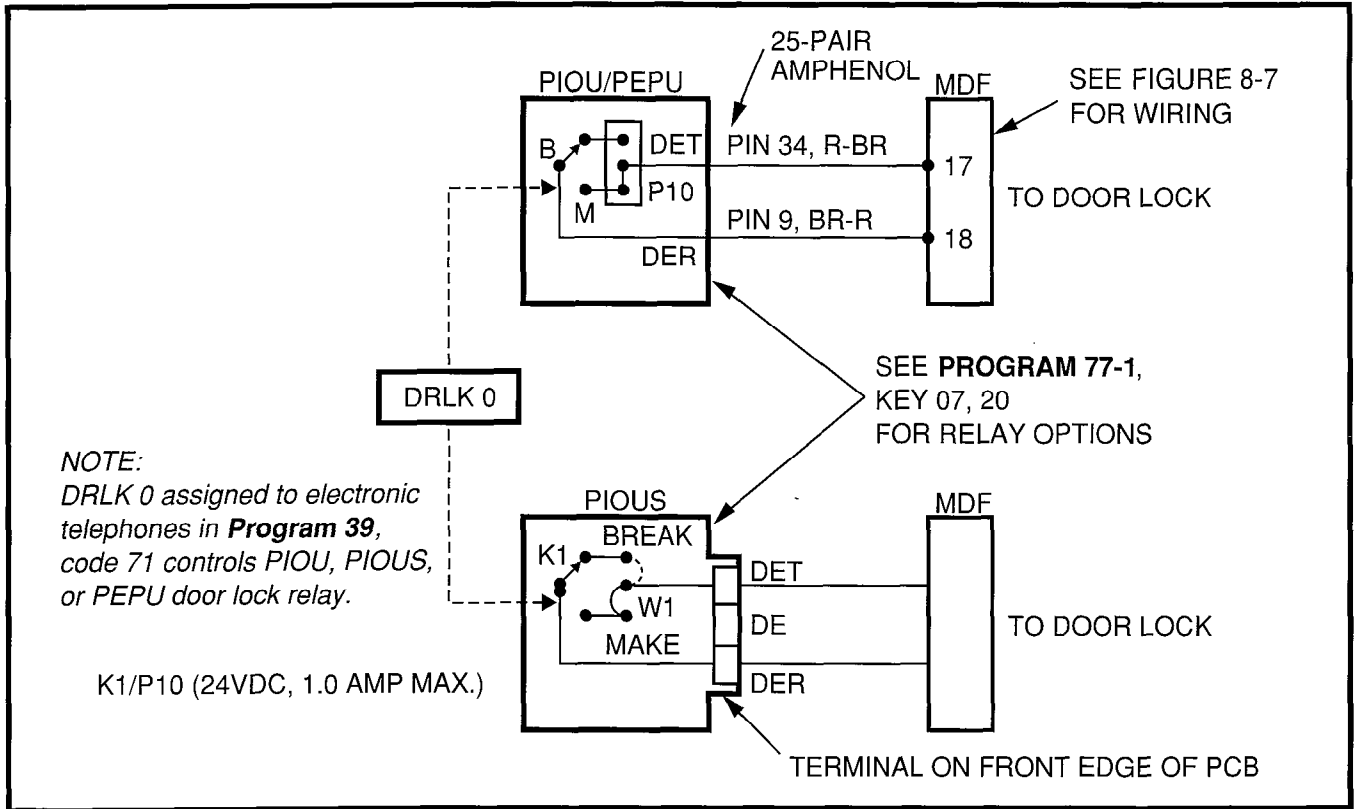


FIGURE 8-9—DOOR LOCK CONTROL OPTION (PIOU/PIOUS/PEPU)

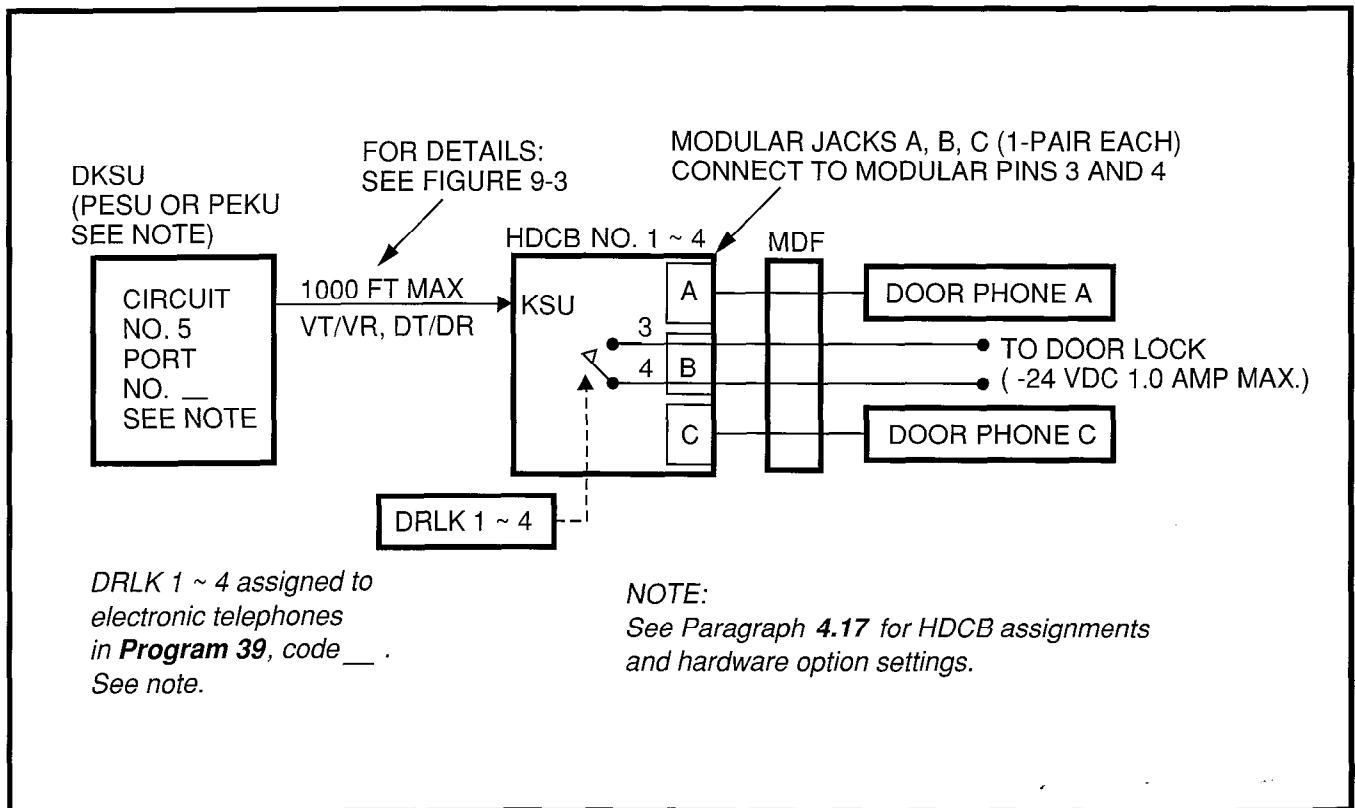


FIGURE 8-10—MULTIPLE DOOR LOCK CONTROL OPTIONS (HDCB)

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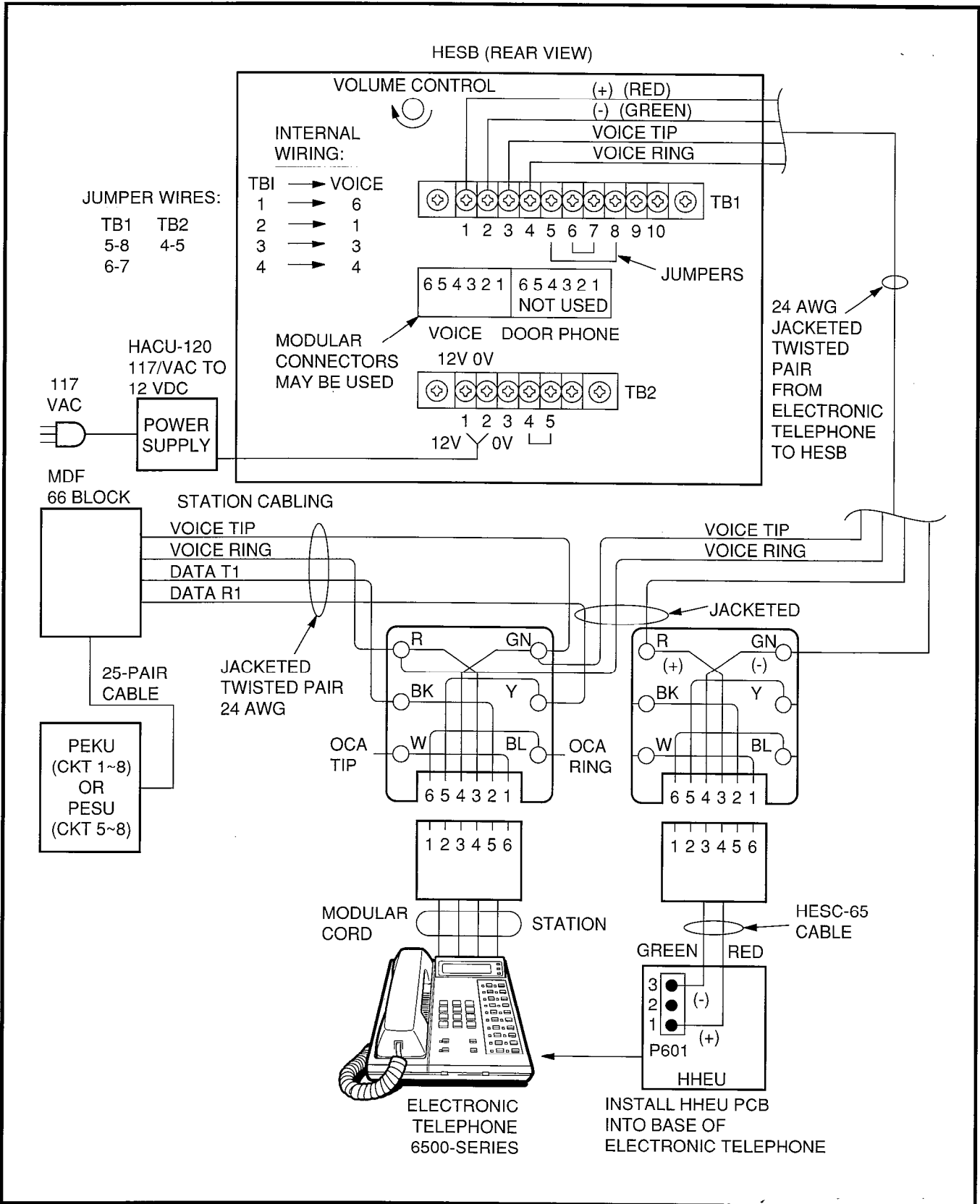


FIGURE 8-11—HESB/ELECTRONIC TELEPHONE WITH LOUD RINGING BELL WIRING

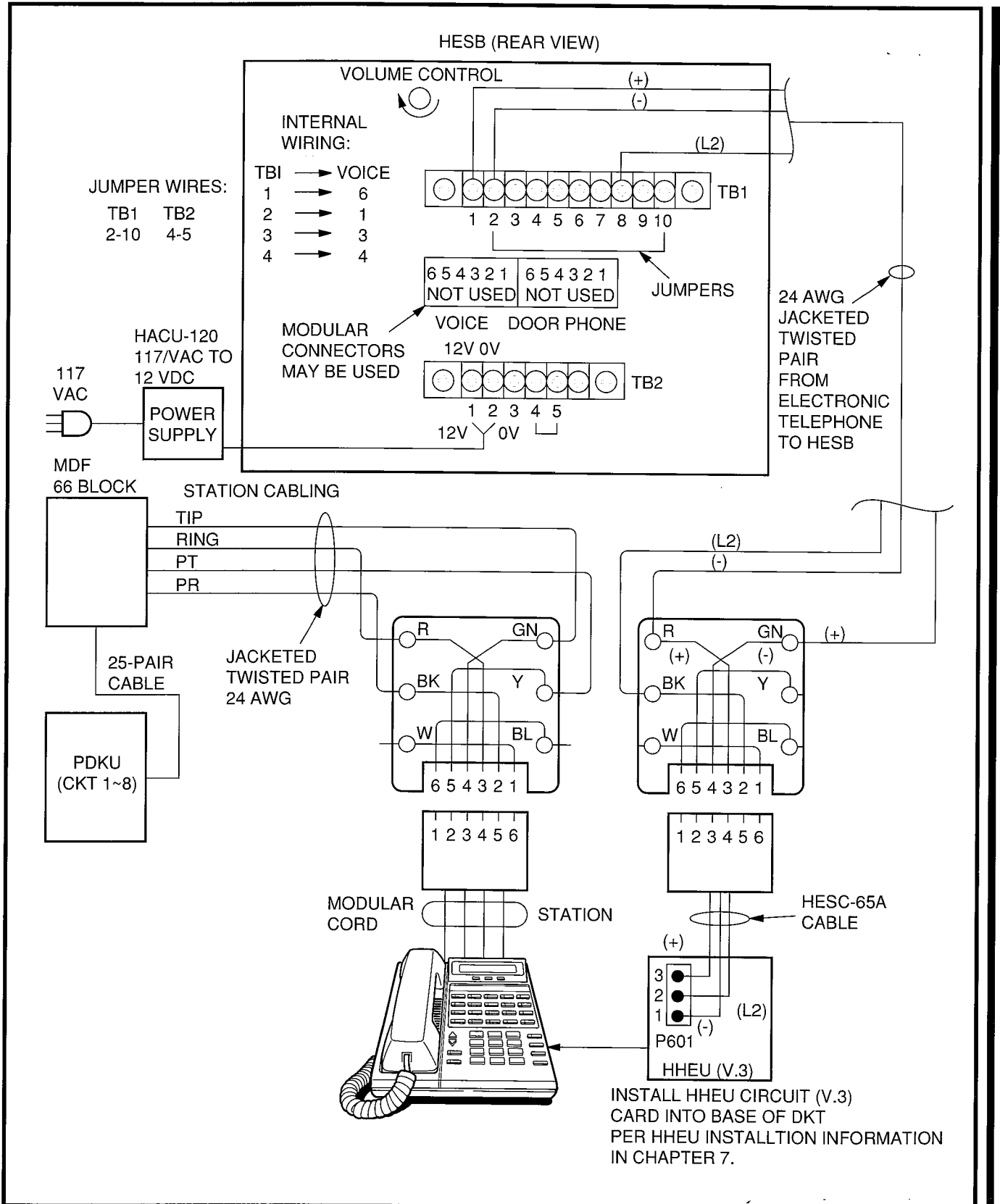


FIGURE 8-11A—HESB/DIGITAL TELEPHONE WITH LOUD RINGING BELL WIRING

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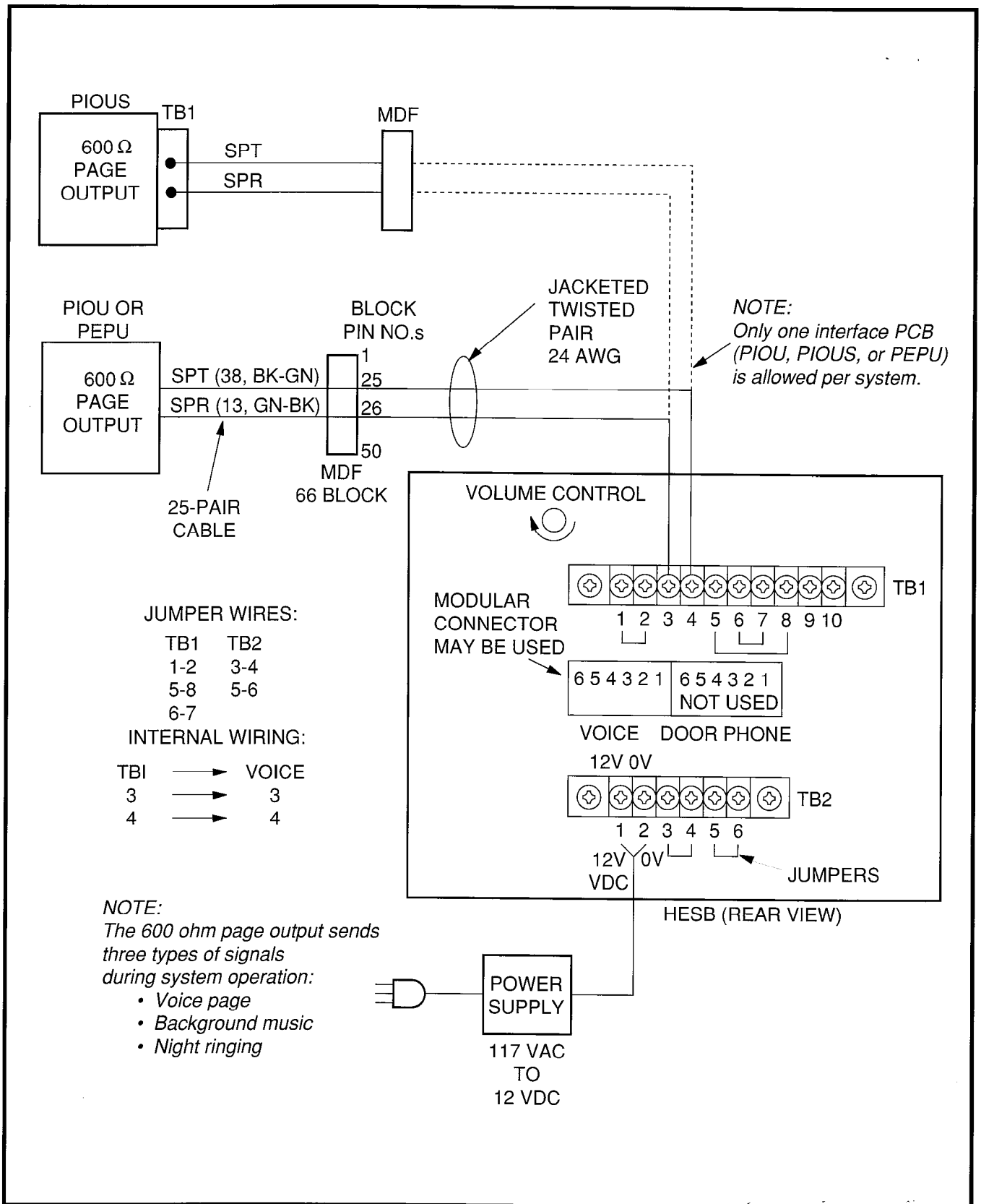


FIGURE 8-12—HESB/AMPLIFIED SPEAKER WIRING

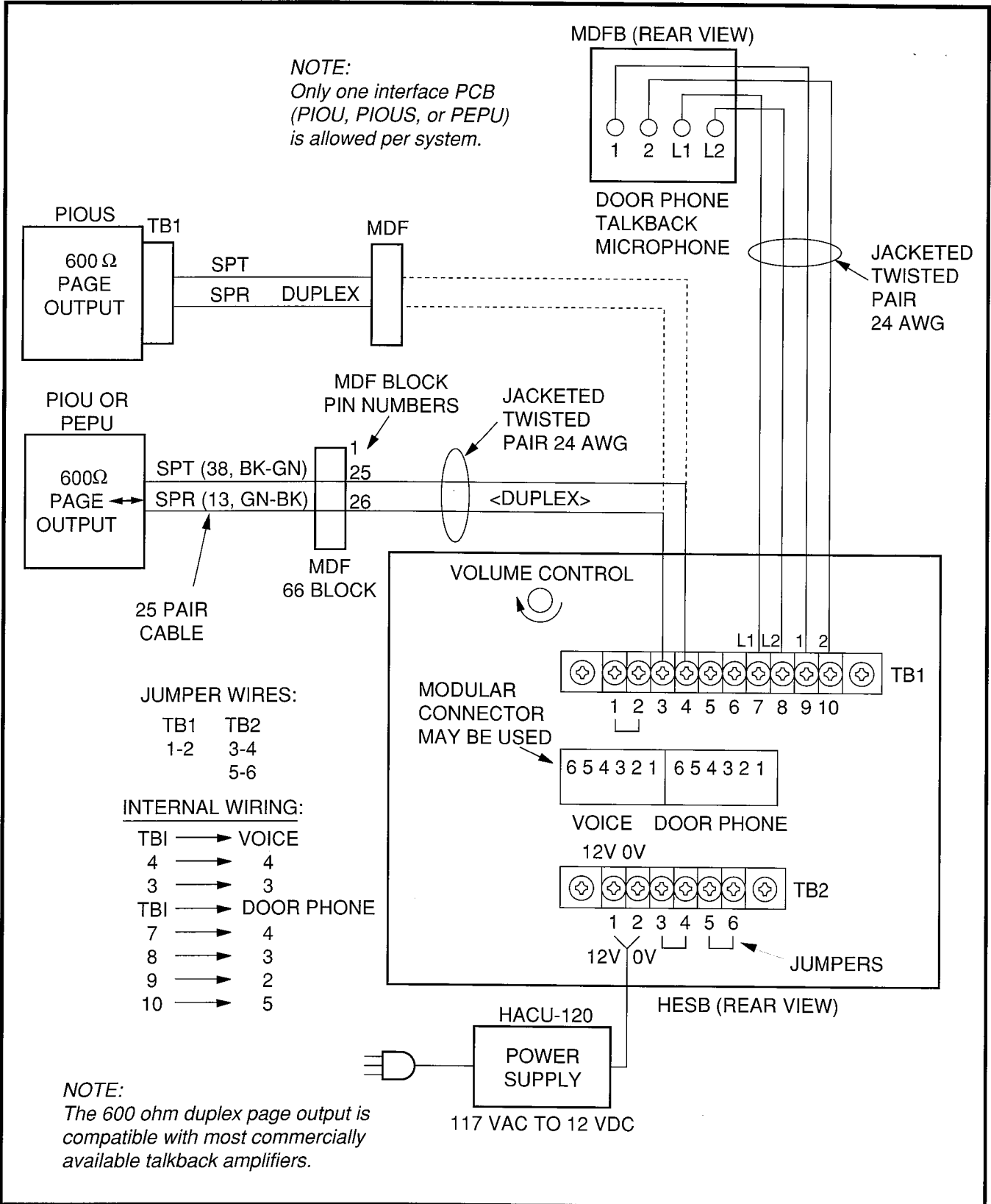
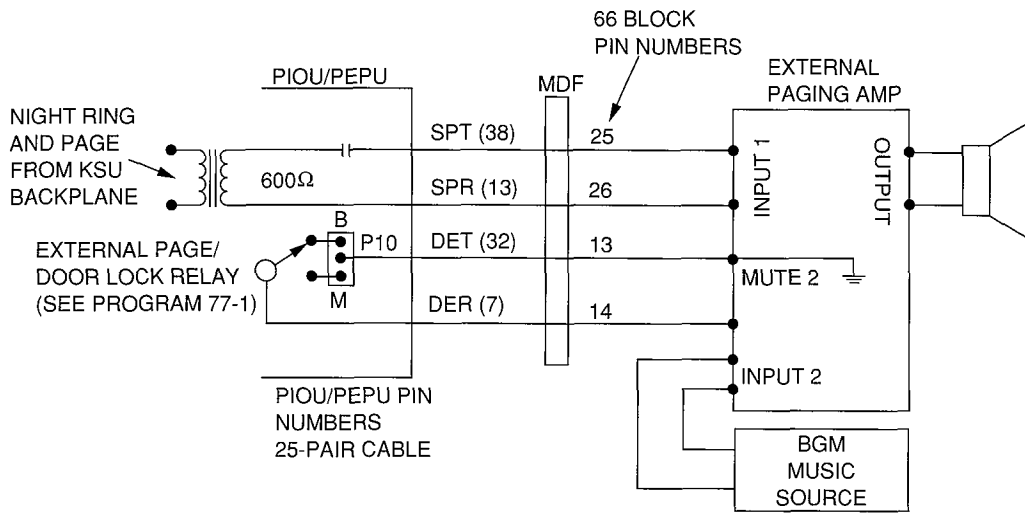


FIGURE 8-13—HESB/TALKBACK AMPLIFIED SPEAKER WIRING



NOTE:
 Only one optional interface PCB (PIOU, PIOUS, or PEPU)
 allowed per system.

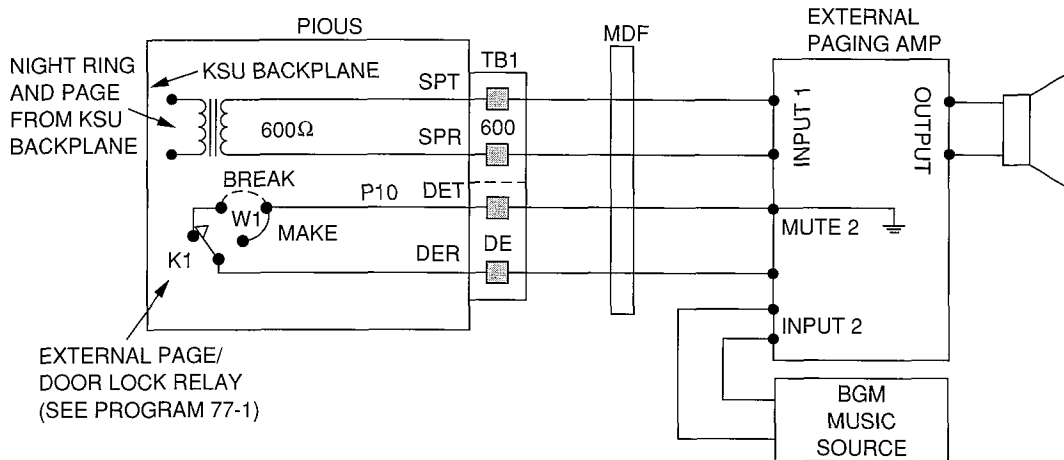


FIGURE 8-14—PAGE AND BGM USING SAME AMPLIFIER (PIOU/PIOUS/PEPU)

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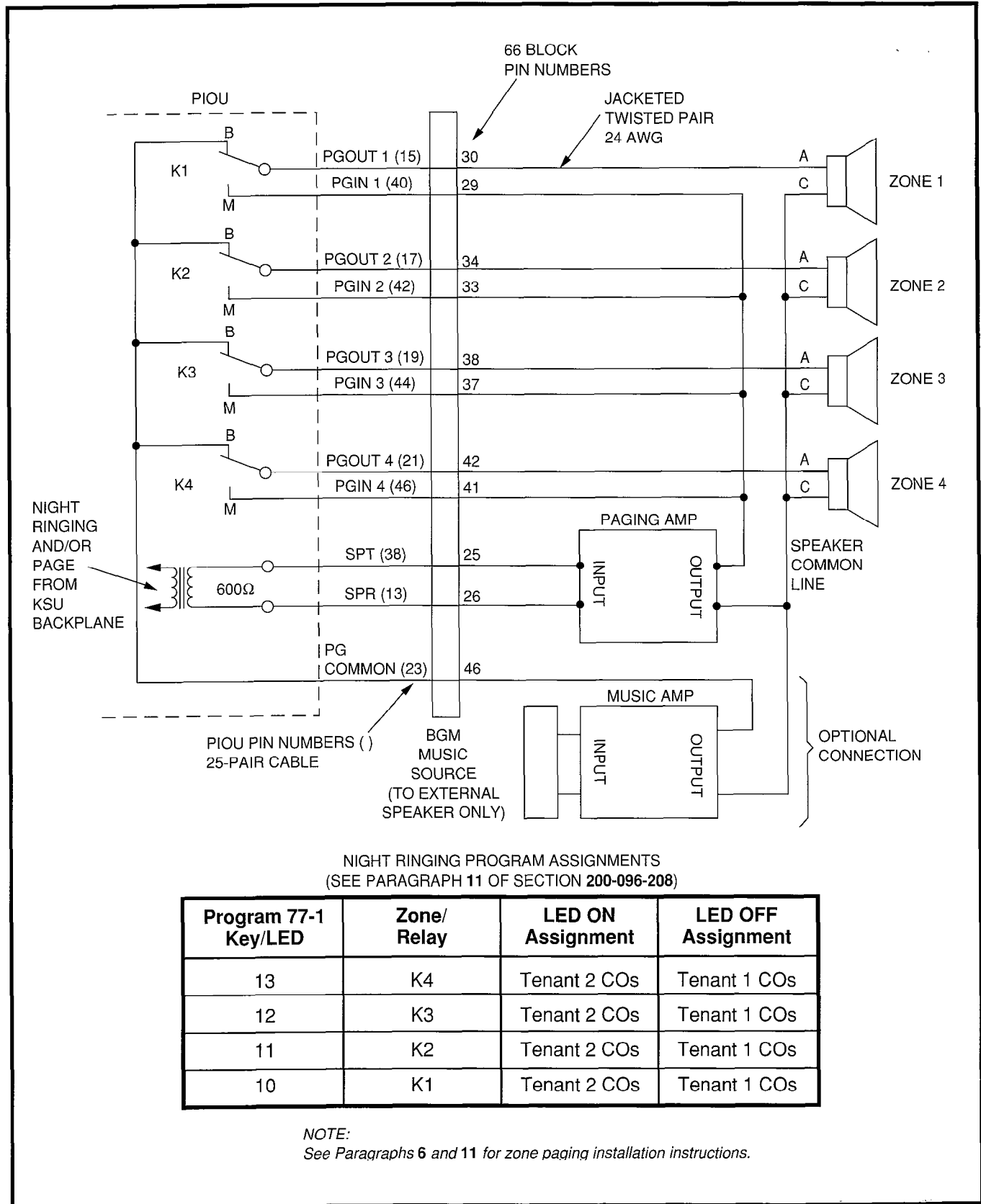


FIGURE 8-15—PIU ZONE, PAGE/BGM/NIGHT RING (SEPARATE AMPLIFIERS)

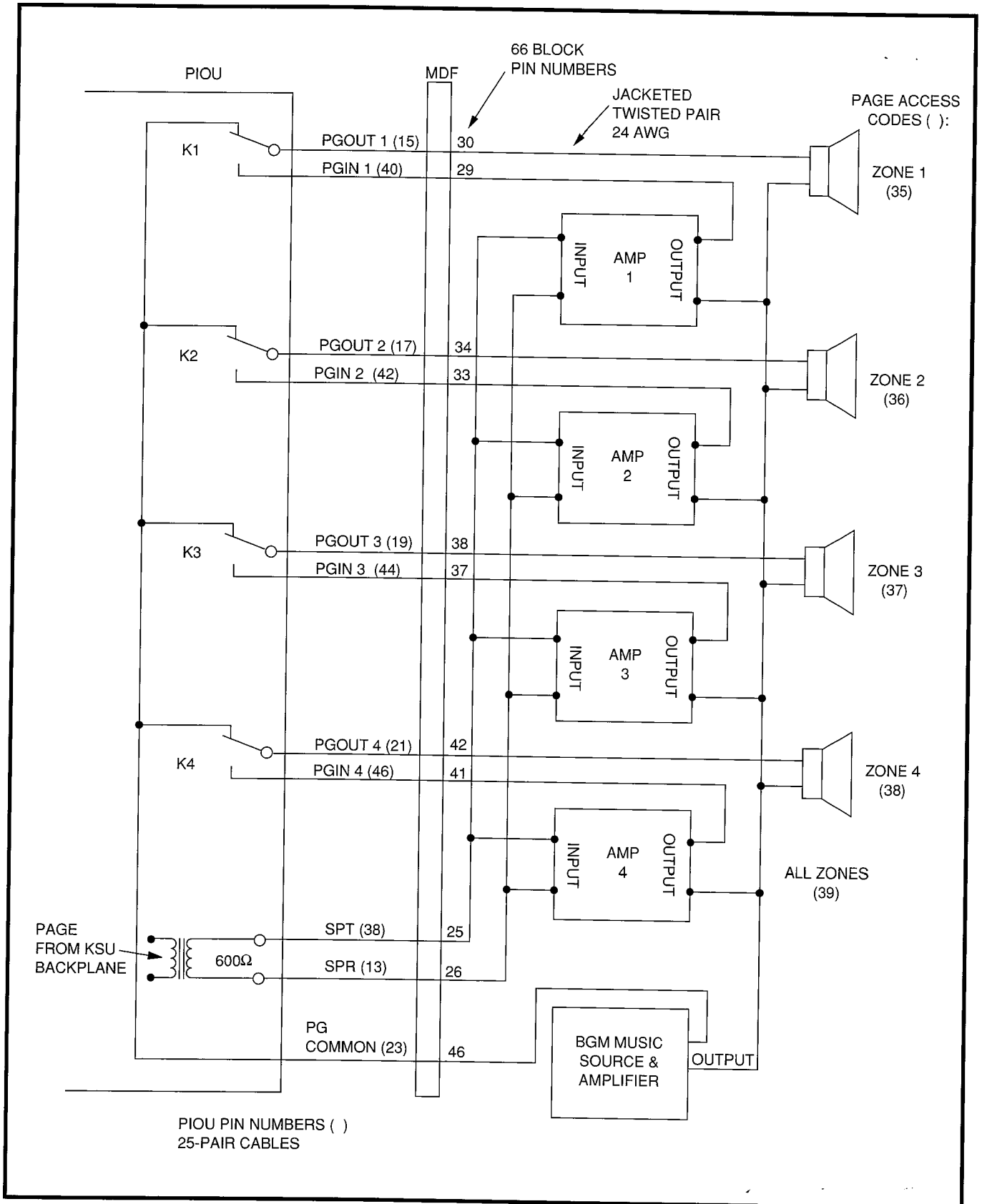


FIGURE 8-16—PAGING WITH MULTIPLE AMPLIFIERS

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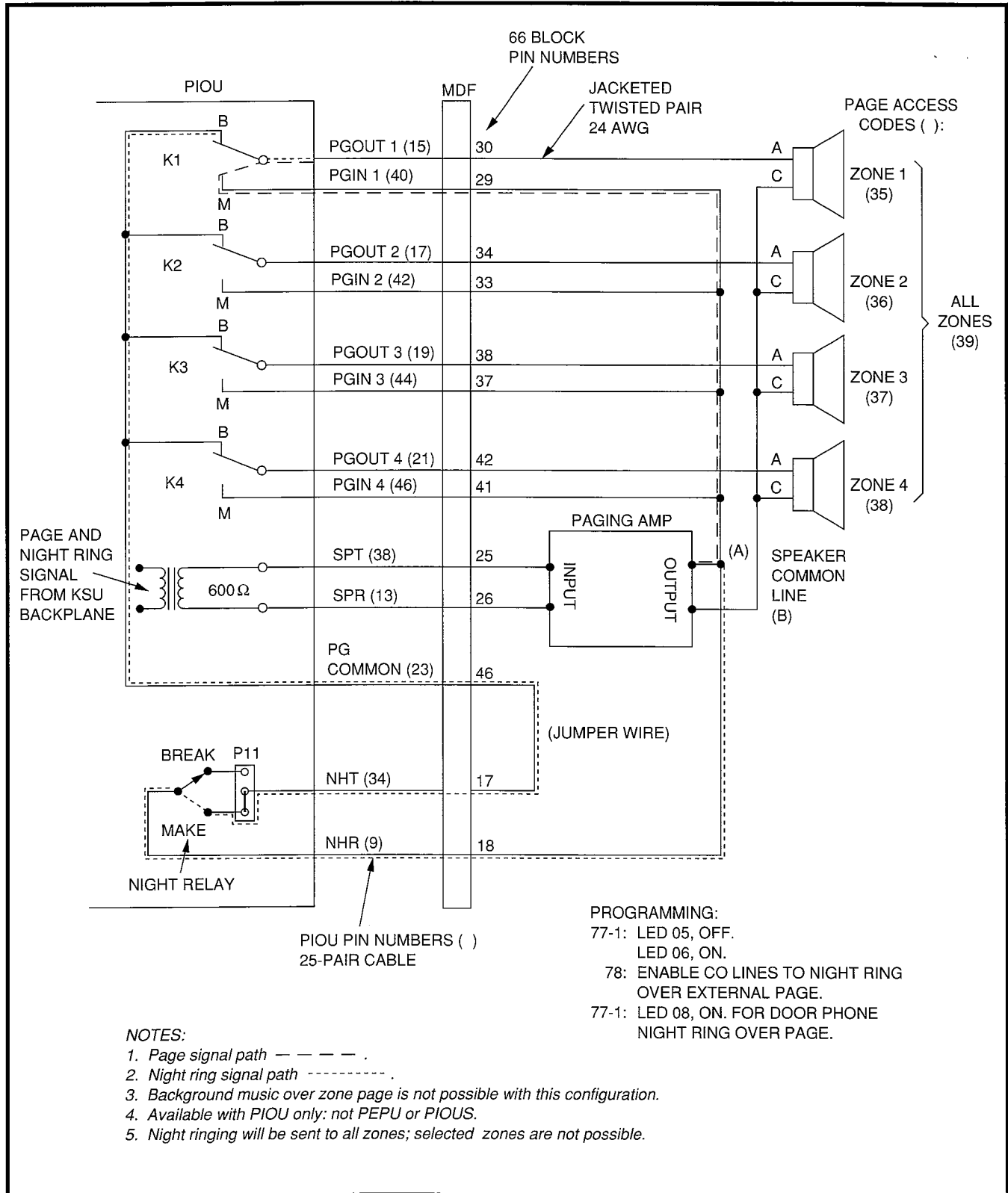


FIGURE 8-17—NIGHT RINGING OVER EXTERNAL ZONE PAGE

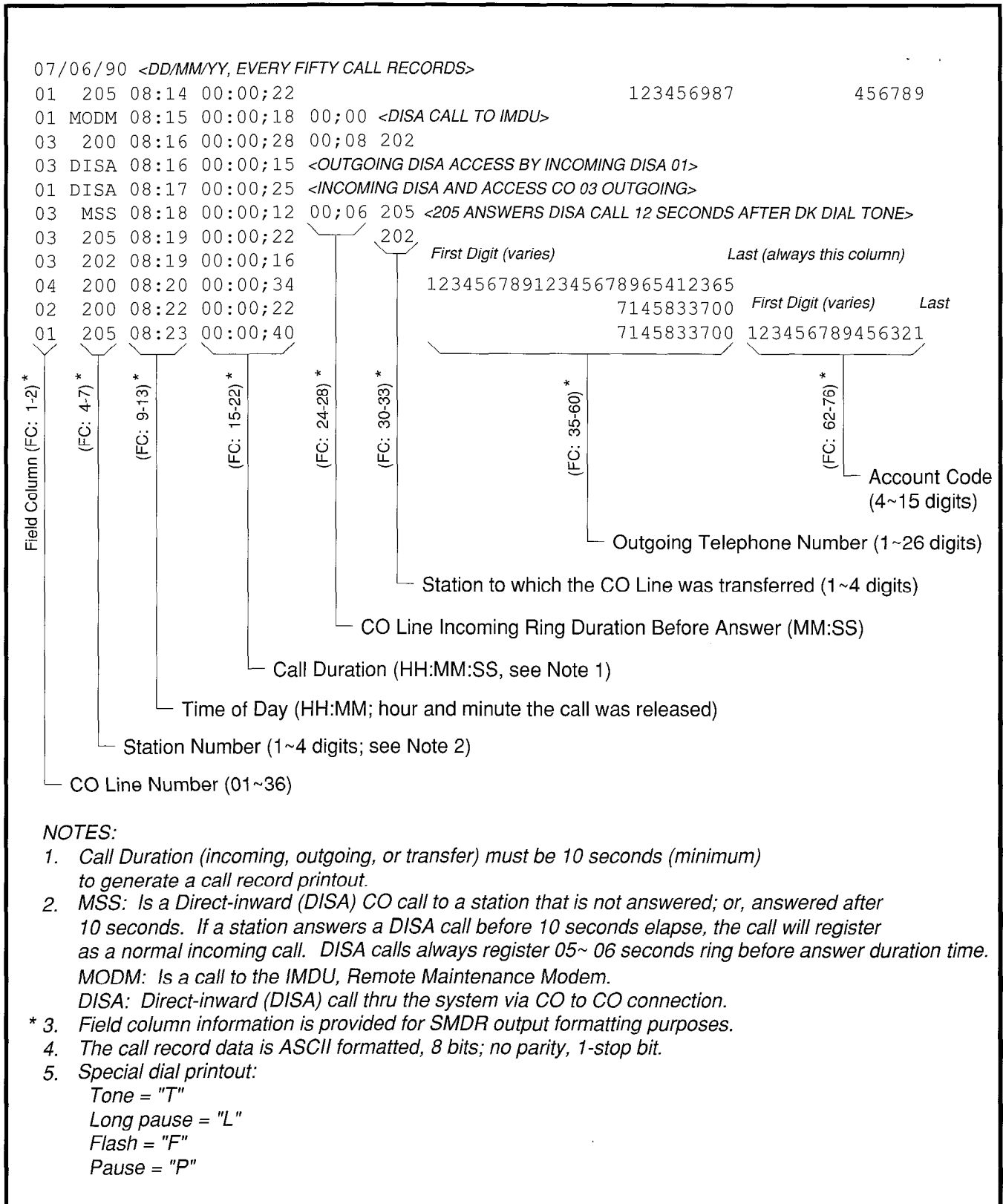
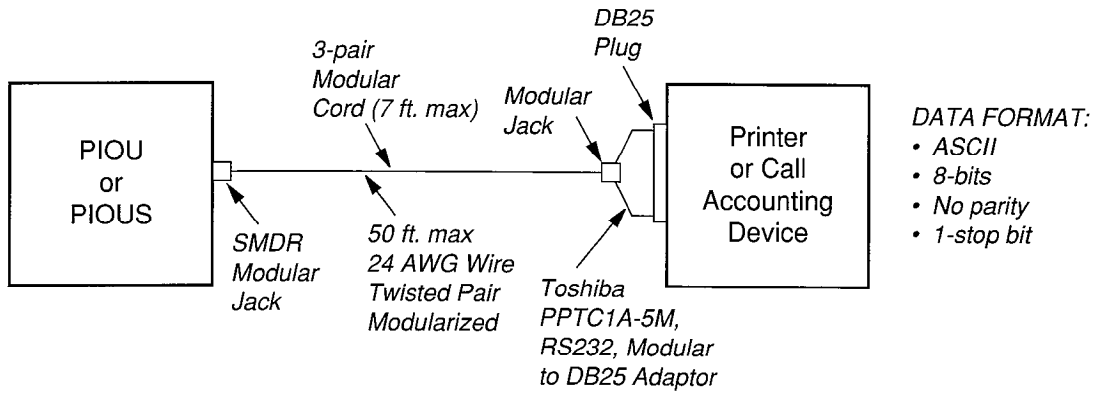


FIGURE 8-18—SMDR PRINTOUT EXAMPLES

BASIC CONNECTION



BASIC WIRING (see: PIOU or PIOUS TTY and SMDR Wiring in Chapter 9 for more detail)

PIOU, SMDR Jack Modular Pin No.	PPTC1A-5M Adaptor		RS-232 Lead Name
	Modular Pin No.	DB25 Pin No.	
1 To →	6 To →	3	RD
2 To →	5 To →	2	TD
3 To →	4 To →	6	DSR
4 To →	3 To →	20	DTR
5 To →	2 To →	8	CD
6 To →	1 To →	7	SG
		4 Jumper to 5	RTS to CTS

FIGURE 8-19—PIOU/PIOUS SMDR CABLE CONNECTIONS

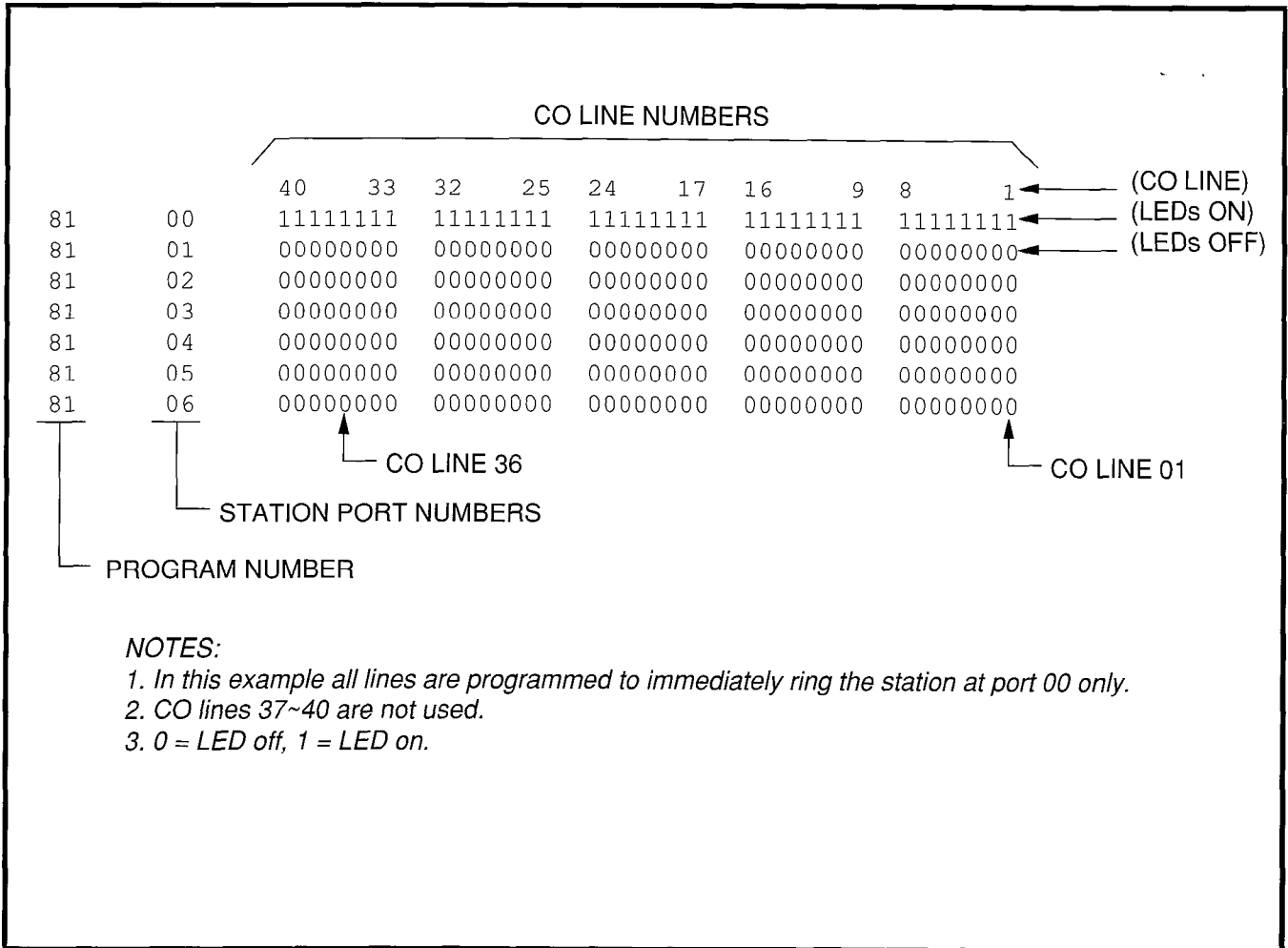


FIGURE 8-20—PIOU/PIOUS TTY PORT (PROGRAM 97) DATA DUMP EXAMPLE

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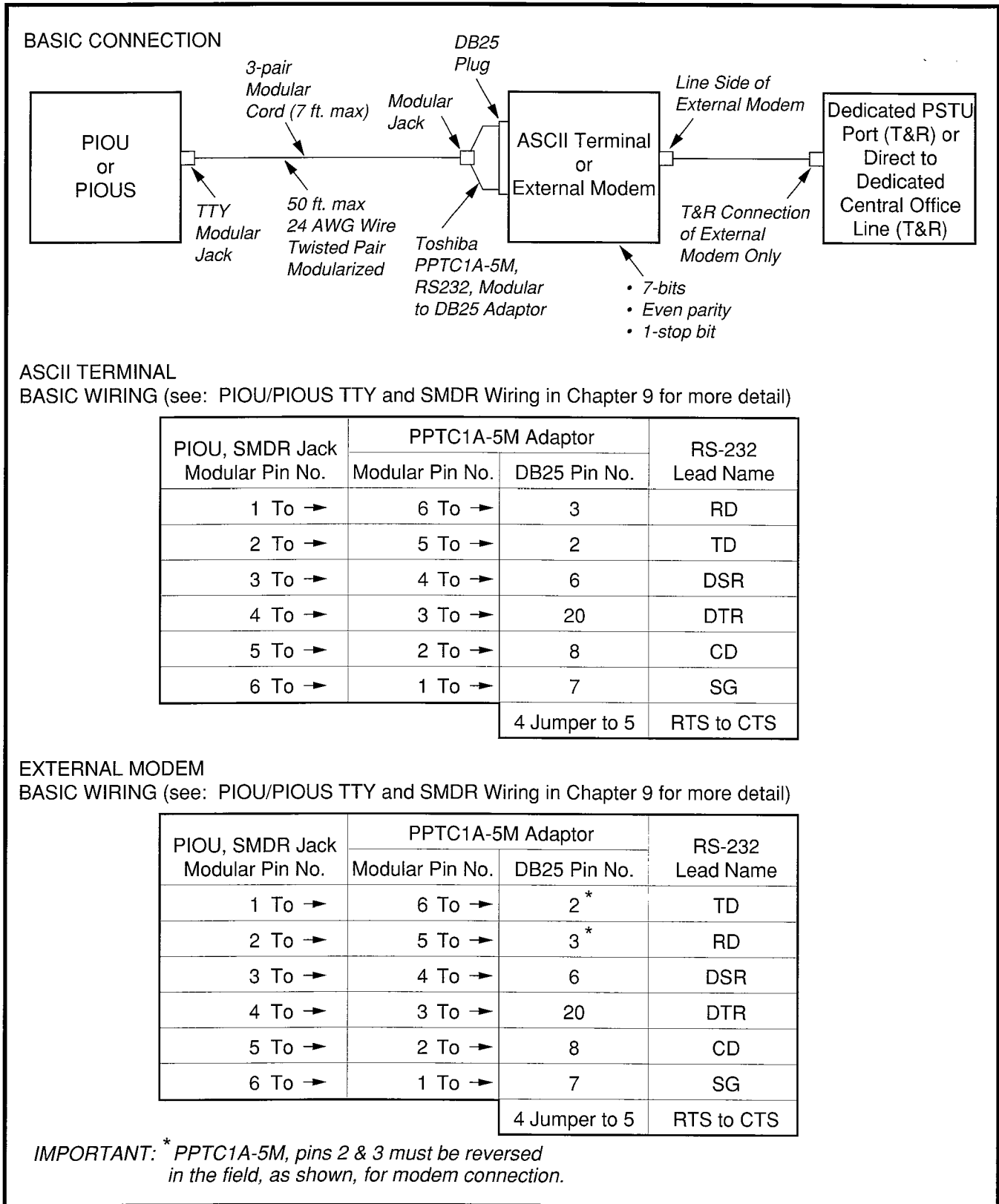


FIGURE 8-21—PIOU/PIOUS (TTY) MAINTENANCE PORT (EXTERNAL MODEM OR ASCII TERMINAL)

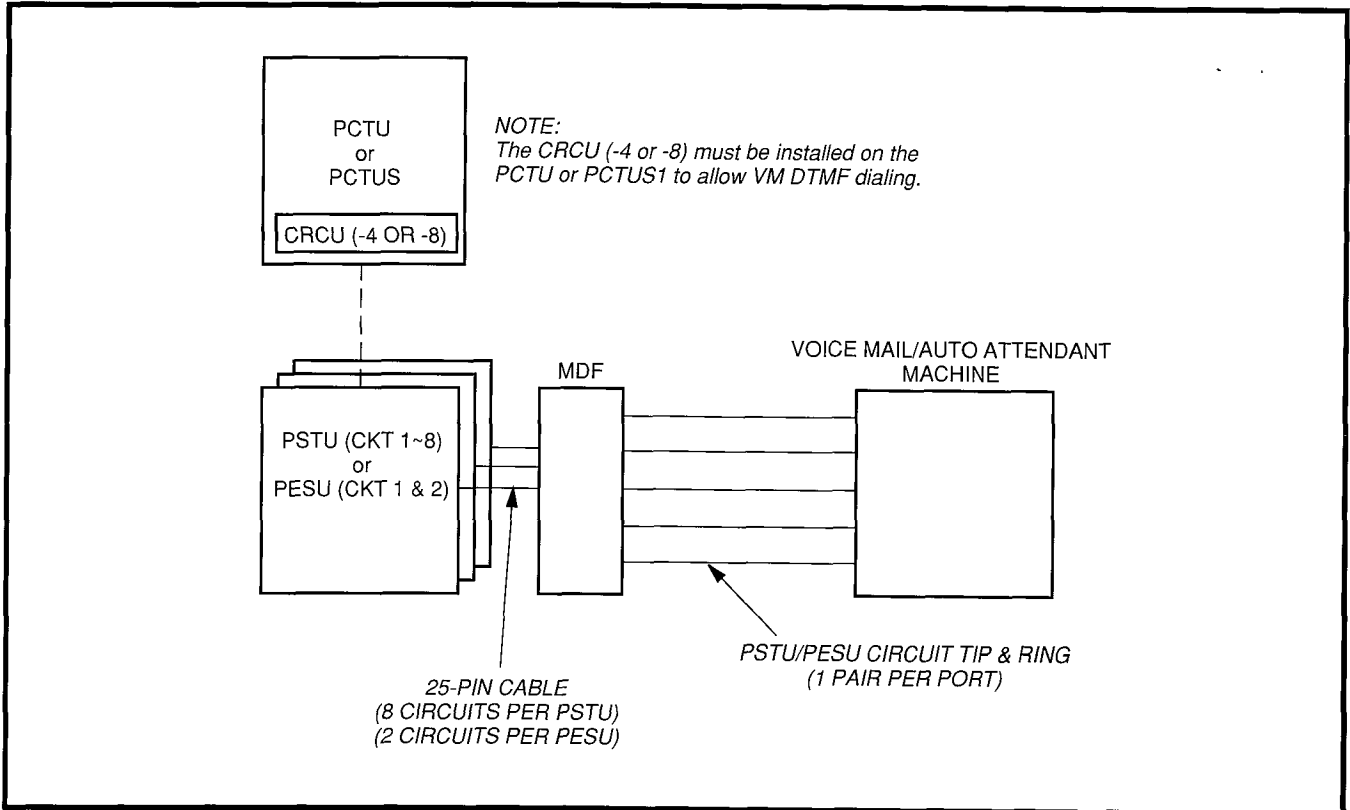


FIGURE 8-22—VOICE MAIL/AUTO ATTENDANT BLOCK DIAGRAM

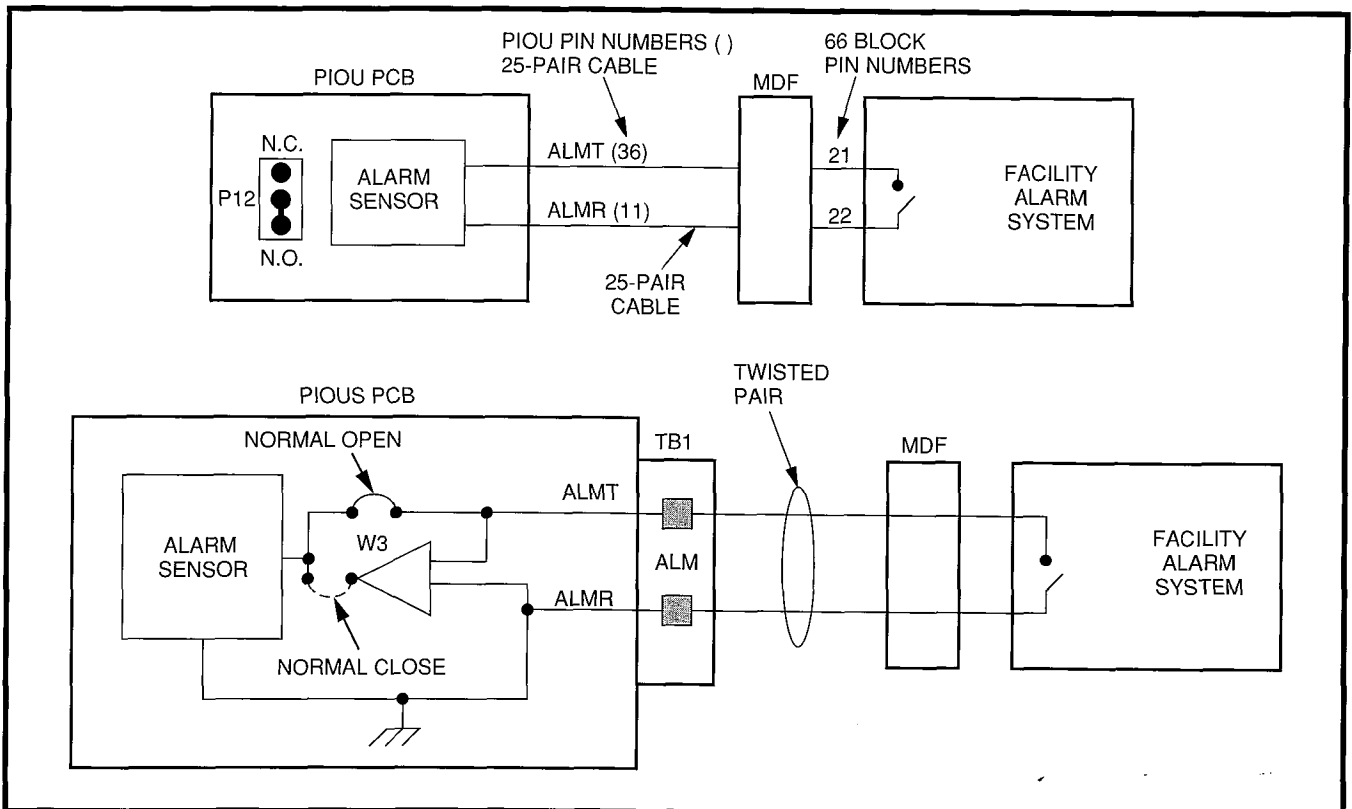


FIGURE 8-23—ALARM SENSOR BLOCK DIAGRAM (PIOU/PIOUS)

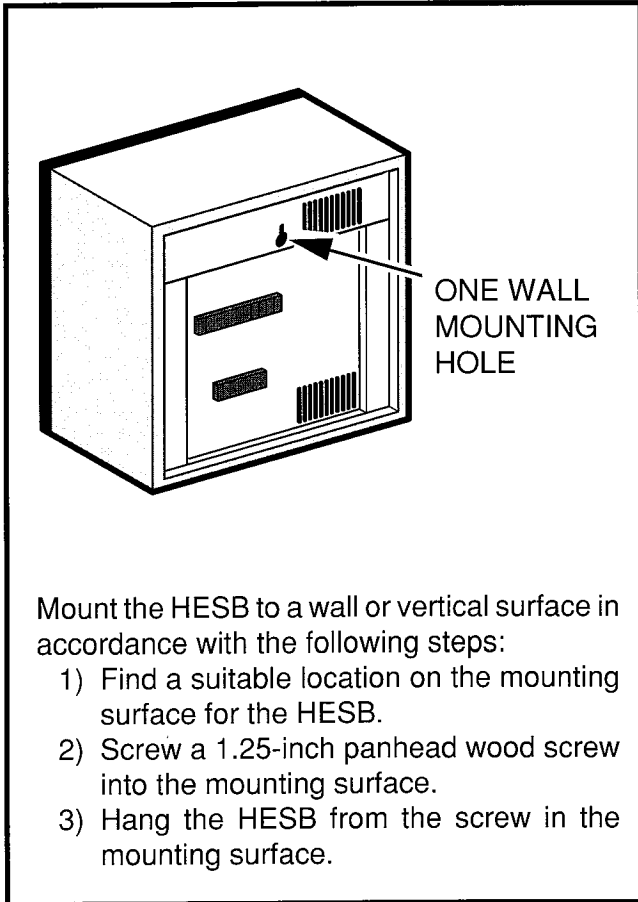


FIGURE 8-24—HESB WALL MOUNTING

11 NIGHT RINGING OVER EXTERNAL ZONE PAGE (RELEASE 3)

11.00 In systems shared by two tenants, each tenant's CO lines can be assigned to night ring separate PIOU external page zones (Figure 8-25). This feature can also be used in one-tenant systems.

11.01 With shared systems, for example, tenant 1's night ringing CO lines could be programmed to ring PIOU external page zones 1 and 2, while tenant 2's lines could be programmed to ring zones 3 and 4. In non-shared systems, night ringing CO lines can be assigned to ring all of the zones or just selected zones.

11.02 The following programs must be used to assign CO lines to ring selected PIOU page zones:

- **Program 78-1:** Assigns CO lines, tenant 1 and tenant 2, that will night ring over PIOU external page zones.

- **Program 15-5:** Assigns CO lines to tenant 1 or tenant 2. Lines are initialized as tenant 1.
- **Program 77-1 (LEDs 10 ~ 13):** Assigns tenant 1 and tenant 2 CO lines to night ring specific PIOU external page zones.
- **Program 39:** Assigns appropriate **NT**, **NT1** (tenant 1), and **NT2** (tenant 2) buttons to electronic and digital telephones.

NOTES:

1. See Paragraph 6 and Figure 8-15 for PIOU zone paging installation instructions.
2. Any station can pick up CO lines that night ring over external page zones by dialing **INT 5 9**.

12 DATA INTERFACE UNIT INSTALLATION (RELEASE 3)

12.00 General

12.01 Release 3 provides two types of Data Interface Units (DIUs) that enable digital telephone users to simultaneously transmit and receive data on the same PDKU station port and wire pair while communicating on a voice call. One unit, called the integrated DIU (PDIU-DI), becomes part of the digital telephone, replacing the telephone's base; the other unit, is a small self-contained unit called the stand-alone DIU (PDIU-DS). Each DIU is powered by the PDKU it is connected to; therefore, no external power is required.

12.02 Both DIUs can be connected to standard Electronic Industries Association (EIA) RS-232 asynchronous serial data devices. EIA devices are divided into two categories: data communication equipment (DCE) and data terminal equipment (DTE). Common DCE devices are modems and some printers; common DTE devices are personal computers, ASCII terminals, and some printers. The PDIU-DI operates like a DCE and connects directly to DTE devices using standard RS-232 cables. Depending on how its internal jumper plugs are configured, the PDIU-DS can either operate like a DTE and connect to DCE devices; or operate like a DCE device and connect to a DTE device. In most applications, DTE and DCE devices exchange data between each other via the standard RS-232 cable connection.

12.03 DIUs can function with DCE and DTE devices at data speeds of up to 19.2 kbps. However, keyboard dialing using AT commands (from a PC or terminal connected to a DIU) is limited to 9600 bps. A speed of 19.2 kbps can be achieved when dialing from a PDIU-DI-equipped digital telephone dialpad, but many PC software programs do not yet handle 19.2 kbps in an error-free manner. DIU data transmission speed is set by the first AT command that the DIU receives once it is in the command state; if manual dialing or receiving calls in the auto answer (default) mode, the transmission speed is transparent.

IMPORTANT NOTE!

To use the PDIU-DI or PDIU-DS with AT commands, communications software or a PC program that performs terminal emulation must be used. AT commands cannot be issued from the computer's operating system prompt.

12.10 Common DIU Connections

12.11 The block diagram in Figure 8-25 illustrates common DIU connections. In this example, PDIU-DIs are connected to personal computers (PC1 and PC2), and PDIU-DSs are connected to a serial printer and modems. The personal computer users can transfer files internally, print files on the same printer, and access the modem pool to send/receive data to/from an external personal computer or dial up data service.

12.12 To access these devices, a data call connection must be established between the DIUs. This is accomplished by dialing the destination DIU from a digital telephone dialpad or from a PC keyboard using standard AT dial commands. PDIU-DIs share the same intercom numbers/ports with the digital telephone to which they are connected, while PDIU-DSs have their own. The INT and DATA LEDs on the digital telephone tell the system whether a voice or data call is being made: the INT LED, voice calls; and the DATA LED initiates data calls. When dialing from a keyboard with AT commands, **ATD** is typed for voice calls, and **ATDD** for data calls.

12.13 Installation instructions for these devices are provided in Paragraphs **12.40** thru **12.70**. Call

paths and scenarios for five types of data test calls are provided in Paragraphs **12.82** ~ **12.86**. Step-by-step data calling procedures are provided in the *Data Interface User Guide* in the *Installation & Maintenance Manual, Operating Procedures*.

12.20 EIA Interface Leads (Signals)

12.21 Both DIUs operate with the ten standard EIA RS-232 interface leads (signals) on which signaling data is transmitted and received. DIUs connect to serial data devices with standard RS-232 cables, available from telephone supply stores (see Figures 8-29 ~ 8-34). The PDIU-DI/PDIU-DS requires ten signals for some applications, but can function with eight using modular cords and connectors with RJ45/DB25 adapters for other applications. If uncertain which signals are necessary for an application, all ten should be connected.

IMPORTANT NOTES!

- 1. The PDIU-DI is always a DCE device; the PDIU-DS may be a DTE or DCE, depending on how its internal jumpers (1 ~ 9) are configured (see Figure 8-28).**
- 2. In the descriptions below, when a signal is ON, its potential is about seven volts positive relative to signal ground (pin 7); when a signal is OFF, it is about 7 volts negative relative to the signal ground (pin 7).**

- **Frame Ground (FG, Pin 1):** The FG signal (EIA circuit AA) is a protective or safety ground which is bonded to the PDIU-DI/PDIU-DS PCB. If required by local codes, the FG should be connected to external ground.
- **Signal Ground (SG, Pin 7):** The SG signal (EIA circuit AB) establishes the common ground reference for all other PDIU and data device signals and must be wired for all applications.
- **Transmit Data (TD, Pin 2):** DTE devices transmit and DCE devices receive data on the TD lead (EIA circuit BA). Before the DTE device can transmit the TD signal, the RTS, CTS, DSR, and DTR signals (all discussed below) must be ON. The TD signal is OFF in the idle state.
- **Receive Data (RD, Pin 3):** The DCE device transmits data to the DTE device on the RD lead (EIA circuit BB); the DTE receives data on the RD.

- **Request to Send (RTS, Pin 4):** Some DTE devices send an RTS signal (EIA circuit CA) to the DCE device when they are ready to transmit data on the TD lead. If the DTE device does not generate the RTS signal, the DIU DIP switch **SW1-4** should be set ON to inform the DIU. Sometimes, the DTE/DCE device may use RTS/CTS for Ready/Busy type flow control, in these cases DIP switch **SW1-4** should be OFF (see Figure 8-26 for DIP switch information).
- **Clear to Send (CTS, Pin 5):** The DCE device sends the CTS signal (EIA circuit CB) which indicates that it is prepared to transmit data to the line side. The DCE device sends this signal only when it receives the RTS signal from the DTE device. Sometimes, the DTE/DCE device may use RTS/CTS for Ready/Busy type flow control; in these cases, dip switch **SW1-4** should be OFF (see Figure 8-26 for DIP switch information).
- **Data Set Ready (DSR, Pin 6):** When connected to the communication channel and prepared to exchange control characters to initiate data transmission, the DCE device sends the DSR signal (EIA circuit CC) to the DTE device. If the PDIU DIP switch **SW1-2** is set ON, DSR will be ON continuously; if the switch is set OFF, DSR follows DTR (if DSR is ON, DTR is ON, etc.) **SW1-2** should be OFF in most cases (see Figure 8-26 for DIP switch information).
- **Data Carrier Detect (DCD, Pin 8):** The DCE device sends the DCD signal (DCD, Pin 8) when receiving the carrier signal on the line side. Before transmitting or receiving data, most DTE devices require that the DCD be ON. If the carrier signal is removed by the remote end or lost due to a fault condition on the line, the DCE notifies the DTE device by an OFF condition with the DCD signal; PDIU DIP switch **SW1-2** is set ON to set the DCD ON continuously; if set OFF, the DCD signal will only be ON when connection between two DIUs is established and OFF when a connection is not established. **SW1-2** is set OFF when the DTE/DCE uses the DTR/DSR signals for Ready/Busy flow control (see Figure 8-26 for DIP switch information).
- **Data Terminal Ready (DTR, Pin 20):** The DTE device sends the DTR signal (EIA circuit CD) to the DCE device, prompting the DCE device to open the communication line. The line is closed and the call disconnected when the DTE device

quits sending the DTR signal. DTR may be sent any time to indicate that the DTE is ready to transmit or receive data. DIP switch **SW1-2** should be set OFF in most cases (see Figure 8-26 for DIP switch information).

- **Ring Indicator (RI, Pin 22):** The RI signal (EIA circuit CE) is sent by the DCE device to the DTE device. Whenever the DCE device receives a ringing signal on the line side, it turns the RI signal ON. If DIU DIP switch **SW1-3** is set ON, the RI signal will be on continuously if ringing; if the switch is set OFF, the RI signal will be one second ON/three seconds OFF when the DIU detects ringing signal.

12.30 DIP Switch Options

12.31 The PDIU-DI and the PDIU-DS each have a four-control DIP switch which can be configured for signaling options. The switch is located on the bottom of the PDIU-DI, and on the back panel of the PDIU-DS (see Figure 8-26).

- **SW1-1:** Normally this switch is set ON to disconnect devices from DIUs automatically. The connection is maintained if data is exchanged between the device and the DIU within eight to nine second intervals. If **SW1-1** is OFF on the called and calling DIU, data calls will remain connected until released manually.

IMPORTANT NOTE!

SW1-1 ON, auto disconnect, is in effect only for DIUs that have AT commands enabled in Program 20 (LED 02 ON).

- **SW1-2:** This switch is placed in the ON position when the PDIU-DI (or PDIU-DS configured like a DCE) must hold DCD and DSR ON continuously. If **SW1-2** is OFF, DSR follows DTR and DCD will be ON only when the DIU is connected on a data call to another DIU. **SW1-2** should be OFF on a DIU when it is connected to a personal computer that uses a communications software program to establish data calls with AT commands.
- **SW1-3:** The PDIU-DI (or PDIU-DS configured as a DCE) sends the Ring Indicate (RI) signal to the computer to tell the computer (DTE) that the PDIU is receiving an incoming call. **SW1-3** should be ON for the DIU to send RI steady, and OFF to send at one second ON/three seconds OFF intervals.

- **SW1-4:** This switch is placed in the ON position if the computer does not output the RTS signal. Sometimes, the DTE device may use RTS/CTS for Ready/Busy flow control, in these cases **SW1-4** should be OFF. In this case the DCD signal of the calling DTE is used as the RTS lead of the called DTE and the DCD signal of the called DTE is used as the RTS signal of the other DTE. In this case a signal which stops the DTE from transmitting data (usually the CTS lead) should be cross-connected to the DIU's DCD signal. Consult the DTE device or application software documentation to determine which type of flow control is required.

12.40 PDIU-DI to Personal Computer (PC) Installation

12.41 The PDIU-DI always functions as a DCE device; it transmits data on the Receive Data lead (RD) and receives data on the Transmit Data lead (TD). Most personal computers function as a DTE device; PCs transmit data on the TD lead and receive data on the RD lead. Follow the steps below to install the PDIU-DI to a DTE, PC:

NOTES:

1. Use the steps below when installing an ASCII terminal, personal computer, or any other DTE device to a PDIU-DI.
2. The PDIU-DI can connect to a DCE computer or any other DCE-type device using a specially configured RS-232 cable or adapter; but this application is rarely required.

- 1) Install the digital telephone that is to be equipped with PDIU-DI per the instructions in Section **200-096-207** and the drawing in Section **200-096-209**.
- 2) Install the PDIU-DI under the digital telephone per the instructions in Section **200-096-207**.

NOTE:

The PDIU-DI always operates as a DCE device; therefore, unlike the PDIU-DS, it has no internal jumpers.

- 3) Connect the appropriate RS-232 cable be-

tween the PDIU-DI's DB-25 female connector and the PC's appropriate asynchronous serial communications port connector (COM port).

IMPORTANT NOTE!

Check the PC manufacturer's serial communication port interface documentation for correct RS-232 pin requirements; requirements vary with each manufacturer. The number of EIA RS-232 signals required (8, 9, or 10 wires) depends on the application. When EIA signal requirements are not known, connect the 10 EIA signals listed in Paragraph 12.20. Figures 8-29 and 8-30 provide diagrams for connecting RS-232 cables between PDIU-DIs and Toshiba lap top, and IBM, XT and AT PCs.

- 4) Set the PDIU-DI DIP switch (**SW1-1 ~ 4**) for the desired application. Figure 8-26 shows the DIP switch locations and Paragraph **12.30** describes switch functions.
- 5) Access **Program 20** to configure the PDIU-DI for DTE-type connection and **Program 39** for data button assignments of the digital telephone connected to the PDIU-DI.

Program 20

- The port number entered for the PDIU-DI in **Program 20** is the port number of the digital telephone to which the PDIU-DI is connected.
- **LED 01:** Should always be ON for PDIU-DI ports.
- **LED 02:** Should be ON for PDIU-DI ports, unless the PC user will never use DIU AT commands (other than ATDD, ATDT, and ATD) and never require the PDIU-DI to send result codes to display on the PC display screen. Frequently, it is difficult to determine the full extent of these requirements; so it is recommended to turn LED 02 ON. See the *Data Interface User Guide* in the Operating Procedures of the *Installation and Maintenance Manual* for information regarding DIU AT commands and result codes.
- **LEDs 03 and 04:** Should be OFF for PDIU-DI ports.

- **LED 05:** Should be ON if the system is installed behind a PBX or Centrex that uses access codes to make external calls or to insert a pause following DIU access of an outside line.
- **LEDs 17 ~ 20:** Used to establish data security groups. PDIU stations are only allowed to make calls to PDIUs in the same data group to which they are assigned.

Program 39

- The following data call buttons can be assigned digital telephones equipped with PDIU-DIs: **DATA**, **DRLS**, and **MODEM**. Assign Speed Dial (**SD**) buttons to data devices as required. Do not assign **DSS** buttons to data devices; **DSS** buttons are used for voice calls only.

12.50 PDIU-DS To Printer Installation

12.51 The STRATA DK (**Release 3**) enables serial printers (laser, dot matrix, or other types) to be connected to stand-alone data interface units (PDIU-DSs). Digital telephones equipped with PDIU-DIs can share access to these printers. Serial printers operate as DCE or DTE devices, depending on the vendor; the PDIU-DS can be connected to either type, since it can be configured as a DTE or DCE device. (The PDIU-DS comes from the factory configured as a DCE device.) Follow the steps below to install the PDIU-DS to a serial printer.

NOTES:

1. Only serial printers (not parallel) that conform to EIA RS-232 signaling requirements can be connected to PDIU-DSs.
 2. In rare applications, it may be desired to connect printers to PDIU-DIs. Refer to the printer's installation instructions.
- 1) Consult the serial printer's documentation and determine if the printer operates as a DCE or DTE device:
 - If the printer is a DCE device: Disassemble the PDIU-DS and configure it to operate like a DTE device by placing the jumper plugs (**P1 ~ P9**) in the "B-C" (MO-

DEM) position. Reassemble the PDIU-DS, and mark "B-C" on the bottom identification label for future reference. (Paragraph **12.70** provides PDIU-DS disassembly/assembly instructions, and Figure 8-28 provides jumper plug information.)

- If the printer is a DTE device: It may not be necessary to disassemble the PDIU-DS, since it comes direct from the factory configured as a DCE device. However, if uncertain, disassemble the PDIU-DS and verify that jumper plugs (**P1 ~ P9**) are in the "A-B" (DTE) position. Reassemble the PDIU-DS and mark "A-B" on the bottom identification label for future reference. (Paragraph **12.70** provides PDIU-DS disassembly/assembly instructions, and Figure 8-28 provides jumper plug information.)

- 2) Connect the PDIU-DS to the appropriate PDKU circuit per wiring diagrams in Section **200-096-209** and information provided in Section **200-096-207**.
- 3) Connect the appropriate RS-232 cable between the printer and the PDIU-DS (see Figure 8-31 for an example printer cable connection).
- 4) If steps 2 and 3 are done properly, the Power and Ready LEDs on the PDIU-DS should light when the printer is turned on and ready.
- 5) Set the PDIU-DS DIP switch (**SW1-1 ~ 4**) for the desired application. Figure 8-26 shows the DIP switch locations and Paragraph **12.30** describes switch functions.

IMPORTANT NOTE!

Check the printer's serial documentation for correct RS-232 pin requirements. The requirements vary with each manufacturer.

- 6) Use **Program 20** to configure the PDIU-DS to connect to a serial printer (see Programming Section **200-096-302** for instructions and record sheets).
 - **LED 01:** Should always be ON for PDIU-DS ports.

- **LED 02:** Should be OFF for PDIU-DS ports connected to printers.
- **LED 03:** Should be OFF for PDIU-DS ports that connect to DTE- or DCE-type printers.
- **LED 04:** Should always be ON for PDIU-DS ports.
- **LED 05:** Should be OFF for PDIU-DS ports connected to printers.
- **LEDs 17 ~ 20:** Data security groups can be used to allow or deny digital telephones equipped with PDIU-DIs access to PDIU-DS ports connected to a printer. DIU stations can only make data calls to DIUs in the same data security group.

- 7) **Program 22** should be used to configure PDIU-DSs to hunt if more than one PDIU-DS connected to the same printer/server.

12.60 PDIU-DS To Modem Installation

12.61 With **Release 3** software, STRATA DK enables asynchronous-type (not synchronous) modems to be connected to PDIU-DSs. This allows PDIU-DI equipped digital telephones that are connected to personal computers, terminals, and other devices to share access to a modem or modem pool.

IMPORTANT NOTE!

Modems must be "smart modems" that respond to AT commands and return result codes. Modems are customer-supplied.

12.62 A modem(s) can be accessed internally for outgoing data calls or externally for incoming data calls. Modems operate as DCE devices; so PDIU-DSs that are connected to them must be configured to operate like a DTE device. In the example installation in Figure 8-25, the line side of the two modems are connected to PSTU/PESU ports to establish a modem pool; however, the line side of modems could be connected directly to a dedicated CO line. If modems are connected directly to telephone network CO lines, automatic transfer of CO line voice calls to system modems (data call) will not function as described in the *Data Interface User Guide*. For best operation and utilization of CO

lines and modems, it is recommended to connect modems to PSTU/PESU standard station ports in a modem pool configuration. The RS-232 side of the modem connects to the PDIU-DS with standard RS-232 cables; the PDIU-DS line side (RJ-11 connector) always connects to its own individual PDKU port. Use the instructions below to install modems to PDIU-DSs.

- 1) Configure the PDIU-DS as a DTE device: Disassemble the PDIU-DS and place jumper plugs **P1 ~ P9** in the "B-C" position (MODEM). Reassemble the PDIU-DS and mark "B-C" on the bottom identification label for future reference. (Paragraph **12.70** provides PDIU-DS disassembly/assembly instructions and Figure 8-28 provides jumper plug information.)
- 2) Connect the PDIU-DS to the appropriate PDKU circuit per the wiring diagrams in Section **200-096-209**.
- 3) Connect the appropriate RS-232 cable between the modem and the PDIU-DS. Figure 8-32 shows an example PDIU-DS to "smart modem" RS-232 connection.

IMPORTANT NOTE!

All ten PDIU-DS EIA leads (signals) should be connected to the modem. Consult the modem's documentation for correct RS-232 pin requirements; the requirements may vary with each manufacturer.

- 4) Connect the line side of the modem to a PSTU or PESU standard telephone circuit or a dedicated CO line (consult the modem's documentation to install the it to a CO line). Section **200-096-209** provides PESU/PSTU station port wiring information.
- 5) Set the PDIU-DS DIP switch (**SW1-1 ~ 4**) for the desired application. Figure 8-26 shows the DIP switch location and Paragraph **12.30** describes switch functions.
- 6) Use the programs below to configure the PDIU-DS to connect to an asynchronous modem (see programming Section **200-096-302** for explanations and record sheets).

Program 20

- **LED 01:** Should always be ON for PDIU-DS ports
- **LED 02:** Should be ON for PDIU-DS ports connected to modems, enabling the use of AT commands and result codes when incoming calls are made from outside the system to modems connected to PDIU-DSs.
- **LED 03:** Should be set ON for PDIU-DS ports connected to modems.
- **LED 04:** Should always be ON for PDIU-DS ports.
- **LED 05:** Should be ON if the system is installed behind a PBX/Centrex that uses access codes to place outgoing trunk calls.
- **LEDs 17 ~ 20:** Data security groups can be used to allow or deny digital telephones equipped with PDIU-DIs access to the PDIU-DS ports connected to a modem. DIU stations can only make data calls to DIUs in the same data security group.

Program 21

- For each PDIU-DS/modem pair, assign the ports on the PDKU and PSTU (or PESU) that will be connected to the PDIU-DS and modem, respectively.

Program 22/33

- If more than one modem/PDIU-DS pair is configured as a system modem pool, the PDIU-DSs should be set to hunt each other in **Program 22**. The modem PSTU or PESU ports should be set to hunt each other in **Program 33**.

Program 31

- LED 18 should be turned on for all PESU or PSTU station ports that are connected to modems. This provides data security by preventing executive or privacy override of modem calls.

12.70 PDIU-DS Disassembly and Assembly

12.71 To set the jumper plugs (**P1 ~ P9**) on the PCB inside the PDIU-DS for DCE or DTE operation, the PDIU-DS must be disassembled. Disassemble the PDIU-DS in accordance with the following steps:

12.72 Disassembling the PDIU-DS

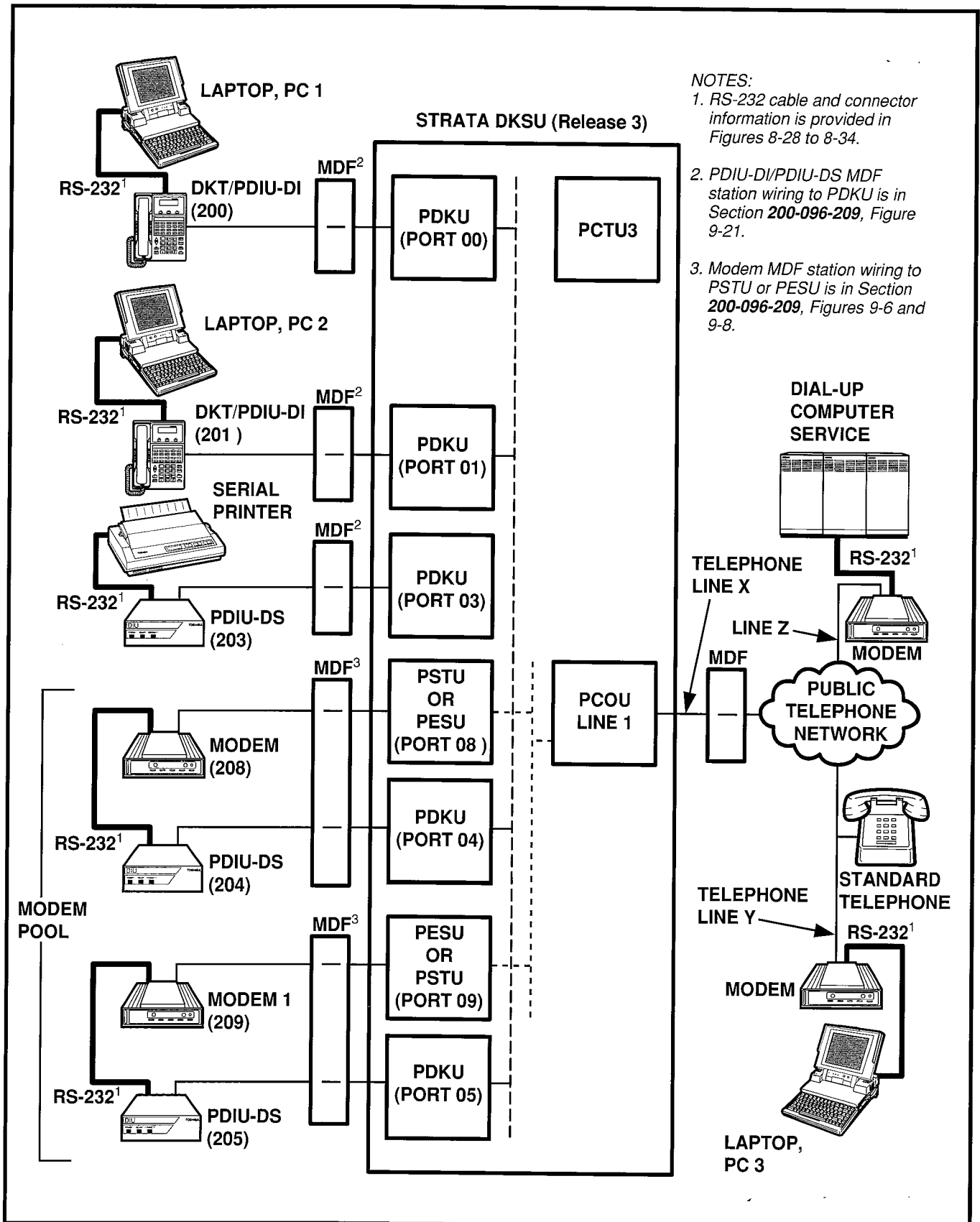
- 1) Remove the four screws securing the bottom panel to the rest of the unit (see Figure 8-27). These screws are not captive; so place together where they can be easily accessed.
- 2) Remove the bottom panel.
- 3) Remove the PCB inside the PDIU-DS by lifting the back panel from its side grooves.
- 4) Turn the PCB over and set the jumper plugs (**P1 ~ P9**) as follows:
 - If the PDIU-DS is connected to a DTE, set the plugs to the "A-B" position.
 - If the PDIU-DS is connected to a DCE device, set the plugs to the "B-C" position.

NOTE:

Do not cut PDIU-DS jumper wires for DK installations. Jumper wires are for PERCEPTION applications only.

12.73 Assembling the PDIU-DS

- 1) Position the back panel to the PCB (see Figure 8-27).
- 2) Slide the back panel down into its side grooves.
- 3) Attach the bottom panel, and secure with the four non-captive screws.



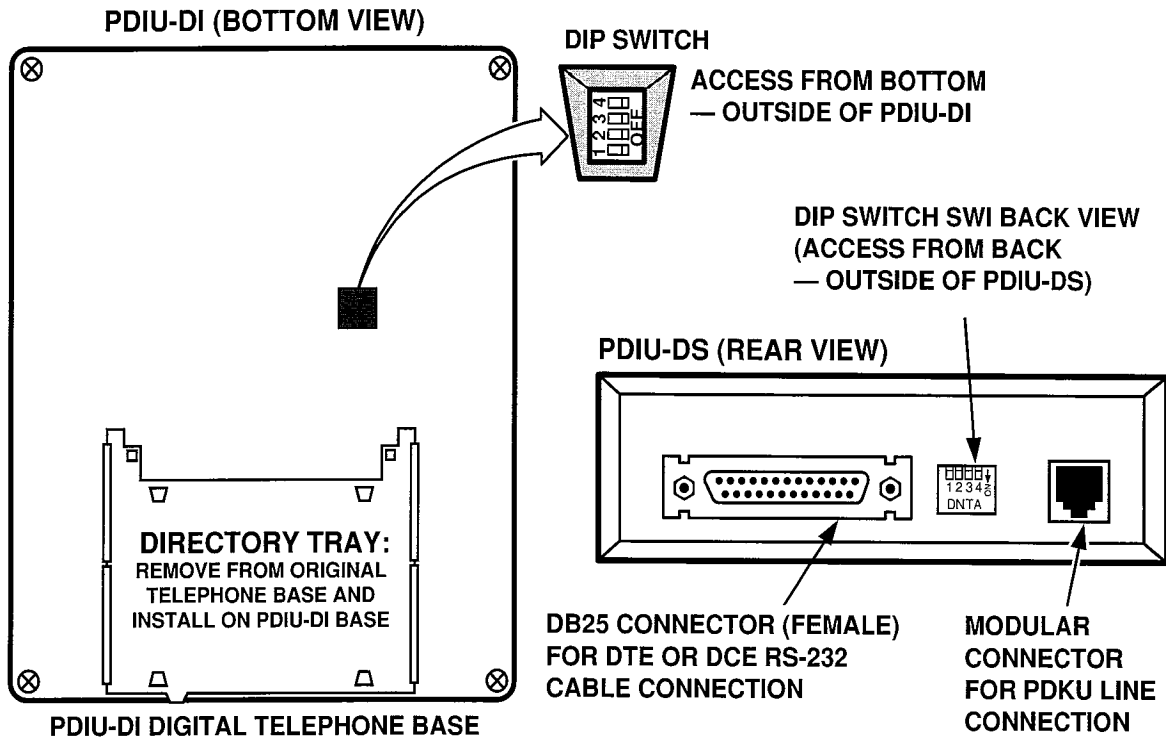
NOTES:

1. RS-232 cable and connector information is provided in Figures 8-28 to 8-34.

2. PDIU-DI/PDIU-DS MDF station wiring to PDKU is in Section 200-096-209, Figure 9-21.

3. Modem MDF station wiring to PSTU or PESU is in Section 200-096-209, Figures 9-6 and 9-8.

FIGURE 8-25—STRATA DK DATA INSTALLATION EXAMPLE BLOCK DIAGRAM



PDIU-DI AND -DS SW1 DIP SWITCH (1 ~ 4) FUNCTIONS

SWITCH	FUNCTION	INITIAL POSITION
SW1 (1)	Forced hang up when DIU does not detect space signal on TD or RD for about 9 minutes ON: enable (auto-disconnect) ¹ OFF: disable	OFF
SW1 (2)	DCD, DSR control ON: continuous on OFF: DSR depends on DTR (DCD is on during communication state)	OFF
SW1 (3)	RI control ON: RI is on continuously during ringing state OFF: RI is 1 sec ON/3 sec OFF during ringing state	OFF
SW1 (4)	RTS control ON: DTE doesn't have RTS signal OFF: DTE has RTS signal (ready/busy flow control: RTS/CTS:DCD)	OFF

NOTES:

1. DIU port must have LED 02, ON in **Program 20** to enable auto disconnect.
2. See Paragraphs **12.20** and **12.30** for more details regarding **SWI** option settings.

FIGURE 8-26—PDIU-DI/PDIU-DS SW1 DIP SWITCH INFORMATION

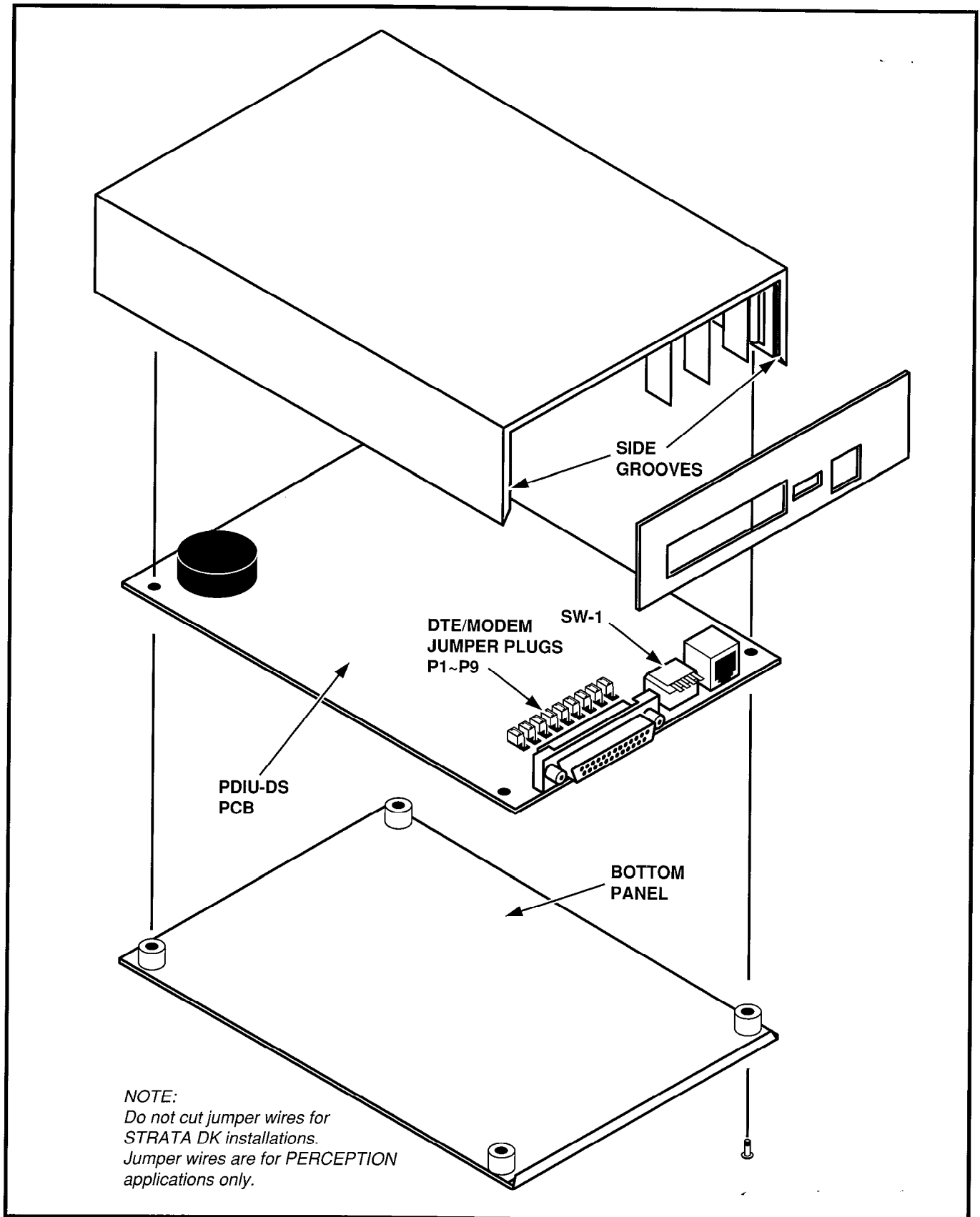
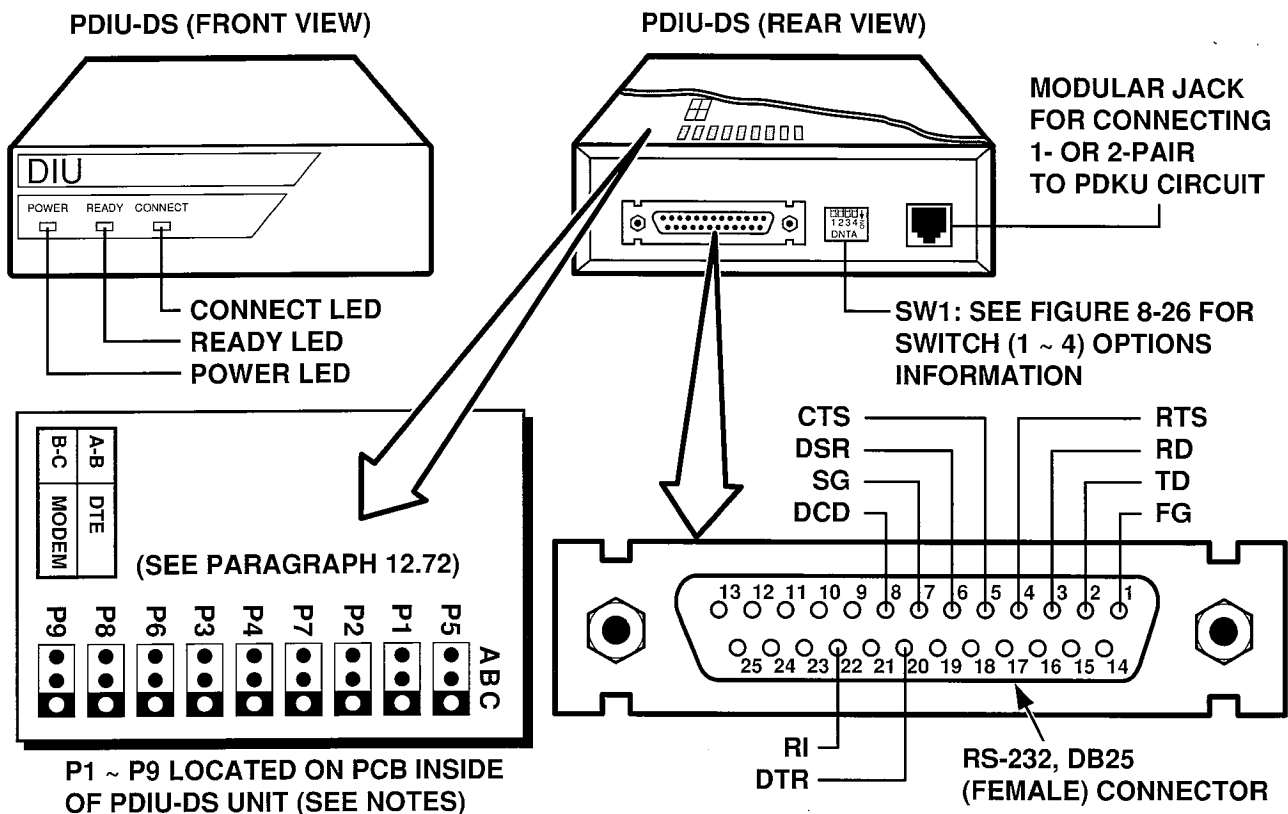


FIGURE 8-27—PDIU-DS DISASSEMBLY/ASSEMBLY DIAGRAM



SIGNAL ABBREVIATION	SIGNAL NAME/FUNCTION	PDIU-DS PIN NO.	SIGNAL DIRECTION AND FUNCTION OF P1 ~ P9			
			PDIU-DS CONNECTED TO DTE		PDIU-DS CONNECTED TO DCE	
			SIGNAL DIRECTION	FUNCTION: A-B (DTE MODE)	SIGNAL DIRECTION	FUNCTION: B-C (MODEM MODE)
FG	FRAME GROUND	1				
SG	SIGNAL GROUND	7				
TD	TRANSMIT DATA	2	DTE → DIU	P1	MODEM ← DIU	P1
RD	RECEIVE DATA	3	DTE ← DIU	P2	MODEM → DIU	P2
RTS	REQUEST TO SEND	4	DTE → DIU	P6	MODEM ← DIU	P6
CTS	CLEAR TO SEND	5	DTE ← DIU	P7/P5	MODEM → DIU	P7/P5
DSR	DATA SET READY	6	DTE → DIU	P4	MODEM ← DIU	P4
DTR	DATA TERMINAL READY	20	DTE ← DIU	P3	MODEM → DIU	P3
DCD	DATA CARRIER DETECT	8	DTE → DIU	P8	MODEM ← DIU	P8
RI	RING INDICATOR	22	DTE ← DIU	P9	MODEM → DIU	P9

NOTES:

1. Mode select (P1 ~ P9) "A-B" if PDIU-DS is connected to a terminal-type device (DTE).
2. Mode select (P1 ~ P9) "B-C" if PDIU-DS is connected to a modem-type device (DCE).
3. See Figure 8-27 to disassemble/assemble PDIU-DI.
4. Some RS-232 leads go by different names depending on the equipment manufacturer.

FIGURE 8-28—PDIU-DS JUMPER PLUG OPTIONS/RS-232 CONNECTOR INFORMATION

**TOSHIBA LAPTOP OR IBM AT-TYPE
PERSONAL COMPUTER (DTE)
PIN DESIGNATIONS**

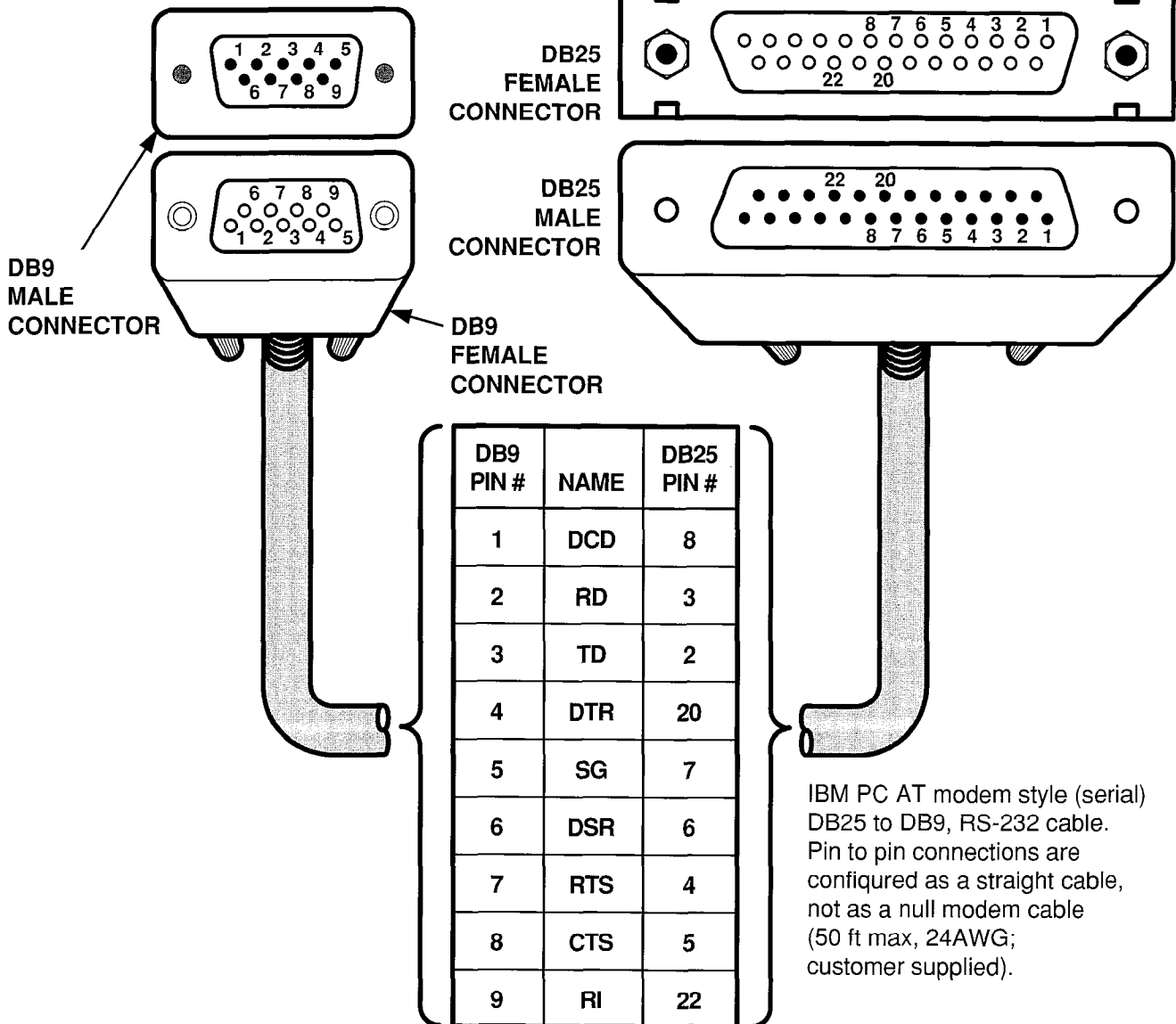
COM PORT PIN #	1	2	3	4	5	6	7	8	9
NAME	DCD	RD	TD	DTR	SG	DSR	RTS	CTS	RI

**PDIU-DI
(FUNCTIONS LIKE A DCE)
PIN DESIGNATIONS**

PDIU-DI PIN #	1	2	3	4	5	6	7	8	20	22
NAME	FG	TD	RD	RTS	CTS	DSR	SG	DCD	DTR	RI

Rear view of asynchronous (serial) communication interface connector (DB9) of Toshiba laptop or IBM AT personal computer

Rear view of PDIU-DI DB25, RS-232 female connector



IBM PC AT modem style (serial) DB25 to DB9, RS-232 cable. Pin to pin connections are configured as a straight cable, not as a null modem cable (50 ft max, 24AWG; customer supplied).

NOTES:

1. Some RS-232 EIA leads may be called by other names by some manufacturers.
2. The computer receives data on pin 2 (RD) and sends data on pin 3 (TD).

FIGURE 8-29—PDIU-DI TO IBM AT TYPE COMPUTER RS-232 CONNECTOR/CABLE CONNECTIONS

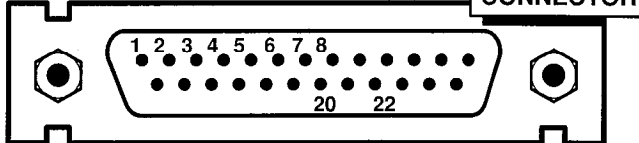
**IBM XT PERSONAL COMPUTER
 OR ASCII TERMINAL
 (FUNCTIONS LIKE A DTE)
 DB25 PIN DESIGNATIONS**

PDIU-DI PIN #	1	2	3	4	5	6	7	8	20	22
NAME	FG	TD	RD	RTS	CTS	DSR	SG	DCD	DTR	RI

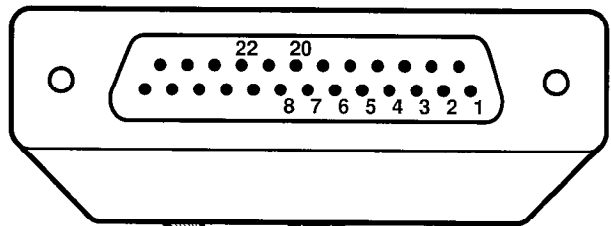
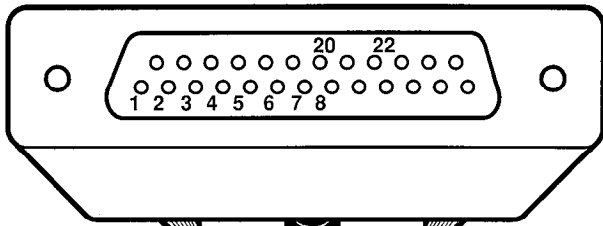
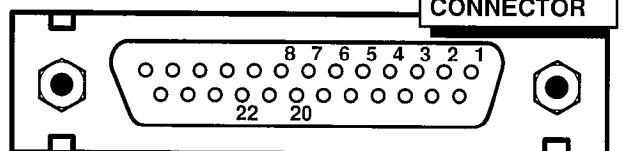
**PDIU-DI
 (FUNCTIONS LIKE A DCE)
 DB25 PIN DESIGNATIONS**

PDIU-DI PIN #	1	2	3	4	5	6	7	8	20	22
NAME	FG	TD	RD	RTS	CTS	DSR	SG	DCD	DTR	RI

Rear view of personal computer
 or ASCII terminal DB25,
 RS-232 connector



Rear view of PDIU-DI DB25,
 RS-232 female connector



**DB25 FEMALE
 CONNECTOR**

**DB25 MALE
 CONNECTOR**

DB25 PIN #	NAME	DB25 PIN #
8	DCD	8
3	RD	3
2	TD	2
20	DTR	20
7	SG	7
6	DSR	6
4	RTS	4
5	CTS	5
22	RI	22
1	FG	1

RS-232 CABLE

IBM PC AT modem style (serial)
 DB25 to DB25 (M/F) RS-232
 cable (50 ft max, 24 AWG,
 customer supplied).

NOTE:

The PC/ASCII terminal receives data on pin 3 (RD) and transmits data on pin 2 (TD).

FIGURE 8-30—PDIU-DI TO IBM XT TYPE COMPUTER, RS-232 CONNECTOR/CABLE CONNECTIONS

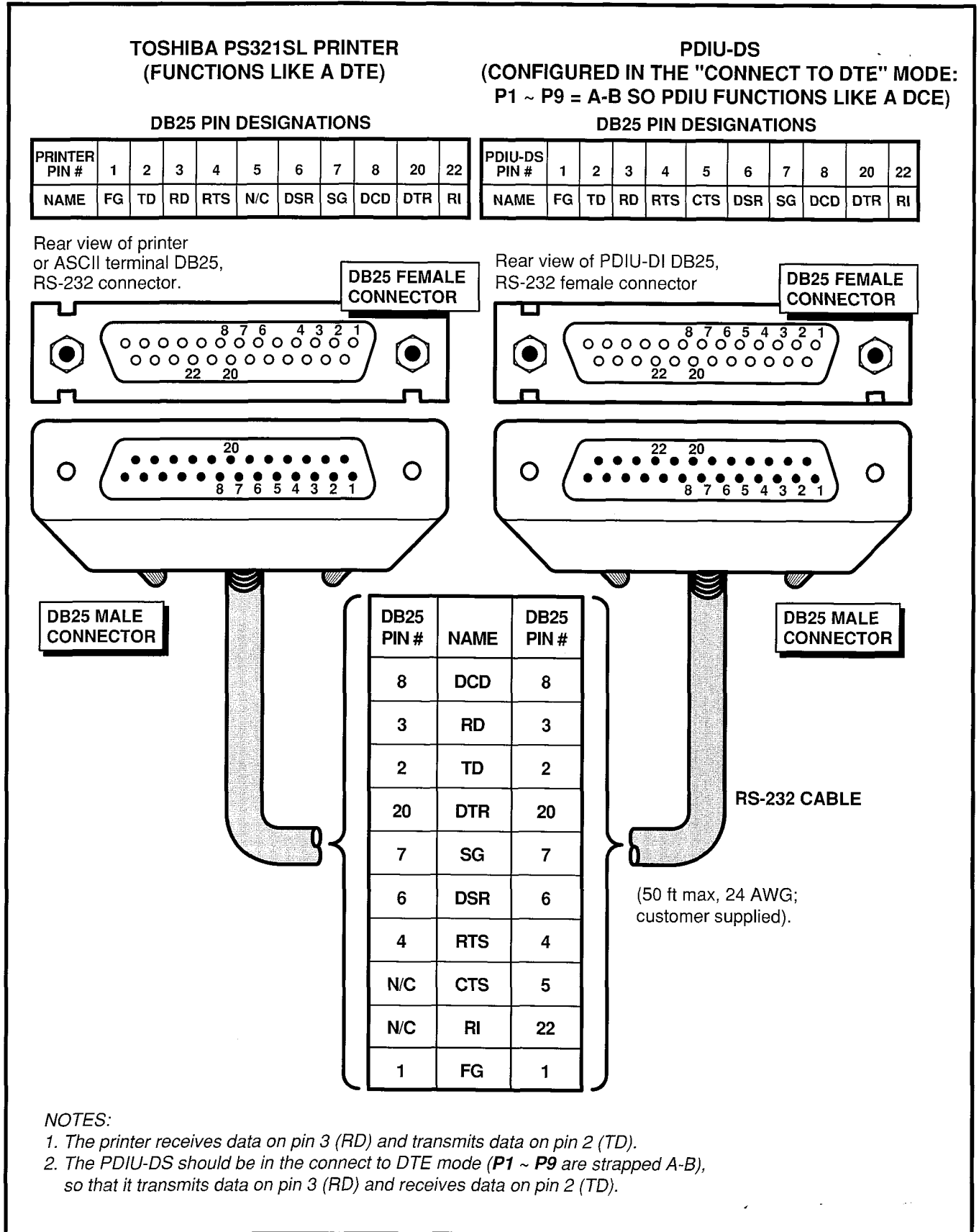


FIGURE 8-31—PDIU-DS TO TOSHIBA PRINTER, RS-232 CONNECTOR/CABLE CONNECTIONS

**HAYES-TYPE SMART MODEM
 (FUNCTIONS LIKE A DCE)**

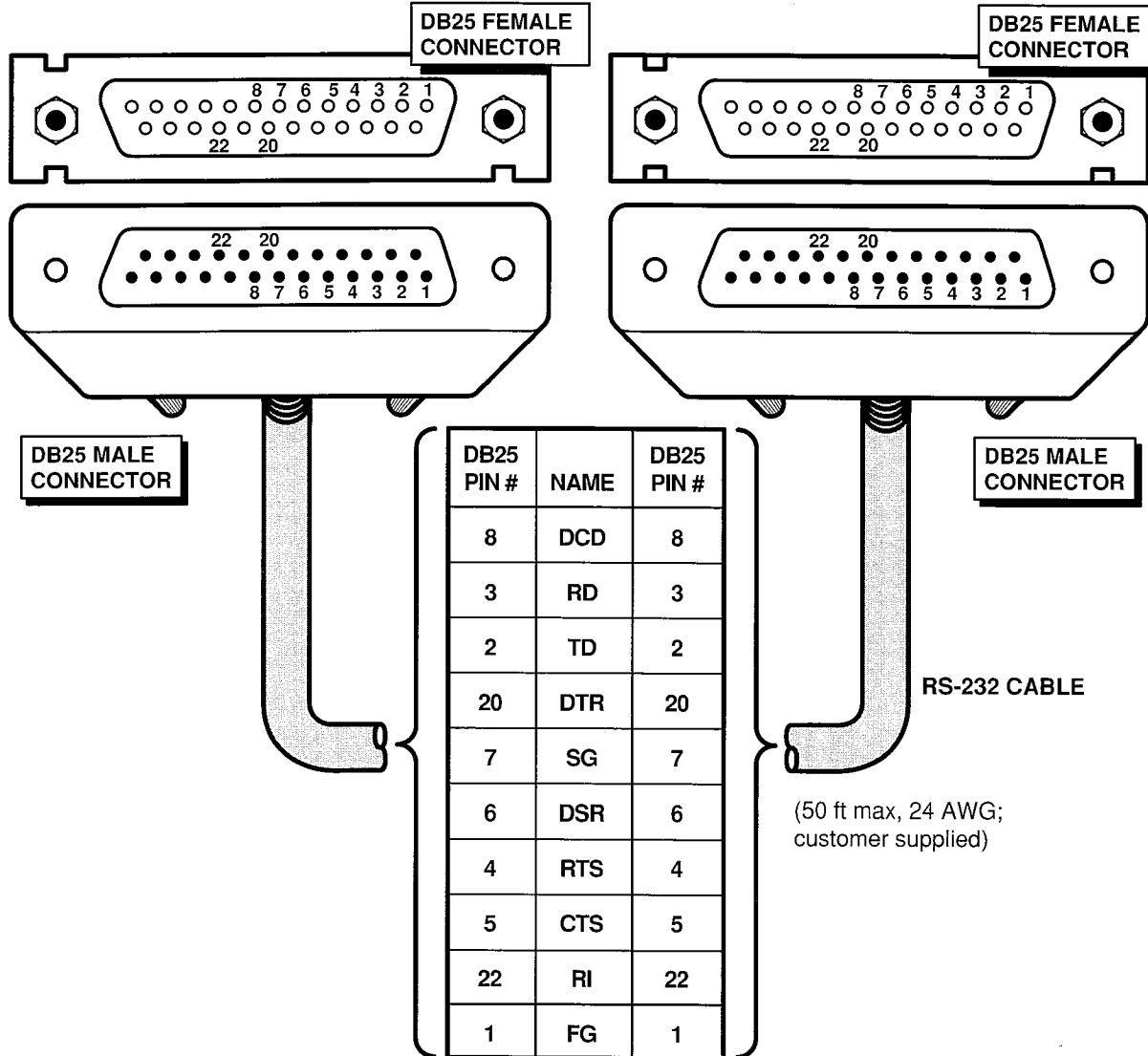
**PDIU-DS
 (CONFIGURED IN THE "CONNECT TO MODEM"
 MODE, P1 ~ P9 = B-C, SO IT FUNCTIONS LIKE A DTE)**

MODEM PIN #	1	2	3	4	5	6	7	8	20	22
NAME	FG	TD	RD	RTS	CTS	DSR	SG	DCD	DTR	RI

PDIU-DS PIN #	1	2	3	4	5	6	7	8	20	22
NAME	FG	TD	RD	RTS	CTS	DSR	SG	DCD	DTR	RI

Rear view of modem DB25 connector

Rear view of PDIU-DS DB25, connector

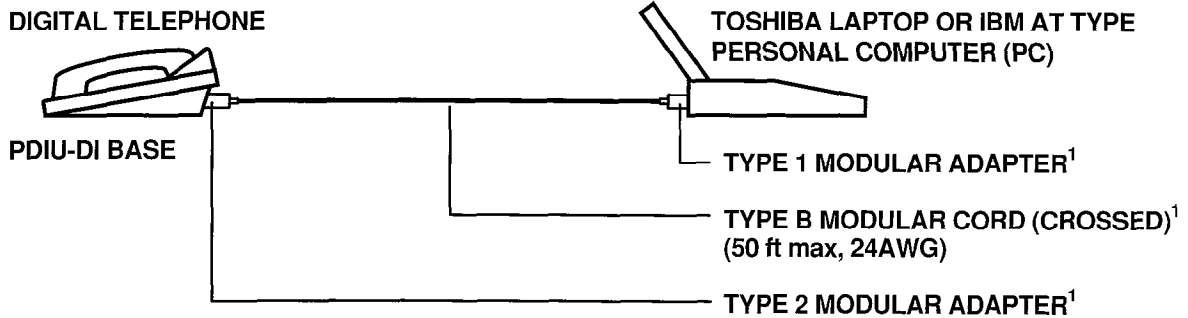


NOTES:

1. Modem receives data on pin 2 (TD) and transmits data on pin 3 (RD).
2. The PDIU-DS must be in the connect to modem mode (P1 ~ P9 strapped B-C) so that it transmits data on pin 2 (TD) and receives data on pin 3 (RD).

FIGURE 8-32—PDIU-DS TO HAYES-TYPE SMART MODEM, RS-232 CONNECTOR/CABLE CONNECTIONS

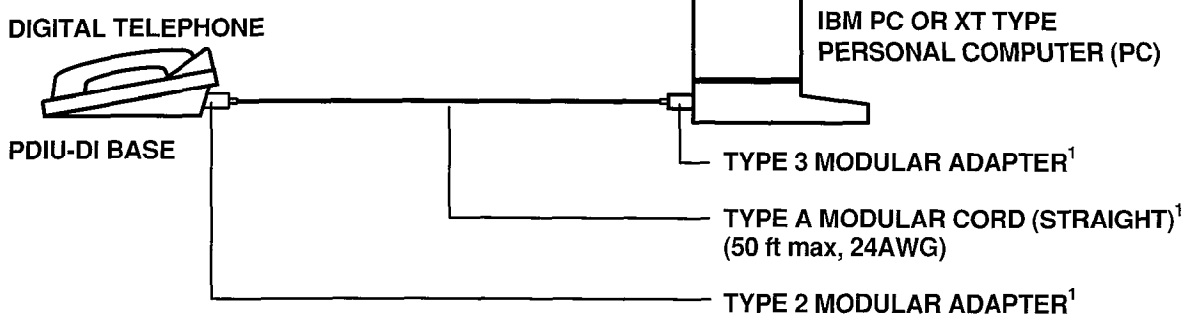
CONNECTION EXAMPLE 1



IMPORTANT!

Will not function with applications that require the RI signal to PC.

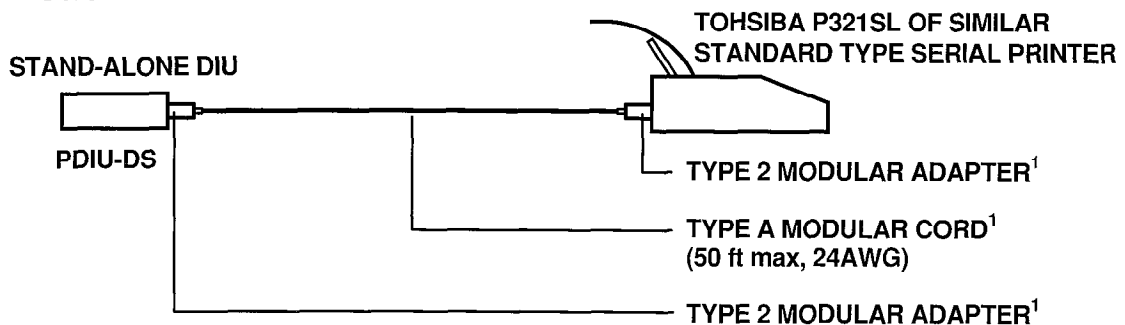
CONNECTION EXAMPLE 2



IMPORTANT!

Will not function with applications that require the RI signal to PC.

CONNECTION EXAMPLE 3

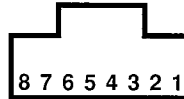


NOTES:

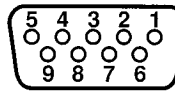
1. See Figure 8-34 for detailed pin out information of modular cords and adapters.
2. Never use modular cords and adapters when connecting a PDIU-DI/PDIU-DS to a modem.
3. Connection examples 1 and 2 work when using the PDIU-DI to make calls with personal computer applications (auto-dialers, printer sharing, outgoing modem calls, etc). If the PC PDIU-DI must receive calls, the RI lead is normally required; therefore, a standard RS-232 cable must be used (see Figures 8-29 and 8-30).
4. In Connection Example 3, PDIU-DS must be in the connect to DTE mode (P1 ~ P9, strapped A-B).
5. All modular cords and adapters are customer-supplied.

FIGURE 8-33—PDIU-DI/PDIU-DS MODULAR CABLE/RJ-45 ADAPTER CONNECTIONS

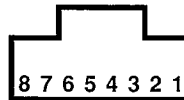
**TYPE 1
 RJ45 TO DB9 (FEMALE) ADAPTER**



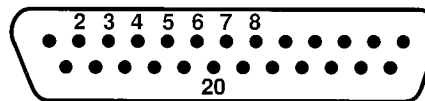
8	7	6	5	4	2	1	N/C	RJ45
DSR	RTS	RD	DCD	TD	GND	CTS	RI	LEAD NAME
6	7	2	1	3	5	8	9	DB9



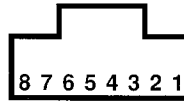
**TYPE 2
 RJ45 TO DB25 (MALE) ADAPTER**



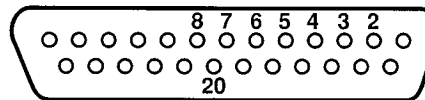
8	7	6	5	4	3	2	1	N/C	RJ45
CTS	SG	DTR	TD	DCD	RD	RTS	DSR	RI	LEAD NAME
5	7	20	2	8	3	4	6	22	DB25



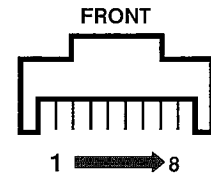
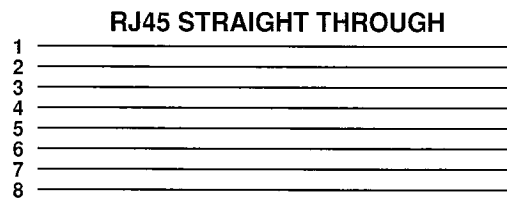
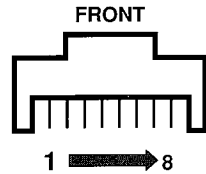
**TYPE 3
 RJ45 TO DB25 (FEMALE) ADAPTER**



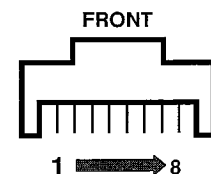
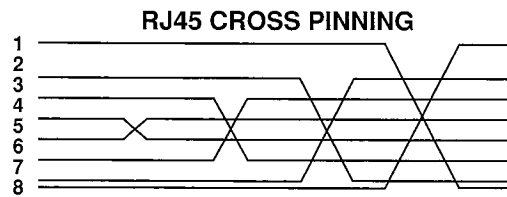
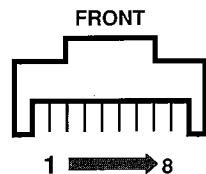
8	7	6	5	4	3	2	1	N/C	RJ45
CTS	SG	DTR	TD	DCD	RD	RTS	DSR	RI	LEAD NAME
5	7	20	2	8	3	4	6	22	DB25



**TYPE A
 RJ45 FLAT MODULAR CORD (STRAIGHT)**



**TYPE B
 RJ45 FLAT MODULAR CORD (CROSSED)**



Modular Cords (50 ft max, 24AWG; customer supplied)

FIGURE 8-34—PDIU-DI/PDIU-DS MODULAR CORDS AND RJ-45/RS-232 ADAPTER PIN CONNECTIONS

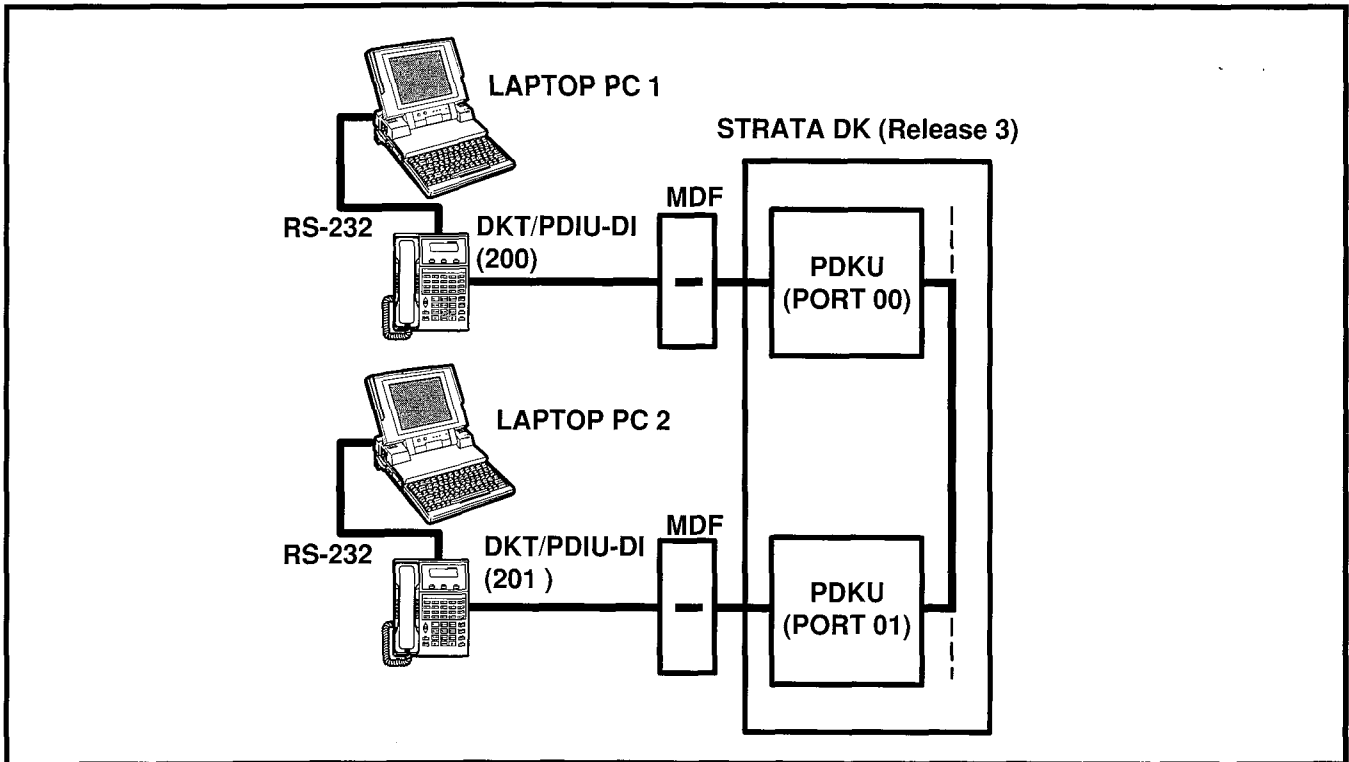


FIGURE 8-35—PC TO PC TEST CALL USING AT COMMANDS

12.80 PDIU-DI/PDIU-DS Installation Tests

12.81 Paragraphs 12.82 ~ 12.86 provide tests for five DIU call applications. The telephone and port numbers used in these figures are provided for explanation purposes only; when actually testing, use port and telephone numbers appropriate for the system. Each of these tests can be conducted with manual dialing from a digital telephone's dialpad or AT dialing from a personal computer's keyboard; however, only the preferred method of dialing for application is presented. *The Data Interface User Guide* in the Operating Procedures section of this manual has additional information useful for the tests.

12.82 PC-to-PC Test Call Using AT Commands (see Figure 8-35)

1) DIU Programming:

- **Program 20:** Ports 00 and 01. LEDs 01, 02, and 17 ON; all other LEDs OFF.
- **Program 39:** Ports 00 and 01. **DATA** (56) and **DRLS** (54) buttons should be provided.
- Default settings for PDIU-DI S-Registers.

- 2) Make sure PC 1 and PC 2 are on-line with a communications software package and that the communication parameters of each PC and communication software package are set to the same values (data transmission rate, parity, data bits, stop bits, flow control, etc.).
- 3) From PC 1's keyboard, type **ATDD201** and press **ENTER** (AT commands must be capital letters).
 - The DATA LEDs will be lit on DKT 200 and 201
 - PC 1 displays, CONNECT XXXX.
 - PC 2 displays, RING.
 - PC 1 and PC 2 are connected as shown by the thick solid lines. PDIU-DIs are now in the communication mode.
- 4) Typing from PC 1 keyboard will display on PC 2 display and vice versa.
- 5) To terminate the call:
 - a) Type **+++** from either PC keyboard.
 - The PC screen displays, OK.
 - b) Type **ATH** from the PC keyboard used in step 5a.

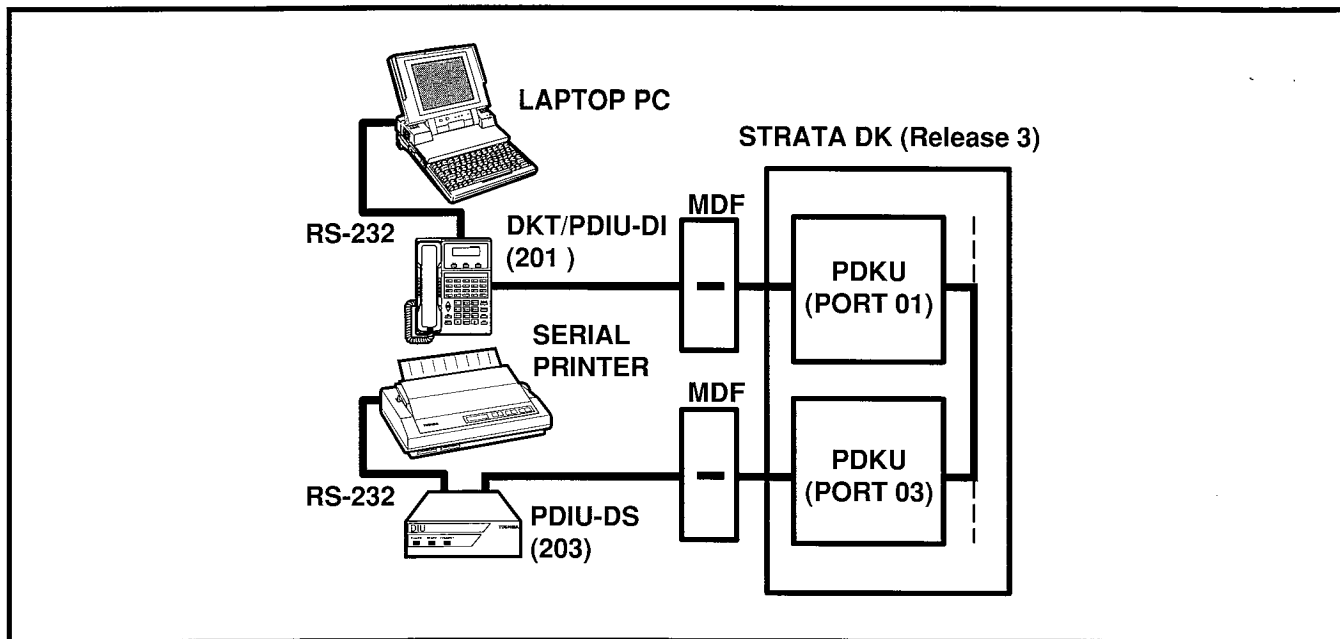


FIGURE 8-36—PC TO PRINTER TEST CALL USING MANUAL DIALING

- PC 1 and PC 2 screens both display, NO CARRIER.
- The Data LEDs on each DKT are off.

12.83 PC to Printer Test Call Using Manual Dialing (see Figure 8-36)

1) DIU Programming:

- **Program 20:** Port 01. LEDs 01, 02, and 17 ON; all other LEDs OFF.
- **Program 20:** Port 03. LEDs 01, 04, and 17 ON; all other LEDs OFF.
- **Program 39:** Port 01. **DATA** (56) and **DRLS** (54) buttons should be provided.
- Default settings for PDIU-DI, S-Registers.

2) Make sure the PC is configured to print data from its serial COM port (the PC COM port connected to DKT/PDIU-DI port 01). This is normally accomplished using the DOS and MODE commands.

- Using the manufacturer's documentation, make sure the communication parameters (data speed, parity, data bits, stop bits, etc.) of the PC COM port match the printer's serial interface parameters.
- To connect the PC to the printer, press the DKT's **DATA** button and dial **203**.
 - The CONNECT on the PDIU-DS will be lit.
 - The connection between the PC and the printer is completed, as shown by the thick lines above (PDIU-DS 203 is in the communication mode).
 - If busy tone is sent to the DKT, the connection is not complete; press **DRLS** and try step 4 again.
- Operate the PC to print data as required.
- To terminate the call, press the DKT's **DRLS** button.

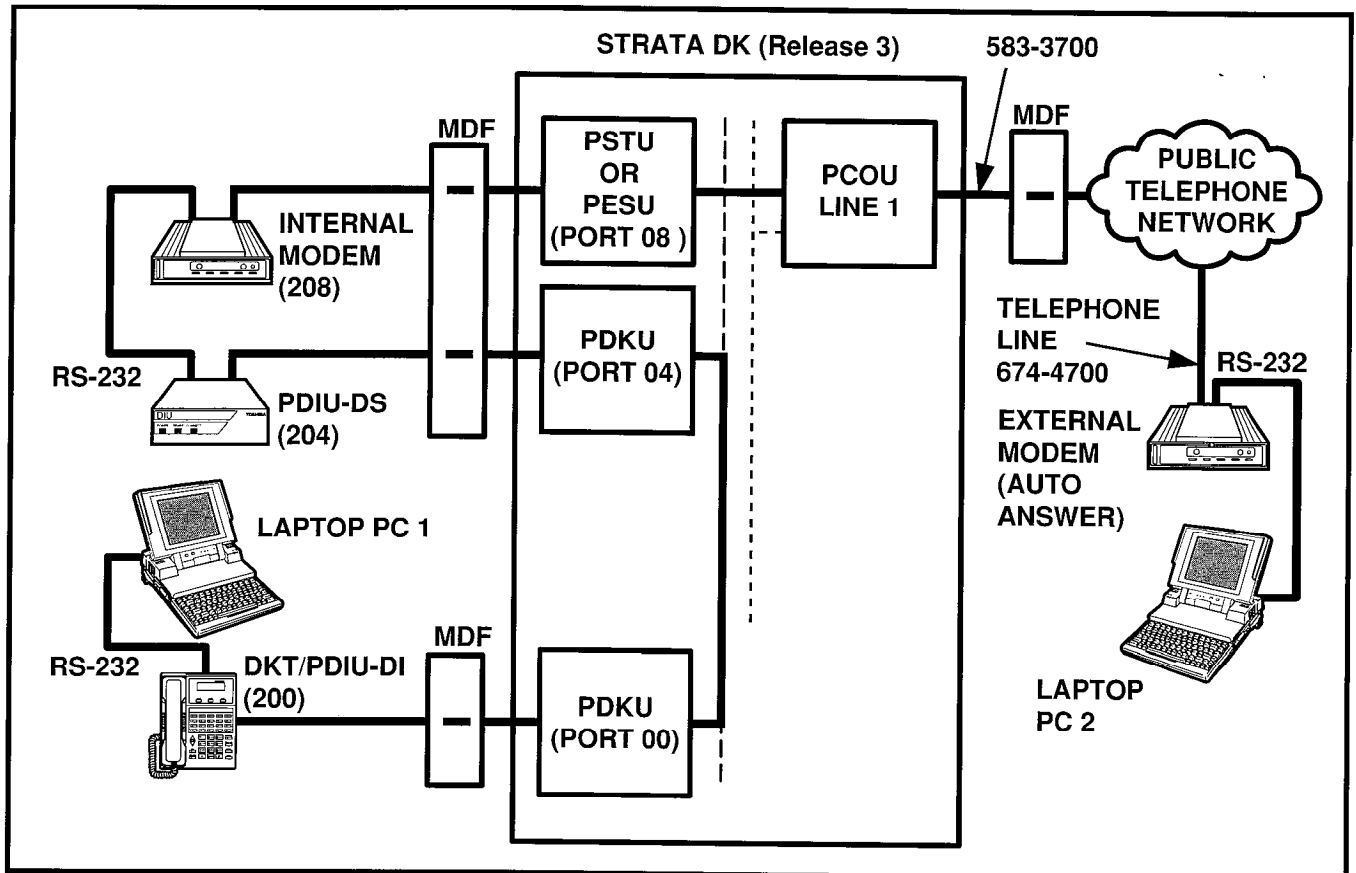


FIGURE 8-37—INTERNAL PC TO EXTERNAL PC TEST CALL USING AT COMMANDS

12.84 Internal PC to External PC Test Call Using AT Commands (see Figure 8-37)

1) DIU Programming:

- **Program 20:** Port 00. LEDs 01, 02, and 17 ON; all other LEDs OFF.
- **Program 20:** Port 04. LEDs 01, 02, 03, 04, and 17 ON; all other LEDs OFF.
- **Program 21:** PDKU port 04 assigned with PSTU port 08.
- **Program 39:** Port 00. **DATA** (56), **DRLS** (54), and **MODEM** (55) buttons should be provided.
- Default settings for PDIU-DI and PDIU-DS S-Registers.

2) Make sure PC 1 and PC 2 are on-line with a communications software package and that the communication parameters of each PC and communication software package are set to the same values (data transmission rate, parity, data bits, stop bits, flow control, etc.).

3) From PC 1's keyboard, type **ATDD204** and press **ENTER** (AT commands must be capital letters).

- The DATA LED on DKT 200 will be lit.
- The CONNECT LED on PDIU-DS 204 will be lit.
- The screen on PC 1 displays, **CONNECT XXXX**, where XXXX is the data transmission speed set by the communications software.
- At this time, PC 1 and PDIU-DS 204 are connected as shown by the thick lines above (PDIU-DS 204 is in the communication mode); PC 1 is now linked directly to the RS-232 side of the internal modem; PC 1 can issue AT commands to the internal modem, which is now in the command mode.
- If PDKU/PDIU-DS port 04 is the only DIU port connected to the modem (**Program 20**, LED 03 ON), the MODEM LEDs on all DKTs will be lit.

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4) From PC 1's keyboard, type **ATDT7016744700** and press **ENTER**.

- The internal modem (208) goes off-hook, dials 701 to seize the CO line, and then dials the external modem's telephone number (674-4700).
- The external modem rings and auto answers; the modems handshake and establish communications.
- If the modems send result codes, the screen on PC 1 displays, CONNECT XXXX, where XXXX is the data transmission speed set by the communication software.

- At this time PC 1 and PC 2 are connected, as shown by the thick lines above, to exchange data (file transfers, type messages, etc.).

5) To terminate the call:

- a) Type **+++** from either PC keyboard.
 - The PC screen displays, OK.
- b) Type **ATH** from the PC keyboard used in step 5a.
 - PC 1 and PC 2 screens both display, NO CARRIER.
 - The DATA LED on DKT 200 will be unlit.

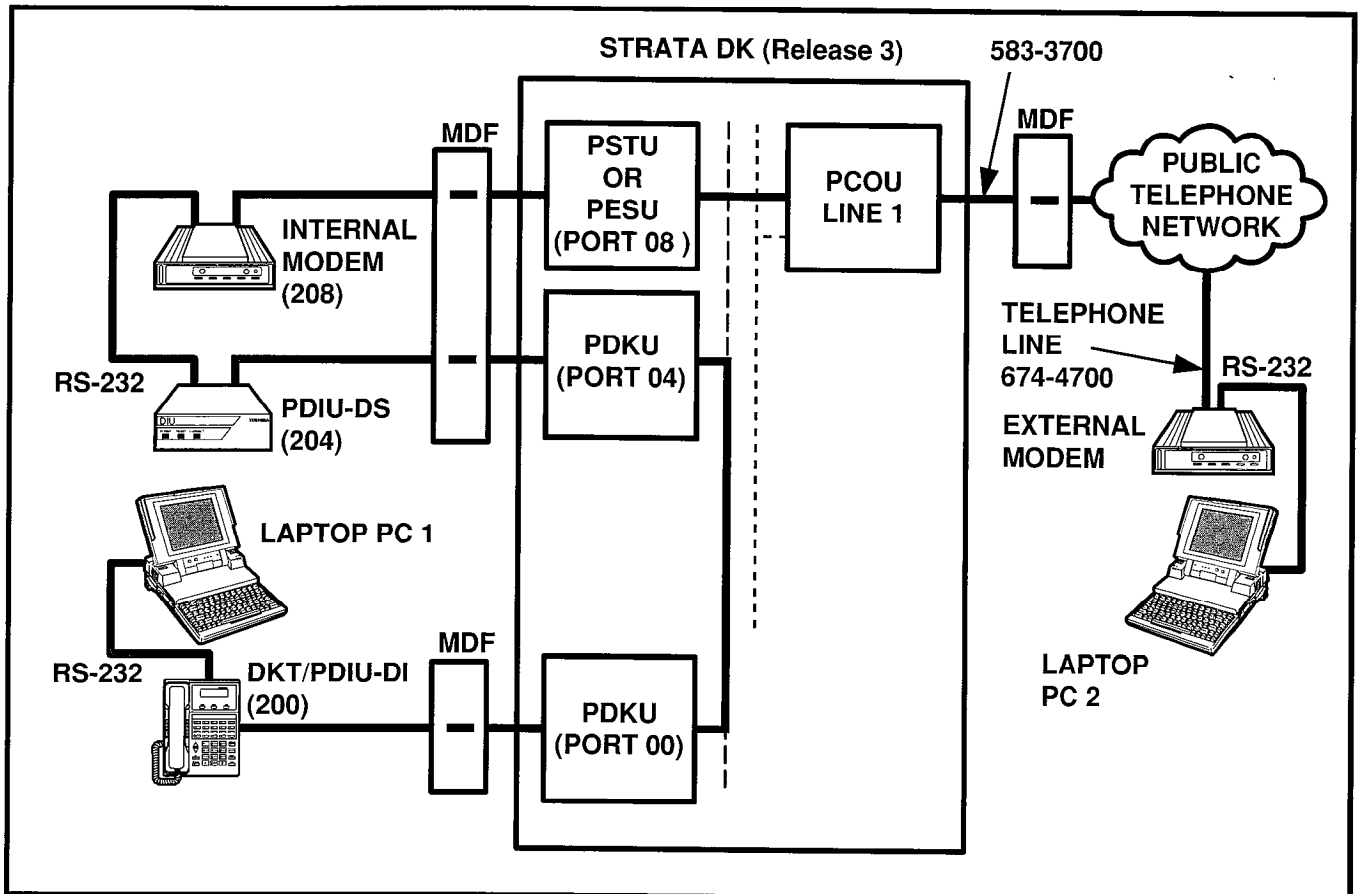


FIGURE 8-38—EXTERNAL PC TO INTERNAL PC TEST CALL USING AT COMMANDS

12.85 External PC to Internal PC Test Call Using AT Commands (see Figure 8-38)

1) DIU Programming:

- **Program 20:** Port 00. LEDs 01, 02, and 17 ON; all other LEDs OFF.
- **Program 20:** Port 04. LEDs 01, 02, 03, 04, and 17 ON; all other LEDs OFF.
- **Program 21:** PDKU port 04 assigned with PSTU port 08.
- **Program 39:** Port 00. **DATA** (56), **DRLS** (54), and **MODEM** (55) buttons should be provided.
- **Program 81:** Port 08. LED 01 ON (CO line 01 rings PSTU port 08).
- Internal modem: set to auto answer (S0=1).
- Default settings for PDIU-DI and PDIU-DS, S-Registers.

2) Make sure PC 1 and PC 2 are on-line with a communications software package and that

the communication parameters of each PC and communication software package are set to the same values (data transmission rate, parity, data bits, stop bits, flow control, etc.).

3) From PC 2's keyboard, type **ATDT5833700** and press **ENTER**.

- The external modem originates the call to STRATA CO line 01.
- CO line 01 rings incoming to the internal modem (PSTU port 08).
- The internal modem rings and auto answers; the modems handshake and establish communications.
- If the modems send result codes, the PC's screens display, **CONNECTXXXX**, where **XXXX** is the data transmission speed set by the communications software.
- At this time, PC 2 is connected to PDIU-DS (204), as shown by the thick lines above (PDIU-DS 204 is in the command

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mode). PC 2 can now issue AT commands to PDIU-DS 204.

- If PDKU/PDIU-DS port 04 is the only PDIU port connected to a modem (**Program 20**, LED 03 ON), then the MODEM LEDs on all DKTs will light.
- 4) From PC 2's keyboard, type **ATDD200** and press **ENTER** (AT commands must be capital letters); this prompts PDIU-DS (204) to dial and connect to PDIU-DI (200).
- The CONNECT LED on the PDIU-DS (204) will be lit; the DATA and MODEM LEDs on DKT 200 will also be lit.
 - The screens on PC 1 and PC 2 display, CONNECT XXXX, where XXXX is the data transmission speed set by the communication software.
- At this time, PC 1 and PC 2 are connected, as shown by the thick lines, to exchange data (file transfers, typed messages, etc.).
- 5) To terminate the call:
- a) Type **+++** from either PC keyboard.
 - The PC screen displays, OK.
 - b) Type **ATH** from the PC keyboard used in step 5a.
 - PC 1's and PC 2's screens both display, NO CARRIER.
 - The DATA and MODEM LEDs on DKT 200 will turn off.

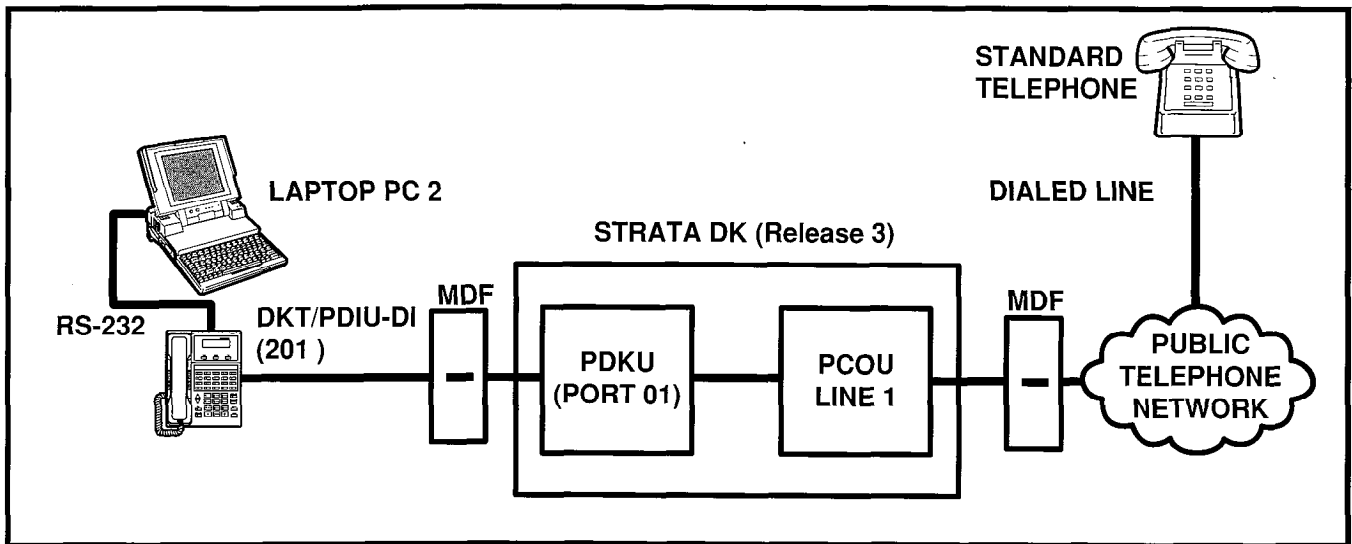


FIGURE 8-39—PC AUTO DIAL VOICE CALL TEST

12.86 PC Auto Dial Voice Call Test (see Figure 8-39)

There are many off-the-shelf, IBM/MS-DOS compatible, desktop organizer software packages that provide an auto dialer function. One of these is the terminal resident SideKick. It is used in this section for test explanation purposes only. If you choose another auto dialer software package, the detailed response may be different than that shown here.

1) DIU Programming:

Program 20: Port 01. LEDs 01, 02, and 17 ON; all other LEDs OFF.

Program 39: Port 01. **DATA** (56) and **DRLS** (54) buttons are optional; if the PDIU-DI is only used for the PC auto dial application, the **DATA** and **DRLS** buttons are unnecessary.

2) Make sure that the auto dial application software is installed on the PC root directory and that the communication parameters of the PC and application software are set to the same values (in this test example, Sidekick "SKINSTAL" program).

3) Make sure that a dialing directory consisting of names and telephone numbers you wish to auto dial is installed within the application software (include the appropriate STRATA CO line access code prefixing each telephone number).

4) To auto dial using Sidekick from the PC keyboard:

a) Press the **ALT** and **CTRL** keys simultaneously.

- The PC screen displays the Sidekick menu window.

b) Press **F5** twice (Sidekick prompts "search for INITIALS:" to display on the PC's screen).

c) Type the initials or name of the person or organization you wish to auto dial.

d) Press **ENTER**.

- Sidekick finds and highlights the desired name/number.

e) Press **ENTER** again.

- DKT/PDIU-DI 201 seizes the appropriate CO line and auto dials the selected telephone number.
- The LEDs of the DKT's **DATA** and CO line 01 buttons will be lit (if assigned in **Program 39**).

- Dial tone, DTMF tones, and ringback or busy tones are audible from the DKT's speaker.

5) Take the DKT's handset off-hook at any time after the telephone number is dialed (press the **SPACE** bar to release the **DATA** button only); or, remain on-hook and use the DKT's speakerphone to talk when the called party answers (LCD model only, do not press the **SPACE** bar when using the speakerphone).

- 6) To terminate the call anytime:
- If off-hook, press the **SPACE** bar and place the DKT handset on-hook.
 - If talking via the speakerphone, press the **SPACE** bar.

13 TWO-CO LINE EXTERNAL AMPLIFIED CONFERENCE (RELEASE 3)

13.00 General.

13.01 Customer-supplied two-way amplifiers can be installed to amplify two-CO line tandem and/or conference calls. As many as four amplifiers can be installed to support up to four of these calls occurring simultaneously. If three amplifiers are installed, three simultaneous calls can be supported, and so on. If all amplifiers are being used, then subsequent two-CO line tandem calls and/or conference calls will be unamplified. Each amplifier is connected to two designated PEKU station ports and will automatically be switched into a two-CO line connection established between any CO lines in the system.

13.02 Amplified Talk Path. Figure 8-40 provides a functional diagram of a two-CO line amplified conference connection (an R-TEC VFR5050 amplifier is used here). The talk path for the connection is as follows: outside party 1—public telephone network—PCOU, CKTX—PCTU3—PEKU, port A—into AMP, CKTA—Out AMP, CKT B—PEKU, port B—PCTU3—PCOU, CKTY—public telephone network—outside party 2. This path is two-way so when outside party 2 talks, the talk level is amplified in the reverse direction.

NOTE:

Only the outside party 1 talk path is amplified to/from a system telephone when it is connected into a two-CO line conference.

13.03 Amplifier Requirements

- Customer-supplied (four maximum).
- Must be FCC-registered, Part 68, and provide automatic gain control.
- Each amplifier requires two PEKU station ports.
- Refer to the amplifier manufacturer's in-

stallation documentation for amplifier grounding instructions.

13.04 Installation: Connect a two-way amplifier to the STRATA DK system in accordance with the following steps (see Figures 8-40 and 9-24).

- 1) At the main distribution frame (MDF), connect the voice pair (VT, VR, port A) of circuit 2 on the designated PEKU PCB to one input of the customer-supplied two-way amplifier. In the example in Figure 8-40, this is CKTA (Central Office Side A) of the VFR5050.
- 2) At the MDF, connect the voice pair (VT, VR, port B) of circuit 3 on the designated PDKU PCB to the other input of the amplifier. In the Figure 8-40 example, this is CKTB (subscriber side B) of VFR5050.
- 3) Plug the amplifier's power cord into the 117 VAC (standard) wall outlet.
- 4) Set the gain and other amplifier parameters options per the amplifier manufacturer's installation documentation.
- 5) Program the STRATA DK system as follows:
 - **Program 10-3:** Enables the appropriate PEKU PCB ports for amplifier connection. Only enable the ports that will be connected with the amplifier(s).
 - **Program 15-5:** Enables appropriate CO lines for tandem connection.
 - **Program 10-1:** LEDs 19 and 20 must be ON.
 - **Program 10-2:** LED 18 must be ON.

NOTE:

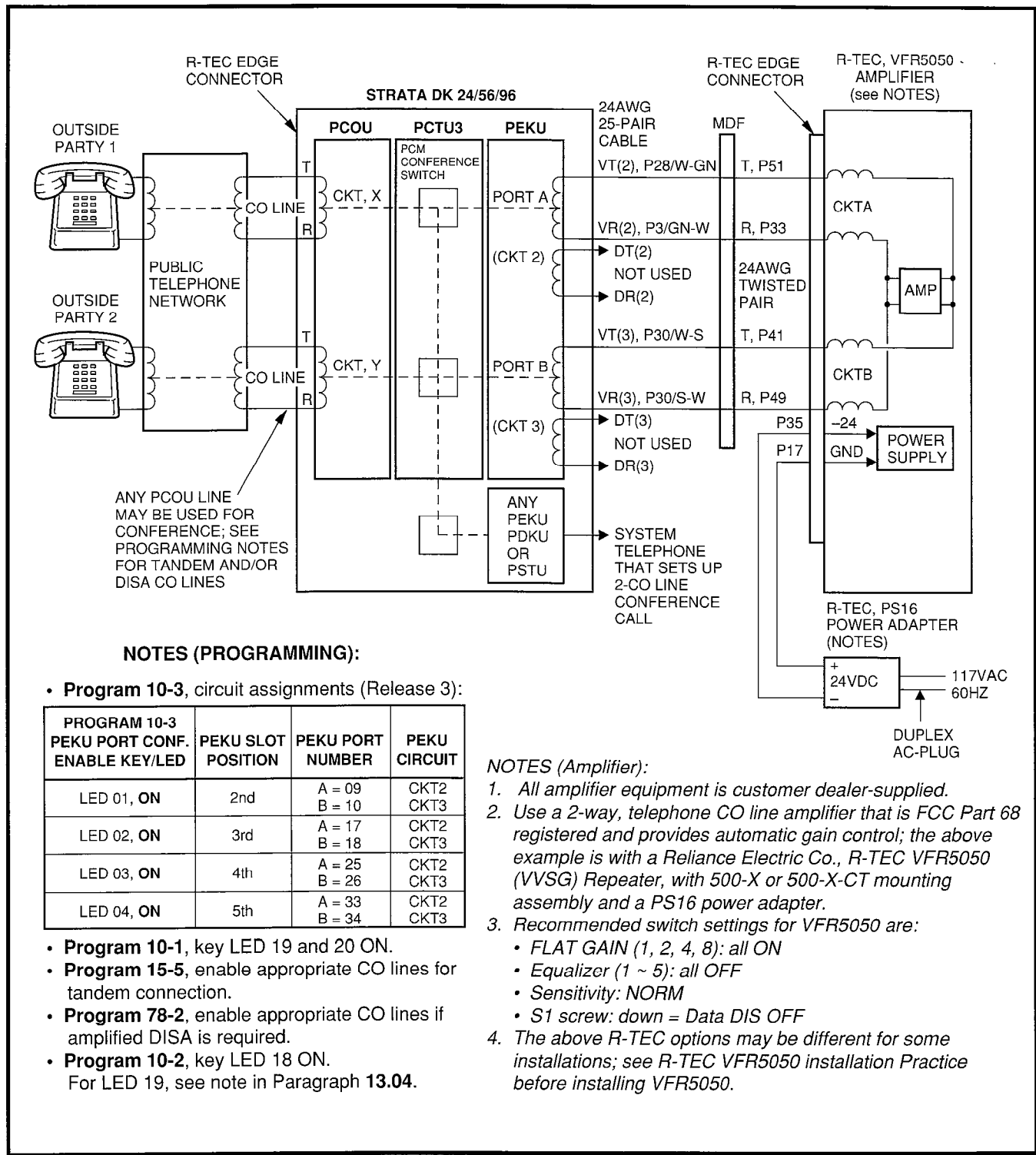
LED 19 should be ON if it is certain that an amplifier will always be available for two-CO line conference connection (four maximum, simultaneously). If this LED is ON and a two-CO line connection is established without an external amplifier, the STRATA DK station may be unbalanced and receive a hum noise. LED 19 provides additional station amplification when external amplifiers are switched into two-CO line connections.

14 BATTERY CARE

WARNING!

To reduce the risk of fire or injury to persons, read and follow these instructions:

- 1. Use only the following type and size batteries: 12-volt, gelcell.*
- 2. Do not dispose of the batteries in a fire. The cells may explode. Check with local codes for possible special disposal instructions.*
- 3. Do not open or mutilate the batteries. Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.*
- 4. Exercise care in handling batteries in order not to short the battery with conduction materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.*
- 5. Charge the batteries provided with or identified for use with this product only in accordance with the instructions and limitations specified in this manual.*
- 6. Observe proper polarity orientation between the batteries and battery charger.*



**FIGURE 8-40—AMPLIFIED TWO-CO LINE CONFERENCE AND/OR
AMPLIFIED DISA FUNCTIONAL WIRING DIAGRAM**

Strata[®] *DK*

RELEASE 1, 2, and 3 INSTALLATION

CHAPTER NINE WIRING DIAGRAMS

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1 GENERAL

1.00 This chapter contains point-to-point wiring diagrams for connection of telephones, lines, peripheral equipment, and power supply to the DK systems. Wiring diagrams are divided into groups according to the PCB which provides the interface for, or controls the operation of, the associated equipment. Table A provides FCC registration numbers and a summary of electrical characteristics related to DK circuit wiring.

2 WIRING DIAGRAMS

2.01 The following paragraphs list and identify the wiring diagrams provided in this chapter.

2.10 Station Wiring Diagrams

- Figure 9-A—Secondary Protector Diagram
- Figure 9-1—MDF Wiring/Electronic Telephone to PEKU
- Figure 9-2—MDF Wiring/DSS/BLF Console and Associated Electronic Telephone Wiring to PEKU
- Figure 9-3—MDF Wiring-Door Phone/Lock to PEKU/PESU
- Figure 9-4—PEKU Background Music Connection
- Figure 9-5—PEKU Station/MDF Cross Connect Record
- Figure 9-6—MDF Wiring/Standard Telephone, Voice Mail, DPFT to PSTU/PSTU2
- Figure 9-7—PSTU Station/MDF Cross Connect Record
- Figure 9-8—PESU Circuit Card Wiring Diagram
- Figure 9-9—PESU Station/MDF Cross Connect Record
- Figure 9-21—MDF Wiring for Digital Telephones (DKTs) and Digital DSS (DDSS) Consoles

- Figure 9-22—MDF Wiring for Digital Telephones (DKTs) With PDIU-DI and PDIU-DS to PDKU
- Figure 9-23—PDKU Station/MDF Cross Connect Record
- Figure 9-24—MDF Wiring/Amplified Two-CO Line Conference

2.20 CO/TIE Line Wiring Diagrams

- Figure 9-10—MDF Wiring/CO Lines to PCOU
- Figure 9-11—MDF Wiring/2-Wire TIE Line to PEMU
- Figure 9-12—MDF Wiring/4-Wire TIE Line to PEMU
- Figure 9-13—PCOU/PEMU/MDF Cross Connect Record

2.30 Power Failure Cut-through (DPFT) Wiring Diagrams

- Figure 9-14—DPFT Connector J1/Terminal Sequence & Designations/Central Office Line Connection & DPFT Control
- Figure 9-15—DPFT Connector J2/Terminal Sequence & Designations/Station Line Connection

2.40 PIOUS, PIOUS, and PEPU Wiring Diagrams

- Figure 9-16—MDF Wiring/PIOU or PEPU Peripherals (25-pair)
- Figure 9-17—PIOU/TTY and SMDR Wiring
- Figure 9-18—PIOUS Page/Relay/Alarm Connections
- Figure 9-19—PIOUS SMDR/TTY Options and Wiring

2.50 Power Supply DC Out Wiring Diagrams

- Figure 9-20—DK24/56/96 Power Supply DC Out Connector/Cables

TABLE 9-A
FCC REGISTRATION NUMBERS DK24/56/96

Manufacture Country	Key System	Hybrid System
Made in Japan Before October 1989	CJ69XA-10242-KF-E	CJ69XA-10243-MF-E
Made in U.S.A. After September 1989	CJ687N-10578-KF-E	CJ687N-10579-MF-E

TABLE 9-B
STATION LOOP REQUIREMENTS

Device Description		Max Loop Resistance (Including Device)	Max Distance from KSU to Device	Number of Wire Pairs ¹
PEKU (ckts 1 ~ 8) or ² PESU (ckts 5 ~ 8)	Electronic telephone, door phone/ control boxes	40 ohms	1000 ft. (303 m)	All need 2-pair. EKTs which receive OCA calls need 3-pair. ¹
PEKU (ckts 7 & 8)	DSS consoles	20 ohms	500 ft. (152 m)	
PSTU (ckts 1 ~ 8) or ² PESU ² (ckts 1 & 2)	Standard telephones, voice mail, auto attendant, etc.	300 ohms	Approx. 3000 ft. (909 m) with 150 ohm device. See manufacturer's product specifications for exact resistance of device.	1-pair
PDKU (ckts 1 ~ 8)	Digital telephones	40 ohms	1000 ft. (303 m)	1-pair
PDKU (ckt 8)	DDSS consoles	40 ohms	1000 ft. (303 m)	1-pair
PDKU (ckts 1 ~ 7)	PDIU-DI	40 ohms	1000 ft. (303 m)	Shares digital telephone wire-pair. ³
PDKU (ckts 1 ~ 7)	PDIU-DS	40 ohms	1000 ft. (303 m)	1-pair ³

NOTES:

1. Use 24 AWG twisted pairs.
2. PESU circuits 3 and 4 are not used.
3. Two-pair or larger wire is required to achieve maximum range, see table 9-D.

TABLE 9-C
NETWORK REQUIREMENTS

TOSHIBA Printed Circuit Board	Facility Interface Code	Network Jack	Ringer Equivalence
PCOU/PCOU2 (Loop Start Line)	02LS2	RJ14C	0.2B
PEMU (Type I, TIE Line) 2-wire	TL11M	RJ2EX	N/A
	4-wire	TL31M	RJ2GX
PESU*/PSTU/PSTU2 (Off-premises Station)	0L13A	RJ21X	N/A

*Circuits 1 and 2

**TABLE 9-D
DIGITAL TELEPHONE/DIU/DDSS CONSOLE/LOOP LIMITS**

MODE	PPSU OR *Battery Backup	Maximum line length (24 AWG, 1 pair)	Maximum line length (24 AWG, 2 pair)
DKT Ringing (Volume Max)	PPSU	1000ft (303m)	1000ft (303m)
	Battery Backup	675ft (304m)	1000ft (303m)
DKT with OCA (DVSU)	PPSU	1000ft (303m)	1000ft (303m)
	Battery Backup	500ft (151m)	1000ft (303m)
DKT with HHEU or Carbon Handset	PPSU	1000ft (303m)	1000ft (303m)
	Battery Backup	330ft (100m)	1000ft (303m)
DKT with PDIU-DI	PPSU	675ft (204m)	1000ft (303m)
	Battery Backup	175ft (53m)	1000ft (303m)
PDIU-DS	PPSU	1000ft (303m)	1000ft (303m)
	Battery Backup	675ft (204m)	1000ft (303m)
DDSS1060A	PPSU	1000ft (303m)	1000ft (303m)
	Battery Backup	500ft (151m)	1000ft (303m)

*Battery backup applies to instances when the system is being powered by batteries exclusively.

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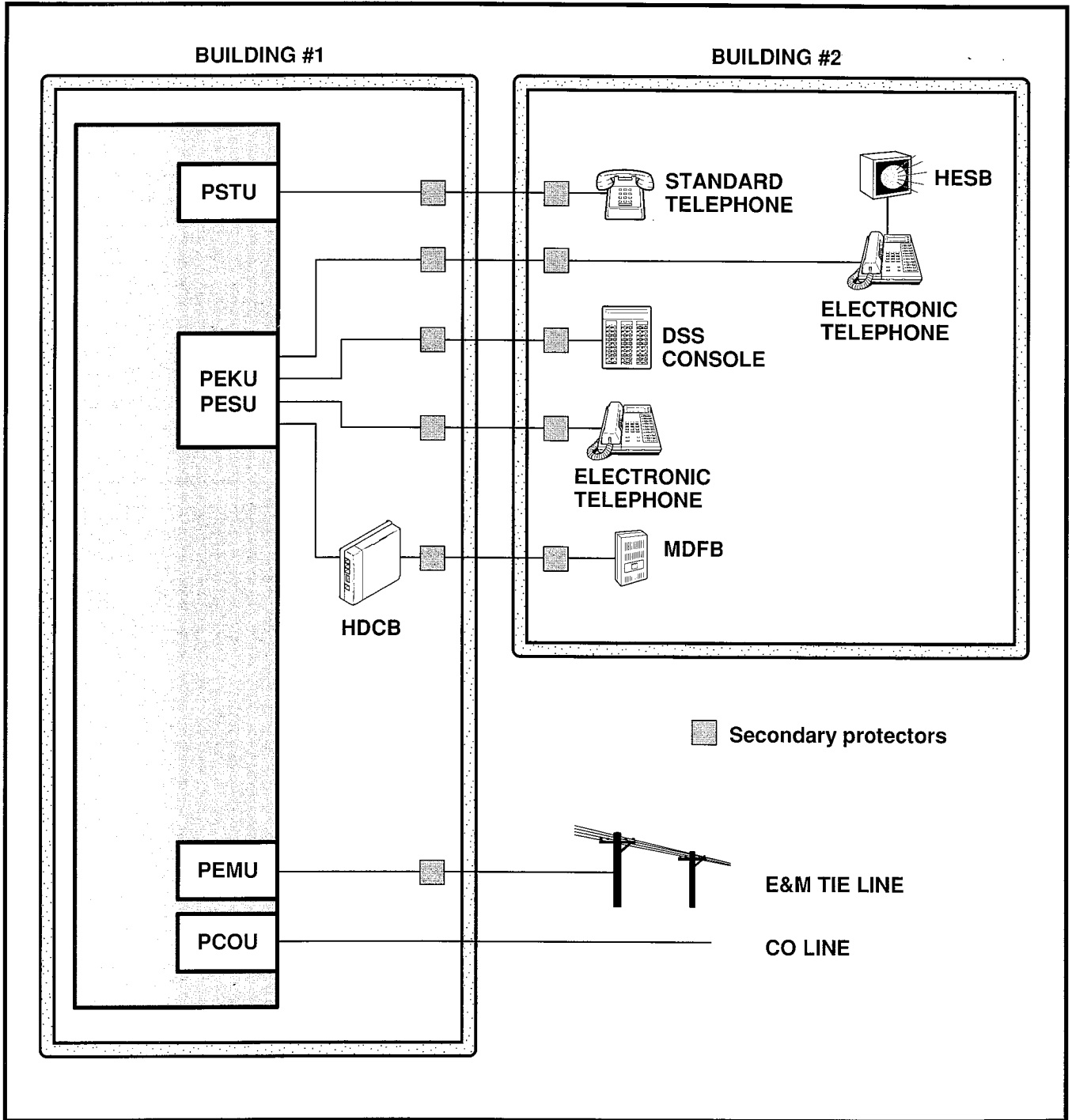


FIGURE 9-A—SECONDARY PROTECTOR DIAGRAM

IMPORTANT!

To protect against transient voltages and currents, secondary protectors must be installed if there is outside wiring (Figure 9-A). These protectors, which contain fast semiconductors in addition to fuses, shall comply with the requirements for secondary protectors for communication circuits, UL 497A. As of October 1, 1990, the following manufacturers offer secondary protectors that are UL listed.

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1. ***Certron Corp; Anaheim, California 92807***
 - ***Secondary protector: Model 08450.***

2. ***Curtis Mfg. Co. Inc; Jaffrey, New Hampshire 03452***
 - ***Secondary protector: Model Diamond Chip. For indoor use on the protected side of the telephone circuit only.***

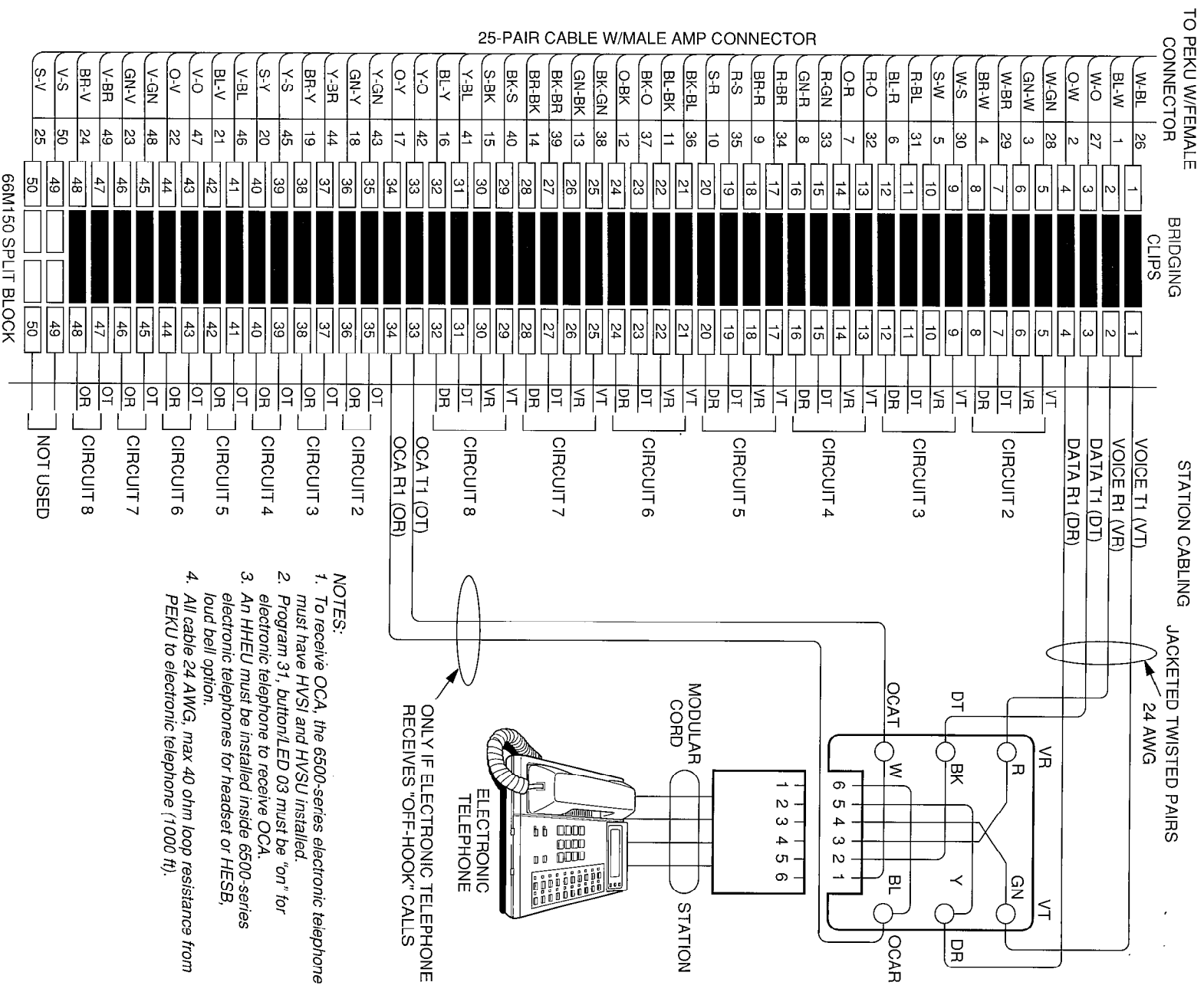
3. ***Oneac Corp; Libertyville, Illinois 60048***
 - ***Secondary protector: Model OnLine 614+ and OnLine DG/S. For indoor use on the protected side of primary telephone protector only.***

4. ***Siemon Co.; Watertown, Connecticut 06795***
 - ***Secondary protector for communication circuits: Model PM-2305. Intended for use with Listed Siemon 66M1 Block: Models PG-04, -25, -50, or PK-04 ground kit and Listed Type 1 enclosure. For use on the protected side of a Listed Primary Telecommunications Protector for indoor use only.***

5. ***Simplex Time Recorder Co.; Gardner, Massachusetts 01440***
 - ***Isolated loop circuit protectors: Models 2081-9027 and 2081-9028. Intended for use between data communication equipment or signal lines of building system equipment.***

Install and test the secondary protectors per the installation instructions of the applicable manufacturer.

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- NOTES:**
1. To receive OCA, the 6500-series electronic telephone must have HVSI and HVSU installed.
 2. Program 31, button/LED 03 must be "on" for electronic telephone to receive OCA.
 3. An HHEU must be installed inside 6500-series electronic telephones for headset or HESB, loud bell option.
 4. All cable 24 AWG, max 40 ohm loop resistance from PEKU to electronic telephone (1000 ft).

FIGURE 9-1—MDF WIRING/ELECTRONIC TELEPHONE TO PEKU

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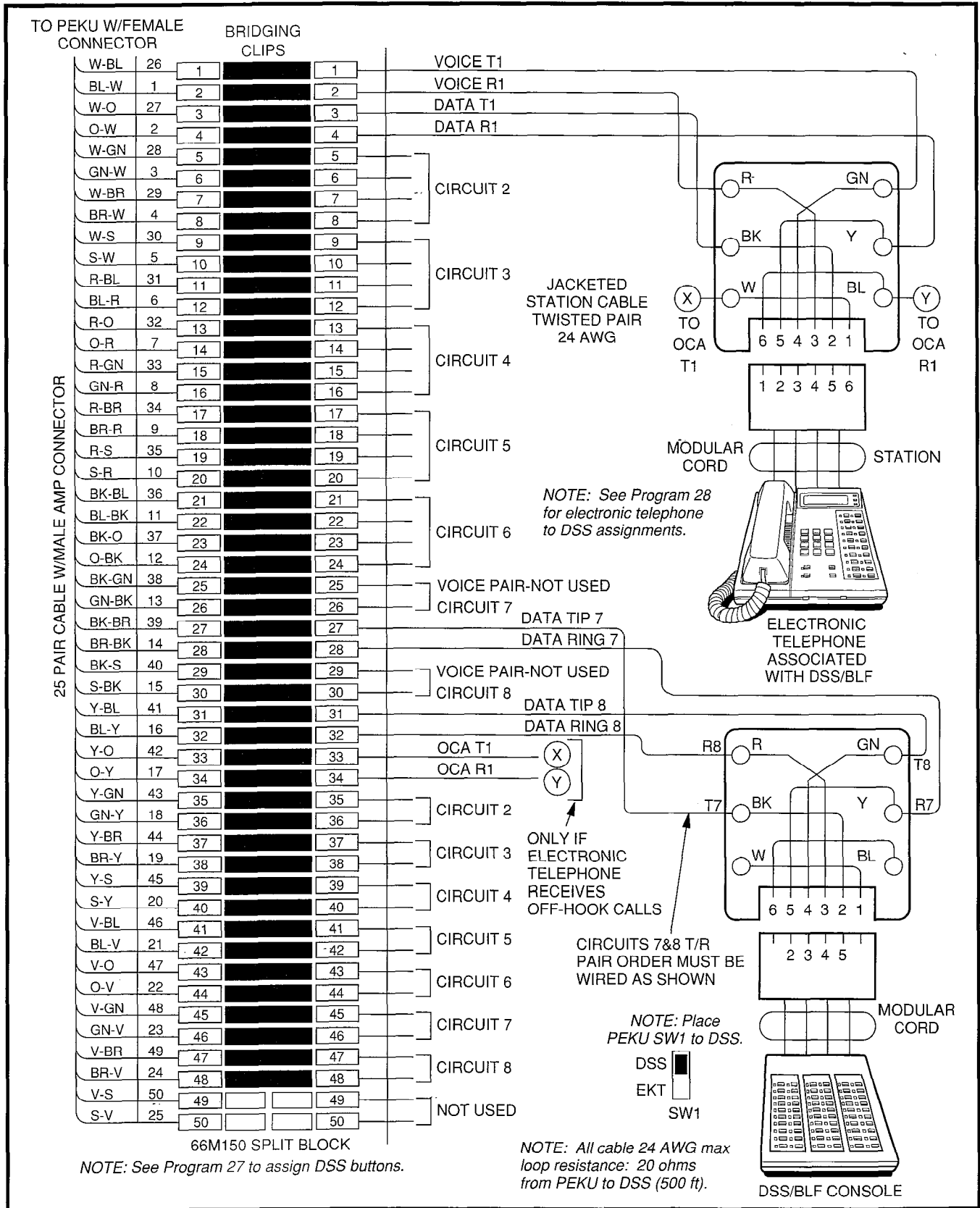


FIGURE 9-2
MDF WIRING/DSS/BLF CONSOLE AND ASSOCIATED ELECTRONIC TELEPHONE WIRING TO PEKU

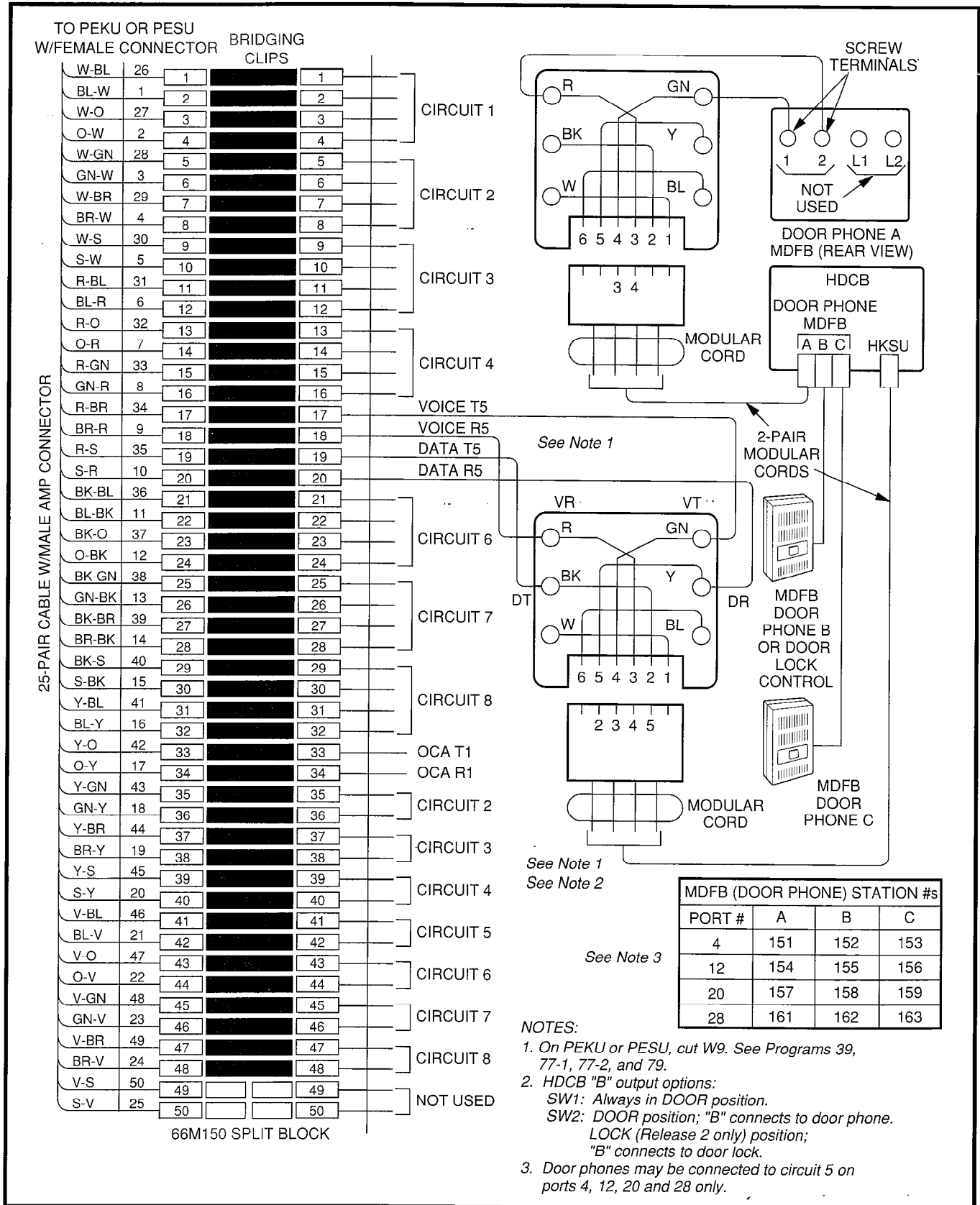


FIGURE 9-3—MDF WIRING-DOOR PHONE/LOCK TO PEKU/PESU

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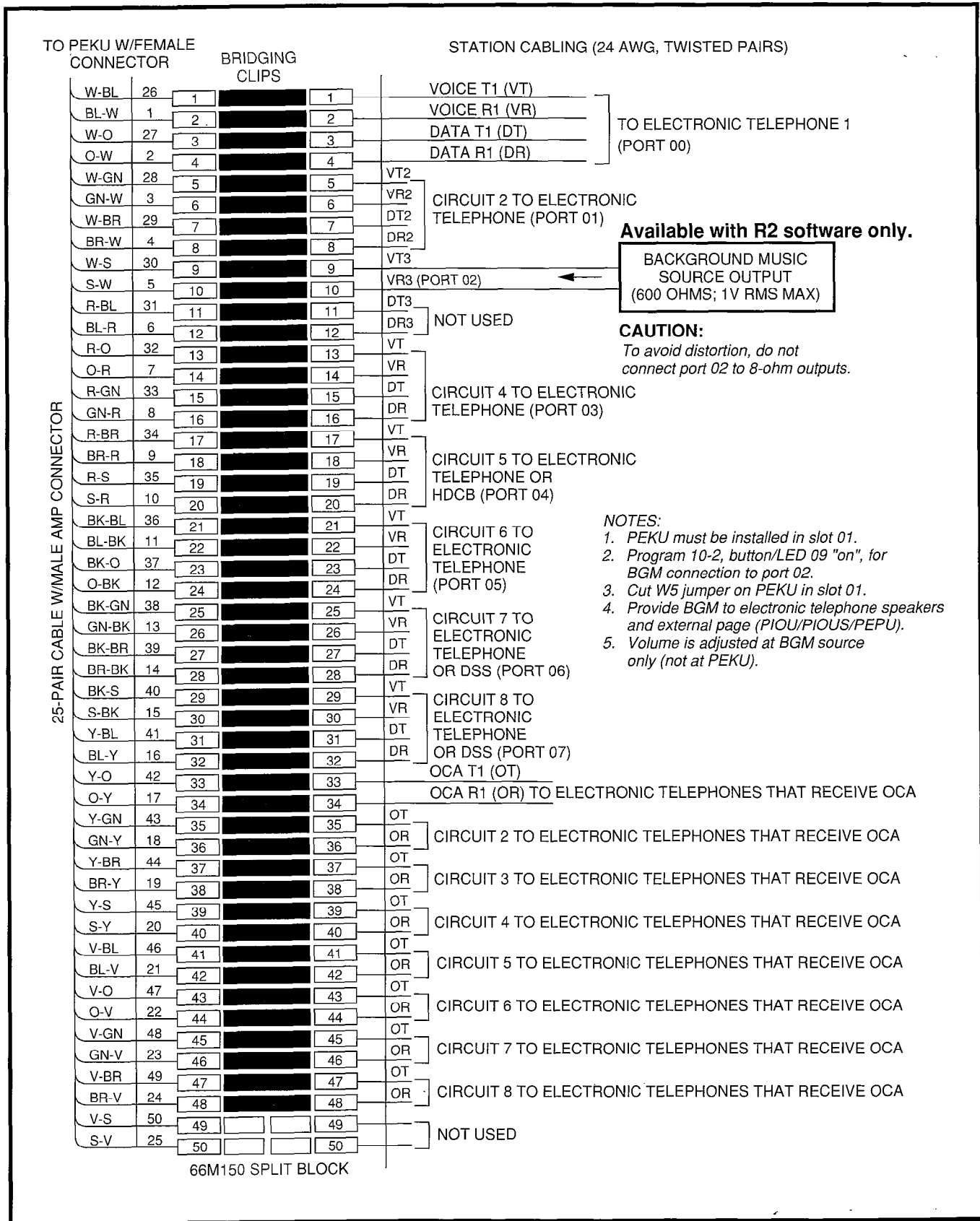


FIGURE 9-4—PEKU BACKGROUND MUSIC CONNECTION

MDF BLOCK NO. _____ DKSU SLOT NO. _____

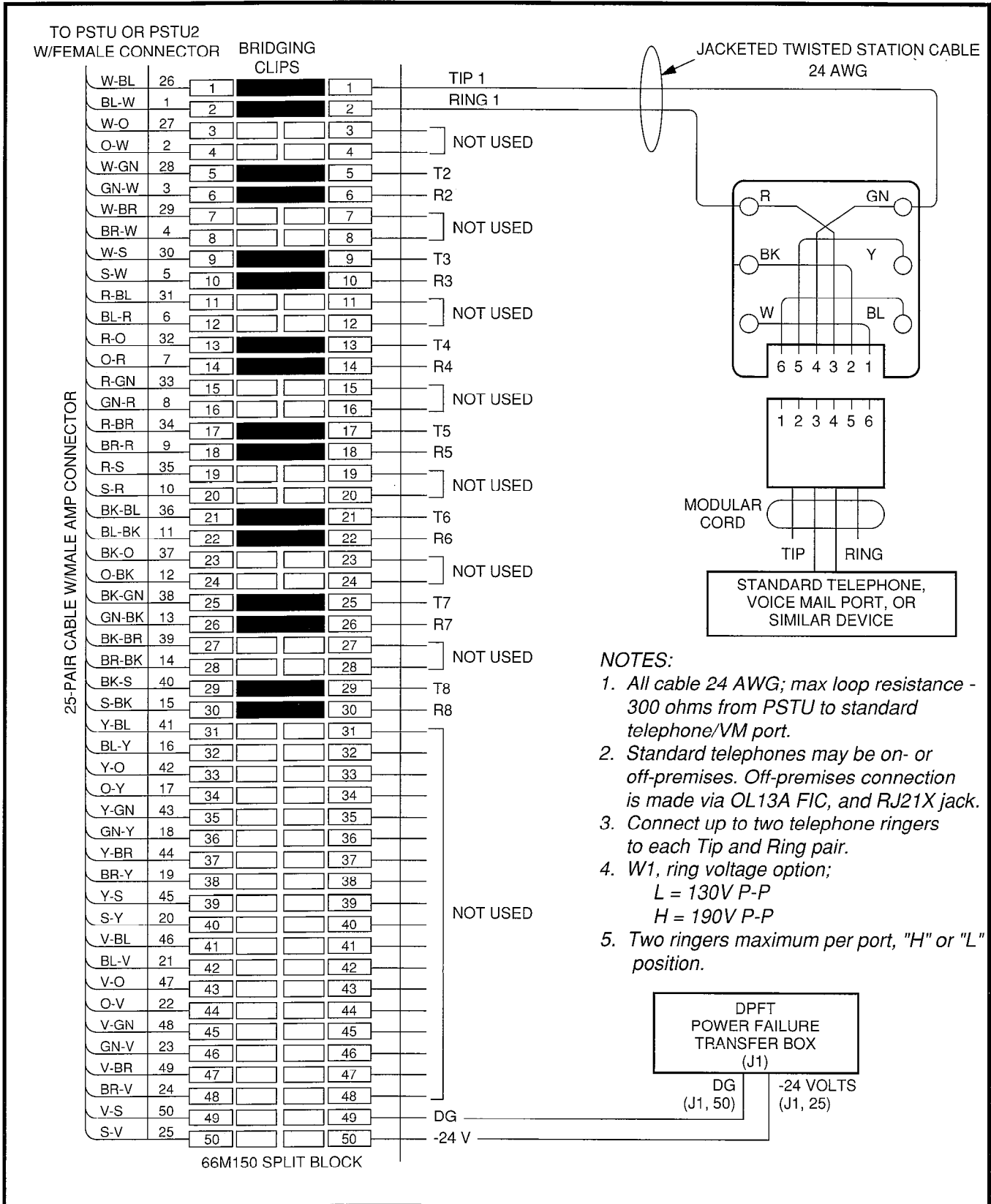
COLOR CODE	DESIGNATION	CKT NUMBER	PORT NUMBER	INTERCOM NUMBER	ELECTRONIC TELEPHONE/ DEVICE LOCATION
W-BI	VT	1			
BI-W	VR				
W-O	DT				
O-W	DR				
W-G	VT	2			
G-W	VR				
W-Br	DT				
Br-W	DR				
W-S	VT	3			1
S-W	VR				
R-BI	DT				
BI-R	DR				
R-O	VT	4			
O-R	VR				
R-G	DT				
G-R	DR				
R-Br	VT	5			2
Br-R	VR				
R-S	DT				
S-R	DR				
Bk-BI	VT	6			
BI-Bk	VR				
Bk-O	DT				
O-Bk	DR				
Bk-G	VT	7			3
G-Bk	VR				
Bk-Br	DT				
Br-Bk	DR				
Bk-S	VT	8			3
S-Bk	VR				
Y-BI	DT				
BI-Y	DR				

NOTES:

1. Indicate if BGM or electronic telephone is connected (see **Program 10-2 and 19**); BGM connects to VT and VR, circuit 3 only (DT and DR not used).
2. Indicate if electronic telephone or HDCB (allowed HDCB port numbers: 04, 12, 20, 28).
3. Indicate if electronic telephone or DSS no. 1, 2, 3, or 4.
4. Copy for each PEKU installed.
5. OCA wiring not shown, see MDF-to-electronic telephone wiring.

FIGURE 9-5—PEKU STATION/MDF CROSS CONNECT RECORD

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- NOTES:**
1. All cable 24 AWG; max loop resistance - 300 ohms from PSTU to standard telephone/VM port.
 2. Standard telephones may be on- or off-premises. Off-premises connection is made via OL13A FIC, and RJ21X jack.
 3. Connect up to two telephone ringers to each Tip and Ring pair.
 4. W1, ring voltage option;
 $L = 130V P-P$
 $H = 190V P-P$
 5. Two ringers maximum per port, "H" or "L" position.

FIGURE 9-6—MDF WIRING/STANDARD TELEPHONE, VOICE MAIL, DPFT TO PSTU/PSTU2

MDF BLOCK NO. _____ DKSU SLOT NO. _____

COLOR CODE	DESIGNATION	CKT NUMBER	PORT NUMBER	INTERCOM NUMBER	STANDARD TELEPHONE/ DEVICE LOCATION
W-BI	T	1			
BI-W	R				
W-O	NOT USED				
O-W	NOT USED				
W-G	T	2			
G-W	R				
W-Br	NOT USED				
Br-W	NOT USED				
W-S	T	3			
S-W	R				
R- BI	NOT USED				
BI-R	NOT USED				
R-O	T	4			
O-R	R				
R-G	NOT USED				
G-R	NOT USED				
R-Br	T	5			
Br-R	R				
R-S	NOT USED				
S-R	NOT USED				
Bk-BI	T	6			
BI-Bk	R				
Bk-O	NOT USED				
O-Bk	NOT USED				
Bk-G	T	7			
G-Bk	R				
Bk-Br	NOT USED				
Br-Bk	NOT USED				
Bk-S	T	8			
S-Bk	R				
Y-BI	NOT USED				
BI-Y	NOT USED				

NOTES:

1. Indicate if standard telephone, voice mail port, etc.
2. Copy for each PSTU installed.

FIGURE 9-7 —PSTU STATION/MDF CROSS CONNECT RECORD

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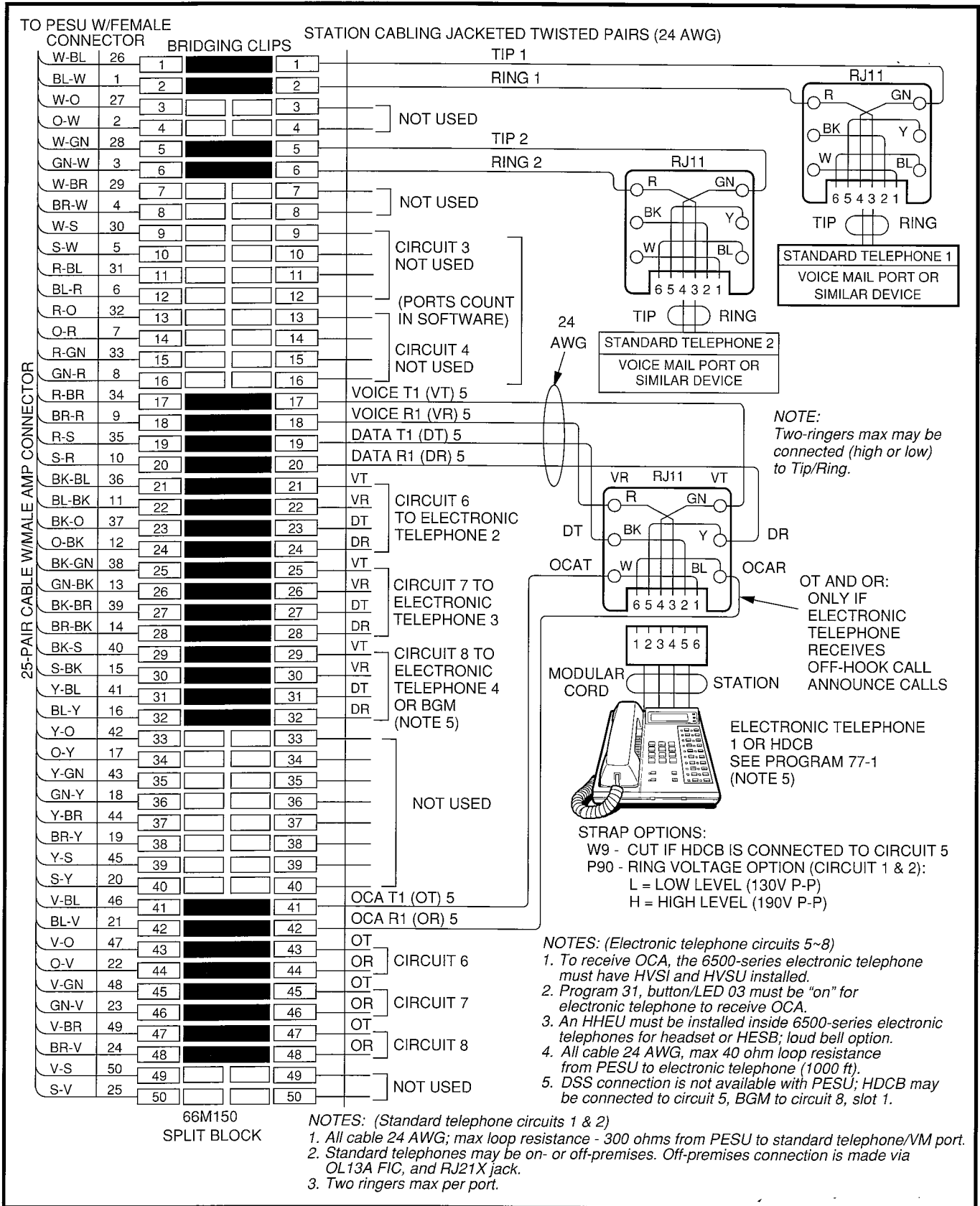


FIGURE 9-8—PESU CIRCUIT CARD WIRING DIAGRAM

MDF BLOCK NO. _____ DKSU SLOT NO. _____

COLOR CODE	DESIGNATION	CKT NUMBER	PORT NUMBER	INTERCOM NUMBER	DEVICE/STANDARD TELEPHONE/ ELECTRONIC TELEPHONE LOCATION
W-BI	T	1			
BI-W	R				
W-O	NOT USED				
O-W	NOT USED				
W-G	T	2			
G-W	R				
W-Br	NOT USED				
Br-W	NOT USED				
W-S	NOT USED	3		N/A	N/A
S-W	NOT USED				
R-BI	NOT USED				
BI-R	NOT USED				
R-O	NOT USED	4		N/A	N/A
O-R	NOT USED				
R-G	NOT USED				
G-R	NOT USED				
R-Br	VT	2			
Br-R	VR				
R-S	DT				
S-R	DR				
Bk-BI	VT	6			
BI-Bk	VR				
Bk-O	DT				
O-Bk	DR				
Bk-G	VT	3			
G-Bk	VR				
Bk-Br	DT				
Br-Bk	DR				
Bk-S	VT	3, 6			
S-Bk	VR				
Y-BI	DT				
BI-Y	DR				

NOTES:

1. Indicate if standard telephone, voice mail port, electronic telephone or HDCB (allowed HDCB port numbers: 04, 12, 20, 28).
2. Indicate if HDCB or electronic telephone.
3. DSS No. 1, 2, 3 or 4 is not allowed.
4. Copy for each PESU installed.
5. OCA wiring not shown, see MDF-to-electronic telephone wiring.
6. Indicate if BGM or electronic telephone is connected (slot 01 only); BGM connects to VT and VR, circuit 8 only (DT and DR not used).

FIGURE 9-9—PESU STATION/MDF CROSS CONNECT RECORD

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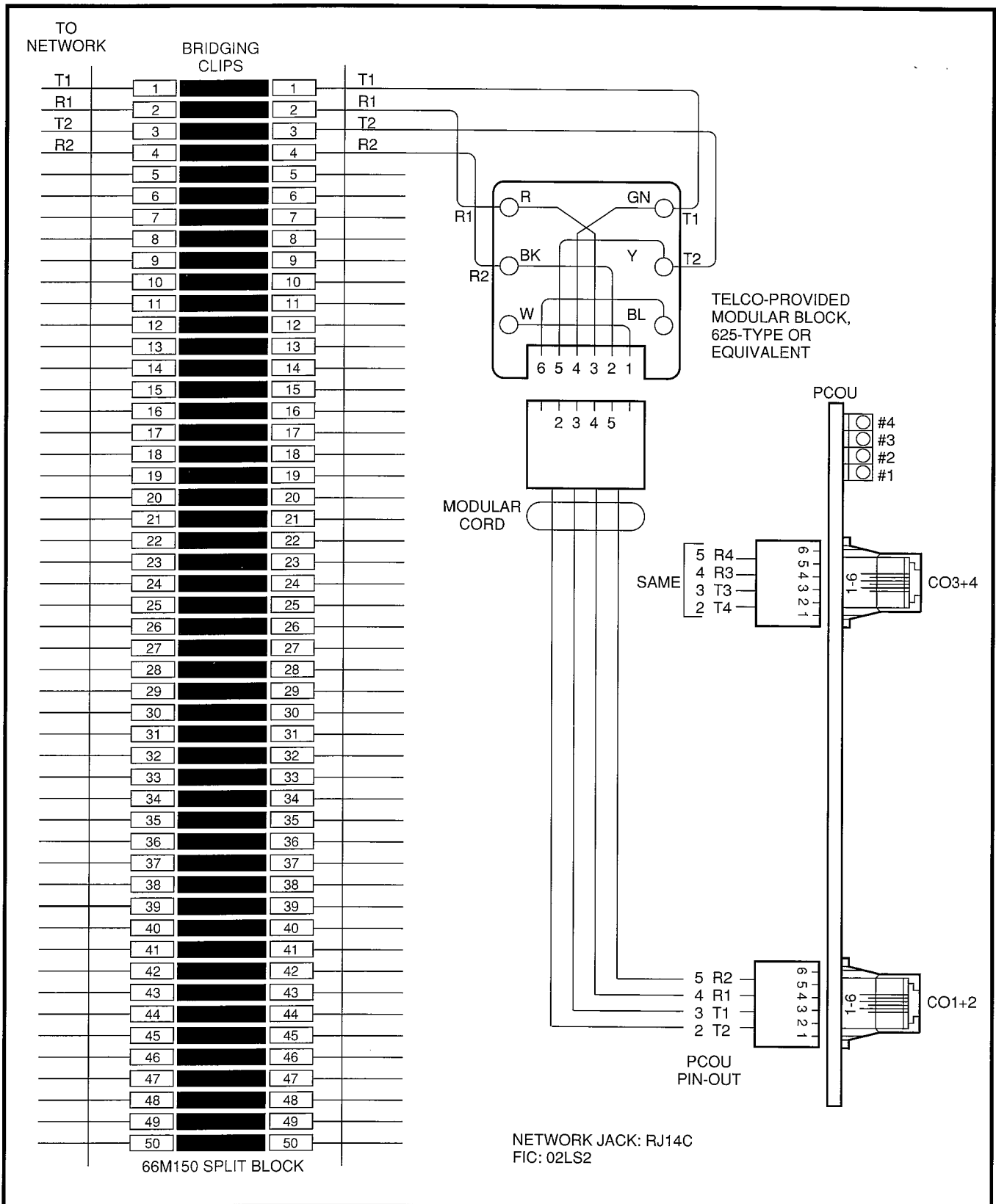


FIGURE 9-10—MDF WIRING/CO LINES TO PCOU

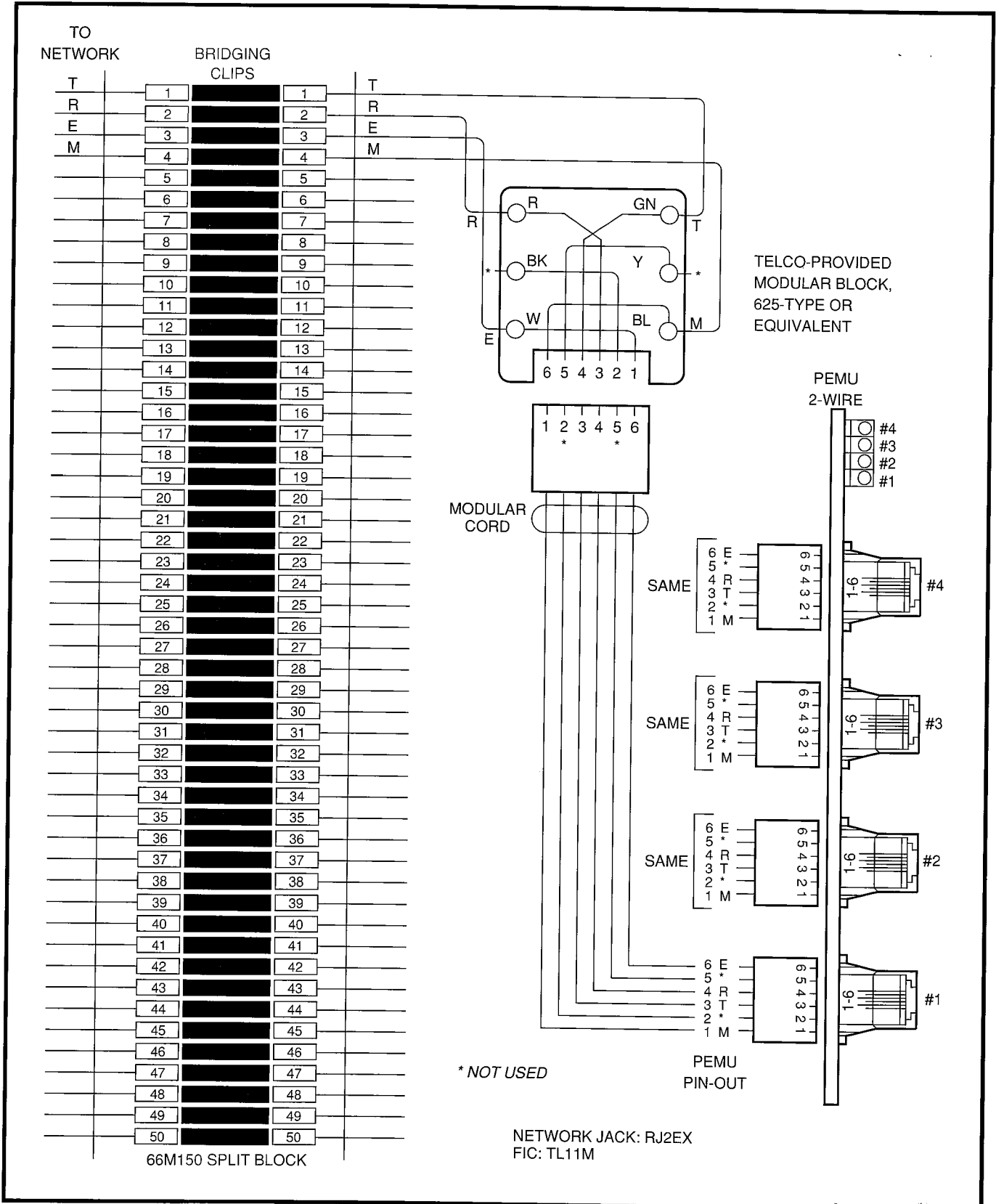


FIGURE 9-11—MDF WIRING/2-WIRE TIE LINE TO PEMU

INSTALLATION-WIRING DIAGRAMS
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FEBRUARY 1991

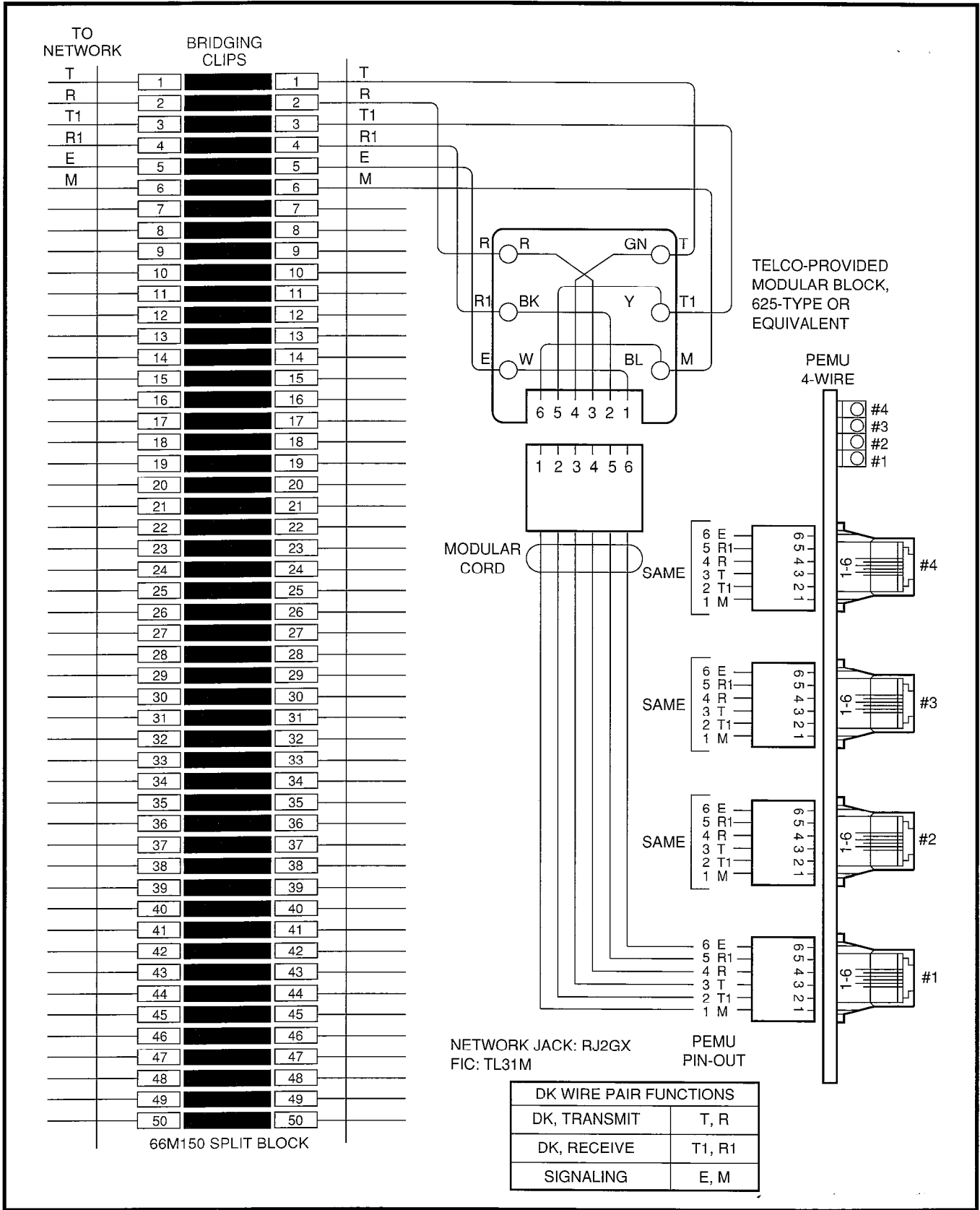


FIGURE 9-12—MDF WIRING/4-WIRE TIE LINE TO PEMU

CO LINE CROSS-CONNECT RECORD

MDF PAIR NUMBERS RJ14C	CO LINE NUMBER	KSU SLOT NUMBER (PCOU)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
	21	
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
	32	
	33	
	34	
	35	
	36	

TIE LINE CROSS-CONNECT RECORD

MDF PAIR NUMBERS		TIE LINE NUMBER	KSU SLOT NUMBER (PEMU)
2-WIRE RJ2EX	4-WIRE RJ2GX		
		1	
		2	
		3	
		4	
		5	
		6	
		7	
		8	
		9	
		10	
		11	
		12	

FIGURE 9-13—PCOU/PEMU/MDF CROSS CONNECT RECORD

INSTALLATION-WIRING DIAGRAMS
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PAIR	PIN	COLOR CODE	LEAD DESIGNATION	FUNCTION	PCOU PCB POSITION
1T	26	W-BI	T	TIP-CO #1	
R	1	BI-W	R	RING-CO #1	
2T	27	W-O	T	TIP-PCOU #1	
R	2	O-W	R	RING-PCOU #1	
3T	28	W-G	T	TIP-CO #2	
R	3	G-W	R	RING-CO #2	
4T	29	W-Br	T	TIP-PCOU #2	
R	4	Br-W	R	RING-PCOU #2	
5T	30	W-S	T	TIP-CO #3	
R	5	S-W	R	RING-CO #3	
6T	31	R-BI	T	TIP-PCOU #3	
R	6	BI-R	R	RING-PCOU #3	
7T	32	R-O	T	TIP-CO #4	
R	7	O-R	R	RING-CO #4	
8T	33	R-G	T	TIP-PCOU #4	
R	8	G-R	R	RING-PCOU #4	
9T	34	R-Br	T	TIP-CO #5	
R	9	Br-R	R	RING-CO #5	
10T	35	R-S	T	TIP-PCOU #5	
R	10	S-R	R	RING-PCOU #5	
11T	36	Bk-BI	T	TIP-CO #6	
R	11	BI-Bk	R	RING-CO #6	
12T	37	Bk-O	T	TIP-PCOU #6	
R	12	O-Bk	R	RING-PCOU #6	
13T	38	Bk-G	T	TIP-CO #7	
R	13	G-Bk	R	RING-CO #7	
14T	39	Bk-Br	T	TIP-PCOU #7	
R	14	Br-Bk	R	RING-PCOU #7	
15T	40	Bk-S	T	TIP-CO #8	
R	15	S-Bk	R	RING-CO #8	
16T	41	Y-BI	T	TIP-PCOU #8	
R	16	BI-Y	R	RING-PCOU #8	
17T	42	Y-O	SPARE		
R	17	O-Y	SPARE		
18T	43	Y-G	SPARE		
R	18	G-Y	SPARE		
19T	44	Y-Br	SPARE		
R	19	Br-Y	SPARE		
20T	45	Y-S	SPARE		
R	20	S-Y	SPARE		
21T	46	V-BI	SPARE		
R	21	BI-V	SPARE		
22T	47	V-O	SPARE		
R	22	O-V	SPARE		
23T	48	V-G	SPARE		
R	23	G-V	SPARE		
24T	49	V-Br	SPARE		
R	24	Br-V	SPARE		
25T	50	V-S	PFT DG	PFT GROUND (INPUT)	PSTU/PIN 50
R	25	S-V	PFT -24V	PFT -24V (INPUT)	PSTU/PIN 25

FIGURE 9-14
DPFT CONNECTOR J1
TERMINAL SEQUENCE & DESIGNATIONS
CENTRAL OFFICE LINE CONNECTION & DPFT CONTROL

INSTALLATION-WIRING DIAGRAMS
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PAIR	PIN	COLOR CODE	LEAD DESIGNATION	FUNCTION	PSTU PCB POSITION
1T	26	W-BI	T	TIP-TEL #1	
R	1	BI-W	R	RING-TEL #1	
2T	27	W-O	T	TIP-PSTU #1	
R	2	O-W	R	RING-PSTU #1	
3T	28	W-G	T	TIP-TEL #2	
R	3	G-W	R	RING-TEL #2	
4T	29	W-Br	T	TIP-PSTU #2	
R	4	Br-W	R	RING-PSTU #2	
5T	30	W-S	T	TIP-TEL #3	
R	5	S-W	R	RING-TEL #3	
6T	31	R-BI	T	TIP-PSTU #3	
R	6	BI-R	R	RING-PSTU #3	
7T	32	R-O	T	TIP-TEL #4	
R	7	O-R	R	RING-TEL #4	
8T	33	R-G	T	TIP-PSTU #4	
R	8	G-R	R	RING-PSTU #4	
9T	34	R-Br	T	TIP-TEL #5	
R	9	Br-R	R	RING-TEL #5	
10T	35	R-S	T	TIP-PSTU #5	
R	10	S-R	R	RING-PSTU #5	
11T	36	Bk-BI	T	TIP-TEL #6	
R	11	BI-Bk	R	RING-TEL #6	
12T	37	Bk-O	T	TIP-PSTU #6	
R	12	O-Bk	R	RING-PSTU #6	
13T	38	Bk-G	T	TIP-TEL #7	
R	13	G-Bk	R	RING-TEL #7	
14T	39	Bk-Br	T	TIP-PSTU #7	
R	14	Br-Bk	R	RING-PSTU #7	
15T	40	Bk-S	T	TIP-TEL #8	
R	15	S-Bk	R	RING-TEL #8	
16T	41	Y-BI	T	TIP-PSTU #8	
R	16	BI-Y	R	RING-PSTU #8	
17T	42	Y-O	SPARE		
R	17	O-Y	SPARE		
18T	43	Y-G	SPARE		
R	18	G-Y	SPARE		
19T	44	Y-Br	SPARE		
R	19	Br-Y	SPARE		
20T	45	Y-S	SPARE		
R	20	S-Y	SPARE		
21T	46	V-BI	SPARE		
R	21	BI-V	SPARE		
22T	47	V-O	SPARE		
R	22	O-V	SPARE		
23T	48	V-G	SPARE		
R	23	G-V	SPARE		
24T	49	V-Br	SPARE		
R	24	Br-V	SPARE		
25T	50	V-S	SPARE		
R	25	S-V	SPARE		

FIGURE 9-15
DPFT CONNECTOR J2
TERMINAL SEQUENCE & DESIGNATIONS
STATION LINE CONNECTION

INSTALLATION-WIRING DIAGRAMS
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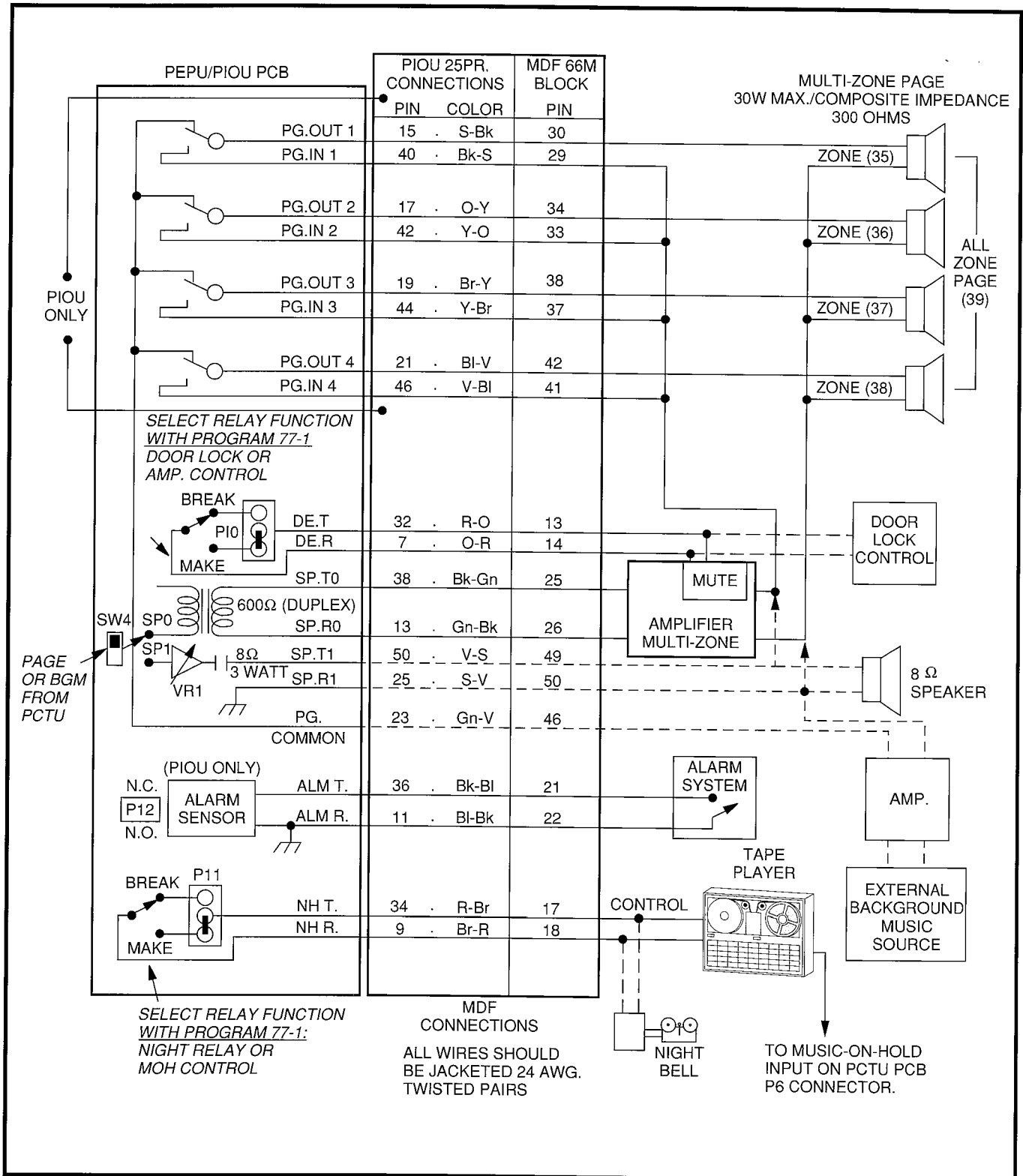


FIGURE 9-16—MDF WIRING/PIOU OR PEPU PERIPHERALS (25-PAIR)

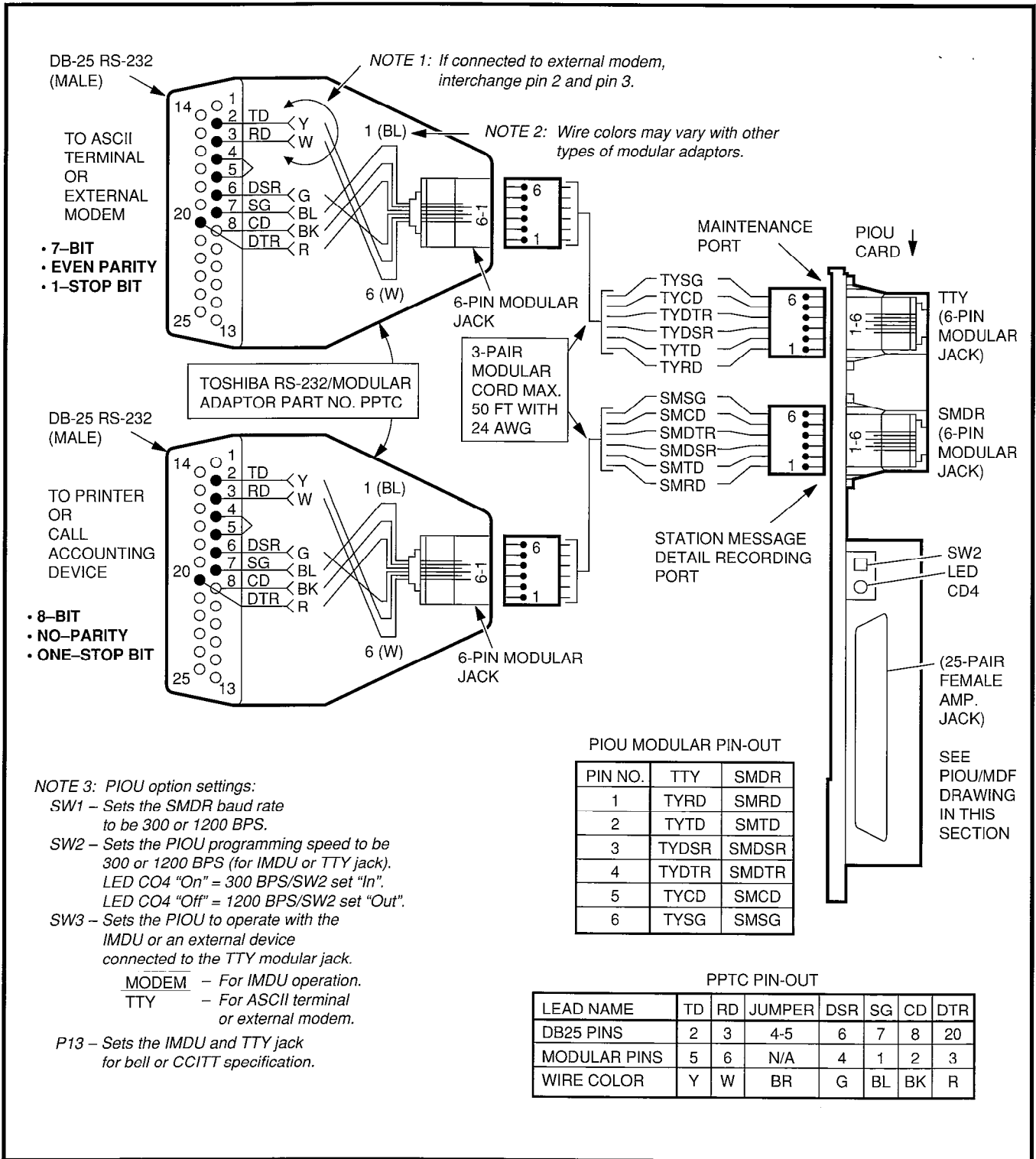


FIGURE 9-17—PIOU/TTY AND SMDR WIRING

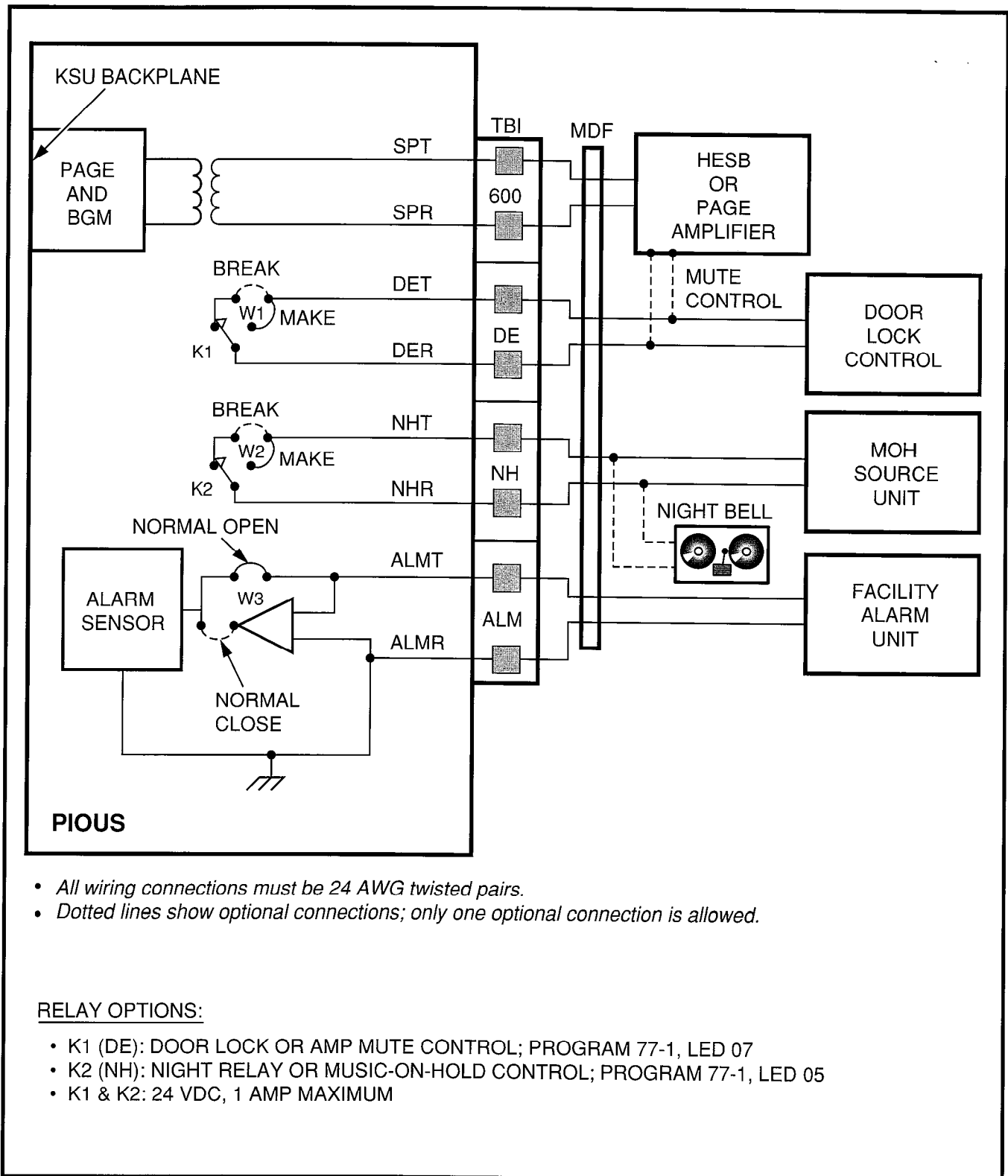


FIGURE 9-18—PIOUS PAGE/RELAY/ALARM CONNECTIONS

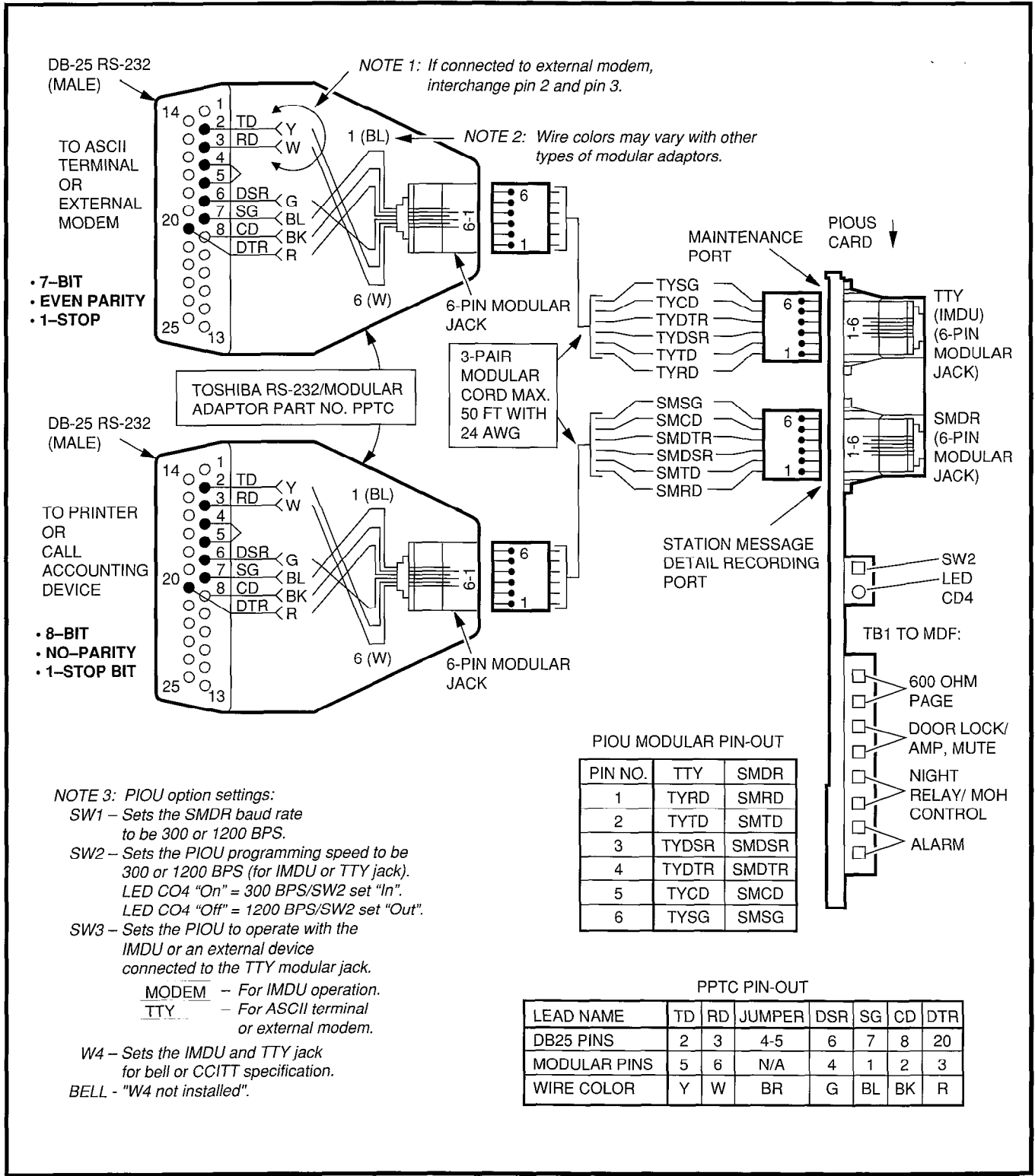


FIGURE 9-19—PIOUS SMDR/TTY OPTIONS AND WIRING

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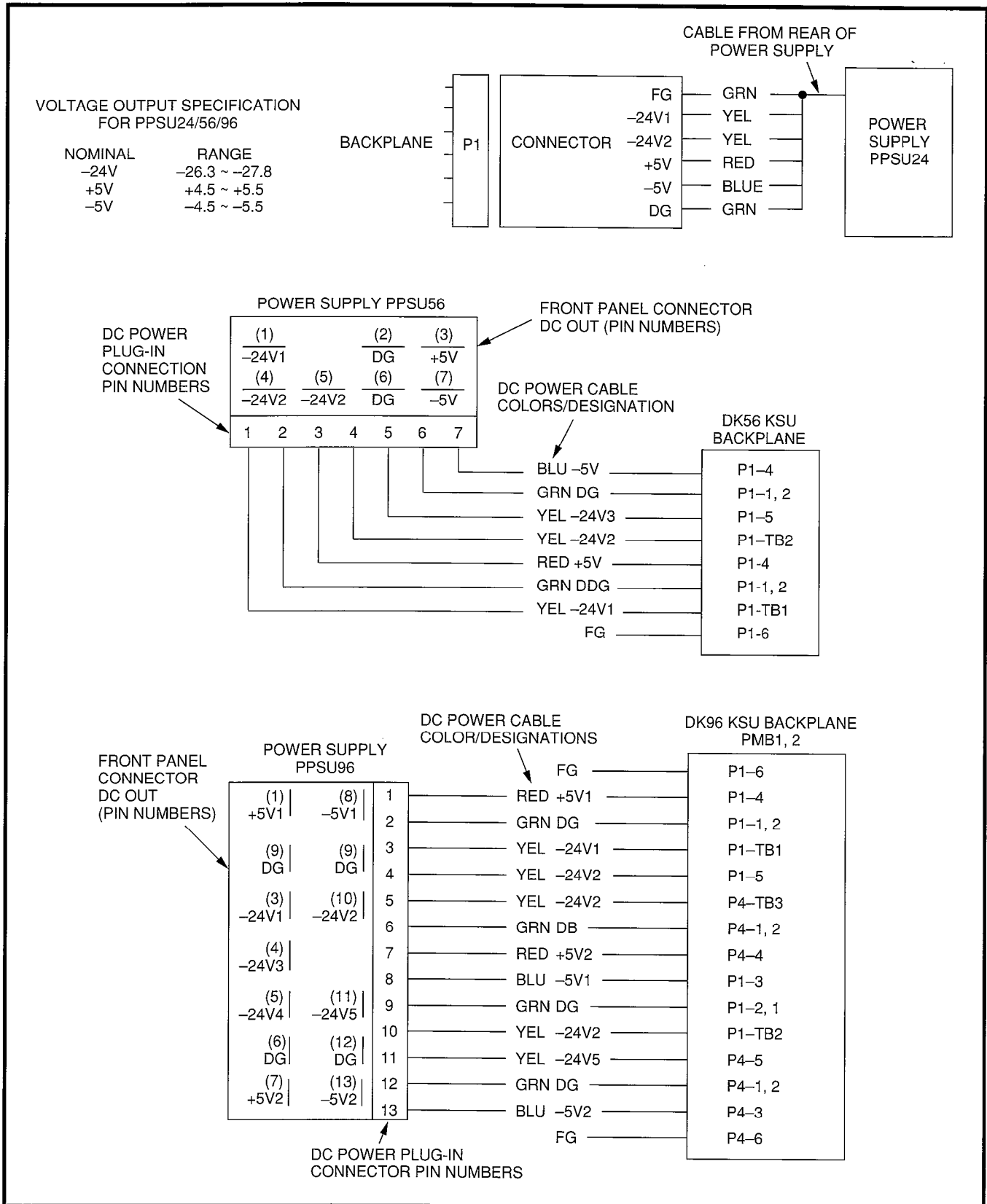


FIGURE 9-20—DK24/56/96 POWER SUPPLY DC OUT CONNECTOR/CABLES

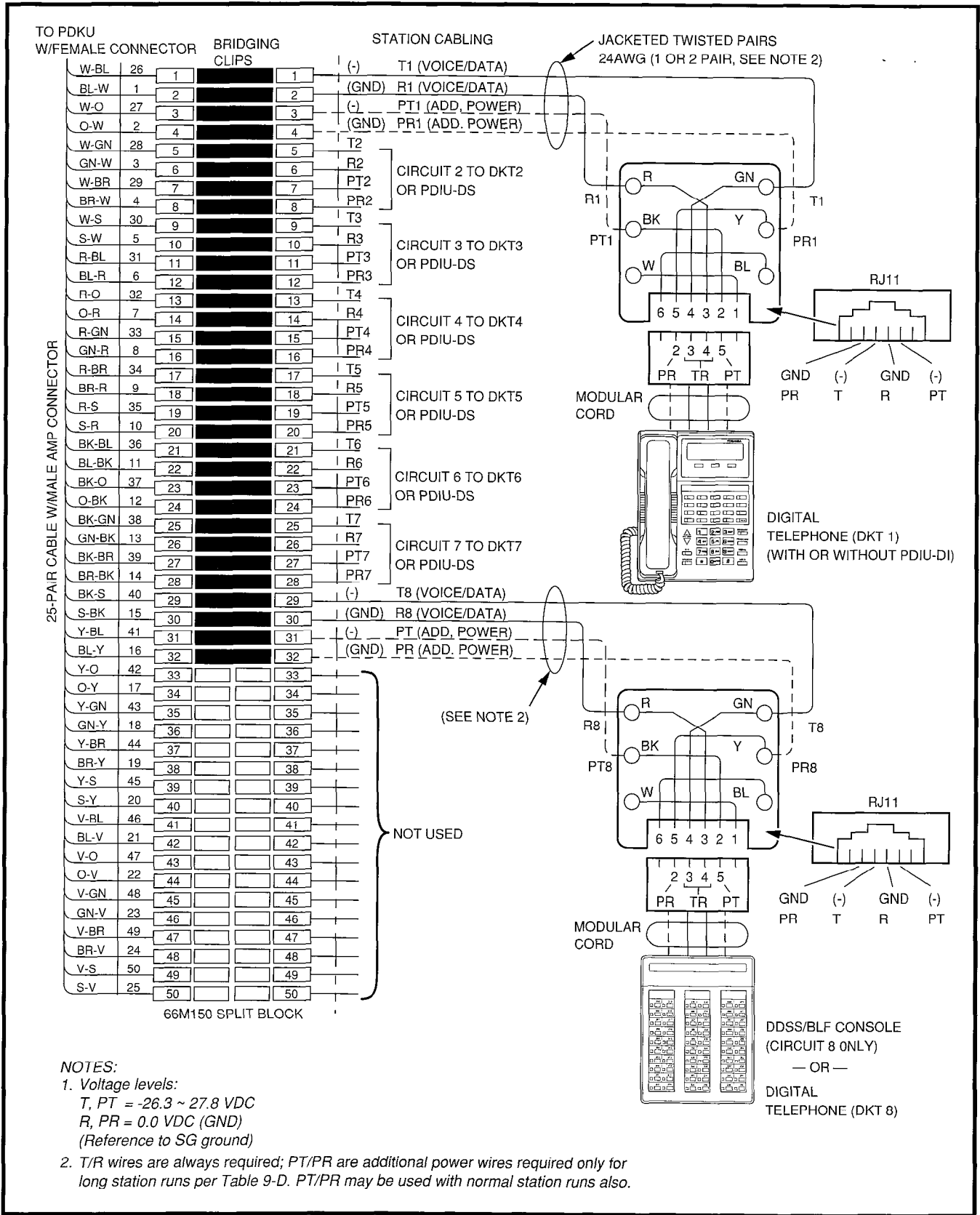


FIGURE 9-21—MDF WIRING FOR DIGITAL TELEPHONES (DKTS) AND DIGITAL DSS CONSOLE (DDSS) TO PDKU

INSTALLATION-WIRING DIAGRAMS
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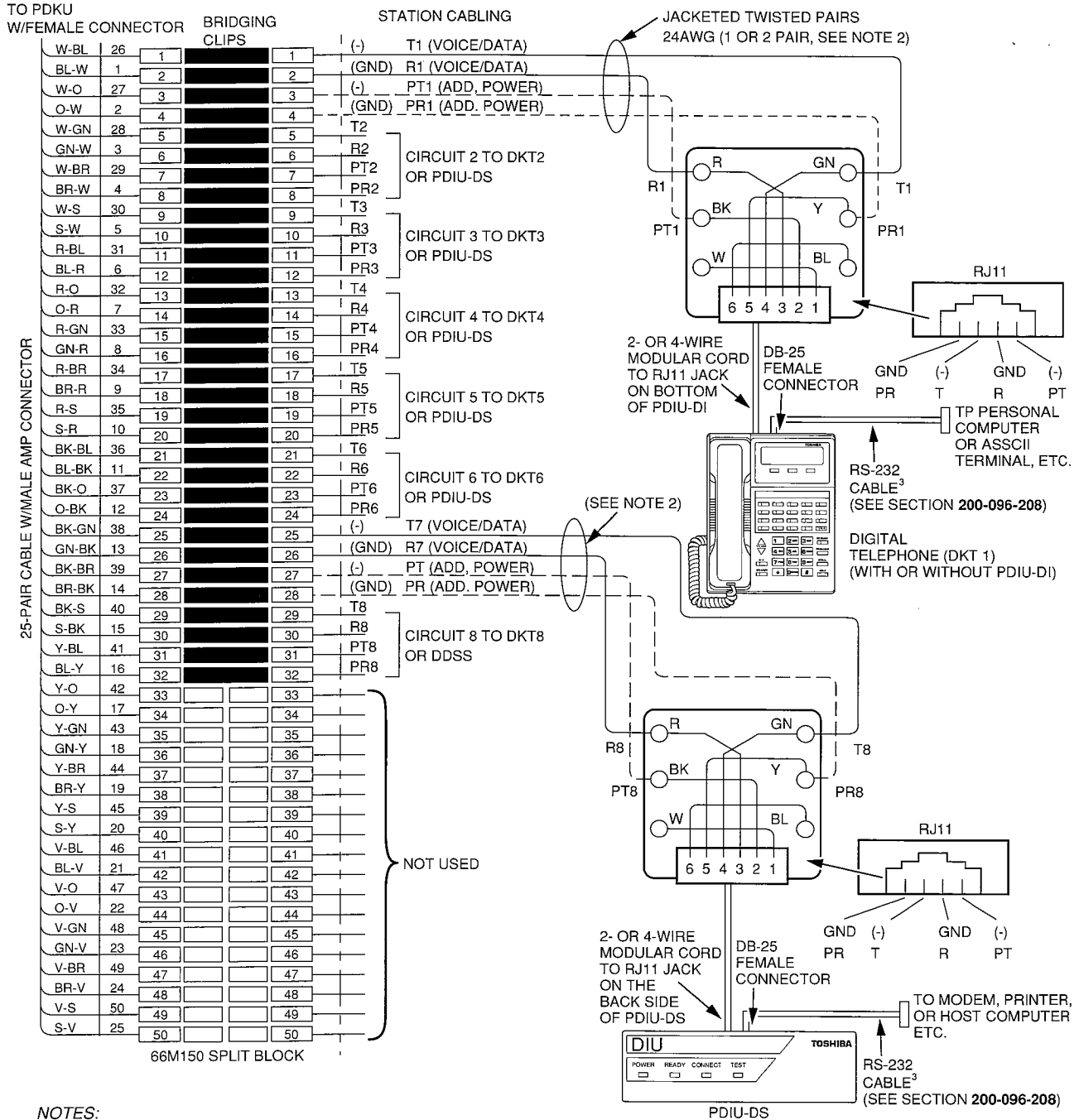


FIGURE 9-22—MDF WIRING FOR DIGITAL TELEPHONES (DKTS) WITH PDIU-DI AND PDIU-DS TO PDKU

MDF BLOCK NO. _____ DKSU SLOT NO. _____

COLOR CODE	DESIGNATION	CKT NUMBER	PORT NUMBER	INTERCOM NUMBER	DIGITAL TELEPHONE/ DEVICE LOCATION
W-BI	T	1			
BI-W	R				
W-O	PWR T				
O-W	PWR R				
W-G	T	2			
G-W	R				
W-Br	PWR T				
Br-W	PWR R				
W-S	T	3			
S-W	R				
R-BI	PWR T				
BI-R	PWR R				
R-O	T	4			
O-R	R				
R-G	PWR T				
G-R	PWR R				
R-Br	T	5			
Br-R	R				
R-S	PWR T				
S-R	PWR R				
Bk-BI	T	6			
BI-Bk	R				
Bk-O	PWR T				
O-Bk	PWR R				
Bk-G	T	7			
G-Bk	R				
Bk-Br	PWR T				
Br-Bk	PWR R				
Bk-S	T	8 ³			
S-Bk	R				
Y-BI	PWR T				
BI-Y	PWR R				

NOTES:

1. Copy for each PDKU installed.
2. Indicate if PDIU-DS, digital telephone (with or without PDIU-DI) or DDSS console (number 1, 2, 3, or 4) is connected.
3. PDIU-DS and PDIU-DI can be connected to circuits 1 ~ 7 only.

FIGURE 9-23—PDKU STATION/MDF CROSS CONNECT RECORD

INSTALLATION-WIRING DIAGRAMS
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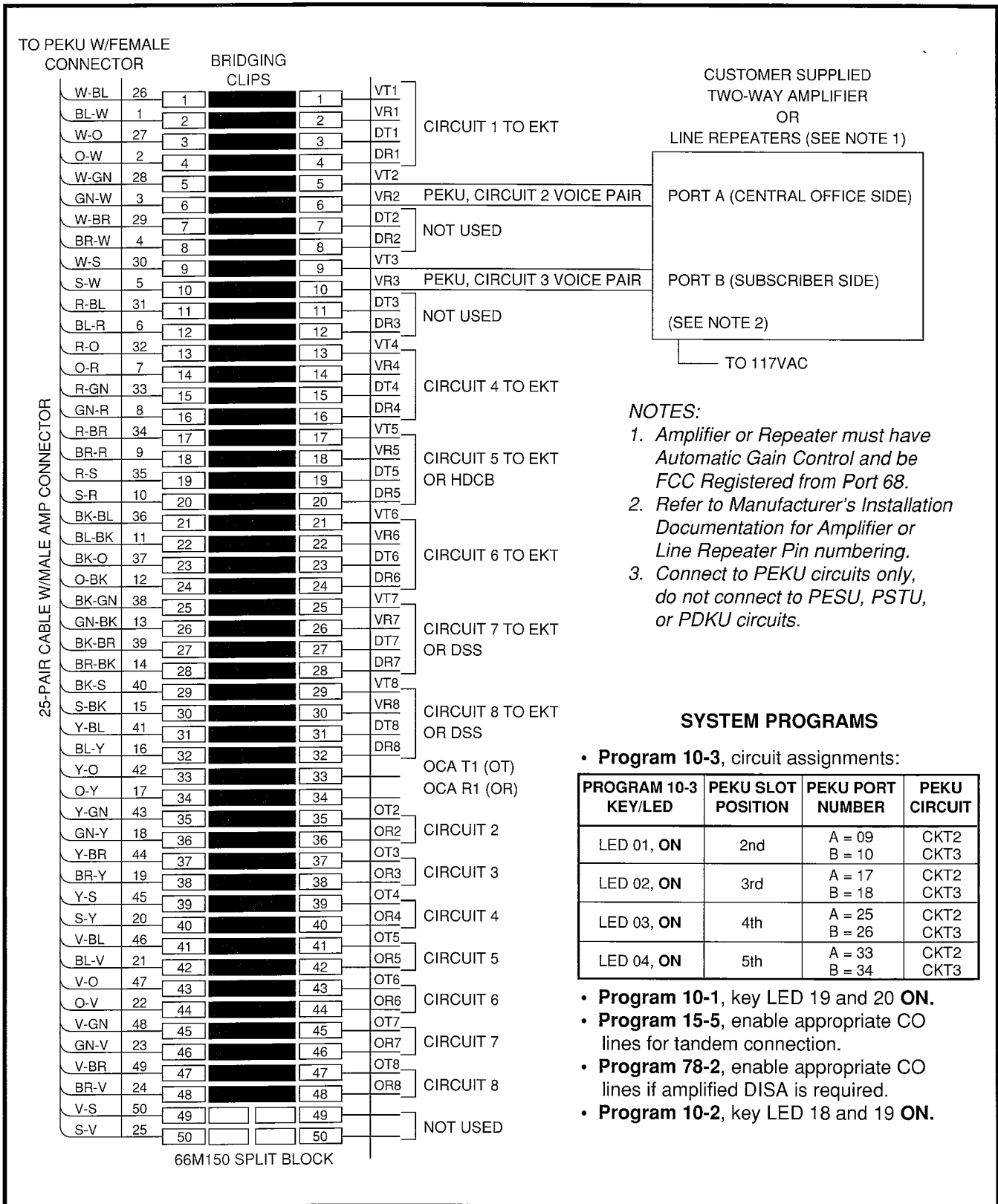


FIGURE 9-24—MDF WIRING/AMPLIFIED TWO-CO LINE CONFERENCE

Strata[®] *DK*

RELEASE 1, 2, and 3

PROGRAMMING PROCEDURES

**CHAPTER ONE
INTRODUCTION**

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1 PURPOSE

1.01 The purpose of this programming section is to provide the system installer with instructions to set the detailed feature configuration and operation of the system.

1.02 This chapter provides an overview of the programming section, its organization, and its general programming instructions.

1.03 For easy reference, every paragraph is numbered.

2 ORGANIZATION

2.00 This programming section is organized in modular chapters. The chapters are titled as follows:

2.10 Chapter One—Introduction (Section 200-096-301): Begins with an overview of the section's purpose and organization. Also included are basic instructions on how to program the system with a 20-button LCD digital or electronic telephone, some general programming notes, and a description of system initialization.

2.20 Chapter Two—System Record Sheets and Instructions (Section 200-096-302): Provides a record sheet for every program (00 ~ 97), including toll restriction and least cost routing, and instructions on how to fill them out. The system programmer programs the system from the data on the record sheets. Program cross-reference tables in numerical and alphabetical order are also included.

3 GENERAL PROGRAMMING INSTRUCTIONS

3.01 General Programming Instructions provide an overview of system programming considerations. Data is entered from System Record Sheets at the 20-button LCD digital or electronic telephone connected to port 05. System Record Sheets document a specific system's data configuration, including attributes of a feature or group of features. The record sheets are organized by program number.

3.10 Programming Data Entry Overview

3.11 Keystrokes for entering data from System Record Sheets follow a pattern, consisting of a

5-step process described below, and illustrated in Figure 1-1. *Button (key) sequences that stay the same for every program are abbreviated, and shaded.* Button sequences that are unique for every program are white.

1) In step 1, enter Programming Mode by pressing a series of buttons. See Figure 1-1. *To save space on the record sheets, abbreviation "A" is used to denote the beginning sequence.* "A" buttons are shaded.

2) In step 2, enter the Program Number. This sequence is unique for every program. The buttons are white, and never abbreviated.

3) In step 3, enter Program Data. Again, this sequence is unique for every program. The buttons are white and never abbreviated. To make another entry, repeat step 3 until ready to exit the current program.

4) In step 4, exit the current program. This sequence never changes. To save space on the record sheets, abbreviation "Z" is used to denote the ending sequence (as in "Z" of "from A to Z"). "Z" buttons are shaded. Upon exiting the current program, repeat step 2 to enter another program, or continue with step 5 to exit programming mode entirely.

5) In step 5, exit Programming Mode by pressing the same buttons as in step 4. This sequence also never changes.

3.12 Each System Record Sheet has the abbreviated button sequence shown in Figure 1-1 for its program illustrated at the top of the sheet.

3.20 Programming Data Variations

3.21 There are two different ways to enter data in step 3 of a program: pressing the buttons on the dialpad, and pressing the LED buttons. Many programs are multidimensional, and involve both types of entry.

3.22 Simple Programs: Simple programs, such as **Program 33**, only require data to be specified through the dialpad. Data entered from the dialpad displays on the programming electronic or digital telephone's LCD, along with prompts and confirmations. See Table 1-A for step-by-step data entry instructions for **Program 33**.

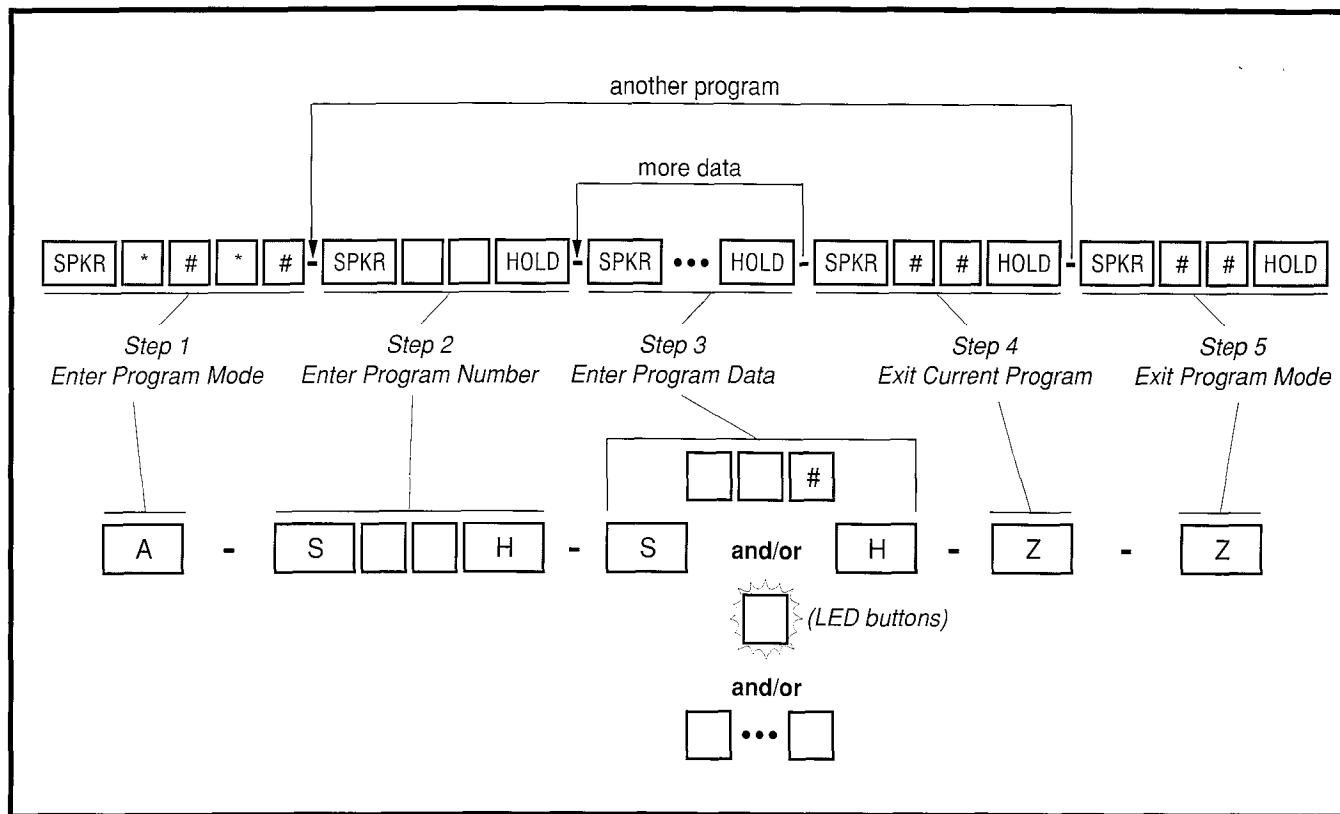


FIGURE 1-1—PROGRAMMING BUTTON SEQUENCE OVERVIEW

3.23 Multidimensional Programs: Once a program number is entered, the first dimension (usually a CO line number, a station port number, or a range of ports) must be specified. Upon specifying this first dimension on the dialpad, programming button LEDs 01 ~ 36 light in the default configuration. The status of each LED can be changed by pressing its associated button. Pressing the button while its LED is lit turns the LED off; pressing the button while its LED is off turns the LED on. **Program 30** is a multidimensional program; see Table 1-B for step-by-step data entry instructions for **Program 30**.

- **Range Programming:** When programming a range of station ports, the station's programming LEDs indicate whether the data programmed matches for all items in the range:
 - **LED On:** Indicates that all ports in the range are programmed with the data choice that lights the particular LED.
 - **LED Off:** Indicates that all ports in the range are programmed with the data choice that does not light the particular LED.
 - **LED Flashing:** Indicates that data is currently inconsistent for all ports in the range. Some may be programmed with the LED on; some with the LED off.

3.24 Programming Button/LED Buttonstrip Template: A special buttonstrip template is placed over the 20 buttons located to the right of the dialpad on the programming LCD electronic telephone, or over the 20 buttons above the dialpad on the programming LCD digital telephone. The template assigns numbers to each of the 20 buttons that coincide with tables found in the System Record for programming purposes. It includes assignments for on-hook programming, to identify programming LED buttons 01 ~ 20; and assignments for off-hook programming, to identify programming LED buttons 21 ~ 36 (shaded). Templates are supplied with each manual.

3.30 Preparing the System for Programming

3.31 This section explains how to prepare a system for programming, including minimum hardware requirements, and directions to clear the system's memory.

3.32 Minimum Hardware Requirements: A system must have the following minimum hardware installed for programming, as described in *Installation*, Section 200-096-200:

- **Power Supply:** The power supply must test satisfactorily.

**TABLE 1-A
SIMPLE PROGRAM: PROGRAM 33
(STATION HUNTING)**

Step #	Press... BUTTONS + LED keys Action description	LCD RESPONSE ...
1.	Use the programming LCD electronic or digital telephone connected to port 05 - circuit 6. Make sure the programming button strip template is installed on the programming telephone (see Paragraph 3.24).	NO. 205 JAN 20 SUN 06:43
2.	SPKR *#*# Enter programming mode.	PROGRAM MODE
3.	SPKR 33 HOLD Access Program 33. System beeps after SPKR key is pressed to indicate program number may be entered.	PROGRAM = 33 DATA STORE
4.	SPKR Prepare the system for a station port selection.	33 SELECT =
5.	00# ~ 95# Select the port number of the Hunt From station. A range of ports can be entered as specified in on the record sheet. After the Hunt From ports are entered, press the # button.	33 SELECT = (00 ~ 95) HUNT TO =
6.	00 ~ 95 Enter the port number of the Hunt To point, as recorded on the system record sheet. Press LED key 01 to delete a digit from Hunt To point ports.	33 SELECT = (00 ~ 95) HUNT TO = (00 ~ 95)
7.	HOLD Secure data in system programming.	33 SELECT = (00 ~ 95) DATA PROGRAMMED
8.	SPKR Prepare system for another selection (go back to step 5), or exit Program 33 (continue with step 9).	33 SELECT =
9.	## HOLD Secure Program 33 data in system memory.	33 SELECT = ## DATA PROGRAMMED
10.	SPKR Exit Program 33. Enter another program number or exit programming mode (go to step 11). Speaker beeps to indicate it is exiting Program 33.	PROGRAM =
11.	## HOLD Exit programming mode.	NO. 205 JAN 20 SUN 06:58

TABLE 1-B
MULTIDIMENSIONAL PROGRAM: PROGRAM 30
(STATION CLASS OF SERVICE)

Step #	Press... ACTION DESCRIPTION	LCD RESPONSE ...
1.	Use the programming LCD digital or electronic telephone connected to port 05 - circuit 6. Make sure the programming button strip template is installed on the programming telephone (see Paragraph 3.24).	NO. 205 JAN 20 SUN 06:43
2.	SPKR *#*# Enter programming mode.	PROGRAM MODE
3.	SPKR 30 HOLD Access Program 30. System beeps after SPKR key is pressed to indicate a program number may be entered.	PROGRAM = 30 DATA STORE
4.	SPKR Prepare system for a port number selection.	30 SELECT =
5.	00# ~ 95# Enter the port number where the station being defined is connected. Use two digits, followed by a # key. A range of ports may be entered at once by using the *# key. (See Note on system record sheet.)	30 SELECT = (00 ~ 95)
6.	LED keys 01 ~ 20 LED keys 01 ~ 20 activate features for each station port or port range. Make the following selections by turing the appropriate key led ON or OFF for each item (01 ~ 20) for each port, as marked on the system record sheet: LED 01: Speakerphone Enabled. LED 02: Microphone Key Lock Enabled. LED 03: Microphone ON at Start of Call. LED 04: Not Used. LED 05: Speed Dial Allowed. LED 06: Automatic Busy Redial Access Enabled. LED 07: Automatic Off-hook Call Announce. LED 08: Forced Account Code Enabled. LED 09: Toll Restriction Override Code Revision Authority LED 10: DISA Security Code Change Allowed LED 11: Dial Pulse (DTMF Off) for Standard Telephone	

TABLE 1-B (continued)
MULTIDIMENSIONAL PROGRAM: PROGRAM 30,
STATION CLASS OF SERVICE

Step #	Press... BUTTONS + LED keys Action description	LCD RESPONSE ...
6.	<p>LED keys 01 ~ 20 (continued)</p> <p>LED 12 and 13: Digital Telephone Handset Receiver Volume (Release 3).</p> <p>LED 14: Account Codes Verified (Release 3).</p> <p>LED 15: Verified Account Code Revision Authority (Release 3)</p> <p>LED 16: Traveling Class of Service Code Revision Authority (Release 3).</p> <p>LED 17: Do Not Disturb Override Allowed.</p> <p>LED 18: Executive Override Allowed.</p> <p>LED 19: Privacy Overridden Allowed</p> <p>LED 20: Not Used</p> <p>If programming a port range, the LED indications are as follows:</p> <ul style="list-style-type: none"> • LED-ON, all ports in range are enabled for that item. • LED-OFF, all ports in range are disabled for that item. • LED-FLASHING, some ports in range are enabled and some ports are disabled. 	
7.	<p>HOLD Secure data in system programming.</p>	<p>30 SELECT = (00 ~ 95) DATA PROGRAMMED</p>
8.	<p>SPKR Prepare system for another selection (go back to step 5), or exit Program 30 (continue with step 9).</p>	<p>30 SELECT =</p>
9.	<p>## HOLD Secure Program 30 data in system memory.</p>	<p>30 SELECT = ## DATA PROGRAMMED</p>
10.	<p>SPKR Exit Program 30. Enter another program number (see Table Q), or exit programming mode (go to step 11). System beeps to indicate it is exiting Program 30.</p>	<p>PROGRAM =</p>
11.	<p>## HOLD Exit programming mode.</p>	<p>NO. 205 JAN 20 SUN 06:58</p>

PROGRAMMING PROCEDURES-INTRODUCTION
SECTION 200-096-301
FEBRUARY 1991

- **PCTU or PCTUS (Common Control Unit PCB):**
A PCTU or PCTUS must be installed, and have its jumpers set for live operation.
- PEKU, PESU, or PDKU in slot 01
- LCD program telephone connected to port 05, equipped with programming template.

3.33 Minimum Software Requirements: To prepare the system software for programming, clear the memory by initializing its data (with **Programs 90 and 92**), as specified in this Section, Paragraph 4, *Initializing the System*. Next, **Program 03** must be completed to inform software of the system's hardware configuration. Basic system programming can then begin.

3.40 General Programming Procedures

3.41 The general procedure for programming a system follows:

- 1) **Programs 90 and 92** must be run to initialize the system, this sets the following elements to initial status:
 - Data for **Programs 00 ~ 97**
 - Speed Dial Memory
 - Character Message Memory
 - Timed Reminders
 - Digital Telephone Volume Levels
 - Call Forward Memory (POWER OFF then ON).
- 2) **Program 03** must be run to inform the software of the system hardware configuration.(POWER OFF then ON).
- 3) Ensure that the Basic System Record, Toll Restriction System Record and Least Cost Routing System Record have been filled out. If they have been filled out, continue with step 4. If not, determine the customer's hardware/software configuration and continue with step 3.
- 4) In Section **200-096-302**, complete record sheets for basic programming, toll restriction, and least cost routing.
- 5) From an LCD telephone connected to port 05 equipped with a programming template, enter data from the record sheets. For help in entering this data, see example Tables 1-A and 1-B in this chapter.
- 6) Set the date, time and day from an LCD telephone connected to port 00.

4 INITIALIZING THE SYSTEM

4.01 This section explains how to prepare the system software for programming. The system's memory must be cleared by initializing its data. Initializing data activates standard data assignments (stored in ROM).

4.10 Initialize Programs 00 ~ 97 Data with Program 90: Always initialize a system when it is first installed, or when its software must be brought to the default configuration. If only minor programming changes are being added to a system in which the programming is basically correct, skip this section. Follow the steps in Table 1-C and Figure 1-2.

- 1) Ensure that the system meets minimum hardware requirements specified in Paragraph **3.32**.
- 2) Place the system power switch in the ON position.
- 3) Follow the steps in Table 1-C.

4.20 Initialize Speed Dial Numbers, Character Message Memory, Timed Reminders, Digital Telephone Volume, and Call Forward Backup Memory with Program 92

4.21 Complete this step if the system is being installed for the first time, or when all currently programmed speed dial numbers or the like must be deleted. Follow the steps in Table 1-D and refer to Figure 1-3.

4.30 After Initialization

4.31 Immediately after initializing the system, **Program 03** must be run to inform the software of the system hardware configuration (see Table 1-E), **Program 00** to assign remote maintenance security codes and to check the system software level (see Table 1-F); and **Program 04** to assign station numbers (see Table 1-G).

4.32 Anytime after initialization, the time and date can be set. This is not accomplished from the programming station, but rather from the electronic or digital telephone connected to port 00 (usually station number 200). Refer to Figures 1-4, 1-5 and 1-6.

4.33 All programs are entered from the LCD electronic or digital telephone connected to port 05.

**TABLE 1-C
PROGRAM 90
INITIALIZING PROGRAMS 00 ~ 97
See Program 90 System Record Sheet**

Step #	Press... Action description	LCD RESPONSE ...
1.	Use the programming LCD electronic or digital telephone with programming template connected to port 05 - circuit 6.	NO. 205 JAN 20 SUN 06:30
2.	SPKR *#*# Enter programming mode.	PROGRAM MODE
3.	SPKR 90 HOLD Access Program 90. System beeps after SPKR button is pressed to indicate the program number can be entered.	PROGRAM = 90 DATA STORE
4.	SPKR Prepare system for the programs to be initialized.	90 SELECT =
5.	00*97 + LED keys 01 & 02 Enter program numbers individually or in a range. For a range, separate the low program number and the high program number with an asterisk.	90 SELECT = 00*97 DATA CLR
6.	HOLD Secure data in system programming. LEDs 01 and 02 flash.	90 SELECT = 00*97 DATA PROGRAMMED
7.	SPKR Prepare system for another selection (go back to step 5), or exit Program 90 (continue with step 8).	90 SELECT =
8.	## HOLD Secure Program 90 data in system memory.	90 SELECT = ## DATA PROGRAMMED
9.	SPKR Exit Program 90. Enter another program number (see Table D), or exit programming mode (go to step 10). System beeps to indicate it's exiting Program 90.	PROGRAM =
10.	## HOLD Exit programming mode. NOTE: The system will not allow the SPKR LED to light to reenter the programming mode.	NO. 205 JAN 20 SUN 06:42
11.	If all programs or just Program 32 were initialized above, POWER OFF for 5 seconds then POWER ON. This resets Station 205 auto preference to select intercom when SPKR key is pressed.	

IMPORTANT NOTE

Always initialize **Programs 00 ~ 97** when installing a PCTU that is being installed for the first time for a particular configuration.

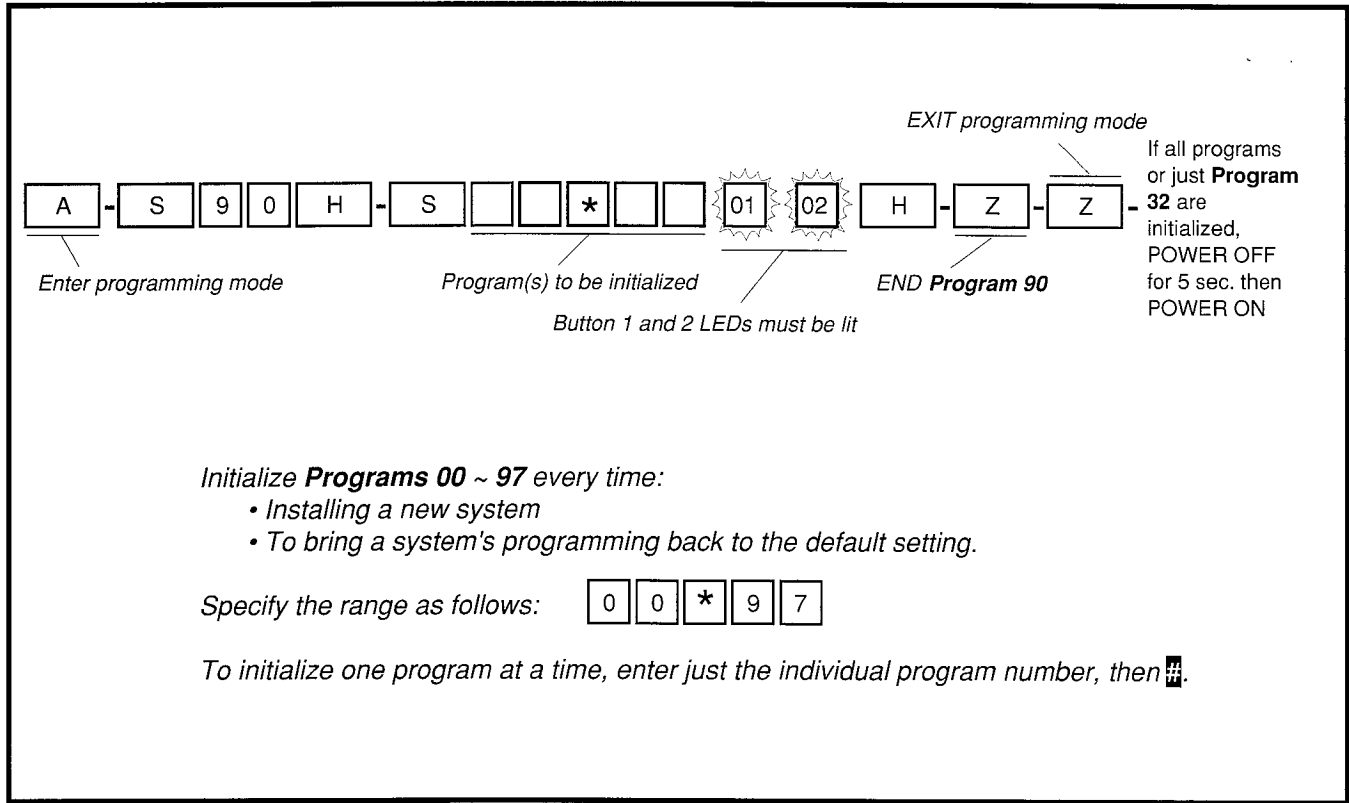


FIGURE 1-2—INITIALIZING DATA FOR PROGRAMS 00 ~ 97 WITH PROGRAM 90

**TABLE 1-D
PROGRAM 92
INITIALIZING SPEED DIAL NUMBERS, ID CODES,
CHARACTER MESSAGE MEMORY, TIMED REMINDERS,
DIGITAL TELEPHONE VOLUME, AND CALL FORWARD BACKUP MEMORY**

Step #	Press... Action description	LCD RESPONSE ...
1.	Use the programming LCD electronic or digital telephone with programming template connected to port 05 - circuit 6.	JAN 20 SUN NO. 205 06:43
2.	SPKR *##* Enter programming mode. System beeps after SPKR button is pressed to indicate when to enter program number.	PROGRAM MODE
3.	SPKR 9 2 HOLD Access Program 92.	PROGRAM = 92 DATA STORE
4.	SPKR Prepare system for selection of programs to initialize. For new system installation perform all 1 ~ 4.	92 SELECT =
5.	Select one of the following. A 1 + LED keys 01 & 03 Clears station speed dial, voice mail ID codes, and LCD memos assigned to station speed dial numbers. OR B 2 + LED keys 01 & 04 Clears system speed dial and LCD memos assigned to system speed dial numbers. OR C 3 + LED keys 02 & 03 Clears character message memory (station and system) and user name display. OR D 4 + LED keys 02 & 04 Clears timed reminders. OR E 5 + LED keys 01 & 05 Presets the Ring/Speaker, Mute Ring, and Intercom Tone/BGM, volume levels of all digital telephones to approximately midrange (Release 3). OR F 9 + LED keys 03 & 04 Clears Call Forward Memory except Fixed Call Forward Memory (Release 2 and above).	92 SELECT = 1 EACH DIAL CLR 92 SELECT = 2 COMMON DIAL CLR 92 SELECT = 3 MSG CLR 92 SELECT = 4 TMR REMINDER CLR 92 SELECT = 5 DKT VR INITIAL 92 SELECT = 9 BACK UP RAM CLR
6.	HOLD Secure data in system programming. Repeat steps 4 ~ 6 until steps 5A ~ 5F are completed (see note).	92 SELECT = (1~0) DATA PROGRAMMED
7.	SPKR Prepare system for another selection (go back to step 5), or exit Program 92 (continue with step 8).	92 SELECT =
8.	## HOLD Secure Program 92 data in system memory.	92 SELECT = ## DATA PROGRAMMED
9.	SPKR Exit Program 92. Enter another program number (see Table C), or exit programming mode (go to step 10). System beeps to indicate it's exiting Program 92.	PROGRAM =
10.	## HOLD Exit programming mode.	JAN 20 SUN NO. 205 06:58

NOTE:

If the call forward memory was cleared, cycle system power after Step 6, if it is required to reset telephone call forward LCD displays or call forward button LED indications.

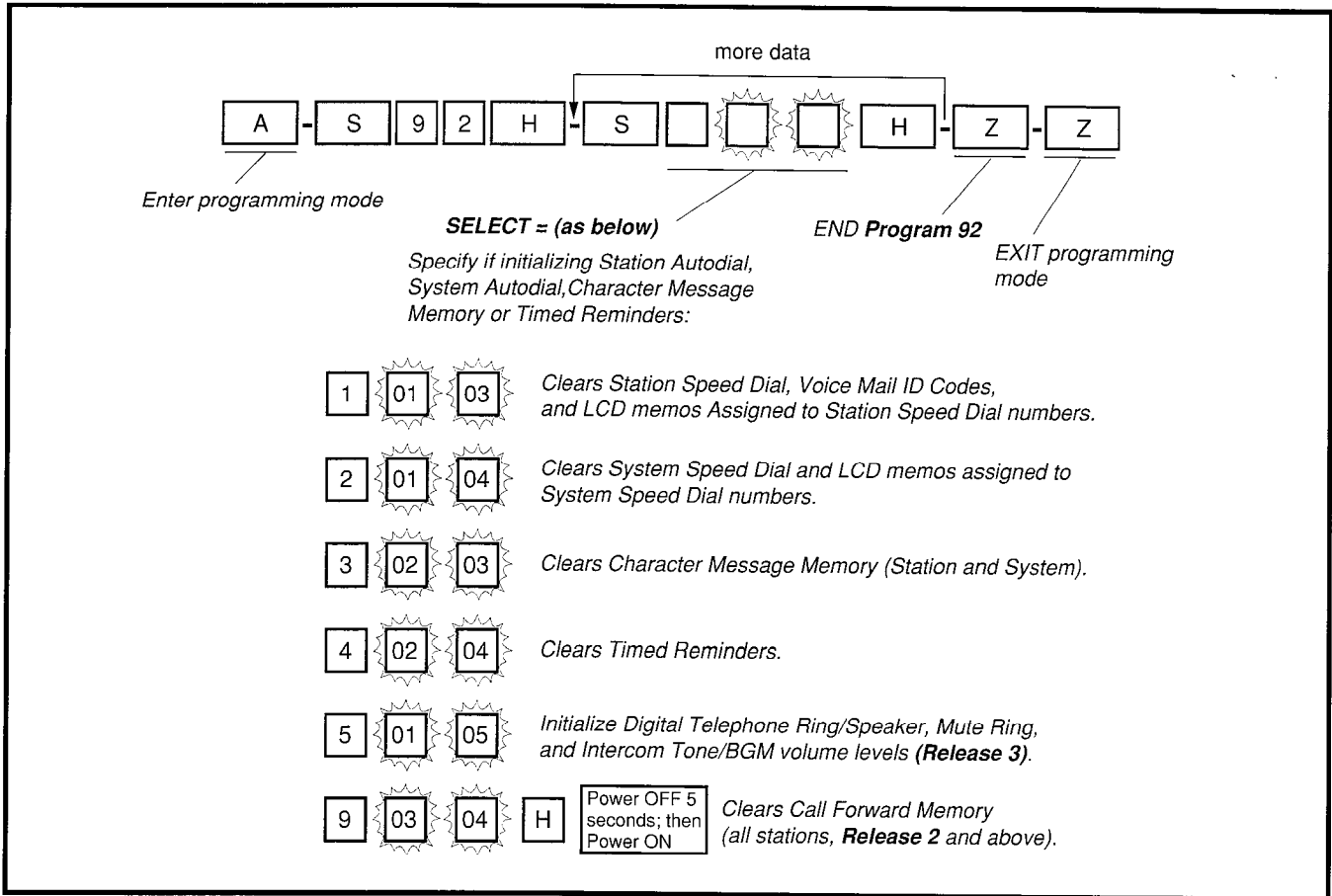


FIGURE 1-3—INITIALIZING SPEED DIAL NUMBERS, ID CODES, CHARACTER MESSAGE MEMORY, TIMED REMINDERS, DIGITAL TELEPHONE VOLUME, AND CALL FORWARD BACKUP MEMORY WITH PROGRAM 92

**TABLE 1-E
PROGRAM 03
FLEXIBLE PCB SLOT ASSIGNMENTS**

Step #	Press... BUTTONS + LED keys Action description	LCD RESPONSE ...
1.	Use the programming LCD electronic or digital telephone with programming template connected to port 05 - circuit 6.	NO. 205 JAN 20 SUN 06:43
2.	SPKR *##*# Enter programming mode.	PROGRAM MODE
3.	SPKR 03 HOLD Access Program 03. After SPKR key is pressed, system beeps to indicate program number may be entered.	PROGRAM = 03 DATA STORE
4.	SPKR Prepare system for a selection.	03 SELECT =
5.	Dial a PCB slot number (00~14) using the dial. The system defaults as follows: 00 Initialized data assigns slot 00 to be a non-optional PCTU without CRUCU. 01 Initialized data assigns slot 01 to be a non-optional PEKU without door phone, DSS console or OCA. 02 ~ 14 Initialized data assigns slots 02 ~ 14 to be empty.	03 SELECT = (00 ~ 14) CARD = (91, 21 or 00) 03 SELECT = <u>00</u> CARD = 91 └─ SLOT NUMBER 03 SELECT = <u>01</u> CARD = 21 └─ SLOT NUMBER 03 SELECT = (<u>02 ~ 14</u>) CARD = 00 └─ SLOT NUMBER
6.	00 ~ 93 Dial the PCB code recorded on the record sheet. Refer to the PCB code reference table on Program 03 System Record Sheet for a definition of the codes.	03 SELECT = (00 ~ 14) CARD = (00 ~ 93)
7.	HOLD Secure data in system programming.	03 SELECT = (00 ~ 14) DATA PROGRAMMED
8.	SPKR Prepare system for another selection (go back to step 5), or exit Program 03 (continue with step 9).	03 SELECT =
9.	## HOLD Secure Program 03 data in system memory.	03 SELECT = ## DATA PROGRAMMED
10.	SPKR Exit Program 03. Enter another program number (see Table E), or exit programming mode (go to step 11). System beeps to indicate it's exiting Program 03.	PROGRAM =
11.	## HOLD Exit programming mode.	NO. 205 JAN 20 SUN 06:58
12.	In order to secure Program 03 entries, POWER OFF for 5 seconds, then POWER ON.	

TABLE 1-F
PROGRAM 00
SOFTWARE CHECK AND REMOTE MAINTENANCE SECURITY CODE ASSIGNMENTS

Step #	Press... Action description	LCD RESPONSE ...
1.	Use the programming LCD electronic or digital telephone with programming template connected to port 05 - circuit 6.	NO. 205 JAN 20 SUN 06:43
2.	SPKR *#*# Enter programming mode.	PROGRAM MODE
3.	SPKR 00 HOLD Speaker beeps to indicate when to enter program number. Access Program 00.	PROGRAM = 00 DATA STORE
4.	SPKR Prepare system for a selection.	00 SELECT =
5.	Select one of the following attributes: A. 0 View the software version. This attribute is not editable. OR B. 1 Define the Level 1 remote maintenance security code from the System Record Sheet (four digit max.). Level 1 allows remote access to all programs and data. Default Level 1 security code is "0000." OR C. 2 Define the Level 2 remote maintenance security code from the System Record Sheet (four digit max.). Level 2 allows remote entry to Programs 30 ~ 39 and 77 ~ 89 only. Default Level 2 security is "0000." OR D. 8 View the software RAM Checksum. This attribute is not editable. The default checksum may change. OR E. 9 View the PPSU Power Cycle Counter. This attribute is not editable. The counter indicates the number of times power is removed from the system after Program 00 was initialized via Program 90 .	00 SELECT = 0 • DX□□ = PCTU1 OR PCTU2 VERSION • DV□□ = PCTUS VERSION • PCM□□ = PCTU3 VERSION NOTE: □□ = THE ACTUAL VERSION NUMBER AND LETTER 00 SELECT = 1 PASSWORD = 0000 00 SELECT = 2 PASSWORD = 0000 00 SELECT = 8 SUM = XXXXXXXXX 00 SELECT = 9 COUNTER = XXXX
6.	HOLD Secure data in system programming. (Only works for "1" and "2")	00 SELECT = (0, 1, 2, 8 or 9) DATA PROGRAMMED
7.	SPKR Prepare system for another selection (go back to step 5), or exit Program 00 (continue with step 8).	00 SELECT =

TABLE 1-F (Continued)
PROGRAM 00

SOFTWARE CHECK AND REMOTE MAINTENANCE SECURITY CODE ASSIGNMENTS

Step #	Press... Action description	LCD RESPONSE ...
8.	## HOLD Secure Program 00 data in system memory.	00 SELECT = ## DATA PROGRAMMED
9.	SPKR Exit Program 00. Enter another program number (see Table D), or exit programming mode (go to step 10). System beeps to indicate it's exiting Program 00.	PROGRAM =
10.	## HOLD Exit programming mode.	NO. 205 JAN 20 SUN 06:58

TABLE 1-G
PROGRAM 04
PORT/STATION NUMBER ASSIGNMENT

Step #	Press... Action description	LCD RESPONSE . . .
1.	Use the programming LCD electronic or digital telephone with programming template connected to port 05 - circuit 6.	JAN 20 SUN NO. 205 06:43
2.	SPKR *#*# Enter programming mode.	PROGRAM MODE
3.	SPKR 04 HOLD Access Program 04. System beeps after SPKR is pressed to indicate a program number may be entered.	PROGRAM = 04 DATA STORE
4.	SPKR Prepare system for a selection.	04 SELECT =
5.	00# ~ 95# Select the number of the port (use two digits). Initialized data assigns station numbers 200 ~ 295.	04 SELECT = 00 INT = 200
6.	■■■■ Enter the port's station number from the record sheet (four digits max.). <i>NOTE: Station numbers must not exceed four digits, or conflict with feature access codes listed in Program 05 System Record Sheet.</i>	04 SELECT = 00 ~ 95 INT = XXXX
7.	HOLD Secure data in system programming.	04 SELECT = (00 ~ 95) DATA PROGRAMMED
8.	SPKR Prepare system for another port selection (go back to step 5), or exit Program 04 (continue with step 8).	04 SELECT =
9.	## HOLD Secure Program 04 data in system memory.	04 SELECT = ## DATA PROGRAMMED
10.	SPKR Exit Program 04. Enter another program number (see Table F), or exit programming mode (go to step 10). System beeps to indicate it's exiting Program 04.	PROGRAM =
11.	## HOLD Exit programming mode.	NO. 205 JAN 20 SUN 06:58

HOW TO SET THE DATE

The date must be set from the electronic or digital telephone assigned to Port 00.
Press the following button sequence with the handset on the hook:



Date in year/month/day format (YYMMDD). If month or day is a single digit, precede with a zero (0).

If the electronic telephone has a Redial button programmed, press it instead.



FIGURE 1-4—SETTING SYSTEM DATE

HOW TO SET THE TIME

The time must be set from the electronic telephone or digital assigned to Port 00.
Press the following button sequence with the handset on the hook:



Time in hours/minutes/seconds format (HHMMSS from 000000 to 235959). If any of these values is a single digit, precede with a zero (0).

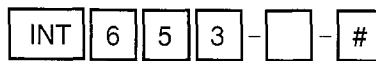
If the electronic telephone has a Redial button programmed, press it instead.



FIGURE 1-5—SETTING SYSTEM TIME

HOW TO SET THE DAY

The day must be set from the electronic or digital telephone assigned to Port 00.
Press the following button sequence with the handset on the hook:



Enter the digit for today's day:

- 1 = Sunday
- 2 = Monday
- 3 = Tuesday
- 4 = Wednesday
- 5 = Thursday
- 6 = Friday
- 7 = Saturday

If the electronic telephone has a Redial button programmed, press it instead.



FIGURE 1-6—SETTING SYSTEM DAY OF WEEK

Strata[®] ***DK***

RELEASE 1, 2, and 3

PROGRAMMING PROCEDURES

**CHAPTER TWO
INSTRUCTIONS/RECORD SHEETS**

IMPORTANT INITIAL INSTALLATION NOTES:

These minimum installation steps must be carried out for proper system operation.

1. *Set PCTU jumper for BATTERY OPERATION; otherwise, all programmed customer data will be lost on power down.*
2. *Place PEPU, PIOUS, or PIOUS PCB in highest slot number of KSU.*
3. *Place all other PCBs in KSU from lowest slot number to highest in the following order:
PCTU or PCTUS1 (always slot 00)
PEKU or PDKU (starting at Slot 01)
PESU (Release 2 and above)
PSTU
PCOU
PEMU*
4. *Run Program 90. Initialize Programs 00 ~ 97, and turn power OFF for 5 seconds, then turn power back ON.*
5. *Run Program 92.*
6. *Enter the hardware configuration with Program 03, exit the programming mode, and turn power OFF for 5 seconds, then turn power back ON.*

WHEN LATER ADDING KSU PCBs:

1. *Move PEMU PCBs to a higher slot number to create empty slots for additions.*
2. *Install new PCBs and reprogram with Program 03. Change PEMU station and CO line numbers or reassign stations.*
3. *Program new features, options, etc. created by new additions.*

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1 GENERAL

1.00 This chapter consists of System Record Sheets, and instructions on how to fill out each of the them. The chapter begins with the instructions: first the basic program, followed by toll restriction, and then least cost routing. The remainder of the chapter contains the system record sheets, organized in the same sequence as the instructions.

1.10 Record Sheet Data Entry

1.11 The system record sheets are used to record the assignment of features or operation of each program. Each sheet is organized to accept an "X" or a series of digits as a selection to be recorded in the space provided. The following descriptions or considerations of the various programming choices available will be helpful in filling out of the System Record Sheets.

1.12 Initialized data information can be found in the Notes at the bottom of each System Record Sheet.

1.20 Basic System Record Instructions

Program 90—Initializing Programs: All customer data can be cleared and set to the initialized state for any program or range of programs. If the system is being installed for the first time, this program must be run to erase random data from RAM which may have been caused by the PCTUs jumper movement to the internal battery. Initialized data information can be found at the bottom of each Program System Record Sheet. If the system is being installed in a new location, all programs (**00 ~ 97**) should be initialized.

Program 92—Initializing Speed Dial Numbers, ID Codes, Character Message Memory, Timed Reminders, Call Forward, and Digital Telephone Volume Levels: All previously entered or random data (of the type listed) is cleared by this program. This program must be run when first installing a system or PCTU.

Program 03—Flexible PCB Slot Assignments:

The software must be informed as to what type of PCB and PCB option(s) are installed in each slot of the KSU. Use the PCB Code Reference Table on the **Program 03** record sheet to determine the proper PCB Code. Always enter PCTU or PCTUS in slot 00. Enter options from the choice of CRCU-4, CRCU-8, EOCU, DDSS, or DSS. Also enter HDCB where installed—this will become useful elsewhere. Record station ports assigned to the PDKU, PEKU, PSTU, PESU and PEMU interfaces. Enter CO/TIE line numbers for the PCOU and PEMU PCBs. Always enter the code for the PIOU or PIOUS or PEPU in the last slot. This record sheet is the main record for the hardware configuration of the entire system. An example of the proper recording of **Program 03** can be found at the end of Section **200-096-304**. Important: After complete entry of **Program 03**, turn the KSU power supply switch off and wait five seconds before turning back on. This will set in memory all of the configuration data entered in **Program 03**.

Program 00—Software Check/Remote Maintenance Security Code Assignments:

- **Level 1 Security Code**—Remote Maintenance security code which allows entry to all programs and data.
- **Level 2 Security Code**—Remote Maintenance security code which allows entry to **Programs 30 ~ 39** and **77 ~ 89**.

Program 04—Port/Station Number Assignment:

Initialized station numbers are 200 ~ 295. Door phone standard numbering is 151 ~ 159 and 161 ~ 163; the internal modem (IMDU) is 19, and port 99 is the DISA COS port. This numbering cannot be changed with **Program 04**. The system automatically assigns door phone station numbers if a door phone is specified in **Program 77-1**; only the first digit can be changed by using **Program 05**. Station number assignment is fully flexible so that each station can have any number assigned up to four digits. However, **if the first digit is not 2, access code conflicts may exist** (see **Program 05**), and a new system numbering plan

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will have to be carefully worked out. All User Guides are written using the standard access codes and station numbers. If desired, an electronic telephone accompanying a DSS console (or a digital telephone accompanying a DDSS console) can have a station number of 0 or 01, etc. without conflict. If no assignment is made in **Program 04**, the system, upon powering up, will automatically assign eight station numbers for each PDKU, PEKU, PESU and PSTU installed and four for each PEMU. This is done in sequence of ascending slot numbers for station numbers 200 and up. If station numbers are assigned in **Program 04** then they are fixed to a slot number—any movement of PEKU, PESU or PSTU station cards must be accompanied by reassignment in **Program 04** or else the telephones will have their station numbers changed.

Program 05—Flexible Access Code Numbering: The first digit of a feature access code may be changed to a different digit or to two digits. Digits after this prefix cannot be changed. Standard access codes are shown as reference in the **Program 05** System Record Sheet. Some do not change (such as Automatic Callback) and are shown with N/A for not affected. **Access code conflicts may exist if new access codes are assigned;** a new system numbering plan will have to be carefully worked out. Pay particular attention to the internal modem (#19) and door phones. Station number assignment may have to be changed using **Program 04**.

Program 10-1—System Assignments 1: The following options are available on a system-wide basis.

- **Two CO Conference, LED 20**—Two CO lines can be conferenced with one or two telephones (digital, electronic, or standard). Conference (see LED 19) in this program must be enabled for this feature to work. Also, two CO line conference must be allowed for DISA use of outgoing lines.
- **Conference, LED 19**—The ability of stations to perform any conference can be allowed or disallowed system-wide.

- **Ring Detect Time, LED 18**—This should be set to normal unless connected to Central Office/CENTREX lines that send ring signals less than 120 milliseconds (**Release 1** is short-ring only; **Release 2** and above is optional).
- **Intercom Volume PAD, LED 17**—“ON” reduces station to station intercom volume. LED 17 should be OFF in all cases except where extreme quiet room noise is expected.
- **ABR Cycles, LED 12**—If activated from an electronic or digital telephone, Automatic Busy Redial will retry dialing a telephone number on a CO line if a far end busy signal is detected. The choice is given of retrying 10 or 15 times before terminating. This feature is not available with standard telephones.
- **ABR Redial Time, LED 11**—Upon detection of a far end busy signal on a CO line, Automatic Busy Redial will retry either once every 30 seconds or once every minute.
- **System Speed Dial Override, Toll Restriction, LED 10**—System Speed Dial (*60 ~ *99) can be chosen to override Toll Restriction.
- **Exclusive Hold, LED 09**—Exclusive Hold allows electronic and digital telephones to place calls on hold (by pressing the **HOLD** key twice) so that other stations cannot pick up the held call with a CO line button. This feature can be disabled on a system-wide basis. Any station can pick up an exclusive hold call by using the call pickup code.
- **Alternate Point Answer/Transfer Privacy, LED 08**—If Transfer Privacy is selected, a transferred call can *only* be answered at the called station upon transfer of that call. With Alternate Point Answer, any electronic or digital telephone with the appropriate CO line button can pick up a call transferred to another telephone. In either case, call pickup will function from any station.
- **Ring Transfer, LED 07**—This option defines station operation for transferring CO line calls. If Ring Transfer is allowed, the

system will allow "blind" transfers—the transferring station may release a transferred call before the called party answers. If not allowed, the system will allow supervised transfers only—the called station must answer before the transferring station releases. If Ring Transfer is not allowed, immediate recall occurs if "blind" transfer is attempted.

- **CO Repeat Ringing, LED 06**—If selected, the incoming ringing timing pattern at a station will be the same as the CO line ringing pattern. This is used mainly with CENTREX or PBX systems which may vary the ring pattern to distinguish between intercom and incoming calls, etc. If Standard Ringing is chosen, CO line station ringing will be a 1 second on, 3 seconds off cycle regardless of the incoming ring pattern. Some Central Offices have ringing characteristics such that this option would not be desirable.
- **Incoming Call Abandon Timing, LED 05**—The amount of time between incoming CO line ring signals determines when the system will discontinue (abandon) sending ringing tones to stations. The choice of 6 or 8 seconds is dependent on the CO ring pattern. This assignment has no effect if the CO Repeat Ringing option is used.
- **DTMF Signal Time, LED 04**—DTMF signals sent out to CO lines can be either 80 or 160 milliseconds in length. DTMF to PSTU/PESU ports (including Voice Mail ports) are not affected by this assignment. See **Program 10-2** for PSTU/PESU DTMF timing.
- **DP Make Ratio, LED 03**—Dial Pulse timing sent out to CO lines can be changed from the normal 40% make ratio to 33%. This selection only applies to those CO lines assigned in **Program 15** to signal dialing with dial pulse instead of DTMF.
- **CO Line Reseize Guard Time, LED 02**—Should be set for 0.45 seconds for most installations. Set guard time for 1.5 seconds (using **Program 10-1**, LED 02 ON and **Program 42-0**), if CO lines experience the

following situations: no dial tone when a line is released and reseized immediately; or, when operating behind CENTREX or PBX, false hookflash signals are sent to the Central Office when stations release and reseize the same CO line immediately (**Release 2** and above).

- **Tone First/Voice First-Electronic and Digital Telephone, LED 01**—With Voice First, an intercom call to an electronic or digital telephone will be preceded by a one second burst of tone, followed by voice communication via the handsfree answer-back function. For Tone First, repetitive intercom ring tone is sent in a 1-second on, 3-seconds off pattern. Conversion from one form to the other can be made by dialing an additional digit of **1** from the calling station.

Program 10-2—System Assignments 2: The following options are available on a system-wide basis.

- **Stations Use External Amplified Conference, LED 19**—This feature should only be used (LED 19 ON) if an external amplifier(s) (**Program 10-3**) is used for two-CO line conference calls. This will provide additional amplification to the station during a two-CO line conference call. If an external amplifier is not switched into two CO line conference calls in all cases, LED 19 must be OFF to prevent line unbalance which may cause HUM noise on the station talk path during two CO-line conference calls.
- **Two CO Line Conference, LED 18**—LED 18 should be ON whenever two CO line (Tandem, DISA, TIE) connection is allowed in **Program 15-5** and **Program 10-1**, LEDs 19 and 20. This will increase the volume level between the two outside parties on a Tandem (two-CO-line) connection; but, it will not affect station volume if conferenced into the Tandem connection. This option is not associated with external amplified conference (**Program 10-3**).
- **Executive Override Warning Tone, LED 16**—Executive Override allows a station (if

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assigned in **Program 30**) to break into and overhear an existing station conversation. A warning tone can be set optionally to be heard by the conversing parties.

- **External Page Included with All Call Page, LED 15**—If the all call voice page access code (39) is dialed, external page (all zones) may be included or omitted with this option. This option does not affect the All Call (AC) button function; the AC button activates electronic and digital telephone speakers only, never external page.
- **Privacy Override Warning Tone, LED 14**—Privacy Override allows a station to enter into, and overhear, an existing CO line conversation by pressing a CO line button (if the called station is assigned in **Program 30**). A warning tone can be set optionally to be heard by the conversing parties.
- **Auto Callback Camp-on Tone, LED 13**—A busy called digital or electronic telephone user may optionally hear a one-time beep tone (from the speaker) signifying that another station has tried to call and has activated the Automatic Callback feature.
- **CO Line Beep Tone, LED 12**—If this LED is lit, a beep tone will be sent every three minutes to stations on outgoing CO line calls.
- **DTMF Tone Return, LED 11**—This option can delete DTMF tones that are returned to digital or electronic telephones when manually dialing or speed dialing. It also eliminates auto dial digits returned to callers when digits are automatically sent to voice mail ports on forwarded calls (**Release 2** and above).
- **Background Music/Music-on-Hold Separation, LEDs 10 and 9**—A separate background music source can be sent to digital telephone speakers, electronic telephone speakers, and external page speakers, while another music-on-hold source can be sent to outside lines or internal stations on hold. With **Release 3**, the background music source connects to circuit 3 of a PEKU PCB or circuit 8 of a PESU PCB in any slot (see **Program 19**).

With **Release 2**, the background music connects to the same circuits on the same PCBs, except that the PEKU or PESU must be installed in slot 01. No matter what release, the music-on-hold source connects to the PCTU or PCTUS PCB's P6 terminal.

- **Display Dialed Number Timing, LED 08**—An LCD telephone will display a dialed number for either 15 or 60 seconds before the display changes back to the normal time and date format.
- **Standard Telephone Distinctive Ring, LED 07**—The outside-call ring pattern to standard telephones, can be made distinct from the intercom ring pattern. If Distinctive Ring is enabled, the CO-line call ring pattern will be 0.2-seconds on, 0.4-seconds off, 0.2-seconds on, 3.4-seconds off; if Distinctive Ring is not enabled, the pattern will be per **Program 10-1**, LED 06. Intercom calls, with or without Distinctive Ring enabled, ring 1-second on and 3-seconds off. This option is available with **Release 2** and above software only.
- **Voice Mail Identification Code, DTMF Signal Time, LED 06**—DTMF digits automatically sent to PSTU/PESU voice mail ports can be sent in either 80- or 160-millisecond bursts. This applies to digits sent via voice mail identification code 656/657 set at each station. This option is available with **Release 2** and above software only.
- **TIE/DISA Busy Tone Cadence, LED 05 (Release 3)**—Select the busy tone cadence for DISA/TIE lines with this LED. Light the LED for a 0.5 second cadence (Bell Precise Busy Tone Cadence); Leave it OFF for the STRATA 0.25 second busy tone cadence. The Bell Precise Busy Tone cadence should be selected so callers will know that they have reached a busy station when calling in on a TIE or DISA line. If it is not selected, the busy tone may be confused with the reorder tone cadence.
- **VM Message Waiting Cancel Via Dial 64/Automatic, LED 04**—"Dial 64" should be enabled if the DK system is connected to a

voice mail system that sets station Message Waiting (MW) LEDs by dialing **6 3** + station number. This insures the message LED remains flashing until all VM messages have been retrieved, at which time the VM machine should cancel the MW LED by dialing **6 4** + station number. With Dial **6 4** enabled, MW indications set on a station from Voice Mail ports will not automatically be cancelled by the DK system when the station calls Voice Mail to retrieve messages. If "Automatic" is selected, the flashing message waiting LED is canceled any time a station calls the VM machine and the VM machine answers. The dial **6 4** option is available with **Release 2** and above.

NOTE:

*Message Waiting cancel via "Dial **6 4** + station number" only applies to VM ports that have LEDs 16 and 17 set "ON" in **Program 31**.*

- **Ringing Modes, LED 03**—Two choices are available for ringing modes invoked by the Night Transfer button. They are DAY, DAY 2, NIGHT (3 modes) or DAY, NIGHT (2 modes). The 3-mode selection is useful for alternate answering positions. These modes are switched via the **NT1/NT2** buttons (**Programs 29** and **39**) which control CO line ring assignments (**Programs 78** and **81 ~ 89**).
- **Call Forward Override From DDSS/DSS Console, LED 02**—If a station has activated call forwarding, all calls to that station will be forwarded to another number except for calls from the DDSS or DSS console position. A choice exists of whether to call forward from the console itself or from the digital or electronic telephone assigned to it. If the console calls (using the DSS console station buttons) are forwarded, the attendant telephone will not be forwarded, and vice versa. This allows the console operator flexibility in reaching a station user.
- **Tone First/Voice First-DDSS/DSS Console, LED 01**—Intercom calls from the

DDSS or DSS console can operate differently from calls by their attendant telephones as far as Tone First/Voice First (see **Program 10-1**).

Program 10-3—(LED 01 ~ 04, Release 3): Turn on LED 01 ~ 04 to identify which PEKU ports should be connected to external amplifiers. External Amplified Conference is provided by customer-supplied two-way amplifiers connected to system PEKU ports to provide amplification of "two-CO" line calls. Up to four amplifiers can be connected (2 PEKU ports for each amplifier) to amplify up to four "two-CO" line calls simultaneously. The amplifier is switched into the call automatically when a two-CO line call is established, amplifiers are switched into calls starting from the lowest PEKU ports to the highest (see record sheet). Skipping PEKU ports is allowed. Example: The first amplifier can be connected to PEKU ports 17 and 18, skipping ports 09 and 10. In this case LED 02 should be ON and LED 01 should be OFF. Caution: The DK system allows up to eight simultaneous two-CO line conference connections, the amplifiers are switched in automatically starting with the first two-CO line call, calls made after the last amplifier is used will not be amplified. (See **Program 10-1**, LED 19 and 20; **Program 10-2**, LED 18 and 19; and **Program 15-5** for more information regarding two-CO line conference.)

NOTE:

The external amplifiers will also be automatically switched into two-CO line DISA and TIE line calls.

Program 12—System Assignments-Basic Timing:

- **Pause Timing, Code 3**—Pauses may be programmed in speed dial numbers by the station users. The length of these short pauses can be set system wide for either 1.5 or 3 seconds. The long pause (a different user selection) is 10 seconds. This pause timing also applies to pauses inserted while dialing via Data Interface Units (PDIUs).
- **Flash Timing, Code 4**—When on a CO

line, a station user can press the Message Waiting/Flash button and the CO line will open (flash) for a period of either 2 seconds, 0.2 seconds or 0.5 seconds depending on this assignment. A flash can also be activated by dial code **CONF/TRNS45**. In general, this choice reflects whether to disconnect and regain dial tone (2 seconds), or to use PBX or CENTREX features which require a flash signal (0.5 seconds). This flash timing also applies to flashes inserted when dialing via Data Interface Units (DIUs).

NOTE:

The 0.2 seconds option is not normally used in the United States.

- **Pause After Flash, Code 5**—Some Central Offices or CENTREX facilities require a period of time after a flash signal before they can accept dialing signals. A selection of pause timing is available to automatically delay any dialing signals after flash. This timing applies to speed dial calls (with flash signals between the telephone number digits) as well as manual dialing.
- **CRCU Seize Time, Code 9**—One channel of the CRCU DTMF receiver/decoder is seized when it is needed for the decoding process, such as with a standard telephone with DTMF dialpad. When placing outgoing calls with DTMF standard telephones, the talk path to the outside party is not “cut-through” until the CRCU circuit is released. The release time of the CRCU channel can be programmed for a time between 1 and 9 seconds (initialized timing is 4 seconds); this is the time it takes to release the CRCU circuit after the last digit is dialed. The choice of timing is a trade-off between CO line time to connect and user speed. If the time is too long, the outside called party may answer before the voice path is “cut-through,” and the caller will not be heard. If the time is too short, a user inputting DTMF tones could be cut off prematurely from using other features, such as speed dial.

NOTE:

If no digits are dialed after accessing an outside line, the CRCU remains seized for 15 seconds and then drops; however, the CO line remains connected.

Program 13—Defining the Message Center:

Each digital and electronic telephone can receive a maximum of four message waiting indications. One of these four is reserved for the designated Message Center. Typically, the telephone (digital or electronic) accompanying a DDSS or DSS console will be the Message Center. However, if incoming traffic to a DDSS or DSS console attendant is heavy, another station may be assigned to be the Message Center.

Program 15—Assigning DP/DTMF, Tenant Service to Individual CO Lines:

- **Automatic Release (AR) on Voice Mail Calls, Code 0 (Release 3)**—If the Central Office sends the AR signal after a CO line call hangs up before the VM/auto attendant transfers a call, “D” tone will be sent to the voice mail port, releasing and clearing that port for another call. If the outside caller hangs up after the VM/auto attendant hook flashes (to transfer the call), “D” tone will not be sent to release the call.
- **CO Outgoing Signal, Code 1**—Each CO line can be independently assigned to have either Dial Pulse or DTMF signaling.
- **CO Dial Pulse Rate, Code 2**—If a CO line is assigned Dial Pulse signaling, the rate can be either 20 or 10 pulses per second. Some Central Offices do not reliably accept 20 pulses per second.
- **Automatic Release (AR), Code 3**—Some Central Offices will provide an AR signal when the far-end calling party hangs up. If the system CO line is on-hold when this signal occurs, it will be automatically disconnected if this option is activated. Two-CO line DISA calls always release when AR is sent. DISA release via AR is not related to this program (**Release 2** and above).

IMPORTANT NOTE:

This option can not always be utilized because some Central Offices may send unreliable AR signaling or no AR signaling.

- **AR Time, Code 4**—AR signaling timing is different depending on the Central Office equipment. An assignment choice exists between Crossbar or ESS Central Offices.
- **Tandem CO Line Connection, Code 5**—Once a two CO line conference call is made by an electronic or digital telephone user, that user may drop out of the conference and optionally leave the two CO lines connected. The choice exists for each CO line that may have this capability. This option must be enabled to allow CO lines to be used for outgoing DISA calls (for **Release 2** and above).
- **CO Line Tenant Assignment, Code 6**—A system may be effectively split into two parts in order to serve two tenants using the same system in a shared arrangement. This assignment dedicates CO lines to one tenant or the other. If tenant service is not desired, leave the assignments all for tenant 1, as initialized.

NOTE:

*The **NT1** and **NT2** buttons control CO ring modes for tenant 1 and tenant 2, respectively.*

- **Forced Account Code (verified or non-verified), Code 7**—If the Forced Account Code feature is used (see **Program 30**) a station user is required to enter an account code before a CO line call can be completed. A choice exists for each CO line.
- **Operation After CO Line Flash, Code 8**—If a standard telephone user is on an existing CO line call and performs a hook-switch flash, a DTMF receiver channel may or may not be connected, depending on this assignment. If the CO is a rotary dial only type, the CRCU must be seized after flash when dialing from DTMF standard telephones. The CRCU will decode the dialed tones and send dial pulses to the CO line.

Program 16—Assigning CO Line Groups: CO lines may be accessed with a dialing code instead of with a CO line button. Up to eight groups may be accessed by dialing 81 ~ 89; this is useful for WATS lines or other facilities, and is heavily used in Least Cost Routing and Pooled Line Key Assignments. A general group for outside calling is available with a dial 9 access code, which is the initialized state for all CO lines. **Program 16** is used to assign each CO line to one of these groups. Do not attempt to assign a CO line to more than one group. A CO line need not be assigned to a group. If CO lines are not used, they should be taken out of all groups, including the Dial 9 group. ABR will not function if unconnected lines are assigned to a line group.

Program 17—TIE Line Page/Handsfree Answerback: The external page and handsfree answerback features can be optionally activated for each TIE line. For reference purposes, on the System Record Sheet, enter the slot number where each PEMU is installed. This program does not assign TIE lines to slot numbers; the CO/TIE line number (01 ~ 36) is needed for input to this program, but is actually determined by the PEMU's slot position in the KSU. **Program 03** contains the CO/TIE line number needed for input.

Program 19—Alternate Background Music (BGM) Source Slot Assignment (Release 3): An alternate BGM source sent to electronic telephones, digital telephones, and the external page output can be connected to a PEKU or PESU PCB in any universal slot; this Program identifies that slot. Identify in **Program 10-2**, LED 09 or 10, whether a PEKU or PESU will be connected to the alternate source (the BGM source can only be connected to circuit 3 of a PEKU or circuit 8 of a PESU PCB). When the alternate BGM source is programmed and connected to the system, the music source connected to the PCTU PCB will continue to be sent to CO lines or stations that are on-hold.

NOTE:

The alternate BGM source cannot be

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connected to a PSTU or PDKU station circuit.

Program 20—Data Interface Unit (DIU: PDIU-DI and PDIU-DS) Configuration (Release 3):

This program identifies the PDKU station ports connected to DIUs and the type of DIU connected.

NOTE:

DIUs can be connected to ports associated with PDKU circuits 1 ~ 7.

- **LED 01**— Light this LED if there is a PDIU-DI or PDIU-DS connected to the PDKU port. Each PDIU-DI (integrated data interface unit) uses the same PDKU port as the station it is connected to, and each PDIU-DS (stand-alone data interface unit) requires a separate PDKU port.
- **LED 02**— If the DIU must respond to AT commands and return result codes, this LED should be lit. DIU "AT" commands and "result" codes are listed in the *Data Interface User Guide* in the Operating Procedures section of this manual. If LED 02 is not lit, the DIU will only respond to AT dialing commands (ATDT, ATD, and ATDD) and will not return result codes. If the DIU is connected to a terminal or a personal computer with communication software, LED 02 should be ON to enable "AT" commands with "result" codes. If the DIU is connected to a modem, LED 02 should be ON. If the DIU is connected to a printer, LED 02 should be ON.
- **LED 03**—If a PDIU-DS is connected to the PDKU port, identify whether the PDIU-DS is connected to a modem (LED ON) or not connected to a modem (LED OFF). If not connected to a modem (LED OFF), the connected device can be a DCE or DTE. This option is not necessary for PDIU-DIs, because they are not normally connected to modems.
- **LED 04**—Light this LED if a PDIU-DS is connected to the PDKU port; leave OFF, if a PDIU-DI is connected. If a PDIU-DI is connected, the digital telephone supporting it may require a **DATA**, **DRLS**, and/or **MODEM** buttons assigned to it in **Program 39**.
- **LED 05**—If the system CO lines are connected to a PBX, CENTREX, or a Central Office that is slow to return dial tone after

seizure, light this LED to insert a pause before and after the PBX or CENTREX access code is dialed by the DIU also; light LED 05 to automatically insert a pause before network telephone numbers are auto-dialed by DIUs.

NOTE:

*The pause length is set in **Program 12-3**, and CO lines behind PBX/CENTREX are assigned in **Programs 42-0** and **42-1 ~ 8**.*

- **LEDs 17 ~ 20**—Data security groups can be set to block data calls between DIUs. DIUs can only make data calls to DIUs in the same security group. LEDs 17 ~ 20 assign the DIU to the appropriate security group: light LED 17 for group 1; LED 18, for group 3; LED 19, for group 2; and LED 20, for group 4.

Typical LED settings for **Program 20**.

- **PDIU-DI Connected to a Terminal or Personal Computer**—LEDs 01, 02, and 17 ON; all other LEDs OFF.
- **PDIU-DS Connected to a Printer**—LEDs 01, 02, 04, and 17 ON; all other LEDs OFF.
- **PDIU-DS Connected to a Modem**—LEDs 01, 02, 03, 04, and 17 ON; all other LEDs OFF.

Program 21—Modem Pool Port Assignments

(Release 3): With this program, identify modems connected to PSTU or PESU standard telephone ports (line side of modem) and PDKU/PDIU-DS ports (RS-232 side of modem). Each selection pair assigns the modem to the system modem pool. With data security groups (**Program 20**, LED 17 ~ 20) and the call blocking feature (**Program 31**, LED 04), modem access can be denied or allowed to data users.

NOTES:

1. *When modems are connected to PSTU ports, the executive/privacy override blocking feature (**Program 31**, LED 18) should be enabled for the modem PSTU ports.*

2. Digital telephones with PDIU-DIs that must access modems from a pool require a **MODEM** button assigned in **Program 39**.
3. PDKU/PDIU-DS ports that are connected to modems in the modem pool should be set with LEDs 01, 02, 03, and 04 "ON" in **Program 20**.
4. If a modem connected to PDIU-DS is connected to a telephone network CO line, instead of a PSTU or PESU station port, **Program 21** should not be used.
5. Use **Program 22** to assign modem/PDIU-DS station a hunt sequence.

NOTE:

DIUs can be connected to ports associated with PDKU circuits 1 ~ 7.

Program 22—Data Interface Unit (DIU) Station

Hunting: If a DIU station (printer, modem, etc.) is busy, data station hunting allows the data call to that station to hunt to an alternate DIU station assigned in this program. If the hunted DIU station is busy, the system will ring the next "hunt-to" station, and so on. If all DIU stations in the "hunt-to" sequence are busy, then the data caller will receive a busy tone. It is recommended that all PDIU-DS/PDKU station ports grouped in a modem pooling or printer pooling/server configuration be placed into a hunt-sequence arrangement with **Program 22**. **Program 22** applies to PDIU-DS and PDIU-DI data stations.

NOTE:

*When a PDIU-DS is connected to a modem(s) assigned to the system modem pool in **Program 21**, modem hunting is automatic when the user presses the DATA button to transfer a CO line call to a modem; however, if the user dials the modem's PDIU-DS's station number, modem hunting will follow the hunt sequence specified in **Program 22**.*

Program 28—DSS Console/Attendant Electronic Telephone and DDSS Console/Attendant Digital Telephone Assignments: Up to four DDSS consoles, or four DSS consoles, or any combination of the two types of consoles up to four may be installed. A DDSS console must be connected to circuit 8 of a PDKU, and a DSS console

must be connected to circuits 7 and 8 of a PEKU. The telephone connected to circuit 1 of the PCB supporting a console is designated as an Attendant telephone. Consoles and telephones are numbered 1 ~ 4 as they are installed from the lowest to highest slot number. For example, if a PEKU in slot 01 had a DSS console connected to circuits 7 and 8, then the DSS console would be DSS console #1 and the electronic telephone would be Attendant telephone #1. Because more than one console can be assigned to an attendant telephone, the detailed arrangement must be programmed. Initialized data assigns one console to one attendant telephone, both connected to the same PDKU or PEKU PCB.

NOTES:

1. DDSS consoles and digital telephones are only available with **Release 3**.
2. DSS console #4 is not available with the PCTUS PCB.

Program 29—DSS Console Button Assignments:

The buttons on the DDSS and DSS consoles may be flexibly assigned as **DSS** buttons, CO line buttons, or speed dial buttons. The standardly equipped Night Transfer and All Call buttons may be changed to one of these three types, but not vice versa. Station speed dial buttons assigned to a DDSS or DSS console share the associated Attendant digital or electronic telephone's speed dial memory. The personal speed dial numbers of the DSS/DDSS circuit port(s) are not available. Initialized data assigns the 60 buttons to be stations 200 ~ 257, All Call and Night Transfer. Each of the four possible consoles can be independently programmed.

Program 30—Station Class of Service:

- **Privacy Override, LED 19—Privacy Override** allows a station to enter into and overhear an existing CO line conversation by pressing a common CO line button. A maximum of two stations may override an existing "station to CO line" conversation. A warning tone may be set optionally—see **Program 10-2**. The choice is for which station is allowed to override calls with

Privacy Override. Privacy Override of DISA two-CO line calls is not allowed.

NOTES:

1. To configure the DK system to operate as nonprivate, allow privacy override from all stations.
 2. Privacy override can be blocked by a station via the PRIVACY button (Program 39) or by the executive/privacy blocking option (Program 31, LED 18).
 3. See Table 2-C at the end of this chapter.
- **Executive Override, LED 18**—Executive Override allows a station to break into and overhear an existing station conversation by dialing the digit 3 after the busy station number. A warning tone may be set optionally—see Program 10-2. The option is for which calling station can use Executive Override.

NOTE:

Executive override can be blocked by stations that have executive/privacy blocking enabled in Program 31, LED 18; the PRIVACY button does not block executive override. See Table 2-C at the end of this chapter.

- **DND Override, LED 17**—An electronic or digital telephone can have a button programmed for Do Not Disturb (DND). When called, a station with DND activated will return very fast busy tone (four tones per second). If the caller presses the additional digit 2 on the dial-pad, a DND Override tone will be heard on the called station's speaker. The assignment is for which calling station can use DND Override.
- **Toll Restriction Traveling Class Code Change, LED 16 (Release 3)**—If this LED is lit for a port, the station occupying it can change the 4-digit Toll Restriction Traveling Class of Service Codes established in Program 44B. Stations selected for this feature must follow the dialing sequences below to change the codes:

Class 1: INT + 622 + the 4-digit code + #
or REDIAL

Class 2: INT + 623 + the 4-digit code + #
or REDIAL

Class 3: INT + 624 + the 4-digit code + #
or REDIAL

Class 4: INT + 625 + the 4-digit code + #
or REDIAL

- **Verified Account Code Change, LED 15 (Release 3)**—If selected for this feature, a station can change the Verified Account Codes established in Program 69. Selected stations must dial the the following sequence to change the codes:

INT + 659 + 000 ~ 299 + Verified
Account Code + # or REDIAL

- **Verified Account Code, LED 14 (Release 3)**—If this feature is selected, all account codes (forced or voluntary) dialed by the station will be verified per account codes set in Program 69. If the station user fails to dial one of these specific verified account codes, the call cannot be executed (forced), or the account code will not be validated for the SMDR call report (voluntary).
- **Handset Volume Level, LEDs 12 and 13 (Release 3)**—This program sets for each digital telephone the handset's initial off-hook volume level. This level can be changed with the digital telephone's volume control button while the handset is off-hook, but it will return to the default level set in this program after the handset is placed on-hook.
- The volume level range for digital telephone handsets is 1 ~ 9, with 1 as the lowest. Anytime a handset is off-hook, its volume level can be adjusted anywhere between 1 ~ 9. The level setting established in this program, however, can only be from 2 ~ 5. This level is set with LEDs 12 and 13:

For level 5: Both LEDs ON (High)

For level 4: LED 12, OFF; LED 13, ON

For level 3: LED 12, ON; LED 13, OFF
(Initialized setting)

For level 2: Both LEDs OFF (Low)

NOTE:

Program 92-5 (LEDs 01 and 05) does not affect receiver handset volume levels.

- **Dial Pulse (DTMF Off), LED 11**—If any device connected to a PSTU or PESU port does not require the CRCU for DTMF decoding, it should be programmed for dial pulse. When that device goes off-hook, the CRCU will not be accessed, thereby reducing potential traffic to the CRCU.
- **Change DISA Security Code, LED 10**—This allows a selected station to change the DISA security code by dialing **INT + 658** (Release 2 and above).
- **Change TR Override Code, LED 09**—Two Toll Restriction Override codes are available in the system. When one of these codes is dialed from any station, all Toll Restriction is bypassed. These codes can be changed only by stations assigned in this program by dialing **INT + 654** or **INT + 655** for codes 1 and 2, respectively.
- **Forced Account Code, LED 08**—If this feature is selected, a station user (using a CO line with Forced Account Code “required” in Program 15-7) is required to enter an account code before a CO line call can be completed. If forced account codes should be verified, turn on LED 14 in **Program 30**. The digit length of forced account codes is determined in **Program 60-4**.
- **OCA Automatic, LED 07**—A busy electronic or digital telephone can receive a second voice communication on intercom via handsfree answerback if the Off-hook Call Announce (OCA) feature is installed. If a *calling* station does not have the automatic function, the user must dial an extra digit of **2** after hearing busy tone in order to gain access to OCA. Initialized data makes all stations automatic for OCA.
- **ABR Access, LED 06**—The Automatic Busy Redial (ABR) feature can be enabled or denied for each station. The system will select the last CO line in the originating line group each time ABR is initiated (also see **Program 10-1**).

NOTE:

*ABR is restricted via **Program 41** in Release 1 software; ABR overrides **Program 41** in Release 2 and above software. **Program 41** is normally used with LCR; therefore, ABR may not function with least cost routing (LCR) in Release 1, but will always function with LCR with Release 2 and above software.*

- **Speed Dial, LED 05**—A station may be denied the use of speed dial (station and system) with this program. Initialized data sets speed dial allowed to every port.
- **Microphone (MIC) On at Start of Call, LED 03**—The microphone (and MIC LED) can be selected to be on or off at the start of a call if the Push On/Push Off mode (see **MIC** Button Lock) is chosen.

NOTE:

*When receiving intercom calls, the flexible **MCO** button (**Program 39**) can control the microphone to prevent room monitoring and handsfree answerback.*

- **MIC Button Lock, LED 02**—An electronic or digital telephone microphone can be turned on or off by using the **MIC** button. Two modes of operation are available. A momentary operation requires that the **MIC** button be continuously pressed to disable the microphone. A Button Lock operation allows an alternate action Push On/Push Off of the **MIC** button. LED 02 should be ON if microphone lock operation is desired.
- **Speakerphone Enabled, LED 01**—Any electronic or digital full speakerphone operation can be disabled by assignment with this program. If disabled, a speakerphone will act as a handsfree electronic or digital telephone. Initialized data enables all speakerphones.

Program 31—Station Class of Service: This program sets most VM port assignments. Each PESU/PSTU port connected to INTOUCH

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should have the following LEDs turned ON: 04, 05, 09, 15, 16, 17, 18, 19, 20. These LED's should be set ON for VM ports only, not for telephone ports.

NOTE:

LED 04 may be ON or OFF, depending on VM/AA device operation. See the LED 04 write up that follows.

- **INTOUCH (B + Station Number), LED 20**—This feature is associated with an INTOUCH Digital Voice Messaging System connected to a PSTU or PESU port. DTMF “B” tone followed by the station number is sent to INTOUCH in situations in which INTOUCH would not normally know the location from which a call was coming, such as hold recall or blind ring transfer recall. This allows INTOUCH to respond more intelligently with appropriate voice prompts. This LED should be lit for PSTU or PESU ports connected to VM devices only, not for station ports connected to telephones.

NOTES:

1. *INTOUCH (B No Station) must be enabled to allow this function.*
2. *This is available only with INTOUCH software Release B.06 and above.*

- **INTOUCH (B No Station), LED 19**—DTMF “B” tone is sent to INTOUCH to signify a recall situation where INTOUCH already knows the recalling station number. Again, this allows INTOUCH to respond more intelligently with appropriate voice prompts. This LED should be lit for PSTU or PESU ports connected to VM devices only, not for station ports connected to telephones.

NOTE:

This is available only with INTOUCH software Release B.06 and above.

- **Executive and Privacy Override Blocking (Modem), LED 18**—This feature de-

nies any other station to break in with Privacy or Executive Override to the called station's connection. It should be used for PSTU and PESU ports connected to a modem or Voice Mail/Auto Attendant in order to ensure data and voice security at that port. This feature may also be used to deny override of any station.

NOTE:

1. *The **PRIVACY/RLS** button may be used to disable privacy blocking on a call-by-call basis; this button cannot disable executive override blocking.*
2. *If a modem is assigned to the system modem pool in **Program 21**, use this option to provide data security (LED 18 ON for modem PSTU ports assigned in **Program 21**).*
3. *If using the system modem pool for data calls that must be switched between voice and data, LED 18 should be OFF for the modem PSTU ports assigned in **Program 21**.*

- **End/End Signal RCV (VM), LED 17**—Activation of this option allows End to End Signaling of DTMF tones through the system. It is required on all Voice Mail-PSTU/PESU ports in order to have proper signaling communication.
- **Receive VM ID Code, LED 16**—When a station is call forwarded to a voice mail system, certain Identification (ID) DTMF tones will automatically be sent to direct the call to a specific mailbox (VM ID Code 656). The automatic ID is also sent to the voice mail device when electronic or digital telephone users retrieve messages via the Intercom and Message Waiting buttons (VM ID Code 657). The voice mail port must be programmed for this feature to allow the receiving of DTMF digits.
- **INTOUCH Integration (A/D), LED 15**—This option will cause an answer tone (DTMF “A” tone) to be automatically sent to INTOUCH when a station answers, and a disconnect tone (DTMF “D” tone) when a station disconnects. This allows INTOUCH to respond quickly rather than waiting a

long time in time-out situations.

- **Group Page 1 ~ 4, LEDs 11 ~ 14**—Intercom paging can be directed to digital and/or electronic telephone speakers in a group arrangement. Up to four groups are possible. This program assigns each electronic and digital telephone to the groups. An electronic or digital telephone can be assigned to as many groups as desired.
- **All Call Page Allowed-Electronic and Digital Telephones, LED 10**—Any station may be allowed to *receive* an All Call page. This does not alter the station's ability to initiate an All Call page. Initialized data allows every port to receive an All Call page.
- **VM (No Conference), LED 09**—If activated, a station is prohibited from having any conference calls. It should be used for voice mail ports in order to prevent undesirable conference calls.
- **VM Group 1 ~ 4, LED 05 ~ 08**—The system allows up to four voice mail station port groups to be configured for support of up to four voice mail or auto attendant devices. One group is intended for each different machine. All PSTU and PESU ports connected to a particular VM machine should be assigned to the same VM group. The purpose of the VM grouping is to allow efficient use of the message waiting set and cancel operations *from* the VM machine. Since each digital and electronic telephone can only have a maximum of four messages waiting, the voice mail device should set MW only once, regardless of how many messages there are.
- **Voice Mail to Voice Mail Call Blocking, LED 04 (Release 3)**—This prevents voice mail/auto attendant ports from call forwarding to other voice mail ports during screened or supervised voice mail transfers. If auto attendant calls are screened or supervised, this LED should be ON for all voice mail/auto attendant ports; if voice mail/auto attendant calls are blind transferred, this LED should be OFF for all voice mail/auto attendant ports.

- **OCA Enabled (Receive), LED 03**—Any digital or electronic telephone equipped with Off-hook Call Announce (OCA) should be assigned this option. If assigned, the station will be allowed to *receive* OCA. This program does not affect the station's ability to originate OCA.
- **Handsfree No Warning, LED 02**—Normally, a 1-second warning tone is sent to a handsfree digital or electronic telephone to inform the user that someone is calling and that he can be heard. If the warning tone is not desired at the *called* digital or electronic telephone, this assignment can disable it. This will also prevent ringing the digital or electronic telephone as a ring-first situation, allowing silent room monitoring of the area surrounding the telephone. Initialized data activates the warning tone for all ports.
- **Handsfree Disabled, LED 01**—It is possible to disable the intercom handsfree function on any digital or electronic telephone.

Program 32—Automatic Preference: Automatic Preference for electronic or digital telephones (see note 2) via handset off-hook or **SPKR** button is the automatic connection to CO lines or intercom under various conditions. With Ringing Line Preference, a digital or electronic telephone going off-hook (or pressing the **SPKR** button) may be automatically connected to the lowest CO line ringing in without having to press a CO line button or dial an access code. If no CO lines are ringing and an electronic or digital telephone goes off-hook, the station can be automatically connected to intercom or to a CO line. The CO line connected can be the lowest numbered CO line available on the telephone or the highest idle CO line from a selected group (1 ~ 8).

NOTES:

1. *The programming digital or electronic telephone, port 05, is set to auto select Intercom any time system power is turned OFF then ON.*
2. *This program does not apply to standard telephones. To allow system features to*

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be accessed, standard telephones always receive system intercom dial tone when originating calls.

Program 33—Station Hunting (Voice Calls Only): If a station is busy, Station Hunting allows the ringing of an alternate station as defined by the assignments in this program. If the hunted to station is busy, the system will try to ring the next hunt to station, and so on. If a hunt to station is in call forward, the call forward overrides the hunt. A CO Line will hunt from a station only if it has been assigned to ring at that station exclusively (see **Programs 81 ~ 89**).

Program 34—Hold Recall Timing: Each station can have a different time (from 011 to 160 seconds) from placing a call on hold or park to the point of hold recall. Each setting is independent of any other station setting.

Program 35—Station Class of Service:

- **LCD Individual Message, LED 05**—This option allows LCD digital and electronic telephones to store up to ten personal messages and offers the option of entering alphanumeric memos for each of the LCD's station speed dial numbers. A maximum of 16 or 6 LCD telephones can have LCD personal memory depending on the control PCB used: 16/PCTU, 6/PCTUS. This program defines which ports can have this feature. Initialized data assigns the lowest ports to have this ability. The software will only accept a maximum of 16/6 port assignments—a low port must be disabled before adding a port above the initialized ports.
- **Message Waiting (RCV), LED 04**—If the message waiting indication is not desired on an electronic or digital telephone, this program can be used to deny it. This does not affect that station's ability to send a message waiting indication to another station.
- **LCD Type/32/12, LED 02**—Digital and 6500-series LCD electronic telephones have a 32-character display. Therefore,

assignments should be left in the initialized state of 32 characters. LED 02 must be ON to receive voice mail message waiting indication.

- **LCD Display, LED 01**—This option should be used (LED 01 ON) for all stations (even non-LCD) unless it is desired to disable the station's LCD and message waiting LED function.

Program 36—Fixed Call Forward: Fixed Call Forwarding is different from other station Call Forwarding options. It is fixed in terms of the destination station number which is assigned in this program. The station user cannot change this destination as is possible with other station Call Forwarding options. This feature is valuable for forwarding to voice mail devices or to an attendant. If Fixed Call Forwarding is set on a station, the station will not ring and all calls will forward.

Program 37—Ring Transfer (Camp-on) Recall Time: If a busy or ringing station does not answer a call sent to it via call transfer, the station originating the transfer will be recalled after a certain amount of time. This time is set independently for each originating station by this program (011 ~ 999 seconds). Initialized data sets all stations for a 32-second recall time. Ring Transfer must first be enabled for the system by **Program 10-1**, LED 07 on.

Program 38—Digital and Electronic Telephone Buttonstrip Type: Three digital telephone and four standard electronic telephone button arrangements are provided (see System Record Sheet). It is best to start with one of these three or four, and then move on to **Program 39** where individual buttons may be programmed. Initialized data treats all ports as 20-button types with 17 CO lines, Intercom, DND and MW/FL for electronic telephones or flash for digital telephones.

Program 39—Flexible Buttonstrip Assignment: **Program 38** should be run first. Forty different types of button assignments are possible (see System Record Sheet for details). Any of

the flexible buttons (10 or 20) can be programmed.

Program 40—Station CO Line Access: Any station can have access to as many CO lines as desired. Any station denied access (either to make a call *or* to answer a call) to a CO line cannot seize that line by dialing an access or pickup code or by using a CO line button. This also denies access via Least Cost Routing. Use this program to divide CO lines for Tenant Service. If only *outgoing* access is to be prevented, use **Program 41**. Use **Program 40** to deny CO line call pick-up.

Program 41—Station Outgoing Call Restriction: Each station can be restricted from outgoing access to each CO line. If so restricted, that station can still answer a ringing CO line or pick up a call on hold. All Call Pickup functions operate normally. This *does not* deny access via LCR. **Program 41** denies ABR in **Release 1** software; ABR overrides **Program 41** in **Release 2** and above software.

Program 42—CO Line To PBX/CENTREX Connection & PBX/CENTREX Access Codes: The system recognizes PBX/CENTREX access codes via **Programs 42-1 ~ 8**. **Program 42-0** informs the software which CO lines are connected to a PBX or to CENTREX. This combination allows Toll Restriction and speed dialing to function properly. This program must be utilized to allow (after flash) PBX/CENTREX features to operate on incoming calls.

Program 43—0+ Credit Card Dialing Option (Release 3): Selected stations can bypass their normal toll restriction assignment by seizing a CO line and then dialing a 0. Both the station and the CO line must be enabled for this feature with this program. After seizing the CO line, the station user is required to dial a specific number of digits, which includes the leading 0. This digit-length requirement forces the user to dial a telephone number or a telephone number plus a credit card number; as a result, these calls are billed to the credit card, and operator-placed calls are not billed to the CO

line. The digit length, 1 ~ 30 numbers, is set in **Program 60-7**. This length is determined by the system's call routing method.

- If calls are routed via least cost routing (LCR), the digit length should usually be set at 12, the length, including 0, of the telephone numbers dialed on 0+ credit card calls. Do not add the amount of digits in the credit card (usually 14), although these numbers will be dialed by the user after system LCR seizes the line and the system dials the telephone number (see Note).
- When not dialing via LCR, the digit length should usually be 26, the sum of the digits in the telephone (12) and credit card (14) numbers.

IMPORTANT NOTE:

More digits than the length set in Program 60-7 are allowed to be dialed; there is no limit to the amount of digits that can be dialed.

Program 44A—Emergency Bypass of Verified Account Code (Release 3): This program exempts numbers up to four digits, such as the emergency 911 number, from Verified Account Code dialing restrictions. As many as three of these special numbers can be programmed. When dialed, these numbers will be sent out the CO line immediately, bypassing any Verified Account Code dialing restrictions set in **Programs 69** and **30**, Key/LEDs 8 and 14. If CO lines are behind CENTREX or PBX, program the appropriate 1 or 2 digit CENTREX/PBX trunk access code in front of the emergency number. Example: If PBX trunk access code is 81, then program 8191 in **Program 44A-51** to allow 911 to bypass forced account code dial requirements.

NOTES:

1. If CO lines are behind PBX or CENTREX, program the PBX/CENTREX outside trunk access code (See **Program 42-0** and **42-1** to assign CO lines and access codes for behind PBX/CENTREX operation).
2. If Verified Account Codes assigned in

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*Program 69 conflict (duplicate) with emergency or other type telephone numbers set in **Program 44A**, **Program 44A** has priority.*

3. *Toll Restriction and DISA parameters requirements are not affected by this program.*

Programs 45 ~ 48 Toll Restriction: All Toll Restriction program information is provided later in this chapter.

Programs 50 ~ 56—Least Cost Routing: All Least Cost Routing program information is provided later in this chapter.

Program 60—SMDR Output/Account Code Digit Length:

- **SMDR Output, Item 3**—System output to a Station Message Detail Recording (SMDR) device can include information for both incoming and outgoing calls, or only for outgoing calls. Local and long distance call data will be sent out.
- **Forced/Voluntary/Verified Account Code Digit Length, Item 4**—The account code entered at a station can vary in length from 4 ~ 15 digits. For Forced Account Code use, a call will not be completed unless the specified number of digits is entered by a station user. In the case of voluntary account codes, the account code will not be sent to the SMDR call record unless the specified number of digits are dialed. See **Program 69** for Verified Account Codes.
- **SMDR Printout Options, Item 5**—This option selectively deletes local call data and allows long distance/toll call data only to be sent out the SMDR port. The type of long distance/toll call data that prints out is selected by long distance prefix codes 0, 1, 00, or 1 or 0.
- **DISA Security Code, Item 6**—The optional security code (1 - 15 digits) is required for incoming DISA calls to access outgoing CO lines. If the DISA security code is not set in programming, DISA users can access outgoing CO lines without

dialing a security code. This code is not required for DISA/DISC internal calls to stations. The DISA security code can also be changed from stations enabled in **Program 30**. DISA access of outgoing CO calls is available with **Release 2** and above software only.

- **Credit Card Call Digit Length, Item 07 (Release 3)**—Station users bypassing toll restriction with the "0+" Credit Card Calling feature (**Program 43**) must dial a predetermined number of digits including the "0." This predetermined number is established with Item 7. This length can be 1 ~ 30 digits.

Program 69—Verified Account Codes (Release

3): Up to 300 Verified Account Codes may be added, deleted or changed with **Program 69**. Each Verified Account Code can be 1 ~ 15 digits long, but cannot exceed the length requirement set in **Program 60-4**. The following programs and options should be considered when establishing Verified Account Codes.

- **Account Code Digit Length—Program 60-4** sets the digit length that must be dialed for all account codes: Forced (verified/nonverified) and Voluntary (verified/nonverified).
- **Full and Partially Verified Account Codes**—Verified Account Codes can contain the same number of digits (full Verified Account Code) or less (partially Verified Account Code) than the length set in **Program 60-4**. If partially verified, the first part of the account code is verified and the remainder is not. For example, if Verified Account Code 2734 is set in **Program 69**, but the digit length is set to eight in **Program 60-4**, then the user must dial 2734 plus any other four digits to enter a partially Verified Account Code. There are many applications for partially Verified Account Codes. For instance, using the code in the example above, the numbers 2734 could be the user's dial restriction code and the remaining four digits could be a customer-client code, a sales order, etc.
- **Verified Account Code Toll Restriction Assignments (Release 3)**—A Toll

Restriction Class can be assigned with **Program 70** to each of the 300 Verified Account Codes .

- **Verified Account Code Dial Requirement (Release 3)**—Verified Account Code Dial Requirement is assigned on a station-by-station basis in **Program 30**, LED 14 ON. All Account Codes dialed (forced or voluntary) from stations assigned in this program will be verified.
- **Code Change**—Stations selected in **Program 30**, LED 15 ON, can change Verified Account Codes (VAC) by dialing the following:
INT + 659 + 000 ~ 299 + VAC + # or **Redial**
- **Verified Account Codes: Forced/Voluntary Program Options (Release 3)**—Any station can dial a Voluntary Account Code after accessing a CO line (**CONF 4 6**; or, with **Release 3**, dial **5 0** or press the **ACCOUNT** button). Forced Account Code requirements are assigned via station and CO line program options: stations are assigned in **Program 30**, LED 08 ON; and CO lines are assigned in **Program 15-7**. Stations must dial Verified Account Codes when assigned in **Program 30**, LED 14 ON.

Program 70—Verified Account Code Toll Restriction Assignments (Release 3): A Toll Restriction Class can be assigned with this program to each of the 300 Verified Account Codes assigned in **Program 69**. Therefore, when a Forced Verified Account Code is dialed at a station, the station temporarily assumes the toll restriction class assigned to the Verified Account Code. When **Program 70** is initialized, all Verified Account Codes are assigned as not toll restricted (data = 00). Verified Account Code Toll Restriction class assignments are not user programmable; so if the assignments are not known, it is recommended to assign a number (block) of Verified Account Codes to each type of toll restriction class. For example:

VACs 000 ~ 050 = no restriction
VACs 051 ~ 100 = total restriction
VACs 101 ~ 150 = Class 1
etc.

Program 77-1—Peripheral Options:

- **Door Lock Time, LED 20**—The Door Lock relay contact may be programmed to operate for either 3 or 6 seconds (applies to PIOUS, PIOUS, PEPUS, and HDCB door lock controls).
- **PEKU Port Number/HDCB, LEDs 16 ~ 19**—Door phone/lock existence is defined by this program. Door phone/lock controllers (HDCB) can *only* exist at ports 04, 12, 20 and 28, and can *only* be installed on the 5th circuit of a PEKU and/or PESU. After assignment of an HDCB, door phone numbers (151 ~ 159, 161 ~ 163) will effectively replace the station number assignment in **Program 04**. The door lock option is set via **Program 77-2**.

NOTE:

HDCB4, port 28, is not available with PCTUS.

- **IMDU Modem, LED 14**—Informs the software that an internal Remote Maintenance modem (IMDU) is installed. Its station number is 19 (unless the access code prefix has been changed with **Program 05**).
- **Night Ringing over External Page Zones, LEDs 10 ~ 13 (Release 3):** For each external paging zone, Tenant 1 or Tenant 2 CO lines can be selected with this program to night ring. For this feature to work, the appropriate CO lines must be programmed to night ring over external page in **Program 78**. Tenant assignments are made in **Program 15**.

NOTE:

The PIOUS option PCB must be installed to allow this option.

- **Door Phone Ring On External Page, LED 08**—If a door phone button is pressed, a ring tone can be enabled or disabled to external paging when the system is in night mode. Activation of a **NT1** button is required to activate this feature. The **NT2** does not apply to door phones.
- **Door Lock Relay/External Page Relay, LED 07**—A relay on the PIOUS, PIOUS or

PEPU can be assigned to operate with the Door Lock function *or* with External Page for mute control. The door lock button is assigned in **Program 39**; the door lock activation time is assigned in **Program 77-1**. This door lock function is not associated with the HDCB door lock; it is an addition to HDCB door locks.

- **NT Relay, LED 06**—A relay, located on the PIOU, PIOUS or PEPU, can be assigned to operate in one of two Night Transfer modes (see next item, MOH/NT Relay). In one mode, the relay will activate for 1 second, and then be idle for 3 seconds when a CO line rings (incoming), and the system is in the night mode. The intended application is to control an external ringing device at night. **Program 78** must have Ring Over External Page activated for this feature. In the second mode, the relay will operate continuously after Night Transfer (**NT1/NT2**) has been activated. One application is for control of an external answering machine.
- **MOH/NT Relay, LED 05**—A relay, located on the PIOU, PIOUS or PEPU, can be assigned to operate in one of two applications. A choice must be made between use for Night Transfer application (see NT Relay above) or Music-on-Hold (MOH). If used for MOH, the relay will activate when any CO line or station is placed on hold. The intended application is to control a tape player which is used as a Music-on-Hold source.

Program 77-2—Door Phone and Door Lock Busy Assignments:

- Each door phone controller (HDCB) can interface with up to three door phones. The system treats each HDCB as a station. Therefore, this is quite different from all other station arrangements using electronic telephones or standard telephone devices. The system does not automatically know how many door phones are connected to each HDCB, so it must be told. This program is used to enter that information so that a caller will receive fast busy tone if the

called door phone does not exist. Door phones 1A, 1B, 1C are numbered 151, 152, 153, respectively, and are connected to the HDCB at port 04. Door phones 2A, 2B, 2C are numbered 154, 155, 156, respectively, and are connected to the HDCB at port 12, etc.

- Each HDCB B-jack output can be configured as a door lock control. Door lock control buttons for HDCB door locks are assigned to electronic or digital telephones in **Program 39**. Door lock activation time is set in **Program 77-1**. A maximum of four HDCB door lock controls are available with a PCTU PCB; three are provided with a PCTUS PCB. Each HDCB requires one PEKU or PESU electronic telephone port. These door locks are not associated with, but are in addition to, the door lock provided by the PIOU, PIOUS, or PEPU PCBs. HDCB door lock control is available with **Release 2** and above software only.

Program 78—CO Line Special Ringing Assignments:

- **Ring Over External Page During Night Mode, Feature 1**—This program selects which CO lines will activate ringing over external paging facilities during the NT1 or NT2 modes. The NT Relay will also be activated if it is in the 1-second on/3-seconds off mode.
- **DISA/DISC CO Line Assignment, Feature 2**—This program assigns CO lines to be used with the Direct Inward Station Calling (DISC) and the Direct Inward System Access (DISA) features (**Release 2** and above). These CO lines may be set for DISC/DISA operation during the different system modes of DAY, DAY2 and NIGHT. A CO line will switch to normal ringing after ten seconds if the outside caller does not use the DISA/DISC feature. Normal function of these lines occurs for outgoing calls. DISA, which allows outgoing CO line access and internal station calling, is available with **Release 2** and above software only.

NOTE:

An optional security code for DISA outgoing CO calls is available via **Program 60-6**.

- **Ring IMDU Maintenance Modem, Feature 5**—IMDU Remote Maintenance modem can be accomplished with this program. Different alternatives are available for the system modes of DAY, DAY2, and NIGHT. If none of these are selected, the IMDU can still be reached on station 19 with the DISC/DISA feature or by a Ring Transfer from the DSS console attendant or any other station. IMDU station 19 must be enabled with **Program 77-1**.

Program 79—Door Phone Ringing:

- **Muted Ring to Busy Electronic and Digital Telephone, LED 20**—If all electronic and digital telephones are busy, and a door phone button is pressed, a muted ring tone can be sent to selected digital and electronic telephones, as defined with this program (only the lowest port in the appropriate ringing group will mute ring).
- **Door Phone Ring, LEDs 01 ~ 12**—When a door phone button is pressed, selected digital and/or electronic telephones will ring as assigned with this program. See **Program 77-2** description for an explanation of the door phone A, B, and C numbering scheme.

Program 80—Electronic and Digital Telephone

Ringing Tones: Distinctive system ringing sends a different ring tone for CO line ringing than that for intercom ringing. In addition, CO line ringing at electronic and digital telephones can be different from one phone to another. Two choices are available; one is 500 Hz modulated with 640 Hz (PERCEPTION ring tone), while the other is 600 Hz modulated with 800 Hz (STRATA ring tone). Two electronic or digital telephones that are close in proximity can then have distinctive CO line ringing, as chosen with this program.

Programs 81 ~ 89—CO Line Ringing Assignments: A wide variety of CO line ringing to

stations can be programmed into the system. Nine categories exist, which are DAY IMMEDIATE, DAY DELAY 1, DAY DELAY 2, DAY2 IMMEDIATE, DAY2 DELAY 1, DAY2 DELAY 2, NIGHT IMMEDIATE, NIGHT DELAY 1, and NIGHT DELAY 2. DAY, DAY2 and NIGHT refer to the three modes of the Night Transfer key. DELAY 1 is a 12-second delay of ringing signal to an electronic or digital telephone, and DELAY 2 is a 24-second delay of ringing. The delay functions are mainly used in CENTREX applications but can be used for other situations. If delayed ringing occurs, the station that initially rings will continue to ring with subsequent delayed ring stations.

Program 93—CO Line Identification: This provides alphanumeric names (to appear on LCD telephones) to CO lines such as WATS BAND 5, FX TONY, MR JONES, etc. The names may be up to 16 alphanumeric characters each, and display when the CO line is being used by an LCD station.

Program 97—Printing Program Data Through SMDR: Contents of each program can be sent to the SMDR port for a hard copy printout.

Setting Date, Time and Day: The current date, time, and day of the week can be set from the electronic or digital telephone connected to port 00 (usually station 200). These cannot be set from the programming electronic or digital telephone at port 05.

2 TOLL RESTRICTION

2.01 The following provides the programmer with an overview of the Toll Restriction feature and step-by-step instructions to fill in the Toll Restriction System Record Sheets.

3 TOLL RESTRICTION OVERVIEW

3.00 Toll Restriction Methods

3.01 Toll Restriction screens and selectively restricts outgoing calls using three different methods. Each type of restriction can be programmed

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for individual stations. Toll Restriction can also be enabled/disabled for each outgoing CO line in the system.

3.02 Simple Toll Restriction: The first method, Simple Toll Restriction, only involves the first digit dialed. The system can be programmed to reject outgoing calls beginning with 0 or 1 (see **Program 48**).

3.03 Three-digit Toll Restriction: The second method, Three-digit Toll Restriction, involves the system analyzing the area code dialed, and selectively allowing/disallowing outgoing calls following the criteria defined in Area Code Tables 1 ~ 4 (see **Program 46**, codes 2 ~ 4).

3.04 Six-digit Toll Restriction: The third method, Six-digit Toll Restriction, involves the system analyzing the area code and the office code, and selectively allowing/disallowing outgoing calls following the criteria defined in Area Code Tables 1 ~ 4 and Office Code Tables 1 ~ 4 (see **Program 46**, codes 2 ~ 4 and 6 ~ 8).

3.10 Toll Restriction Features

3.11 For description purposes, Toll Restriction is divided into several components, or sub-features. The sub-features operate independently of the restriction methods just described, although they may employ these methods.

3.12 Station Priority Classes 1 ~ 4: Four classes of Toll Restriction can be defined to assign different levels of priority to individual stations. Classes can be defined so each is progressively more restrictive by allowing or denying specific area or office codes, calls to long distance information, international calls, and operator assisted calls (**Programs 46-10 ~ 40**).

3.13 Office Code Exception Tables: Class 1 ~ 4 restrictions can be further modified by defining as many as eight exception tables to allow or deny access to specific office codes that fall within previously restricted area codes (**Program 47**).

Exception office code access is accomplished with the Six-digit Toll Restriction method described earlier.

3.14 Emergency, Information, and Toll-free Long Distance Toll Restriction Override: Toll restricted stations may be allowed to dial special codes such as **911** for emergency response, **1-411** or **411** for information, or 800 prefix toll-free calls (**Program 46**).

IMPORTANT!

Always be sure to provide access to emergency numbers such as 911.

3.15 Toll Restriction Override by System Speed Dial: System speed dial numbers can be programmed to override toll restriction (see Basic System Features, **Program 10-1**).

3.16 Toll Restriction/Traveling Class Override Codes: Up to two Toll Restriction Override Codes can be defined. When dialed at a toll restricted station, these codes enable the station user to override toll restrictions defined at the station (**Program 44B or 45-8 ~ 9**). Codes may be changed by stations chosen in programming (see Basic System Features, **Program 30**).

3.17 Special Common Carrier Authorization: Toll Restriction can be programmed to recognize Other Common Carrier (OCC) telephone numbers, directory numbers, authorization codes, and PBX access codes. The system starts inspecting numbers for toll restriction purposes after the recognizable code is dialed (**Program 45-3 ~ 6**).

4 COMPLETING THE TOLL RESTRICTION SYSTEM RECORD

4.01 The following instructions explain how to complete System Record Sheets used to program the Toll Restriction feature. They are arranged in the same order in which the tables appear in the *Toll Restriction System Record Sheets*. The following instructions are intended to give a concise general definition of the programming characteristics defined by each record sheet.

NOTES:

1. On each record sheet, mark an X in the space provided to indicate that a choice is selected. Unless otherwise specified, this indicates the key LED is lit. When appropriate, indicate digits to be entered using the station dialpad.
2. Initialized data and considerations are documented when applicable.

4.10 Program 44B—Toll Restriction/Traveling Class Override Codes (Release 3)

4.11 Each of the four toll restriction classes established in **Program 46** can be assigned a code with this program. If one of these codes is entered at a station, the station will assume the code's class for that call. When the call is complete, the station returns to its regular class assigned in **Program 48**. The traveling class code data is not sent out the SMDR port and will not print out on station call records.

NOTE:

Stations selected in **Program 30**, LED 16 ON, can add, change, or delete the codes set in **Program 44**. See **Program 30** for more information regarding station revision of override codes.

4.20 Program 45-1—Toll Restriction Dial Plan

4.21 A dial plan must be defined for the Toll Restriction software to recognize the typical dialing sequence of long distance/local calls made from the system's home area code, and identify area and office codes. The dialing plan defines several components of a telephone number for long distance calling:

- **Long Distance Prefix 1**—In most areas, a 1 must be the first digit dialed for long distance calling. In such areas, the area code is dialed right away. The dial plan defines whether the prefix 1 is required for a particular installation's long distance calling.
- **Area/Office Code Numbering Schemes**—In most places, the middle digit of an area code is 0 or 1, and the middle digit of an office code is 2 ~ 9. Toll Restriction examines the first

three-digit sequence dialed and determines whether it is an area code or an office code.

- If the middle digit is 0 or 1, then the sequence is an area code.
- If the middle digit does not equal 0 or 1, then the sequence is an office code, and the office code parameters of the selected dialing plan apply.

4.22 An exception to this rule exists. In some places, area and office codes are interchangeable. The middle digit is always 0 or 1 (see Code 3 selection). In such a case, the system only knows that three digits dialed are an area code if 1 is dialed before them. If 1 is not dialed first, the system knows the three digits are an office code. The dial plan defines the numbering scheme applicable to the installation site.

- **Office Codes:** Office Code elements are defined as follows:
 - N = 2 ~ 9
 - X = 0 ~ 9
 - NXX = interchangeable with area code; 2nd digit may be 0 or 1.
 - NNX = not interchangeable with area code; 2nd digit may not be 0 or 1.

4.23 Equal Access Codes and Special Common Carrier Authorization Codes may be entered as exceptions to the dialing plan in **Program 45-3 ~ 6**.

4.24 **Selections:** On the record sheet for **Program 45-1**, choose one of the following dial plans by marking an X in the space next to the code.

- **Plan 1** for dialing plan **AC+NNX/1+NNX** with **Release 1** and **2** or **AC+NXX/1+NNX** with **Release 3** should be selected if the installation is in a location where a user places a long distance call to a destination *outside* the area code without dialing 1 before dialing the area code. The user places a long distance call to a destination in the *same* area code by dialing 1 directly before the office code.
- When using this plan, the system recognizes the following:
 - The first three digits of a ten-digit number is an area code if the middle digit is 0 or 1.
 - With **Release 1** and **2**, the first three digits dialed immediately after a 1 in an

eight-digit string are a non-interchangeable office code (the middle digit *must* be 2 ~ 9); or, with **Release 3**, the first three digits dialed immediately after a 1 in an eight-digit string is an interchangeable office code (the middle digit may be 0 or 1).

- A seven-digit string starting with an office code is a local call.
- An 11-digit string is not recognized.
- **Plan 2** for dialing plan 1+AC+NNX/1+NNX with **Release 1** and **2** or 1+AC+NXX/1+NNX with **Release 3** should be selected if the installation is in a location where a user places a long distance call to a destination *outside* the area code by dialing a 1 before dialing the area code. The user places a long distance call to a destination in the *same* area code by dialing a 1 directly before the office code
- When using this plan, the system recognizes the following:
 - The first three digits following a 1 in an 11-digit number are an area code, if the middle digit is 0 or 1.
 - With **Release 1** and **2**, the first three digits dialed after a 1 in an eight-digit string are a non-interchangeable office code (the middle digit *must* be 2 ~ 9); or, with **Release 3**, the first three digits dialed immediately after a 1 in an eight-digit string is an interchangeable office code (the middle digit may be 0 or 1).
 - Digits 5 ~ 7 in an 11-digit string may be an interchangeable office code as well.
- **Plan 3** for dialing plan 1+AC+NXX/NNX should be selected if the installation is in a location where a user places a long distance call to a destination *outside* the area code by dialing a 1 before dialing the area code. The user places a long distance call to a destination in the *same* area code by simply dialing the number, without a 1 in front. The area and office codes may be interchangeable. The system differentiates between them whenever it sees the digit 1 dialed.
- When using this plan, the system recognizes the following:
 - If 1 is the first number dialed in an 11-digit string, the next three digits are an area code.

- A ten-digit string is not recognized.
- The first three digits in a seven-digit string are an office code. (There is no distinction between local call dialing and long distance dialing within the area code.)
- Digits 5 ~ 7 in an 11-digit string may be an interchangeable office code as well.
- **Plans 4** and **5** are not used in the United States.

NOTE:

Program 45-1 must be completed for the Least Cost Routing feature to function properly. See LCR Program 50-1.

4.30 Program 45-2—Toll Restriction Disable

4.31 Selected CO lines may be programmed to be exempt from any toll restrictions defined in this section. Mark the exempt CO lines with an X on the record sheet. Initialized data leaves all LEDs off, which causes all CO lines to be affected by toll restrictions defined.

NOTE:

Toll Restrictions disabled in this program override station toll restrictions defined in Program 48.

4.40 Program 45-3 ~ 6—Equal Access/Special Common Carrier Numbers and Authorization Code Digit Length

4.41 The purpose of this program is to notify the system of how many digits to ignore before it applies Toll Restriction. This enables the system to allow the use of Special Common Carrier authorization codes.

4.42 Special Common Carrier (SPCC) telephone numbers may be defined to notify the system to modify restrictions when the station user is dialing a long distance carrier. The user dials a code to access the carriers. Original restrictions re-activate after the carrier number is dialed.

4.43 There are two elements toll restriction software must verify for a user to successfully complete long distance calling:

- The first five digits of the number dialed to

access the long distance special common carrier (SPCC).

- The total number of digits belonging to the authorization code of the SPCC.

4.44 Items 3 and 5: Enter the first five digits of the SPCC telephone number in the spaces labeled *SPCC1 Telephone Number* (item 3) or *SPCC2 Telephone Number* (item 5) on the record sheet. The initialized state assigns "00000" to items 3 and 5.

4.45 Items 4 and 6: Enter each SPCC's authorization code digit length. The number of digits allowed (including the first five specified in items 3 and 5) ranges from 00 ~ 99. Initialized data assigns "00" to items 4 and 6. Enter two digits on the record sheet.

4.46 A restricted station is not able to place a toll call through a long distance carrier by dialing the SPCC1 or SPCC2 telephone number if the station is denied from that number in other toll restriction programs. Upon recognizing the first five digits dialed, Toll Restriction software is notified to allow the number of digits programmed in items 4 or 6 (00 ~ 99, including the first five dialed as SPCC1 or 2).

4.47 The system interprets data to be a seven-digit local call to an SPCC. Only five digits of the seven-digit number are entered; therefore, the last two digits are don't care digits. Any number dialed that has the same first five digits as the carrier, the system will assume the SPCC is being called.

IMPORTANT NOTE:

For items 4 and 6, do not enter more digits than necessary for the authorization code. If too many digits are allowed, toll restrictions may be ignored.

4.50 Program 45-8 ~ 9—Toll Restriction Override Code

4.51 Two different codes may be dialed by any station user to override station-specific restrictions.

4.52 Fill in the codes on the record sheet. They must be four digits each.

4.53 Selected stations in the system are able to alter the override code. These stations are defined by **Program 30**. To change the codes from selected stations:

Code 1: **INT** + **6 5 4** + code + **#**

Code 2: **INT** + **6 5 5** + code + **#**

4.60 Program 46-2 ~ 4—Toll Restriction Allowed/Denied Area Codes Assigned by Class

4.61 Four Toll Restriction classes can be defined for the system. Each class area code provides for a different combination of restrictions.

4.62 This program defines the area codes allowed or denied for each Toll Restriction class. Area code tables for classes 1 ~ 4 can each describe area codes that are allowed or denied for the class. The tables (in memory) operate as allow tables. If an area code exists in a table (displays with **4#**), then it is allowed. Anything not displaying is not allowed. Initialized data allows all area codes for each class (all codes are in all tables). All allowed area codes can be displayed (**4#**) for each class.

4.63 For each class, choose whether the record table is used to record allowed area codes in memory (ALLOWED) or denied area codes not in memory (DENIED). Enter the area codes that define the set.

4.70 Program 46-6 ~ 8—Toll Restriction Allowed/Denied Office Codes Assigned by Class

4.71 This program defines the office codes allowed or denied for each Toll Restriction Class within the home area code. Office code tables for classes 1 ~ 4 can each describe office codes allowed or denied for the class. The tables (in memory) operate as allow tables. If an office code exists in a table (displays with **8#**), then it is allowed. Anything not displaying is not allowed. Initialized data allows all office codes in the home area code for each class.

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4.72 For each class, choose whether the record table is used to record allowed office codes in memory (ALLOWED) or denied office codes not in memory (DENIED). Enter the office codes that define the set.

4.80 Program 46-10 ~ 40—Toll Restriction Class Parameters (Classes 1 ~ 4)

4.81 This program defines parameters of each Toll Restriction class, including dialing plan restrictions and exceptions to previous restrictions.

4.82 Toll Restriction exceptions and dialing plan restrictions may be defined for each class. **Program 46-10** assigns class 1 restriction exceptions and parameters; **46-20** assigns class 2; **46-30** assigns class 3; **46-40** assigns class 4. This program also relates to **Program 47**. See **Program 47** for more explanation.

4.83 To define the proper parameters for a Toll Restriction class, make the appropriate selections on the record sheet designated for classes 1 ~ 4:

- **LED 01: 0 Restricted**—Mark an X next to LED 01 if operator or operator-assisted calls are restricted for the class being defined.

IMPORTANT NOTE:

To allow 0 + dialing (LED 01 must be off), codes 020 ~ 099 must be allowed in Program 46, and digit free must be allowed in Program 48. Warning—Allowing 0 + dialing also allows operator-assisted toll calls.

- **LED 02: 01 Restricted**—Mark an X next to LED 02 if overseas operator or unassisted overseas operator calls are restricted for the class being defined.
- **LED 03: 1+AC+555 and AC+555 Allowed**—Mark an X next to LED 03 to allow the particular class to call all restricted area codes plus the office code of **555**, including out-of-area directory assistance calls. Turning the LED off does not necessarily deny information calls. This may also be accomplished in the office code table and/or the area/office code exception tables.

- **LEDs 11 ~ 18: Area Code/Office Code Exception Tables 1 ~ 8**—Select the exception tables that apply to the class being defined by marking an X in the box. Exception tables for both area and office codes will be defined in **Program 47**.

NOTE:

Each class can be assigned any or all of the eight available office code exception tables.

4.90 Program 47—Toll Restriction Exception Office Codes Assigned by Area Codes (Table 1 ~ 8)

4.91 This program defines exceptions to previously defined office code restrictions for up to eight area codes, allowing six-digit toll restriction. Office codes entered in Tables 1 ~ 8 are opposite of what is defined for the area code by **Program 46-2 ~ 8**. For instance, if **Program 46** denies area code **714**, entering office codes **530** and **555** into an exception table for area code **714** will allow those office codes.

4.92 Eight exception tables are available. Each area code with exception office codes requires a table. Each table may hold up to 800 exception office codes.

4.93 Enter the area code and required office codes on the record sheet.

4.100 Program 48—Station Toll Restriction Classification

4.101 This program assigns a combination of two restrictions to each station port defined in the system. The first feature is Digit Restriction and the second is Station Restriction Assignment.

4.102 Digit Restrict Code: If Digit Restrict is enabled for a particular station, the station is able to dial the number of digits defined in the **Program 45-1** toll restriction dialing plan.

- **1: Enable Digit Restriction**—Enter **1** in the Digit Restrict Code column, next to the port number to enable the restriction for the station.

This is used to prevent a user from dialing a second call when dial tone is returned from a CO after the outside party disconnects.

- **2: Disable Digit Restriction**—Enter **0** in the Digit Restrict Code column, next to the port number to disable digit restriction for the station. This allows toll restricted users to dial any number of digits (i.e., to an external voice mail device, computer, etc.).

4.103 Station Restrict Code: The second feature assigns Toll Restriction to individual station ports, in addition to previous restrictions. It includes seven different choices. One of the choices must be entered for each port. Initialized data assigns **0** or no restrictions to all ports. The seven choices are explained as follows.

NOTE:

*Station restrictions are overridden by CO lines disabled as defined in **Program 45-2**. If a station port has appearance of a CO line with restrictions disabled, the restrictions will be removed from the station on an individual CO line basis through **Program 45-2**.*

- **0: No Station Toll Restriction**—Enter **0** in the Station Restrict Code column, next to the port number, to remove toll restrictions from the station.
- **1: Area Code Toll Restriction**—Enter **1** in the Station Restrict Code column, next to the port number. If the selected station must be restricted from dialing all area codes.
- **2: Area Code Toll Restriction and “0” or “1” as a 1st or 2nd Digit**—Enter **2** in the Station Restrict Code column, in the space available for the port number, if the selected station must be restricted from dialing all area codes, and **0** or **1** when used as a first or second digit. This restriction prevents the station from making any long distance calls or operator-assisted calls, in addition to outgoing calls outside the home area code. In applicable areas, this prevents long distance office codes from being dialed (if 1+NNX).
- **3: Class 1 Toll Restriction**—Enter **3** in the Station Restrict Code column in the space provided for the port number, if the selected

station will be assigned to the Class 1 level of restriction. Class 1 area and office code restrictions are defined in **Program 46**, and exception office code tables in **46-10**.

- **4: Class 2 Toll Restriction**—Enter **4** in the Station Restrict Code column in the space provided for the port number, if the selected station will be assigned to the Class 2 level of restriction. Class 2 area and office code restrictions are defined in **Program 46**, and exception office code tables in **46-20**.
- **5: Class 3 Toll Restriction**—Enter **5** in the Station Restrict Code column in the space provided for the port number, if the selected station will be assigned to the Class 3 level of restriction. Class 3 area and office code restrictions are defined in **Program 46**, and exception office code tables in **46-30**.
- **6: Class 4 Toll Restriction**—Enter **6** in the Station Restrict Code column in the space provided for the port number, if the selected station will be assigned to the Class 4 level of restriction. Class 4 area and office code restrictions are defined in **Program 46**, and exception office code tables in **46-40**.

5 LEAST COST ROUTING

5.01 The following provides the programmer an overview of the Least Cost Routing feature and step-by-step instructions to fill in the Least Cost Routing System Record Sheets.

6 LEAST COST ROUTING OVERVIEW

6.00 Definition

6.01 The Least Cost Routing (LCR) feature enables the system to automatically route each outgoing voice and data call over common carriers and selected CO lines. The customer chooses these lines for the specific time of day, and for system users with varying priorities. If the system is programmed properly, LCR can select the most economical route, helping save money. If the best routes are unavailable, users with priority can access more expensive outgoing routes. Several elements of LCR must be defined in programming.

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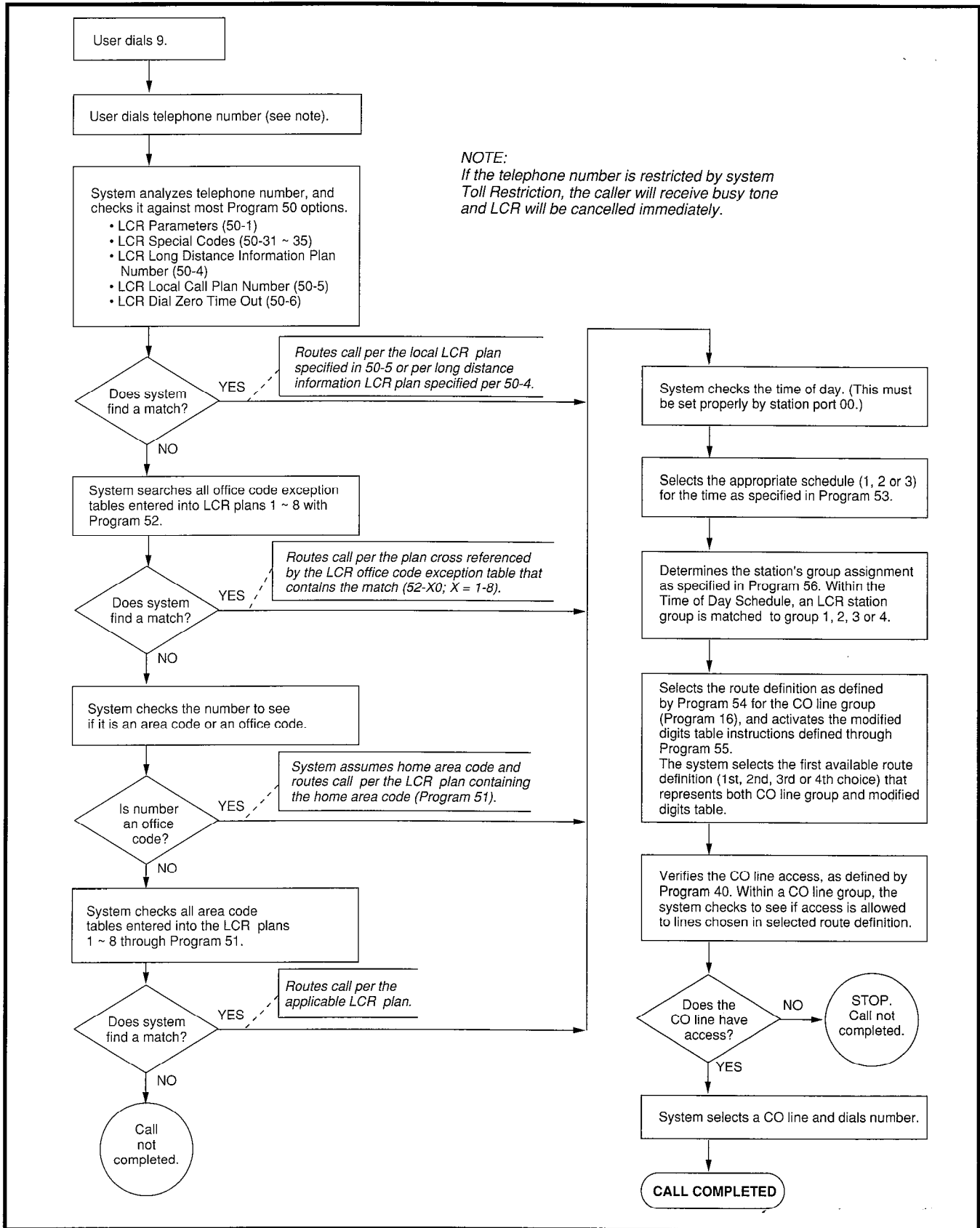


FIGURE 2-1—LCR OPERATIONAL BLOCK DIAGRAM

NOTE:

For LCR to function properly, CO line groups must be created in **Program 16**; CO line restrictions set in **Programs 40 and 41**; and the area dialing plan assigned in **Program 45-1**.

6.02 LCR General Parameters: Enables features including a warning tone for last choice route number, a comfort dial tone during LCR processing, and the Long Distance Information dialing plan.

6.03 LCR Home Area Code: Notifies LCR software of the area code of the installation site.

6.04 LCR Special Codes: Notifies LCR of special emergency and operator codes that will be automatically routed as a local call, without unnecessary delay.

6.05 Long Distance Information Plan Number: Notifies LCR software how to route a long distance information call.

6.06 Local Call Plan Number: Notifies LCR software which call routing plan is specifically designed to handle local and special calls.

6.07 LCR Timeout after 0 (Zero) is Dialed: Notifies the system of the time delay to the user after dialing a 0, before a regular operator is accessed.

6.08 LCR Area Codes: As many as eight separate area code tables can be defined; one for each available call routing plan. Each table defines the area codes that are handled by the particular routing plan.

6.09 LCR Office Code Exceptions for Area Codes: As many as eight LCR office code exception tables may be defined to inform LCR software how to handle specific office codes within area codes. According to the tables defined, specific exception office codes can be routed through a different call plan than the overall area code plan.

6.10 LCR Schedule Assignments: Call routing plans 1 ~ 8 can send the outgoing calls of different groups of stations according to a time schedule, and call route definitions.

6.11 LCR Route Definitions: Groups of CO lines assigned to special common carriers, foreign exchange lines, or other special services can be specified as call routes.

6.12 LCR Modified Digit Assignments: Carrier codes can be programmed to dial automatically when a call is placed over the appropriate route. Digits can be added to the front or back of special common carrier codes or other access numbers to make placing calls an invisible process for the user. Digits may also be deleted from the front of the dialed number.

6.13 LCR Station Access Priority Assignments: Each station port defined in the system may be assigned to one of four station priority groups. The groups can have varying access to the defined call routes at different times of day. Each group is partitioned from the other groups.

6.20 Conditions

6.21 A number of conditions apply to LCR assignment. A summary of each is listed here. Paragraph 7, *Completing the Least Cost Routing Record Sheets*, gives more detailed explanations and examples of how the conditions relate to the programming process.

6.22 If a station has direct CO appearances, or pooled CO line buttons programmed to allow direct outgoing line access, LCR will be bypassed using the pooled line or a CO line button.

6.23 LCR accommodates special code dialing, such as **911** for emergency response, **1-411** or **411** for information, or **800** area code toll-free numbers. These calls can be directed to the local call route. Examples are given in Paragraph 4 (see **Program 50-31 ~ 35**).

IMPORTANT NOTE:

Always provide emergency service access for numbers such as 911.

6.24 Basic System Record programs related to LCR include:

- **Program 16** defines which outgoing CO lines are assigned to CO line groups 81 ~ 88.
- **Program 40** denies a station complete CO line access. This also applies to LCR.
- **Program 41** restricts outgoing CO line calls to selected stations. These stations may make outgoing calls through LCR. In this Program, **Release 1** software denies ABR; **Release 2** and above software allows ABR.

7 COMPLETING THE LEAST COST ROUTING SYSTEM RECORD

NOTE:

*All stations using LCR should be ALLOWED CO line access in **Program 40**, and DENIED CO line access in **Program 41**.*

7.01 The following instructions explain completion of the System Record Sheets used to program LCR. Instructions are arranged in the same order as data tables in the *Least Cost Routing System Record* and the programming instruction tables in Chapter 3. The instructions are intended to give a concise, general definition of LCR characteristics defined by each record sheet.

NOTES:

1. *On each record sheet, enter required data in the space provided to make a selection, unless otherwise specified.*
2. *The initialized state and considerations are documented on the record sheet.*

7.10 LCR CO Line Programming Reference Table

7.11 This table is intended for reference only. Information relevant to LCR is compiled here from *Basic System Programming*.

1) Under the column labeled "CO Lines in Group (01 ~ 36)," enter the numbers of the CO lines

assigned to groups 81 ~ 88. Refer to the completed record sheet in **Program 16** for this information.

- 2) Under the column labeled "CO Line Type/Comments," enter the service type, the common carrier name, or the line type for each line group, e.g., local line, Foreign Exchange (FX) to 818 (LA), WATS (out of state), etc.
- 3) Refer to Basic System Record, **Program 40**, to restrict stations from incoming and outgoing access of CO lines, including using LCR. All stations that must use LCR to make outgoing calls must NOT be restricted in this program. These restrictions *do* apply to LCR.
- 4) Refer to Basic System Record, **Program 41**, to restrict stations from accessing outgoing CO lines, except through LCR. All stations that must use LCR for outgoing calls must be restricted from CO line access in this program.

7.20 Program 50 Series—LCR Definitions

7.21 Program 50-1—LCR Parameters: This program defines general operating parameters for LCR software.

NOTE:

Mark an X in the column to indicate which programming button LEDs should be lit. Initialized data leaves all LEDs OFF.

LED Key 01

- **ON:** LCR software is enabled system-wide.
- **OFF:** LCR software is disabled. None of the LCR programming referred to by this section is recognized. Dial 9 access assigned in **Program 16** is enabled.

LED Key 02

- Not used.

LED Key 03

- **ON:** LCR routes long distance information (LDI) calls over the plan number specified in **Program 50-4**.

- **OFF:** LCR routes LDI calls using area codes specified in route plans 1 ~8, as it would for any other call.

LED Key 04

- **ON:** Station users hear a simulated dial tone immediately after dialing the access LCR code (typically 9), until the first digit of the phone number is dialed. The dial tone is simulated to assure the user of the system's proper operation, but it is not a functional dial tone.
- **OFF:** Station users hear nothing after dialing the LCR access code until the destination rings or issues a busy signal.

LED Key 05

- **ON:** The user is notified with a warning tone to indicate that LCR has routed the call over the least desirable route number. The most expensive route is typically programmed to be the least desirable. A user has three choices upon hearing the warning tone:
 - a) Ignore the tone, LCR places the call using the least desirable route.
 - b) Hang up and try later to save money.
 - c) Activate the Automatic Call Back feature. The appropriate CO line group calls the user back when a more desirable route number becomes available.
- **OFF:** No warning tone sounds.

7.22 Program 50-2—LCR Home Area Code:

Enter the local area code in the spaces provided on the record sheet. Initialized data leaves the home area code blank.

- LCR matches the area code entered here with the LCR route plan containing the home area code in its Area Code Table (the home area code is later entered into one of the eight available LCR route plans through **Program 51**). Thus, LCR is informed of how to handle local calls.
- Typically, systems are configured to have the LCR route plan containing the home area code as the same as the local route plan defined in **Program 50-5**. This is typically programmed by the installer to be route plan number 1, rather than the default plan 8.

7.23 Programs 50-31 ~ 35—LCR Special Codes:

Five Special Codes may be entered in spaces provided next to 31 ~ 35. The codes may be a maximum of four digits, and should include items such as **911** for emergency calls, and **411** or **1-411** for local information, etc. Initialized data leaves all codes blank.

- When any of these codes are dialed, LCR is flagged to treat the call as follows:
 - The call will be sent over the local call route plan specified in **Program 50-5**.
 - No additional digits need to be dialed. They are not necessary. Therefore, the call is put through immediately.

7.24 Program 50-4—LCR Long Distance Information (LDI) Plan Number:

Enter the number of the LCR route plan (1 ~ 8) over which long distance information calls will be routed. Typically, long distance information calls are routed over the local call route defined in **Program 50-5**.

- If the long distance information plan is chosen in **Program 50-1**, the call is routed as defined by this table.
- Initialized data assigns plan 8 to be the LDI route plan.

7.25 Program 50-5—LCR Local Call Plan Number:

Of the eight route plans available for LCR call processing, one must be defined as the Local Call Plan, typically route plan 1. Enter the number of the plan (1 ~ 8) over which local calls, operator-assisted/0+ calls, and special code calls will be routed.

7.26 Program 50-6—LCR Dial 0 (Zero) Time-out:

Enter the maximum number of seconds LCR waits for a user to dial additional digits after a 0, before it routes the call to an operator for assistance. LCR will wait this number of seconds to receive additional digits that will indicate charge calls, collect calls or other 0+ calls.

- The allowed range is 04 ~ 10 seconds. Always enter two digits. Initialized data assigns an LCR dial zero time-out value of 06 seconds.

7.30 Route Plan Overview

7.31 Four groups of programs define eight sepa-

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rate LCR route plans. They are **Programs 51 ~ 54**. The purpose of the plan scheme is to provide the system with directions for routing all possible calls, made by all possible users at all possible times of day. Eight separate plans provide the customer flexibility enough to route different area codes and exception office codes over different CO line groups.

7.32 Initialized data assigns all calls to plan eight. Any assignments made in **Programs 51 ~ 54** for plans 1 ~ 7 will exempt the defined call from being made on route plan 8. Likewise, any phone number not specified in routes 1 ~ 7 automatically defaults to route plan 8.

7.33 Tables for **Programs 51 ~ 54** appear on LCR Route Plan Numbers 1 ~ 8. The following instructions reveal how to fill in individual tables within the plans. Each of the following program tables must be completed for all plans.

7.34 Program 51—LCR Area Code Tables: Every route plan can be assigned to define a set of area codes and/or office codes.

- The purpose of **Program 51** is to define which area code calls are placed over which LCR Plan Number (1 ~ 8). Initialized data assigns all possible area codes (000 ~ 999) to LCR Plan 8. Therefore, calls made to all area codes will be routed over route definitions defined in **Program 54** for plan 8, following the time schedule specified by **Program 53** for plan 8 (unless other assignments are made in plans 1 ~ 7).
- For example, any area code entered in a **Program 51** LCR area code table for plans 1 ~ 7 is subtracted from plan 8. An area code cannot be lost. If it is subsequently deleted from plans 1 ~ 7, LCR software automatically adds it to plan 8.
- To fill in record sheets for plans 1 ~ 8:
 - Check the box by Area Code Table.
 - Enter the applicable area codes, three digits per box.

NOTE:

*Remember that LCR matches the home area code entered in **Program 50-2** with the LCR route plan containing the home area code in*

*its Area Code Table. The home area code must be entered into one of the eight available LCR route plans through **Program 51**. Thus, LCR is informed of how to handle local calls. Typically, systems are configured to have the LCR route plan containing the home area code as the same as the local route plan defined in **Program 50-5**. This usually is programmed by the installer to be route plan number 1, rather than the default plan 8.*

7.35 Program 52—LCR Office Code Exceptions for Specified Area Code: The purpose of the Office Code Exception Table is to enable the customer the flexibility of routing specific office codes through a different call plan than other office codes used with that area code.

- Eight LCR office code exception tables may be defined for the overall LCR scheme. Any number of exception code tables may be assigned to each route plan, although each exception table may only be used once system-wide.
- Every route plan can be assigned to define a set of area codes and office code exceptions or a set of office code exceptions.
- This program applies to both examples listed below. In the first case, an office code exception table does not need to be defined in addition to the area codes in **Program 51**, but it may. In the second case, the plan may only pertain to exception office codes for certain area codes.

Example 1—In the first example, office code exception tables will be defined to the area code table. Use the continuation sheet to define the exception office codes. As many as eight of the office code exception tables may be linked to a plan, but each exception table may only be used once. When using the continuation sheet, be sure that the same exception table is not assigned to more than one plan.

- Turn to the continuation sheet (that follows plan 8 record sheet).
- Determine the plan number where the exception office codes will be routed.
- Fill in the area code of the exception office codes in the spaces provided by the correct plan number. These office codes will

be routed differently than the overall area code.

- Enter the specific office codes that are to be routed differently.

Example 2—In the second example, the route plan only applies to office code exceptions. The first office code exception table may be documented on the LCR Plan record sheet:

- Check the box on the record sheet next to Office Code Exception Table number.
- Enter the number of the exception table (1 ~ 8). Make sure this table number is not entered on any other plan, or on the continuation sheet.
- Enter the applicable area code.
- Enter the specific office codes that are to be routed differently than the area code.

7.36 Program 53—LCR Schedule Assignments: This program assigns up to three time schedules to each plan. Each time schedule consists of four different route definition choices (defined in **Program 54**) available to the four station groups (defined in **Program 56**). It may be helpful to complete **Program 54** portions of the plans and **Program 56** before proceeding.

Typical Installation without time scheduling feature—In most cases, an installation will not require use of the time schedule feature. To reflect this on the record sheets for plans 1 ~ 8:

- 1: Enter the same **Schedule Start Times** for **Schedules 1** and **2**. Use military time, in the format HH:MM (Hours:Minutes). Fill in all four digits. Initialized data assigns “0000” to all times.
 - If LCR software sees schedules 1 and 2 have the same start times, then it only looks at schedule 1 for route definitions.
- 2: Enter **Route Definition Numbers** for **Schedules 1** and **2**. Four definitions may be entered for each group.
 - LCR Station (Class) Groups 1 ~ 4 are assigned in **Program 56**.
 - LCR Route Definition numbers 1~ 4 are defined in **Program 54**.

- The order in which the route definitions are entered defines the order of LCR line selection. The most desirable route should be entered in the leftmost position, and the least desirable route in the rightmost position.
- If “1” is assigned to Station Group 1, and 1 for route definition only, then those assigned will only be able to use route definition 1, thereby restricting them during times that route definition 1 is not allowed.
- Keep in mind that the route definition number is being entered, not the CO line group number. The definitions are assigned in **Program 54**.

Installation requiring time scheduling feature—When an installation requires the time scheduling feature to be programmed, three “shifts” of route definitions can be assigned per station group. To reflect this on the record sheet, substitute step 1 of the procedure described for the typical customer with the following:

- 1: Enter the **Schedule Start Times** for **Schedules 1, 2** and **3**. Use military time, in the format HH:MM (Hours:Minutes). Fill in all four digits. Initialized data assigns “0000” to all times.
 - Start time for schedule 2 is the stop time for schedule 1.
 - Start time for schedule 3 is the stop time for schedule 2.
 - Start time for schedule 1 is the stop time for schedule 3.

7.37 Program 54—LCR Route Definition: The purpose of this program is to define four different ways of routing calls for each of the eight LCR plans. Define each route by selecting and entering:

- 1: **CO Line Group (1 ~ 8):** Refer to the LCR CO Line Programming Reference Table completed at the beginning of the LCR record sheets.
 - Each CO line group represents a type of service, e.g., special common carrier, foreign exchange, local line group, etc.
 - **Program 16** assigns CO lines to CO line groups 1 ~ 8 (81 ~ 88).
 - **Program 40** denies incoming and outgo-

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ing CO line access to stations, including LCR access.

- **Program 41** allows CO line access to stations using LCR only for outgoing calls when enabled.

2: Modified Digits Table (1 ~ 6): Refer to **Programs 55-0, 55-1 and 55-2**. The system handles CO line groups differently, according to which modified digits table was assigned in **Program 54**.

7.40 Program 55 Series—LCR Modified Digits Tables

7.41 This program defines six modified digits tables for LCR call handling. Each modified digits table assigns editing steps that include:

- Deleting a pre-defined quantity of digits from the front of the number dialed (**Program 55-0**).
- Adding a pre-defined number to the front of the number dialed (**Program 55-1**).
- Adding a pre-defined number to the end of the number dialed (**Program 55-2**).

7.42 The purpose of this program is to define call handling so the route definition used by LCR is invisible to the station user. The station user handles all calls the same way. The goal is for LCR to remember the dialing peculiarities of each call route, so the user doesn't need to know.

7.43 Program 55-0—LCR Modified Digits-Delete: Enter the **Quantity of Digits** that should be deleted from the front of the number dialed for each of the six **Table Numbers** in the **Delete Digits Table**. The maximum number is ten. Always make the entry two digits.

7.44 Program 55-1—LCR Modified Digits-Add to Front of Dialed Number: Enter the digits that must be added to the front of the number dialed in the **Add Digits Table**. The maximum quantity of digits is 22, including pauses.

- Length of pause can be indicated by using codes (P1 ~ P8) specified in the **Pause Entry Reference Table**. Each pause takes two digits of memory space.
- Try to allow for the longest wait, e.g., make the pause longer, rather than shorter, to accommodate the length of time a carrier may need to access the service tones, etc.

7.45 Program 55-2—LCR Modified Digits-Add to End of Dialed Number: Enter the digits that must be added to the end of the number dialed in the **Add Digits Table**. The maximum quantity of digits is 22, including pauses.

- Length of pause can be indicated by using codes (P1 ~ P8) specified in the **Pause Entry Reference Table**. Each pause takes two digits of memory space.
- Try to allow for the longest wait, e.g., make the pause longer, rather than shorter, to accommodate the length of time a carrier may need to access the service tones, etc.

7.46 Program 56—LCR Station Group Assignment: The purpose of this program is to assign all defined station ports to one of four LCR Station Groups.

- Station groups are completely independent of one another. Therefore, each station group must be defined separately.
- Software does not automatically assign the highest, all-inclusive routing priority to class 1 stations, making all routes available to class 2, 3 and 4 stations available to class 1 as well.
- Instead, stations are assigned to independent groups (partitioned). Completely flexible assignment of routing definitions to groups is allowed, with no one group's definition affecting another's. Each group's route definitions are specified to activate separately according to the time schedules set by **Program 53**.

1: Enter the station group number next to the port number.

SYSTEM RECORD SHEETS

RELEASE 1, 2, and 3

IMPORTANT INITIAL INSTALLATION NOTES:

These minimum installation steps must be carried out for proper system operation.

1. *Set PCTU jumper plug for BATTERY OPERATION; otherwise, all programmed customer data will be lost on power down.*
2. *Place PEPU, PIOU, or PIOUS PCB in highest slot number of KSU.*
3. *Place all other PCBs in KSU from lowest slot number to highest in the following order:*
PCTU or PCTUS (always Slot 00)
PEKU or PDKU (starting at Slot 01)
PESU (Release 2 and above)
PSTU
PCOU
PEMU
4. *Run Program 90. Initialize Programs 00 ~ 97, and turn power OFF for five seconds, then turn power back ON.*
5. *Run Program 92.*
6. *Enter the hardware configuration with Program 03, exit the programming mode, and turn power OFF for five seconds, then turn power back ON.*

WHEN LATER ADDING KSU PCBs:

1. *Move PEMU PCBs to a higher slot number to create empty slots for additions.*
2. *Install new PCBs and reprogram with Program 03. Change PEMU station and CO line numbers or reassign stations.*
3. *Program new features, options, etc. created by new additions.*

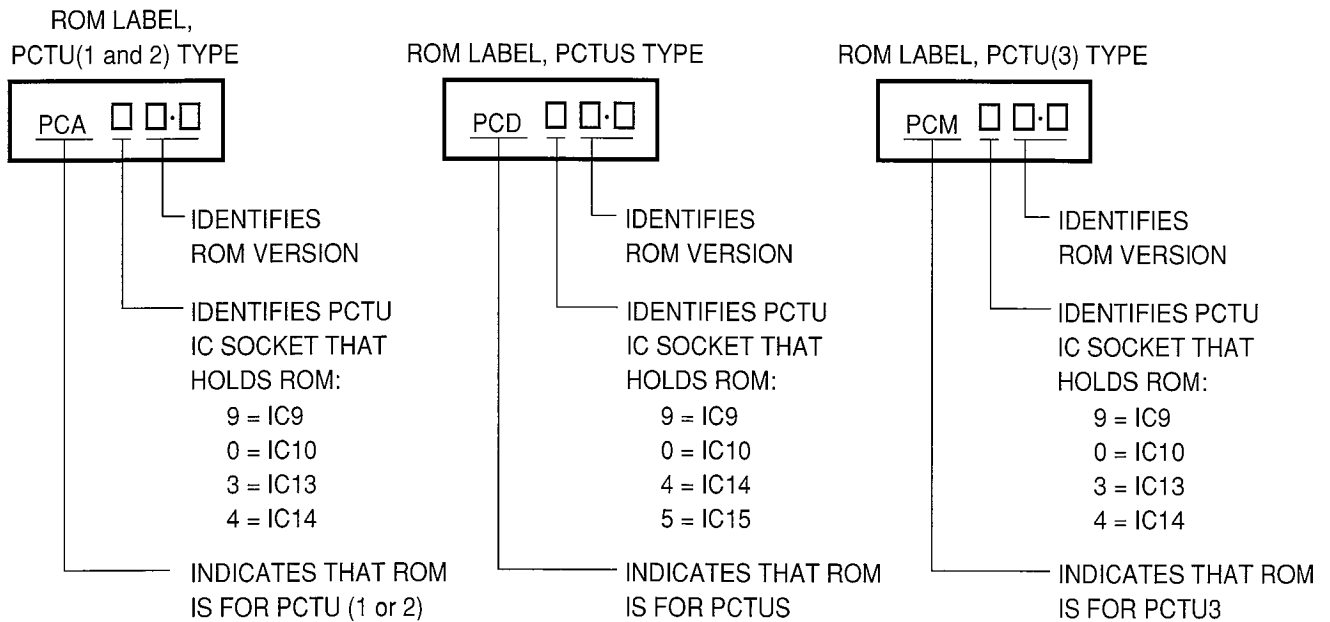
STRATA DK SOFTWARE RELEASES

Software Guide: This is a reference guide that provides updated information regarding software enhancements to the STRATA Digital Key (DK) System.

DK Software Identification: The DK operating software is stored on Read Only Memory (ROM) chips and is identified by ROM Version.

There are four ROM chips in a DK ROM set, which are installed on a processor control circuit PCB. There are four versions of PCTU: PCTU3 is the **Release 3** version; PCTU2 is the **Release 2** version and PCTUS is the **Release 2** version for use with DK24 only; PCTU1 is the first released version. PCTU1 can be upgraded to PCTU2 by changing PROMs supplied in the Toshiba PURR2 upgrade kit. All PCTUS PCBs, used in STRATA DK24, contain **Release 2** version software. PCTU1, PCTU2, and PCTUS cannot be upgraded to PCTU3, **Release 3**.

The ROM version may be displayed by running **Program 00-0** from the local programming telephone or remote programming terminal. The ROM version is also printed on the label attached to each of the four ROM chips in a set. The last two or three characters on the label identify the ROM version: e.g., **2K**, **1G**, etc. as shown below:



IMPORTANT NOTE:
PCTU(1 and 2) ROM (PCA), PCTUS ROM (PCD), and PCTU(3) ROM (PCM) are not interchangeable.

System Record Sheets: The same System Record Sheets are used for *all* STRATA DK models and are updated with each DK software release. Each updated and new record sheet will be dated when released and may be inserted in the original document to replace the outdated record sheet (the record sheets released with the original PCA2K software are dated June 1989).

On the record sheets, the letters "**R2**" note options available with **Release 2** and above only (see the software guide for the **R2** option list). All program options that are *not* noted with "**R2**" are available with *all* STRATA DK software. The letters "**R3**" note options available with **Release 3** software only (see the software guide for the **R3** option list). All program options available with "**R2**" are also available with **Release 3** software.

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RELEASE 2 (R2) SOFTWARE GUIDE

With the exception of Busy and Group Station LCD Messaging, all items available with **R1** software are available with **R2** software; items listed below are available with **R2** software and above only.

Item Description	*Related Programs	Comments
PESU PCB	<u>03</u> , Code 25 and 26	Station PCB, supports 2 standard telephones, 4 electronic telephones
BGM/MOH separation	<u>10-2</u> , key/LED 09	Separates music-on-hold and background music; 2 music sources required
HDCB, door lock option	<u>39</u> , Code 72, 73, 74, 75 <u>77-2</u> , key/LED 4, 8, 12, 16	Allows HDCB, port B, to be optioned as a door lock control; 4 maximum
Release key	<u>39</u> , Code 76	Provides more efficient way of releasing calls (headset or handset)
SMDR, print toll only	<u>60-5</u> , 0, 1, 2, 3, 4	Allows system SMDR to send SMDR data for long distance calls only
Pickup code to selectively pickup CO lines on-hold	None	Provides the call park/page for pickup function for outside call
DISA – same as DISC but allows access to outgoing CO line	<u>60-6</u> = security code Port 99 = COS class <u>78</u> assigns DISA CO lines	DISA code must be entered to call out on CO lines via DISA (optional). 4-minute disconnect timer (reset-dial "0").
DISA security code change from station	<u>30</u> , key/LED 10	Allows stations designated in programming to change the DISA code
Call forward busy, no answer, busy/no answer	<u>39</u> codes: 57 = BNA/604 58 = NA/603 59 = BSY/602	Calls forward if station is busy, does not answer, or busy/no answer
FIXED call forward displays on LCD	<u>36</u>	LCD displays that phone has fixed call forward set
2 CO line conference with standard telephone	<u>10-1</u> and <u>15-5</u>	Allows a standard telephone to set up a conference with 2 CO lines
Distinctive ringing for CO/Int to standard telephone	<u>10-2</u> , key/LED 07 on	Standard telephone ringing pattern is different between intercom and CO line call
"NAME" display on LCD	None	Called LCD displays name/number of calling station
Auto-preference and pooled line seizure operate like STRATA _e	None	Changes off-hook and pooled line operation to allow fast release/seize
DSS transfers call when answering another call—like STRATA _e	None	CO lines ring transfer automatically when pressing another CO line key

**All program numbers are underlined in this column.*

RELEASE 2 (R2) SOFTWARE GUIDE (continued)

With the exception of Busy and Group Station LCD Messaging, all items available with **R1** software are available with **R2** software; items listed below are available with **R2** software and above only.

Item Description	*Related Programs	Comments
80/160 DTMF option for VM ID Codes	<u>10-2</u>	Allows Voice Mail auto digits to be sent at 80 or 160 ms
Immediate drop when Toll Restricted digits are recognized	None	Call drops as soon as a restricted number sequence is detected
CO line, incoming ring detector time change: (120/223 ms)	<u>10-1</u> , key 18	Changes CO ringing detect time to eliminate false ring-ins from some COs
ABR overrides <u>Program 41</u>	None	Allows ABR to function with all LCR program configurations
Change RM prompt from DKTS Version 1.0 to DK Connect	None	Changes Remote Maintenance prompt to verify that IMDU connection is made
Message waiting cancel from voice mail port only by: Dial 64 and station number	<u>10-2</u> , key/LED 4	Deletes auto-cancel of MW LED when VM answers a call from a station that has MW LED from voice mail
Operation change when sending "D" tone to VM	None	Prevents disconnects when VM device does not recognize "D" tone to drop connection
Ring detect time option	<u>10-1</u> , key/LED 18	Ring detect time INITIALIZES TO NORMAL to eliminate CO line false rings
Two-CO line via access code or LCR	None	Allows two-CO line conference to be set up from electronic and standard telephones via 81 ~ 88, 701 ~ 736, and LCR dial 9
DTMF tone return <ul style="list-style-type: none"> • Manual dialing • Voice mail I.D. auto digits (dial codes 656 and 657) • Speed dialing 	<u>10-2</u> , key/LED 11	Deletes DTMF tone returned to electronic telephones when manual dialing and speed dialing; deletes DTMF tones from callers when the called station forwards the call to voice mail. DTMF digits are still sent out to CO line and voice mail ports.
Call forward backup memory	<u>92-9</u> , key/LED 03 and 04	Clears call forward backup memory when system is first initialized
Call forward memory save	None	Station call forward information is retained during system power down; when power is returned, stations will forward as before power loss.
CO line resize guard time option	<u>10-1</u> , key/LED 02 <u>42-0</u> , key/LED 01 ~ 36	Allows CO line resize guard time to be changed from 0.45 seconds to 1.5 seconds to meet central office and CENTREX seize/hookflash timing requirements

*All program numbers are underlined in this column.

RELEASE 3 (R3) SOFTWARE GUIDE

All items available with **R1** and **R2** software are available with **R3** software; items listed below are available with **R3** software only.

Item Description	*Related Programs	Comments
Night ringing over selected page zones	<u>77-1</u> , key/LEDs 10 ~ 13 <u>78</u> , 1 ~ 3	Allows CO lines to ring over selected PIOUS page zones. CO lines can be placed into two groups (tenant 1 and tenant 2), and each group can be assigned to night ring over different PIOUS paging zones.
Digital telephone volume level initialization	<u>92-5</u> , keys/LEDs 01 and 05	Sets digital telephone volume levels to their initialized settings: ring, busy override, Intercom (muted) ring, speaker, and BGM.
Digital telephone handset receive volume level set for individual telephones	<u>30</u> , keys/LEDs 12 and 13 Initialize data is Level 3.	Allows the initial off-hook volume level to be set individually for each digital telephone. The settable range is from level 2 to 5 (5 = loudest). The digital telephone can be manually adjusted using the volume control for each call over the full range of 1 to 9.
Privacy button	<u>39</u> , Code 53	Allows non-private stations to deny privacy-override to other stations when privacy button is activated. This prevents override calls by pressing common CO line button appearances.
Busy and group station LCD station messaging which is available in R1 , but not R2 , is available in R3	None	<p>Busy station messaging: Allows an LCD message to be sent (live) to a busy LCD station.</p> <p>Group station messaging: Allows an LCD station to set a "called or calling station message" for another station or a group of stations.</p>
"0+" credit card calls that bypass toll restriction but do not allow operator placed calls	<u>43</u> and <u>60-7</u>	Selected stations can be configured in programming to be allowed "0+" dialing which will override toll restriction on selected CO lines or all CO lines. If a station does not dial a programmable number of digits after dialing "0", the call will be disconnected after 10 seconds.
Data Interface Station Hunting	<u>22</u>	Allows data calls to busy data stations to hunt to an idle data station. This program is separate from voice call hunting, Program 33 . Voice and data calls to the same station can hunt to different stations.

*All program numbers are underlined in this column.

RELEASE 3 (R3) SOFTWARE GUIDE (continued)

All items available with **R1** and **R2** software are available with **R3** software; items listed below are available with **R3** software only.

Item Description	*Related Programs	Comments
PDKU PCB	<u>03</u> , Code 62 and 64	Station PCB, supports 8 Toshiba digital telephones (DKT) or 7 DKTs and one digital, direct station selection console (DDSS). Also supports up to 8 stand-alone data interface units (PDIU-DS) and DKT integrated data interface units (PDIU-DI).
Bell Precise Busy Tone cadence is sent from STRATA DK to outside callers that dial busy numbers when calling into DK on TIE, DISC, or DISA CO lines	<u>10-2</u> , key/LED 05	Allows STRATA DK busy tone cadence to be changed from 0.25 seconds on/off to 0.5 seconds on/off. For busy TIE line or DISC/DISA calls.
Automatic release of Voice Mail ports when outside caller hangs up	<u>15</u> , Code 0	Selected CO lines will detect the Automatic Release (AR) signal (calling party control) if sent from the CO line when the calling party hangs-up on a voice mail call. This prompts "D" tone to be sent to the PSTU or PESU voice mail port causing the voice mail machine to release. AR can be detected between voice mail answer and hookflash to transfer.
Verifiable account codes	<u>70</u> <u>30</u> , key/LED 14 <u>69</u> , <u>60-4</u> , <u>15-7</u>	Verified Account Code with Toll Restriction class assignments. Up to 300 verifiable account codes (4 ~ 15 digits) can be set in system programming.
Voice mail (VM) to VM call blocking	<u>31</u> , key/LED 4	Prevents VM ports from call forwarding or hunting to other VM ports during screened or supervised VM transfers.
Switched Data: • Simultaneous voice/data over a single wire pair via DKT with an integrated data interface unit (PDIU-DI) • Modem pooling and printer sharing using a stand-alone data interface unit (PDIU-DS) • Data security group 1 ~ 4	<u>20</u> , key/LEDs 01 ~ 05 <u>39</u> , DATA button, Code 56 DRLS key, Code 54 MODEM button, Code 55 <u>21</u> , <u>22</u> <u>20</u> , key/LEDs 17 ~ 20	Allows digital telephones with DIUs connected to personal computers to make data calls internal to other DKT/DIUs with PC for file transfers, etc. Allows DKTs with DIUs to make external data calls over the public telephone network automatically via modems connected to stand-alone DIUs specially programmed to auto-connect in customer configuration programming.

*All program numbers are underlined in this column.

RELEASE 3 (R3) SOFTWARE GUIDE (continued)

All items available with **R1** and **R2** software are available with **R3** software; items listed below are available with **R3** software only.

Item Description	*Related Programs	Comments
Emergency number override of verified/forced account code	<u>44A</u> (51 ~ 53)	Allows up to three emergency numbers (911, etc.) to be programmed to bypass the forced (verified or nonverified) account code dialing requirement.
Traveling class of service	<u>44B</u> (1 ~ 4)	This feature allows a toll restriction override code to be assigned to each station class (class 1 ~ 4). When the toll restriction override code is dialed from a telephone, the telephone will assume the class the code is assigned to until the call is complete. The telephone will return to its normal class when the call is complete.
ACCOUNT button	<u>39</u> , Code 50	Flexible button, allows voluntary account codes to be entered anytime without interrupting existing conversations.
Amplified Conference (External)	<u>10-1</u> , LEDs 01 ~ 04 <u>10-2</u> , LEDs 18 and 19 <u>10-3</u>	Allows up to four customer-supplied amplifiers to be connected to selected system PEKU ports. The amplifiers automatically switch into two CO line (Tandem) and two CO line/station conference calls. The amplifiers increase the transmission volume level that is typically degraded because of added telephone network losses during two CO line calls. Two line DISA and TIE line calls are also amplified.
Flexible BGM connection	<u>19</u> , <u>10-3</u>	Allows alternate BGM source and external page output connection to any slot with a PEKU or PESU installed.

*All program numbers are underlined in this column.

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PROGRAM NUMBER INDEX (continued)

FEATURE OR TOPIC	PROGRAM NO.	FEATURE OR TOPIC	PROGRAM NO.
Pause Timing	12, 39	Speed Dial	10-1, 30, 39
PBX Access Code	42-1 ~ 42-8	Speed Dial Clear	92
PBX Backup	42-0	Standard Telephone Ringing Options	10-2
Pooled CO Lines	16, 39	Station Class of Service	30, 31, 35
Pooled Line Buttons	16, 39	Station Hunting (Data Calls)	22
Port/Station Number Assignment	04	Station Hunting (Voice Calls)	33
Privacy/Non-Privacy	31, 30, 39	Station Message Detail Recording	60, 97
Privacy Override	10-2, 30, 31	Tandem CO Line Connections	10-1, 15
Private CO Lines	39	Tenant Service	15, 39
Redial Last Number	39	TIE Lines	03, 17
Relay Service	77-1	Toll Restriction	10, 30, 41 ~ 48
Remote Administration and Maintenance	00, 77-1, 78	Toll Restriction Override	10-1, 30, 39
Repeat Last Number Dialed	30, 39	Toll Restriction Override Code Revision	30
Ringling Line Preference	32, 81 ~ 89	Transfer Privacy	10-1
Saved Number Redial	39	Traveling Class	44B
Security Code (DISA)	30, 60	Verifiable Account Codes	15, 30, 60, 69, 70
Security Code (R. Maintenance)	00	Voice Mail Interface	10-2, 31, 39
Slot Assignment	03	Voice or Tone Signaling	05, 10-1, 10-2
Speakerphone Assignment	30	Volume Reset (Digital Telephones)	92-9
		Voluntary Account Codes	39

TABLE 2-A
PROGRAMS 00 ~ 97 IN NUMERICAL ORDER WITH SECTIONS CROSS-REFERENCED

Program Number	Title <i>(Applicable Sections)</i>	Program Number	Title <i>(Applicable Sections)</i>
00	Software Check/Remote Password Assignments <i>(Basic System)</i>	29-1	DSS Button Assignment, DSS Console 1 <i>(Basic System)</i>
03	Flexible PCB Slot Assignments <i>(Basic System)</i>	29-2	DSS Button Assignment, DSS Console 2 <i>(Basic System)</i>
04	Port/Station Number Assignment <i>(Basic System)</i>	29-3	DSS Button Assignment, DSS Console 3 <i>(Basic System)</i>
05	Flexible Access Code Numbering <i>(Basic System)</i>	29-4	DSS Button Assignment, DSS Console 4 <i>(Basic System)</i>
10-1	System Assignments, Part One of Two <i>(Basic System)</i>	30	Station Class of Service <i>(Basic System)</i>
10-2	System Assignments, Part Two of Two <i>(Basic System)</i>	31	Station Class of Service <i>(Basic System)</i>
10-3	Amplified Conference (External) <i>(Basic System)</i>	32	Automatic Preference <i>(Basic System)</i>
12	System Assignments – Basic Timing <i>(Basic System)</i>	33	Station Hunting (Voice Calls) <i>(Basic System)</i>
13	Defining the Message Center <i>(Basic System)</i>	34	Hold Recall Timing <i>(Basic System)</i>
15	Assigning DP/DTMF, Tenant Service to Individual CO Lines <i>(Basic System)</i>	35	Station Class of Service <i>(Basic System)</i>
16	Assigning CO Line Groups (Dial 9 or 81 ~ 88) <i>(Basic System)</i>	36	Fixed Call Forward <i>(Basic System)</i>
17	TIE Line Page/Handsfree Answerback <i>(Basic System)</i>	37	Ring Transfer (Camp-on) Recall Time <i>(Basic System)</i>
19	Alternate Background Music (BGM) Source Slot Assignment <i>(Basic System)</i>	38	Electronic and Digital Telephone Buttonstrip Type <i>(Basic System)</i>
20	Data Interface Unit (DIU: PDIU-DI and PDIU-DS) Configuration <i>(Basic System)</i>	39	Flexible Buttonstrip Assignment <i>(Basic System)</i>
21	Modem Pool Port Assignments <i>(Basic System)</i>	40	Station CO Line Access <i>(Basic System)</i>
22	Station Hunting (Data Calls) <i>(Basic System)</i>	41	Station Outgoing Call Restriction <i>(Basic System)</i>
28	DSS Console, Attendant Electronic Telephone Assignments <i>(Basic System)</i>	42-0	CO Line to PBX Connection <i>(Basic System)</i>
		42-1~8	PBX Access Code <i>(Basic System)</i>
		43	0+ Credit Card Dialing Option <i>(Basic System)</i>

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TABLE 2-A
PROGRAMS 00 ~ 97 IN NUMERICAL ORDER WITH SECTIONS CROSS-REFERENCED (continued)

Program Number	Title <i>(Applicable Sections)</i>	Program Number	Title <i>(Applicable Sections)</i>
44A	Emergency Bypass of Verified Account Codes <i>(Basic System)</i>	50-31~35	Least Cost Routing Special Codes <i>(Least Cost Routing)</i>
44B	Toll Restriction Traveling Class Override Codes <i>(Toll Restriction)</i>	50-4	Least Cost Routing Long Distance Information Route Plan <i>(Least Cost Routing)</i>
45-1	Toll Restriction Dial Plan <i>(Toll Restriction)</i>	50-5	Least Cost Routing Call Route Plan Number <i>(Least Cost Routing)</i>
45-2	Toll Restriction Disable <i>(Toll Restriction)</i>	50-6	Least Cost Routing Dial Zero Timeout <i>(Least Cost Routing)</i>
45-3~6	Equal Access/Special Common Carrier Numbers and Authorization Code Digit Length <i>(Toll Restriction)</i>	51	Least Cost Routing Area Codes <i>(Least Cost Routing)</i>
45-8~9	Toll Restriction Override Code <i>(Toll Restriction)</i>	52	Least Cost Routing Office Code Exceptions for Specified Area Code <i>(Least Cost Routing)</i>
46-2~4	Toll Restriction Allowed/Denied Area Codes Assigned by Class <i>(Toll Restriction)</i>	53	Least Cost Routing Schedule Assignments <i>(Least Cost Routing)</i>
46-6~8	Toll Restriction Allowed/Denied Office Codes Assigned by Class <i>(Toll Restriction)</i>	54	Least Cost Routing Route Definition <i>(Least Cost Routing)</i>
46-10	Toll Restriction Class 1 Parameters <i>(Toll Restriction)</i>	55-0	Least Cost Routing Modified Digits-Delete <i>(Least Cost Routing)</i>
46-20	Toll Restriction Class 2 Parameters <i>(Toll Restriction)</i>	55-1~2	Least Cost Routing Modified Digits-Add <i>(Least Cost Routing)</i>
46-30	Toll Restriction Class 3 Parameters <i>(Toll Restriction)</i>	56	Least Cost Routing Station Group Assignments <i>(Least Cost Routing)</i>
46-40	Toll Restriction Class 4 Parameters <i>(Toll Restriction)</i>	60	Station Message Detail Recording Output/Account Code Digit Length <i>(Basic System)</i>
47	Toll Restriction Exception Office Codes Assigned by Area Code <i>(Toll Restriction)</i>	69	Verified Account Codes <i>(Basic System)</i>
48	Station Toll Restriction Classification <i>(Toll Restriction)</i>	70	Verified Account Code Toll Restriction Assignments <i>(Basic System)</i>
50-1	Least Cost Routing Parameters <i>(Least Cost Routing)</i>	77-1	Doorphone Selections <i>(Basic System)</i>
50-2	Least Cost Routing Home Area Code <i>(Least Cost Routing)</i>	77-2	Doorphone Busy Signal Assignments <i>(Basic System)</i>

TABLE 2-A
PROGRAMS 00 ~ 97 IN NUMERICAL ORDER WITH SECTIONS CROSS-REFERENCED (continued)

Program Number	Title <i>(Applicable Sections)</i>	Program Number	Title <i>(Applicable Sections)</i>
78	CO Line Special Ringing Assignments – DISC/IMDU/Night Ringing Over External Page <i>(Basic System)</i>	86	DAY2 DELAY2 Ringing <i>(Basic System)</i>
79	Door Phone Ringing <i>(Basic System)</i>	87	NIGHT IMMEDIATE Ringing <i>(Basic System)</i>
80	Electronic and Digital Telephone Ringing Tones <i>(Basic System)</i>	88	NIGHT DELAY1 Ringing <i>(Basic System)</i>
81	DAY IMMEDIATE Ringing <i>(Basic System)</i>	89	NIGHT DELAY2 Ringing <i>(Basic System)</i>
82	DAY DELAY1 Ringing <i>(Basic System)</i>	90	Initializing Program 00~89 <i>(Basic System)</i>
83	DAY DELAY2 Ringing <i>(Basic System)</i>	92	Initializing Speed Dial Numbers, ID Codes, Character Message Memory, Timed Reminder, Digital Telephone Volume Levels, and CO Line Identifications <i>(Basic System)</i>
84	DAY2 IMMEDIATE Ringing <i>(Basic System)</i>	93	CO Line Identification <i>(Basic System)</i>
85	DAY2 DELAY1 Ringing <i>(Basic System)</i>	97	Station Message Detail Recording Data Printout Options <i>(Basic System)</i>

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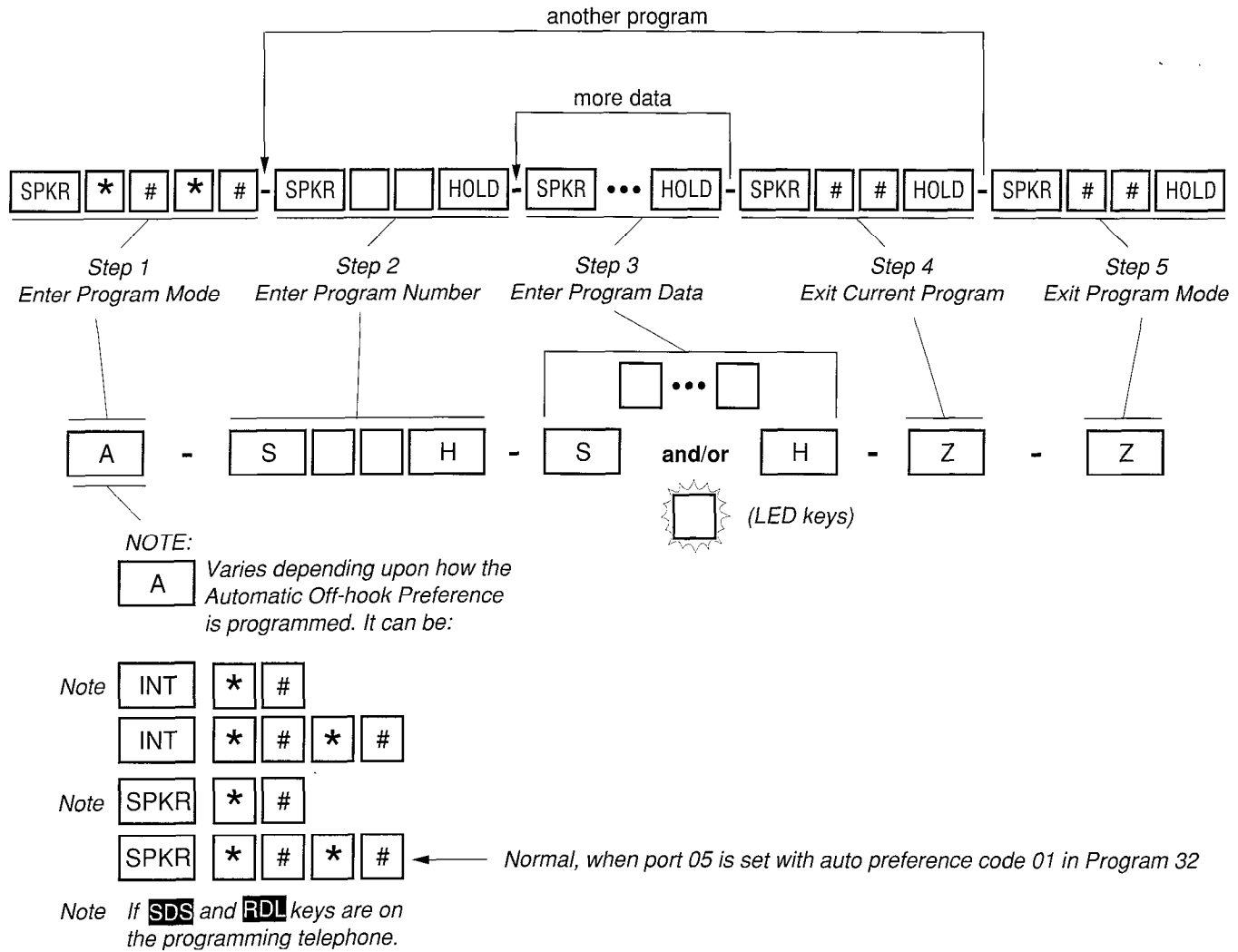


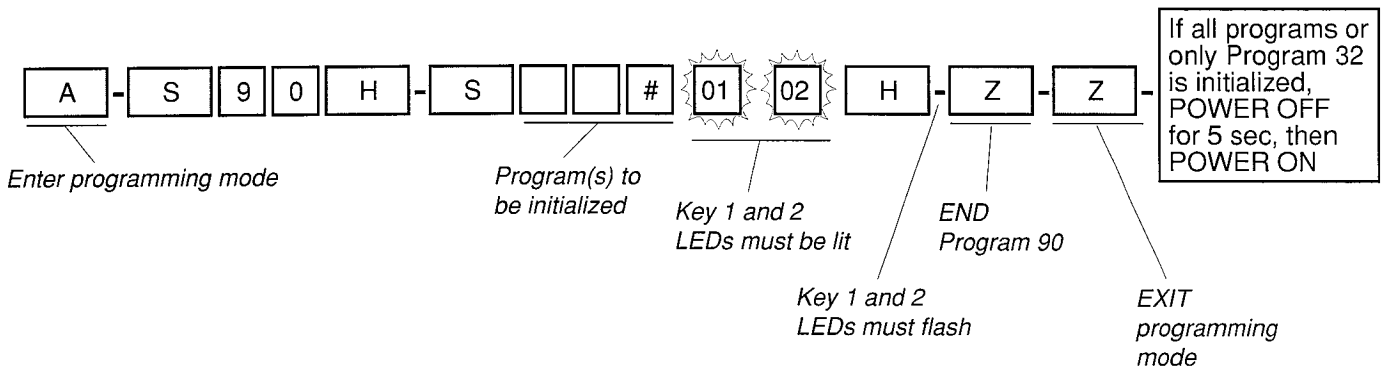
FIGURE 2-2-PROGRAMMING KEY SEQUENCE OVERVIEW

The System Record contains programming forms for **Programs 00 ~ 97**. A System Record should be filled out for each system installed as detailed in Chapters 1 and 2.

Each programming form is supplemented with a guide for entering data from the form. The guide illustrates the key sequence a programmer must press, with the exception of sequences common to all programs, e.g., entering programming mode (A), exiting current program (Z), and exiting programming mode (Z). To save space, these common sequences are coded, as illustrated in **Figure 2-2**. The **SPKR** and **HOLD** keys are also coded "S" and "H" to save space.

NOTE:
Programs 90, 92, and 03 are out of order and placed in front purposely because they must always be completed first, and in this order. Upon completing these steps, begin with **Program 00**.

**PROGRAM 90
INITIALIZING PROGRAMS 00 ~ 97**



IMPORTANT

Initialize Programs 00 ~ 97 every time :

- A new system is installed
- To bring a system's programming back to the default setting.

Specify the range as follows: 0 0 * 9 7

To initialize one program at a time, just enter the individual program number, then #

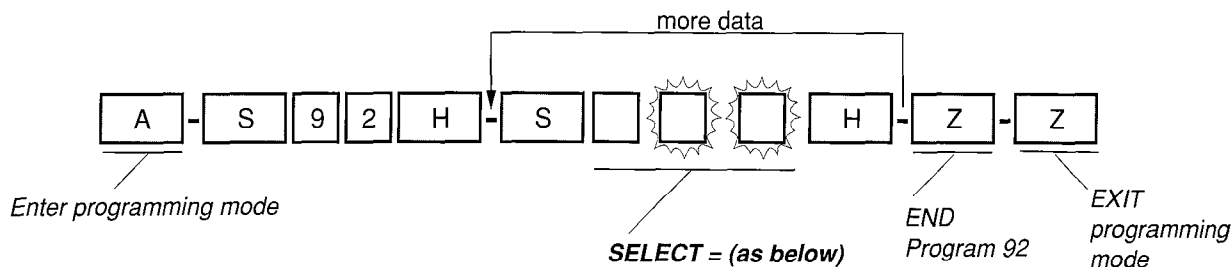
NOTES:

1. Always complete **Program 90** at new system installs, before programming anything else. Skipping this step may cause erratic system behavior.
2. Follow instructions in Table 1-C (Section **200-096-301**) to clear this data.
3. When **Program 90** is run, it will initialize any program or range of Programs without cycling system power. System power may be cycled to cause **Program 32** to initialize the programming station with Intercom autoperference. This allows the programming station to enter the Programming Mode using the **SPKR** key (A = **SPKR * # * # HOLD**).

WARNING!

Running this program will erase customer data.

PROGRAM 92
INITIALIZING SPEED DIAL NUMBERS, ID CODES CHARACTER MESSAGE MEMORY, TIMED
REMINDERS, DIGITAL TELEPHONE VOLUME, AND CALL FORWARD BACKUP RAM



- 1 [01] [03] Clears Station Speed Dial, Voice Mail ID Codes, and LCD memos assigned to Station Speed Dial numbers.
- 2 [01] [04] Clears System Speed Dial and LCD memos assigned to System Speed Dial numbers.
- 3 [02] [03] Clears Character Message Memory (Station and System) and user Name/Number display.
- 4 [02] [04] Clears Timed Reminders.
- 5 [01] [05] Resets digital telephone volume levels to initialized settings. This sets Intercom Tone/BGM, busy override (muted ring), and speaker/ringing volume to approximately mid-range on all DKTs (Release 3).⁴
- 9 [03] [04] [H] Power OFF
5 seconds;
then Power ON⁵ Clears Call Forward Memory (all stations, Release 2 and above).

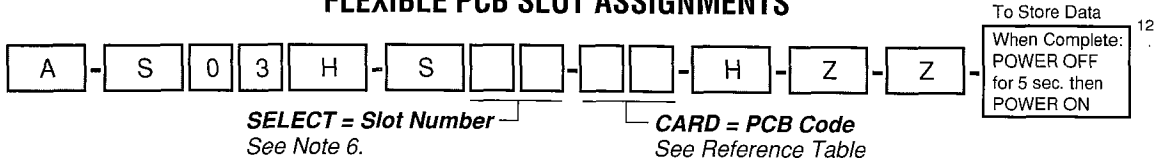
NOTES:

1. **IMPORTANT:** It is mandatory to complete all parts of **Program 92** at every new system install. If **Program 92** is not completed certain feature operations may cause erratic system behavior.
2. Use the instructions in Table 1-D (Section **200-096-301**) to clear this data.
3. **Program 92-9** does not affect fixed call forward settings.
4. **Program 92-5** does not affect digital telephone handset receiver volume levels. To set off-hook handset receiver volume levels individually for each digital telephone, see **Program 30**, LEDs 12 and 13.
5. Power "OFF" and "ON" is required to clear telephone LCD Call Forward Displays and Call Forward button LEDs. Call Forward memory is cleared when **Program 92-4** is run, even if system power is not cycled.

WARNING!
Running this program will erase customer data.

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PROGRAM 03
FLEXIBLE PCB SLOT ASSIGNMENTS



DK24/56

SLOT NO.	00	01	02	03	04	05	06	07	08
PCB CODE									
PCB TYPE	PCTU ⁸	PEKU or PDKU ¹³							
OPTIONS									
STA. PORT #s	—	00~07							
CO/TIE LINE#s	—								

NOTES:
 DK24, slots 00 ~ 06 only
 DK56, slots 00 ~ 08
 PCTUS, ports 00 ~ 23
 PCTU(2), ports 00 ~ 96
 PCTU(3), ports 00 ~ 96

DK96
 (Top Shelf)

SLOT NO.	01	02	03	04	05	06	07	08
PCB CODE								
PCB TYPE	PEKU or PDKU ¹³							
OPTIONS								
STA. PORT #s	00~07							
CO/TIE LINE#s								

PCB CODE
 Reference Table

PCB	CODE	PORTS/TYPER
PCTU ⁸	91	NONE
PCTU ⁸ CRCU4	92	NONE
PCTU ⁸ CRCU8	93	NONE
PIOU(S)/ PEPU	41	NONE
PEKU	21	8/STA.
PEKU EOCU	22	8/STA.
PEKU w/DSS	23	8/STA.
PEKU EOCU w/DSS	24	8/STA.
PESU	25	Note 7
PESU EOCU	26	Note 7
PSTU	31	8/STA.
PCOU	11	4/CO
PEMU	13	4/CO 4/STA.
PDKU ¹¹	62	8/STA.
PDKU ¹¹ w/DSS	64	8/STA.
NONE	00	NONE

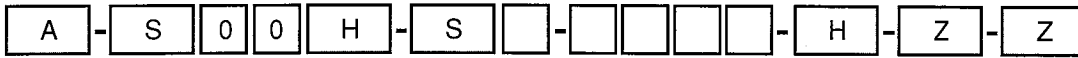
DK96
 (Bottom Shelf)

SLOT NO.	00	09	10	11 ¹⁰	12 ¹⁰	13 ¹⁰	14 ¹⁰
PCB CODE							
PCB TYPE	PCTU ⁹						
OPTIONS							
STA. PORT #s	—						
CO/TIE LINE#s	—						

NOTES:

1. See instructions in Table 1-E (Section 200-096-301) to input the data from this record.
2. Shaded rows on tables are for configuration purposes only.
3. A PCTU (PCB codes 91, 92 or 93) must be installed in slot 00 (labeled PCTU).
4. A PEKU, PESU or PDKU is always installed in slot 01.
5. Initialized data reads slot 00 = 91, slot 01 = 21, slots 02 ~ 14 = 00.
6. System PCB slots are labeled PCTU, S01 ~ S14. For programming, these tables label the same slots 00 (PCTU) ~ 14.
7. PESU circuits: 1 and 2, standard telephones; 3 and 4, not used; 5 ~ 8, electronic telephones. Total 8 station ports used in software; available with **Release 2**, and above.
8. PCTU1, PCTU2, PCTU3 (PCTUS in DK24 only).
9. PCTU1, PCTU2 or PCTU3 only.
10. OCA or PDIU-DI/PDIU-DS is not available with slots 11 ~ 14.
11. PDIU-DI/PDIU-DS will function with either PDKU code 62 or 64; a special code is not required (**Release 3**).
12. System Power must **always** be cycled after running **Program 03**.
13. PCTU3 is required when a PDKU is installed.

PROGRAM 00
SOFTWARE CHECK/REMOTE MAINTENANCE SECURITY CODE ASSIGNMENTS



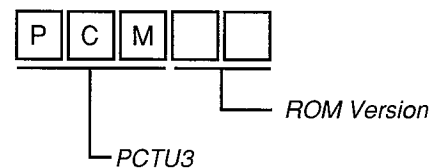
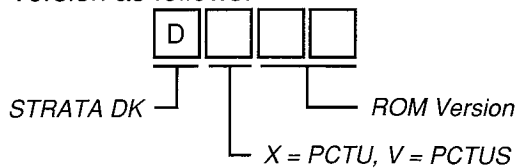
SELECT = Select Code
 Enter 0 to check S/W version.
 Enter 1 to change 1st level password.
 Enter 2 to change 2nd level password.
 Enter 8 to check software sum.
 Enter 9 to check counter.

Password Codes
 Enter the 4-digit password.
 See Note 3.

Select Code	Item	Password or S/W Check Codes
0	ROM Version	= D [] [] [] See Note 4.
1	1st Level Password	= [] [] [] []
2	2nd Level Password	= [] [] [] []
8	Software RAM Checksum	= [] [] [] [] [] [] [] [] See Note 5.
9	Power Cycle Counter	= [] [] [] [] [] See Note 5.

NOTES:

- See instructions in Table 1-F (Section **200-096-301**) to program the system with this information.
- Initialized passwords are 0000.
- The LCD responds as follows, when a selection is made:
 0 Version =
 1 Password =
 2 Password =
 8 Sum =
 9 Counter =
- This selection is not programmable. It identifies the system's software version as follows:



DX = Release 1 (R1) software (PCTU1)
DX = Release 2 (R2) software (PCTU2)
DV = Release 2 (R2) software (PCTUS)
PCM = Release 3 (R3) software (PCTU3)

- These selections are not programmable. They are for factory test purposes only. The Checksum and Counter vary as customer data is entered.

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PROGRAM 04
PORT/STATION NUMBER ASSIGNMENT



SELECT = Port Number

INT = Station Number

Slot	S01: PEKU/PDKU ¹⁵				S01: PEKU/PDKU ¹⁵											
Port	00	01	02 ¹¹	03	04 ⁸	05 ⁷	06	07 ¹¹	08	09 ¹³	10 ¹³	11	12 ⁸	13	14	15
INT (Sta No.)																
	16	17 ¹³	18 ¹³	19	20 ⁸	21	22	23 ¹⁴	24	25 ¹³	26 ¹³	27	28 ⁸	29	30	31
	32	33 ¹³	34 ¹³	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. Follow instructions in Table 1-G (Section 200-096-301) to enter this data.
2. Shaded portions of the table are for configuration purposes only.
3. If a station number is assigned, and "ERROR" displays on the LCD, the station number has already been assigned to another port.
4. Station numbers default to 200 ~ 295. New station number assignments will not activate on individual station LCDs until the handset goes on/off hook.
5. If an assigned station number conflicts with a default feature access code, no error message is issued. The station's LCD reflects the conflicting number. When another station attempts to dial the number, the station will not ring. Instead, the feature activates.
6. If station numbers that conflict with feature access codes must be assigned, use **Program 05** to change the access code first.
7. The station connected to port 05 has exclusive ability to program the system.
8. PEKU ports 04, 12, 20 and 28 may be configured to support Door Phone Control Boxes (HDCBs). See **Program 77-1**.
9. Door phone and modem (IMDU) station numbers are pre-assigned as follows:
 - IMDU modem number: • Modem = 19
 - Door phone numbers: • Port 04 = 151, 152, 153; Port 12 = 154, 155, 156
 - Port 20 = 157, 158, 159; Port 28 = 161, 162, 163
10. To insert a blank, press LED key 01; range programming is possible.
11. PEKU circuit 3 or PESU circuit 8 is the optional BGM connecting port circuit. This BGM PCB must be installed in slot 01 in **Release 2**, but can be in any slot with **Release 3** (see **Program 19**).
12. Port 99 = DISA COS port (**Release 2**); DISA Port 99 is normally used in **Program 40, 41, and 48**.
13. May be used to connect two-CO line external conference amplifier (customer-supplied) to PEKU PCB (see **Program 10-3**).
14. Last port available when using PCTUS control PCB.
15. PDKU requires **Release 3** (PCTU3).
16. DIUs can be connected to ports associated with PDKU circuits 1 ~ 7.

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PROGRAM 05
FLEXIBLE ACCESS CODE NUMBERING



SELECT = Access Code 1~9
from the Table Below

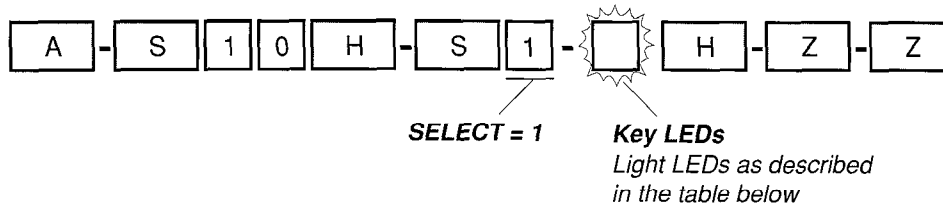
SPECIAL DIAL = New Access Codes
See Note 6 Below.

Access Code	Features Affected (N/A = Not Affected)	New Access Codes
0	Unused	
1	Voice First/Tone First (N/A)(1) Door Phones (151-163) IMDU Access (19)	Station LCD Messages (10-19) Station Speed Dial Set (10 ~ 49)
2	Busy Override (N/A) (2) Do Not Disturb Override (N/A) (2)	Station Numbers N/A 200 ~ 295 Off-hook Call Announce (N/A) (2)
3	Executive Override (N/A) (3) All Call Voice Page (30) All Call Voice Page with External Spkrs (39)	External Page (35-38) Group Page (Internal) (31-34)
4	Automatic Callback (N/A) (4) CO Line Queuing (N/A) (4) Station Number Display (401) Port Number Display (402) Hold/Park (41) Hold/Park Pickup (42) Automatic Busy Redial (44) Automatic Busy Redial Cancel (44) Message Waiting Answer (408)	Flash (45) Account Code Input (46) T.R. Override/T. Class Code Input (47) BGM Over Stations - ON (481) BGM Over Stations - OFF (480) BGM Over External Speakers ON (491) BGM Over External Speakers OFF (490) Cancel Message Waiting at Station (No MW key) I (409)
5	(*50) Voluntary Account Code (R3) Call Pickup Station (5+Station No.), Ringing CO Line (59), Telephone Page (530), (R2) (R2) Directed Pickup of CO Line on Hold (57□□, □□ = 01 ~ 36), External Page (531, 535 ~ 538)	
6	Call Forward (601, R2: 602, 603, 604) Timed Reminder (605-609) M/W for Voice Mail ON (63+Station No.) M/W for Voice Mail OFF (64+Station No.) Voice Mail ID Code Set (Call Fwd, 656) Voice Mail ID Code Set (Ans. MW, 657) LCD Message Set (68) 6101 – DKT Mute Ring Adjust (R3) 6102 – DKT Ring Level Adjust (R3)	Date Set (651) Time Set (652) Weekday Set (653) T.R. Override Code Change (654, 655) System Speed Dial/LCD Messages (60-99) (R2) LCD User Name (621-Set, 620-Reset) (R2) DISA Security Code Change (658) 659 – Verified Account Code Changed (R3) 622 ~ 625 Traveling Class Code 1 ~ 4 Changed (R3)
7	CO Outgoing Calls (701-736) Message Waiting Set/Cancel (N/A) (7)/I (77)	
8	CO Group Outgoing Calls (81-88)	
9	Least Cost Routing or CO Group Hunt (9)	

NOTES:

- For more information, see the instructions preceding the record sheets.
- Be sure access code changes do not conflict with existing access code or station numbering schemes. Refer to **Program 04 – Port/Station Number Assignment**.
- To insert a blank, press programming key 01.
- If access codes are being changed to a number that is currently assigned, change the currently assigned code to an unused code first. In the initialized state, the only unused code is zero (0).
- The initialized station number sequence of 200 ~ 295 may not be globally changed through **Program 05**. Make changes through **Program 04**.
- Access codes can be replaced by 2 digits. Standard Access codes are shown for reference.

**PROGRAM 10-1
SYSTEM ASSIGNMENTS, PART 1 OF 2**



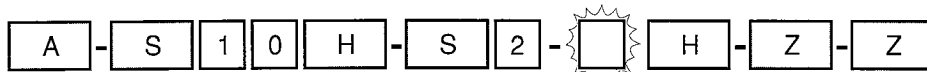
Key/LED	X	LED On	LED Off
20	2	Two CO Conference/Allowed ⁷	Not Allowed
19	2	Conference/Allowed	Not Allowed
(R2) 18	2	Ring Detect Time - Normal ⁶	Ring Detect Time – Short Rings
17		Intercom Volume PAD (-8 dB)	No Intercom PAD
16		–	–
15		–	–
14		–	–
13		–	–
12		ABR Cycles/10 times	15 times
11		ABR Redial time/30 sec.	1 min.
10		System Speed Dial Override, Toll Restriction	Restricted
09	2	Exclusive Hold/Allowed	Not Allowed
08	2	Alternate Point Answer	Transfer Privacy
07 ⁴	2	Ring Transfer of CO Lines Allowed	Not Allowed
06 ⁵		CO Repeat Ringing	Standard Ring
05		Incoming Call Abandon/8 sec.	6 sec.
04 ³		CO DTMF Signal Time/160 msec.	80 msec. ³
03		DP Make Ratio/33%	40%
(R2) 02 ⁸		0.45 or 1.5 sec. per Program 42-0	CO line re-seize guard time 0.45
01		Tone First (from EKTs)	Voice First (from EKTs)

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data lights LEDs 07, 08, 09, 18, 19 and 20.
3. LED 04 DTMF Signal Time applies to manual and speed dial tones sent out of the system via CO or TIE lines. LED 04 **does not** apply to Call Forward or Voice Mail ID DTMF tones sent to voice mail ports. (See **Program 10-2**, LED 06, for tones sent to Voice Mail ports.)
4. If ring transfer is allowed, set Ring Transfer Recall time in **Program 37**; if ring transfer is not allowed (LED 07 off), the station will recall immediately if transfer is attempted.
5. Standard ring pattern is 1 sec. on, 3 sec. off.
6. **Release 1** software detects short ring signals only.
7. Two CO conference must be allowed for DISA operation.
8. CO line guard time is the time interval the system requires to release a CO line and allow it to be re-seized. If LED 02 is off, all lines are set with 0.45 second guard time; if LED is on, guard time is 0.45 or 1.5 seconds per **Program 42-0**.

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PROGRAM 10-2
SYSTEM ASSIGNMENTS, PART 2 OF 2



SELECT = 2

Key LEDs

Light LEDs as defined by the table below.

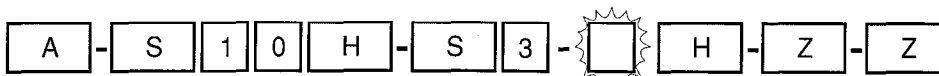
ALL LEDs with an "X" should be lit when you finish

BUTTON/LED	X	LED On	LED Off
20		—	—
19 ¹¹		Station External Amp Conference	No External Amplifier Connected
18		Two CO Line Conference	No Two CO Line Conference
17		—	—
16	2	Executive Override Warning Tone/ON	Executive Override Warning Tone/OFF
15 ⁷	2	External Page included with All Call Page	Not Included
14	2	Privacy Override Warning Tone/ON	Privacy Override Warning Tone/OFF
13		Send Auto Callback Camp-on Tone ³	No Callback Tone
12		CO Line 3 min Beep Tone	No Beep Tone
(R2) 11		No DTMF Tone Return ⁸	DTMF Tone Return
(R2) 10 ⁴		BGM connected to PESU, Circuit 8 ¹⁰	EKT connected to PESU, CKT 8
(R2) 09 ⁴		BGM connected to PEKU, Circuit 3 ¹⁰	EKT connected to PEKU, CKT 3
08		Display Dialed Number/1min.	Display Dialed Number/15 sec.
(R2) 07 ⁶		Standard Tel. CO Ring per Prog. 10-1, LED 06	Standard Tel. CO Ring Distinctive
(R2) 06 ⁵		VM ID Code DTMF Signal Time 80 ms	160 ms
(R3) 05		TIE/DISA Busy Tone, 0.5 second cadence ⁹	TIE/DISA Busy Tone, 0.25 second cadence
(R2) 04		MW cancel from VM; dial 6 4 & Station No.	MW cancel from VM: Automatic
03		Ringing Modes/3	Ringing Modes/2
02	2	Hunt/C.F. override from console's phone	Hunt/C.F. override from console
01		Tone First (from DSS Console)	Voice First (from DSS Console)

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data lights LEDs 02, 14, 15 and 16.
- Called party receives notification tone when calling party activates ACB.
- BGM connected to PEKU, Circuit 3 or PESU, Circuit 8 will be sent to electronic and digital telephone speakers and external page (optional).
- VM ID code DTMF signal time is fixed at 160 msec for **Release 1** software.
- The ring pattern for standard telephone, distinctive ring on incoming CO calls is: 0.2 sec. on/0.4 sec. off, 0.2 sec. on/0.4 sec. off, 3 sec. off; intercom ring is always 1 sec. on, 3 sec. off. This does not apply to VM Ports (**Program 31**, LED 17 on) which are always standard ring.
- External speakers and all electronic and digital telephones are paged by dialing: **INT 3 9**. The **AC** key is used to page all electronic telephones only; external speakers are not included when using the **AC** key.
- Deletes DTMF tones returned to electronic telephones when dialing from dialpad or speed dialing; also deletes auto dial digits from callers that are call forwarded to voice mail. This does not affect the actual DTMF tones sent out to the CO or voice mail.
- 0.5 second cadence, Bell Standard Busy Tone, should be enabled so outside callers are not confused by STRATA 0.25 second busy tone when calling busy number on DISA and TIE line calls
- PESU/PEKU must be in SLOT 01 if using **Release 2** software; PESU/PEKU can be in any universal slot assigned in **Program 19-1** if using **Release 3** software.
- Important:** LED 19 should be OFF unless external amplifiers are used for two-CO line/station conference (see **Program 10-3**). If LED 19 is ON, the station may be unbalanced and receive HUM if external amplifier with Auto-Gain-Control is not connected.

PROGRAM 10-3 (Release 3)
TWO CO-LINE CONFERENCE/DISA AMPLIFIER CONNECTION PORT ASSIGNMENTS



SELECT = 3

Key LEDs

Light LEDs as defined by the table below.

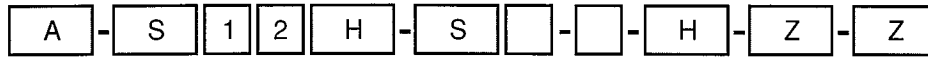
ALL LEDs with an "X" should be lit when you finish.

KEY/LED	X	LED ON	LED OFF
20			
19			
18			
17			
16			
15			
14			
13			
12			
11			
10			
09			
08			
07			
06			
05			
(R3) 04		PEKU Ports 33, 34 — Amp. 4 Connected	Ports 33, 34 — Stations Connected
(R3) 03		PEKU Ports 25, 26 — Amp. 3 Connected	Ports 25,26 — Stations Connected
(R3) 02		PEKU Ports 17, 18 — Amp. 2 Connected	Ports 17,18 — Stations Connected
(R3) 01		PEKU Ports 09, 10 — Amp. 1 Connected	Ports 09,10 — Stations Connected

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data: all LEDs off.
3. See Section **200-096-208**, Paragraph 13 for connecting up to four two-way amplifiers for use on tandem, DISA and conference telephone calls.
4. **Important:** Only enable the PEKU ports that are actually connected on amplifiers.
5. Amplifiers are switched into two-CO line calls automatically, one amplifier for each call, starting from the lowest ports enabled to the highest. Skipping ports is allowed. Two-CO line calls established after all amplifiers are in use will not be amplified.
6. See **Program 10-2**, LED 18 and 19; **Program 10-1**, LEDs 19 and 20; and **Program 15-5** for more information regarding two-CO line conference/tandem.

PROGRAM 12
SYSTEM ASSIGNMENTS - BASIC TIMING



SELECT = 3~9
 Enter program code,
 3 ~ 9, from table below.

SELECT CODE = Enter required
 code for the time listed in the
 table below. See Note 3.

Program Code	Function	Time	Required Code
3 ⁶	Pause Timing (Speed Dial)	<input type="text" value="1"/> 1.5 sec.	
		<input type="text" value="2"/> 3.0 sec.	
4 ⁶	Flash Timing ⁴	<input type="text" value="1"/> 0.5 sec.	
		<input type="text" value="2"/> 2.0 sec.	
		(R2) <input type="text" value="4"/> 0.2 sec. ⁵	
5	Pause After Flash (Voice Path Delay)	<input type="text" value="0"/> no pause	
		<input type="text" value="1"/> 1.5 sec.	
		<input type="text" value="2"/> 3 sec.	
9	CRCU Inter-digital Release Time (Standard Phone)	<input type="text" value="1"/> 1 sec.	
		through <input type="text" value="9"/> 9 sec.	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data programs timing as follows: Code 3 = 1, Code 4 = 2, Code 5 = 0, and Code 9 = 4.
3. When programming Code 9, the LCD responds with LINE TIME = instead of SELECT CODE =.
4. The duration of time the PCOU circuit opens Tip & Ring when the MW/FL key is pressed, or hookflash code CONF/TRNS 4 5 is dialed.
5. This timing is not used in the United States.
6. This timing applies to voice calls originated from telephones and voice or data calls originated by system Data Interface Units (PDIU-DI or -DS).

**PROGRAM 13
DEFINING THE MESSAGE CENTER**

A	-	S	1	3	H	-	S	1	-			H	-	Z	-	Z
---	---	---	---	---	---	---	---	---	---	--	--	---	---	---	---	---

SELECT = 1

PORT = Port Number
Enter the port number of the station to be defined as the Message Center.

**Port
Number**

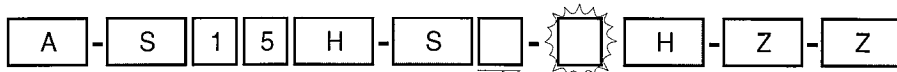
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NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Any electronic or digital telephone may receive (and store) up to 3 message waiting indications from any other electronic or digital telephone. A fourth message waiting indication may be set by the Message Center electronic or digital telephone only.
3. The Message Center is allowed to perform "Message Waiting," even if disallowed on all other stations.
4. Initialized data = no port assigned.
5. The message center feature should be assigned to the customer's main answering position: a station or the lowest port (in VM group) of the customer's voice mail device (see **Program 31** for VM group port assignment), whichever the customer specifies.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
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FEBRUARY 1991

PROGRAM 15
ASSIGNING DP/DTMF, TENANT SERVICE TO INDIVIDUAL CO LINES



SELECT = Program Code

Key LEDs = CO Line

Specify CO lines by setting LED keys, as defined by the table below.
 All LEDs with an "X" should be lit when finished.

On-hook

Program Code	Program	LED Status		CO Lines 01 ~ 20 (LED Keys)																				
		ON	OFF	01 (01)	02 (02)	03 (03)	04 (04)	05 (05)	06 (06)	07 (07)	08 (08)	09 (09)	10 (10)	11 (11)	12 (12)	13 (13)	14 (14)	15 (15)	16 (16)	17 (17)	18 (18)	19 (19)	20 (20)	
0 (R3)	AR VM Calls ⁷	Detect	Ignore																					
1	CO Outgoing Signal	DP ⁶	DTMF																					
2	CO Dial Pulse Rate (Pulse per sec.)	20 PPS	10 PPS																					
3	AR Hold ⁴	Recognize	Ignore																					
4	AR Timing ⁴	Crossbar 95 msec.	ESS (Electronic) 450 msec.																					
5	Tandem CO Line Connection with Station Dropout	Equipped ⁵	Not Equipped																					
6	CO Line Tenant Assignment	Tenant 2	Tenant 1																					
7	Forced Account Code	Equipped	Not Equipped																					
8	Operation After Flash	No CRCU after flash	CRCU after flash																					

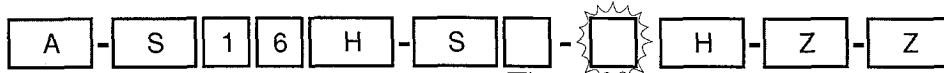
Off-hook

Program Code	Program	LED Status		CO Lines 21 ~ 36 (LED Keys)																			
		ON	OFF	21 (01)	22 (02)	23 (03)	24 (04)	25 (05)	26 (06)	27 (07)	28 (08)	29 (09)	30 (10)	31 (11)	32 (12)	33 (13)	34 (14)	35 (15)	36 (16)				
0 (R3)	AR VM Calls ⁷	Detect	Ignore																				
1	CO Outgoing Signal	DP	DTMF																				
2	CO Dial Pulse Rate (Pulse per sec.)	20 PPS	10 PPS																				
3	AR Hold ⁴	Recognize	Ignore																				
4	AR Timing ⁴	Crossbar 95 msec.	ESS (Electronic) 450 msec.																				
5	Tandem CO Line Connection with Station Dropout	Equipped	Not Equipped																				
6	CO Line Tenant Assignment	Tenant 2	Tenant 1																				
7	Forced Account Code	Equipped	Not Equipped																				
8	Operation After Flash	No CRCU after flash	CRCU after flash																				

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data is all LEDs OFF.
- Shaded areas indicate that the handset must be off-hook during programming.
 Program CO lines 01 through 20 with handset on-hook
 Program CO lines 21 through 36 with handset off-hook
- AR = Automatic Release signal. This is a momentary-open of the CO line loop provided by some Central Offices. If programmed to recognize AR, CO lines on-hold will drop when the outside party hangs up and the CO sends AR signal. Two-CO line DISA calls always release with AR. DISA line release is not related to this program.
- Tandem connection must be equipped for all DISA CO lines and all other lines used for two-CO line conference.
- If a CO line is set for Dial Pulse (DP) operation, the **TONE** key must be programmed on stations that must send DTMF tones over the CO lines (see **Program 39, TONE** key).
- When AR is sent on a CO line call because the outside caller hangs-up, "D" tone will be sent to the voice mail port (PSTU/PESU), prompting the voice mail machine to release and clear the port for another call. Detection is from VM answer to VM hookflash; it is not in effect after the VM or auto attendant operates the hookflash to transfer the call.

PROGRAM 16
ASSIGNING CO LINE GROUPS (DIAL 9 OR 81 ~ 88)



SELECT = CO Line Group
 Only enter the last digit of the CO line group (1 ~ 8) to be defined, or enter 0 for Dial 9 group.

Key LEDs
 Specify which CO lines are assigned to the group by setting LEDs as defined by the table below. All LEDs with an "X" should be lit when finished. See Note 2.

	Key LED	CO Line	CO Line Groups																	
			81 (1)	82 (2)	83 (3)	84 (4)	85 (5)	86 (6)	87 (7)	88 (8)	Dial 9 (0)									
Off-hook	16	(36)																		
	15	(35)																		
	14	(34)																		
	13	(33)																		
	12	(32)																		
	11	(31)																		
	10	(30)																		
	09	(29)																		
	08	(28)																		
	07	(27)																		
	06	(26)																		
	05	(25)																		
	04	(24)																		
	03	(23)																		
	02	(22)																		
	01	(21)																		
On-hook	20	(20)																		
	19	(19)																		
	18	(18)																		
	17	(17)																		
	16	(16)																		
	15	(15)																		
	14	(14)																		
	13	(13)																		
	12	(12)																		
	11	(11)																		
	10	(10)																		
	09	(09)																		
	08	(08)																		
	07	(07)																		
	06	(06)																		
	05	(05)																		
04	(04)																			
03	(03)																			
02	(02)																			
01	(01)																			

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Program CO lines 1~20 by setting LEDs 1~20 with the handset on-hook;
 Program CO lines 21~36 by setting LEDs 1~16 with the handset off-hook;
3. Initialized data assigns all CO lines to the Dial 9 group.

PROGRAM 17
TIE LINE PAGE/HANDSFREE ANSWERBACK



Select = TIE Line
 Enter the number of the
 CO line designated as a
 TIE line (01 ~ 36).
 See Notes 3 and 6.

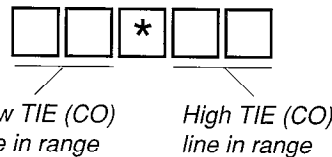
Light Key/LED 01 to enable
 the Page/Handsfree Answerback
 Feature on the TIE line defined.
 See Note 4.

PEMU Slot No.	TIE Line Circuit	TIE Line (CO Line) 01 ~ 36	Key 01 LED Lit X = ON
PEMU 1 PCB Slot No. _____	1		
	2		
	3		
	4		
PEMU 2 PCB Slot No. _____	1		
	2		
	3		
	4		
PEMU 3 PCB Slot No. _____	1		
	2		
	3		
	4		

NOTES:

- For more information, see the instructions preceding the record sheets.
- System page access to external TIE line callers and handsfree answerback to stations receiving TIE line calls can be allowed with this program.
- Shaded areas of the table are for configuration purposes. Refer to **Program 03** to find the PEMU PCB slot numbers. **Program 03** must be completed prior to this program.
- Be sure to specify both digits of the CO line assigned as a TIE line. If the 0 before a single digit (01 ~ 09) is left out, the LCD displays what is entered, but key LED 01 cannot be programmed.
- All 20 key LEDs light if pressed, but only key LED 01 has a programming function.
- Initialized data does not assign Page/Handsfree Answerback to any TIE line. LED 01 stays off for all CO lines.

7. A range of TIE lines may be programmed by entering



- Maximum PEMU PCBs allowed because of power supply limits: DK24 = 1 PEMU, DK56 = 2 PEMUs, DK96 = 3 PEMUs.
- If PEMU is installed with PCTUS PCB, only 16 station ports are available.
- When a PEMU is installed, it is automatically assigned to the next consecutive CO line and station ports: if the system is equipped with a PCTU (1, 2, or 3) the PEMU assumes four CO lines and four station ports; with a PCTUS it assumes four CO lines and eight station ports.

PROGRAM 19
BACKGROUND MUSIC SLOT IDENTIFICATION (RELEASE 3)



SELECT = 1

SLOT (01 ~ 14)

DK96: 01 ~ 14

DK56: 01 ~ 08

DK24: 01 ~ 06



Slot number of PEKU or PESU
connected to background
music (BGM) source

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. If PEKU, the BGM source must be wired to Circuit 3.
3. If PESU, the BGM source must be wired to Circuit 8.
4. LED 09 (PEKU) or LED 10 (PESU) in **Program 10-2** must be lit also.
5. BGM cannot be connected to the PDKU or PSTU PCBs.

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PROGRAM 20
PDKU DATA PORT CONFIGURATION (RELEASE 3)



Select = PDKU Port Number that is connected to PDIU-DS or to DKT with PDIU-DI.

Keys/LEDs 1 ~ 5 defines data port type;
 Keys/LEDs 17 ~ 20 assigns data port to security group.

PDKU Port Number

PDKU Port Number

PDKU Port Number

KEY/LED	X	LED ON	LED OFF
20		Data Security Group 4	Not Included
19		Data Security Group 2	Not Included
18		Data Security Group 3	Not Included
17		Data Security Group 1	Not Included
16			
15			
14			
13			
12			
11			
10			
09			
08			
07			
06			
05		Auto Pause ⁴ Behind PBX	No Auto Pause
04		DIU-DS Connected	DIU-DI Connected
03		DIU-DS to Modem Connection	DIU-DS to other type DCE or DTE
02		AT Commands and Result Codes	AT DIAL Command Only
01		DIU Connected	No DIU Connected

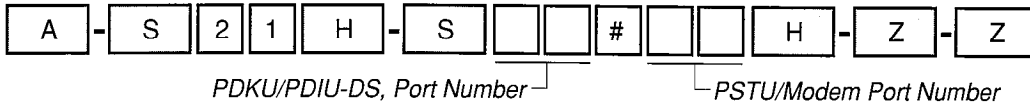
KEY/LED	X	LED ON	LED OFF
20		Data Security Group 4	Not Included
19		Data Security Group 2	Not Included
18		Data Security Group 3	Not Included
17		Data Security Group 1	Not Included
16			
15			
14			
13			
12			
11			
10			
09			
08			
07			
06			
05		Auto Pause ⁴ Behind PBX	No Auto Pause
04		DIU-DS Connected	DIU-DI Connected
03		DIU-DS to Modem Connection	DIU-DS to other type DCE or DTE
02		AT Commands and Result Codes	AT DIAL Command Only
01		DIU Connected	No DIU Connected

KEY/LED	X	LED ON	LED OFF
20		Data Security Group 4	Not Included
19		Data Security Group 2	Not Included
18		Data Security Group 3	Not Included
17		Data Security Group 1	Not Included
16			
15			
14			
13			
12			
11			
10			
09			
08			
07			
06			
05		Auto Pause ⁴ Behind PBX	No Auto Pause
04		DIU-DS Connected	DIU-DI Connected
03		DIU-DS to Modem Connection	DIU-DS to other type DCE or DTE
02		AT Commands and Result Codes	AT DIAL Command Only
01		DIU Connected	No DIU Connected

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data: LED 17 ON, all others OFF.
3. Copy this page if more than three DIUs are installed.
4. Auto pause will be inserted after a Centrex or PBX access code is dialed by a DIU: CO line must be assigned in **Program 42-0**, and must have access code assigned in **Program 42** (1 ~ 8). Pause time is determined by **Program 12-3**. A pause will also be inserted after the DK CO line access code is dialed (by the PDIU) in all cases if LED 05 is turned on.
5. DIUs can be connected to ports associated with PDKU circuits 1 ~ 7.

**PROGRAM 21
MODEM POOL PORT ASSIGNMENTS (RELEASE 3)**



	<i>PDKU/PDIU-DS, Port Number</i>	—	<i>PSTU/Modem Port Number</i>
Assignment 1		—	
Assignment 2		—	
Assignment 3		—	
Assignment 4		—	
Assignment 5		—	
Assignment 6		—	
Assignment 7		—	
Assignment 8		—	
Assignment 9		—	
Assignment 10		—	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data is blank.
3. Copy this page if more than 10 modems are assigned to modem pool.
4. Requires **Release 3** software.
5. DIUs can be connected to any ports associated with PDKU circuits 1 ~ 7.

PROGRAM 22
DATA INTERFACE UNIT (DIU) STATION HUNTING (DATA CALLS ONLY; RELEASE 3)



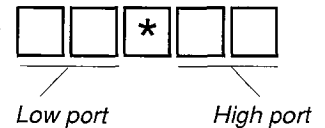
SELECT = Port Number (00~95)
 Enter the PDKU/DIU port number of the Hunt From station. See Note 3 for entering a range of ports.

HUNT TO = (00~95)
 Enter the Hunt To PDKU/DIU port number. See Note 4.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Hunt To																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data does not assign Hunt To points to any port.
3. A range of ports may be assigned by pressing the following key sequence:
4. Press LED key 01 to delete a digit from Hunt To port.
5. **Program 22** applies to PDIU-DI and PDIU-DS data stations. If programming a PDIU-DI station, use the associated digital telephone port number; the PDIU-DS is programmed using its own unique port number.



PROGRAM 28
DSS CONSOLE/ATTENDANT ELECTRONIC TELEPHONE ASSIGNMENTS AND
DIGITAL DSS CONSOLE/ATTENDANT DIGITAL TELEPHONE ASSIGNMENTS

A - S 2 8 H - S H - Z - Z

SELECT = (1~4)
Enter the DSS console number.
See Note 3.

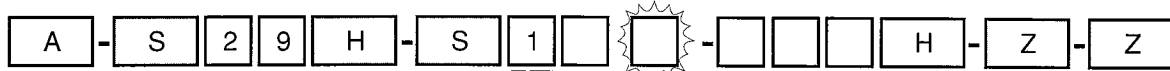
DSS ATT = (1~4)
Enter the attendant electronic or digital telephone number. See Notes 4 and 5.

DSS PEKU/ DDSS PDKU PCBs (Lowest Slot to Highest)	DSS/DDSS Console Number	Attendant Electronic/ Digital Telephone Number (1, 2, 3 or 4)
Low Slot Number:	1	
Slot Number:	2	
Slot Number:	3	
⁹ High Slot Number:	4	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. A digital DDSS console can be assigned to an electronic telephone, and a DSS console can be assigned to a digital telephone. DDSS is supported by PCTU3 only, DSS is supported by PCTU1, PCTU2, PCTU3, and PCTUS.
3. Refer to **Program 03**, Flexible PCB Slot Assignments, for the PCB slots of PEKUs and PDKUs configured to support consoles.
4. The system automatically assigns the console supported by the PEKU or PDKU in the lowest-number PCB slot to be console number 1. See Note 7.
5. The system automatically assigns the telephone connected to the 1st station port on a console PDKU or PEKU to be attendant number 1. See Note 7.
6. If more than one console is associated with one attendant telephone, then specify the same number attendant telephone for all consoles associated with it.
7. Shaded information is for configuration purposes only.
8. Initialized data assigns console #1 to attendant telephone #1; console #2 to attendant telephone #2; console #3 to attendant telephone #3, and console #4 to attendant telephone #4.
9. Console #4 is not available with PCTUS PCB.

PROGRAM 29-1
DIGITAL DSS AND DSS CONSOLE KEY ASSIGNMENTS
CONSOLE 1



SELECT = 1

DSS Number 1~4:

Each system can have up to 4 consoles. Enter the console to which keys are being assigned (DSS console 1).

DSS Key Group 1~3:

Each console has three groups of 20 LED keys. Choose the group to be assigned.

No. 01 ~ No. 20

Press the LED/key that is in the same position as the console key being assigned. The LED lights and the LCD displays the console key's number.

Code:

Assign the appropriate speed dial, CO line access, or DSS station access code to the key chosen. See code table below for the keys to enter. See Notes 4 and 5.

Console 1					
Group No. 1		Group No. 2		Group No. 3	
Key/Code	Key/Code	Key/Code	Key/Code	Key/Code	Key/Code
10	20	10	20	10	20
09	19	09	19	09	19
08	18	08	18	08	18
07	17	07	17	07	17
06	16	06	16	06	16
05	15	05	15	05	15
04	14	04	14	04	14
03	13	03	13	03	13
02	12	02	12	02	12
01	11	01	11	01	11

Code Table

Key Type	Code
Station Speed Dial	*10 ~ *49
System Speed Dial	*60 ~ *99
CO Line Access	01 ~ 36
DSS (Station Access)	#00 ~ #95
AC	89
NT1	91
NT2	92

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data associates the PEKU or PDKU's console with the telephone connected to PEKU or PDKU's first port. See **Program 28** to reassign consoles to other telephones.
- When assigning CO line access keys (01 ~ 36), the associated telephone must be assigned access to the CO line also. See **Program 40**.
- The **NT** and **AC** keys may be changed to **DSS**, **CO** or **SD** keys, but they may not be reassigned to other key locations.
- Initialized data assigns **AC** (Code 89) to Group No. 3 key 19 and **NT** (Code 91) to Group No. 3 key 20 on all consoles. All other keys are initialized as DSS keys to ports 00 ~ 57, in sequential order.
- Initialized key assignments are shown after **Program 29**.
- Important:** Only program **SD**, **CO**, **DSS**, **AC**, and **NT** buttons; programming other feature buttons on a console may cause system operation problems.

**PROGRAM 29-2
DIGITAL DSS AND DSS CONSOLE KEY ASSIGNMENTS
CONSOLE 2**



SELECT = 2
DSS Number 1~4:
Each system can have up to 4 consoles. Enter the console to which keys are being assigned (DSS console 2).

DSS Key Group 1~3:
Each console has three groups of 20 LEDs/keys. Choose the group to be assigned.

No. 01 ~ No. 20
Press the LED/key that is in the same position as the console key being assigned. The LED lights and the LCD displays the console key's number.

Code:
Assign the appropriate speed dial, CO line access, or DSS station access code to the key chosen. See code table below for the keys to enter. See Notes 4 and 5.

Console 2					
Group No. 1		Group No. 2		Group No. 3	
Key/Code	Key/Code	Key/Code	Key/Code	Key/Code	Key/Code
10	20	10	20	10	20
09	19	09	19	09	19
08	18	08	18	08	18
07	17	07	17	07	17
06	16	06	16	06	16
05	15	05	15	05	15
04	14	04	14	04	14
03	13	03	13	03	13
02	12	02	12	02	12
01	11	01	11	01	11

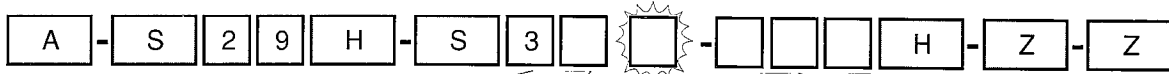
Code Table

Key Type	Code
Station Speed Dial	*10 ~ *49
System Speed Dial	*60 ~ *99
CO Line Access	01 ~ 36
DSS (Station Access)	#00 ~ #95
AC	89
NT1	91
NT2	92

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data associates the PEKU or PDKU's console with the telephone connected to PEKU or PDKU's first port. See **Program 28** to reassign consoles to other telephones.
3. When assigning CO line access keys (01 ~ 36), the associated telephone must be assigned access to the CO line also. See **Program 40**.
4. The **NT** and **AC** keys may be changed to **DSS**, **CO** or **SD** keys, but they may not be reassigned to other key locations.
5. Initialized data assigns **AC** (Code 89) to Group No. 3 key 19 and **NT** (Code 91) to Group No. 3 key 20 on all consoles. All other keys are initialized as DSS keys to ports 00 ~ 57, in sequential order.
6. Initialized key assignments are shown after **Program 29**.
7. **Important:** Only program **SD**, **CO**, **DSS**, **AC**, and **NT** buttons; programming other feature buttons on a console may cause system operation problems.

PROGRAM 29-3
DIGITAL DSS AND DSS CONSOLE KEY ASSIGNMENTS
CONSOLE 3



SELECT = 2

DSS Number 1~4:

Each system can have up to 4 consoles. Enter the console to which keys are being assigned (DSS console 2).

DSS Key Group 1~3:

Each console has three groups of 20 LEDs/keys. Choose the group to be assigned.

No. 01 ~ No. 20

Press the LED/key that is in the same position as the console key being assigned. The LED lights and the LCD displays the console key's number.

Code:

Assign the appropriate speed dial, CO line access, or DSS station access code to the key chosen. See code table below for the keys to enter. See Notes 4 and 5.

Console 3					
Group No. 1		Group No. 2		Group No. 3	
Key/Code	Key/Code	Key/Code	Key/Code	Key/Code	Key/Code
10	20	10	20	10	20
09	19	09	19	09	19
08	18	08	18	08	18
07	17	07	17	07	17
06	16	06	16	06	16
05	15	05	15	05	15
04	14	04	14	04	14
03	13	03	13	03	13
02	12	02	12	02	12
01	11	01	11	01	11

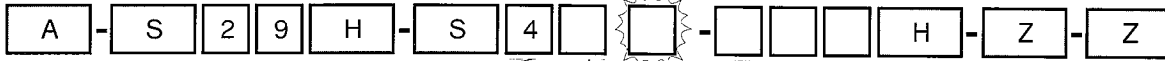
Code Table

Key Type	Code
Station Speed Dial	*10 ~ *49
System Speed Dial	*60 ~ *99
CO Line Access	01 ~ 36
DSS (Station Access)	#00 ~ #95
AC	89
NT1	91
NT2	92

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data associates the PEKU or PDKU's console with the telephone connected to PEKU or PDKU's first port. See **Program 28** to reassign consoles to other telephones.
- When assigning CO line access keys (01 ~ 36), the associated telephone must be assigned access to the CO line also. See **Program 40**.
- The **NT** and **AC** keys may be changed to **DSS**, **CO** or **SD** keys, but they may not be reassigned to other key locations.
- Initialized data assigns **AC** (Code 89) to Group No. 3 key 19 and **NT** (Code 91) to Group No. 3 key 20 on all consoles. All other keys are initialized as DSS keys to ports 00 ~ 57, in sequential order.
- Initialized key assignments are shown after **Program 29**.
- Important:** Only program **SD**, **CO**, **DSS**, **AC**, and **NT** buttons; programming other feature buttons on a console may cause system operation problems.

PROGRAM 29-4
DIGITAL DSS AND DSS CONSOLE KEY ASSIGNMENTS
CONSOLE 4



SELECT = 2

DSS Number 1~4:

Each system can have up to 4 consoles. Enter the console to which keys are being assigned (DSS console 2).

DSS Key Group 1~3:

Each console has three groups of 20 LEDs/keys. Choose the group to be assigned.

No. 01 ~ No. 20

Press the LED/key that is in the same position as the console key being assigned. The LED lights and the LCD displays the console key's number.

Code:

Assign the appropriate speed dial, CO line access, or DSS station access code to the key chosen. See code table below for the keys to enter. See Notes 4 and 5.

Console 4					
Group No. 1		Group No. 2		Group No. 3	
Key/Code	Key/Code	Key/Code	Key/Code	Key/Code	Key/Code
10	20	10	20	10	20
09	19	09	19	09	19
08	18	08	18	08	18
07	17	07	17	07	17
06	16	06	16	06	16
05	15	05	15	05	15
04	14	04	14	04	14
03	13	03	13	03	13
02	12	02	12	02	12
01	11	01	11	01	11

Code Table

Key Type	Code
Station Speed Dial	*10 ~ *49
System Speed Dial	*60 ~ *99
CO Line Access	01 ~ 36
DSS (Station Access)	#00 ~ #95
AC	89
NT1	91
NT2	92

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data associates the PEKU or PDKU's console with the telephone connected to PEKU or PDKU's first port. See **Program 28** to reassign consoles to other telephones.
3. When assigning CO line access keys (01 ~ 36), the associated telephone must be assigned access to the CO line also. See **Program 40**.
4. The **NT** and **AC** keys may be changed to **DSS**, **CO** or **SD** keys, but they may not be reassigned to other key locations.
5. Initialized data assigns **AC** (Code 89) to Group No. 3 key 19 and **NT** (Code 91) to Group No. 3 key 20 on all consoles. All other keys are initialized as DSS keys to ports 00 ~ 57, in sequential order.
6. Initialized key assignments are shown after **Program 29**.
7. **Important:** Only program **SD**, **CO**, **DSS**, **AC**, and **NT** buttons; programming other feature buttons on a console may cause system operation problems.

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PROGRAM 29
INITIALIZED DSS AND DIGITAL DSS CONSOLE KEY ASSIGNMENTS

PCTU (1,2, or 3)					
#09	#19	#29	#39	#49	NT 1(91)
#08	#18	#28	#38	#48	AC (89)
#07	#17	#27	#37	#47	#57
#06	#16	#26	#36	#46	#56
#05	#15	#25	#35	#45	#55
#04	#14	#24	#34	#44	#54
#03	#13	#23	#33	#43	#53
#02	#12	#22	#32	#42	#52
#01	#11	#21	#31	#41	#51
#00	#10	#20	#30	#40	#50

PCTUS					
#09	#19	*15	*25	*35	NT 1(91)
#08	#18	14	24	34	AC(89)
#07	#17	13	23	33	*43
#06	#16	12	22	32	42
#05	#15	11	21	31	41
#04	#14	*10	20	30	40
#03	#13	#23	19	29	39
#02	#12	#22	18	28	38
#01	#11	#21	17	27	37
#00	#10	#20	*16	*26	*36

**PROGRAM 30
STATION CLASS OF SERVICE
(PORTS 00 ~ 31)**



SELECT = Port Number(s)

Enter the port number(s) to which class of service must be assigned. See Note 4 for entering a range of ports.

Key LEDs

Light LEDs for the port specified in the last step. All Keys/LEDs marked with an "X" in the table below should be lit.

Feature	Key LED	Port Numbers 00~31																																	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	20																																		
Priv. Override Allowed ⁷	19																																		
Exec. Override Allowed ⁷	18																																		
DND Override Allowed ⁷	17																																		
Change T.C.O. Code (R3) ¹⁰	16																																		
Change Verified A.C. (R3) ¹¹	15																																		
Account Codes Verified (R3)	14																																		
Digital Tele. Recv. Vol. (R3) ¹⁴	13																																		
Digital Tele. Recv. Vol. (R3) ¹⁴	12																																		
Dial Pulse/(DTMF Off) ⁹	11																																		
Change DISA Security Code ⁸ (R2)	10																																		
Change TR Override Code ¹²	09																																		
Forced Acc't Code	08																																		
OCA/Busy Override Automatic ⁵	07																																		
ABR Access Enabled	06																																		
Speed Dial Allowed	05																																		
	04																																		
MIC on at Start of Call ¹³	03																																		
MIC Key Lock Enabled ¹³	02																																		
Speakerphone Enabled	01																																		

NOTES:

1. For more information, see the instructions preceding the record sheets.
 2. Initialized data reads LEDs 01, 05, 07, and 12 ON for all ports.
 3. Ports 32 ~ 95 on next page. The same notes apply to all ports.
 4. A range of ports may be specified by entering *
- Low port in range
High port in range
5. If this LED is turned OFF, OCA and Busy Override must be accessed manually by dialing **2**. If kept ON, ACB and Executive Override cannot be accessed.
 6. If all stations are allowed Privacy Override, (the system will be non-private), allowing up to three telephones to talk on the same CO line.
 7. See **Program 10-2** to enable/disable Priv./Exec./DND override warning tones.
 8. Change DISA security code is available with **Release 2** and above software only. To change DISA code from selected stations: Dial **INT 6 5 8** + code + **#**.
 9. DP or DTMF is specified for standard telephones only, PSTU or PESU (circuits 1 and 2).
 10. To change a 4-digit Traveling Class Override (T.C.O.) code: Dial **INT** + + code + **#**.
 = **6 2 2** - Class 1, **6 2 3** - Class 2, **6 2 4** - Class 3, **6 2 5** - Class 4.
 11. To change verified account codes from selected stations: Dial **INT** + **6 5 9** + Code Number (000 ~ 299) + code (1 ~ 15 digits) + **#**. Note that the total account code digit length is set in **Program 60-4**; all digits do not have to be verified.
 12. To change the 4-digit T. R. override codes (1 or 2) from selected stations: Dial **INT** + **6 5 4** + code + **#** or **INT** + **6 5 5** + code + **#**.
 13. MIC ON/OFF at start of call (LED 03 ON = MIC ON, LED 03 OFF = MIC OFF) is only in effect if MIC key lock is enabled (LED 02 = ON).
 14. There are nine handset receiver volume levels, 1 ~ 9 (9 being the highest). The initial off-hook level can be set anywhere from level 2 to 5. Set the initial level with one of the following combinations: Level 2 = 12 OFF/13 OFF; Level 3 = 12 ON/13 OFF (default level); Level 4 = 12 OFF/13 ON; Level 5 = 12 ON/13 ON.

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PROGRAM 30
STATION CLASS OF SERVICE
(PORTS 32 ~ 95)

Feature	Key LED	Port Numbers 32-63																															
		32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	20																																
Priv. Override Allowed ⁷	19																																
Exec. Override Allowed ⁷	18																																
DND Override Allowed ⁷	17																																
Change T.C.O. Code (R3) ¹⁰	16																																
Change Verified A.C. (R3) ¹¹	15																																
Account Codes Verified (R3)	14																																
Digital Tele. Recv. Vol. (R3) ¹⁴	13																																
Digital Tele. Recv. Vol. (R3) ¹⁴	12																																
Dial Pulse (DTMF Off) ⁹	11																																
Change DISA Security Code (R2) ⁸	10																																
Change TR Override Code ¹²	09																																
Forced Account Code	08																																
OCA/Busy Override Automatic ⁵	07																																
ABR Access Enabled	06																																
Speed Dial Allowed	05																																
	04																																
MIC on at Start of Call ¹³	03																																
MIC Key Lock Enabled ¹³	02																																
Speakerphone Enabled	01																																

Feature	Key LED	Port Numbers 64-95																																	
		64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95		
	20																																		
Priv. Override Allowed ⁷	19																																		
Exec. Override Allowed ⁷	18																																		
DND Override Allowed ⁷	17																																		
Change T.C.O. Code (R3) ¹⁰	16																																		
Change Verified A.C. (R3) ¹¹	15																																		
Account Codes Verified (R3)	14																																		
Digital Tele. Recv. Vol. (R3) ¹⁴	13																																		
Digital Tele. Recv. Vol. (R3) ¹⁴	12																																		
Dial Pulse (DTMF Off) ⁹	11																																		
Change DISA Security Code (R2) ⁸	10																																		
Change TR Override Code ¹²	09																																		
Forced Acc't Code	08																																		
OCA/Busy Override Automatic ⁵	07																																		
ABR Access Enabled	06																																		
Speed Dial Allowed	05																																		
	04																																		
MIC on at Start of Call ¹³	03																																		
MIC Key Lock Enabled ¹³	02																																		
Speakerphone Enabled	01																																		

Notes from page 2-71 apply.

**PROGRAM 31
STATION CLASS OF SERVICE
(PORTS 00 ~ 31)**



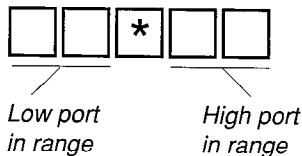
SELECT = Port Number(s)
Enter the port number(s)
to which class of service
must be assigned.
See Note 4 for entering
a range of ports.

Key LEDs
Light LEDs for the port specified in
the last step. All keys/LEDs marked with
an "X" in the table below should be lit.

Feature	Key LED	Port Numbers 00-31																																		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
INTOUCH (B + Station No.)	20																																			
INTOUCH (B No Station)	19																																			
Block Exec./Priv. Ovr. ⁸	18																																			
End/End Signal Rcv (VM)	17																																			
Receive VM ID Code	16																																			
INTOUCH Integration (A/D)	15																																			
Group Page 4 - EKTs/DKTs	14																																			
Group Page 3 - EKTs/DKTs	13																																			
Group Page 2 - EKTs/DKTs	12																																			
Group Page 1 - EKTs/DKTs	11																																			
All Call Page Allowed - EKTs/DKTs	10																																			
VM (No Conference)	09																																			
VM Group 4	08																																			
VM Group 3	07																																			
VM Group 2	06																																			
VM Group 1	05																																			
VM to VM Call Blocking (R3) ⁷	04																																			
OCA Enabled (Receive)	03																																			
Handsfree No Warning	02																																			
Handsfree Disabled	01																																			

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data reads LED 10 ON for all ports.
3. Ports 32 ~ 95 on next page. The same notes apply.
4. A range of ports may be specified by entering



5. If key LED 15 is lit, key LED 17 must be lit.
If key LED 19 is lit, key LED 17 must be lit.
If key LED 20 is lit, key LEDs 17 and 19 must both be lit.
6. INTOUCH B + Station No./B No Station requires INTOUCH software **Release B.06** or above.
7. VM to VM call block should be "ON" for all VM (PSTU/PESU) ports if the Voice Mail/Auto Attendant machine does supervised and/or screened transfer.
8. Block Exec./Priv. override (LED 18 "ON") prevents Privacy Override to the selected station unless the **PRV/RLS** key is "ON" at that station; this option (LED 18 "ON") prevents executive override to the station under all conditions.

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PROGRAM 31
STATION CLASS OF SERVICE
(PORTS 32 ~ 95)

Feature	Key LED	Port Numbers 32 ~ 63																																		
		32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63			
INTOUCH (B + Station No.)	20																																			
INTOUCH (B No Station)	19																																			
Block Exec./Priv. Ovr. ⁸	18																																			
End/End Signal Rcv. (VM)	17																																			
Receive VM ID Code	16																																			
INTOUCH Integration (A/D)	15																																			
Group Page 4 - EKTs/DKTs	14																																			
Group Page 3 - EKTs/DKTs	13																																			
Group Page 2 - EKTs/DKTs	12																																			
Group Page 1 - EKTs/DKTs	11																																			
All Call Page Allowed - EKTs/DKTs	10																																			
VM (No Conference)	09																																			
VM Group 4	08																																			
VM Group 3	07																																			
VM Group 2	06																																			
VM Group 1	05																																			
VM to VM Call Blocking (R3) ⁷	04																																			
OCA Enabled (Receive)	03																																			
Handsfree No Warning	02																																			
Handsfree Disabled	01																																			

Feature	Key LED	Port Numbers 64 ~ 95																																		
		64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95			
INTOUCH (B + Station No.)	20																																			
INTOUCH (B No Station)	19																																			
Block Exec./Priv. Ovr. ⁸	18																																			
End/End Signal Rcv. (VM)	17																																			
Receive VM ID Code	16																																			
INTOUCH Integration (A/D)	15																																			
Group Page 4 - EKTs/DKTs	14																																			
Group Page 3 - EKTs/DKTs	13																																			
Group Page 2 - EKTs/DKTs	12																																			
Group Page 1 - EKTs/DKTs	11																																			
All Call Page Allowed - EKTs/DKTs	10																																			
VM (No Conference)	09																																			
VM Group 4	08																																			
VM Group 3	07																																			
VM Group 2	06																																			
VM Group 1	05																																			
VM to VM Call Blocking (R3) ⁷	04																																			
OCA Enabled (Receive)	03																																			
Handsfree No Warning	02																																			
Handsfree Disabled	01																																			

Notes from page 2-73 apply.

**PROGRAM 32
AUTOMATIC PREFERENCE**



SELECT = Port Number
Enter the port number of the station having preference defined. See Note 3 below for entering a range of ports.

DATA = Ringing Code
Enter 0 to disable Ringing Line Preference.
Enter 1 to enable Ringing Line Preference.

Automatic Preference Code:
Enter 00 for no selection.
Enter 01 for intercom.
Enter 02 for lowest CO line.
Enter 11 ~ 18 for Line Groups 1~ 8.

Port Number	Ringing Code (0 or 1)	Automatic Preference Code	Port Number	Ringing Code (0 or 1)	Automatic Preference Code	Port Number	Ringing Code (0 or 1)	Automatic Preference Code
00			32			64		
01			33			65		
02			34			66		
03			35			67		
04			36			68		
05			37			69		
06			38			70		
07			39			71		
08			40			72		
09			41			73		
10			42			74		
11			43			75		
12			44			76		
13			45			77		
14			46			78		
15			47			79		
16			48			80		
17			49			81		
18			50			82		
19			51			83		
20			52			84		
21			53			85		
22			54			86		
23			55			87		
24			56			88		
25			57			89		
26			58			90		
27			59			91		
28			60			92		
29			61			93		
30			62			94		
31			63			95		

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data assigns Ringing Code 1 and Automatic Off-hook Code 00 for all ports. Power up sequence assigns Automatic Off-hook Code 01 to programming port 05.
- To enter a range of ports dial the following key sequence:
- Automatic Preference applies to Off-hook and speaker key.
- This program applies to electronic and digital telephones only; standard telephones always select the system intercom path when going off-hook.

PROGRAM 33
STATION HUNTING (VOICE CALLS ONLY)



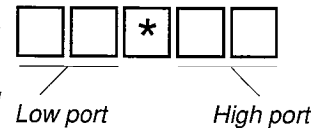
SELECT = Port Number (00~95)
 Enter the port number
 of the Hunt From station.
 See Note 3 for entering
 a range of ports.

HUNT TO = (00~95)
 Enter the Hunt To
 port number.
 See Note 4.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Hunt To																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data does not assign Hunt To points to any port.
3. A range of ports may be assigned by pressing the following key sequence:
4. Press LED/key 01 to delete a digit from Hunt To port.
5. If a Hunt station is in Call Forward, calls will be directed to the forwarded destination.
6. CO lines will Hunt if they are programmed to ring at the Hunt station only; CO lines that ring at more than one station in any given ring program (81-89) will not Hunt.



**PROGRAM 34
HOLD/PARK RECALL TIMING**

- - # - -

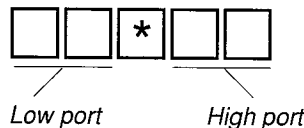
SELECT = Port Number (00~95)
Enter the port number having its Hold/Park Recall Time defined. See Note 4 for entering a range of ports.

HOLD TIME = Seconds
Enter the number of seconds the system will wait. Use three digits. Acceptable range is 000 or 011~160. See Note 3.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Seconds																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns a Hold/Park recall time of 032 seconds to all ports.
3. Enter 000 for no hold recall. Enter 011~160 for 11 to 160 seconds.
4. Enter a range of ports by keying in the following sequence:



PROGRAM 35
STATION CLASS OF SERVICE
(PORTS 00 ~ 31)



SELECT = Port Number (00~95)
 Enter the port number(s) being defined. See Note 3 for entering a range of ports.

LED Keys
 Select LEDs to light for the port specified in the last step. All LEDs marked with an "X" in the table below should be lit.

Feature	LED Keys	Port Numbers (00~31)																														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	20																															
	19																															
	18																															
	17																															
	16																															
	15																															
	14																															
	13																															
	12																															
	11																															
	10																															
	09																															
	08																															
	07																															
	06																															
LCD Indiv. Message ⁴	05																															
Message Waiting (RCV)	04																															
	03																															
LCD Type/32-ON/12-OFF ⁵	02																															
LCD Display ⁵	01																															

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data reads key/LED 05 lit for ports 00~15, and keys/LEDs 01, 02, and 04 lit for ports 00~95.

3. Enter a range of ports by keying in the following sequence: *

Low port High port

- The maximum number of LCD stations that may be assigned personal message/speed dial memos/timed reminder memos is 16 with PCTU (1, 2, or 3), and 6 with PCTUS. Initialized data assigns the lowest port numbers: 00 ~ 15 with PCTU; 00 ~ 05 with PCTUS.
- Key LEDs 01, 02 and 04 should be lit for all stations connected to voice mail ports - allow proper voice mail integration.
 Key LED 01 and 02 should be lit for all stations (even non-LCD), unless it is desired to disable the LCD and message waiting indication.
- Ports 32 ~ 95 are found on the next page. The same notes apply.

**PROGRAM 35
STATION CLASS OF SERVICE
(PORTS 32 ~ 95)**

Feature	LED Keys	Port Numbers (32-63)																																			
		32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63				
	20																																				
	19																																				
	18																																				
	17																																				
	16																																				
	15																																				
	14																																				
	13																																				
	12																																				
	11																																				
	10																																				
	09																																				
	08																																				
	07																																				
	06																																				
LCD Indiv. Message ⁴	05																																				
Message Waiting (RCV)	04																																				
	03																																				
LCD Type/32-ON/12-OFF ⁵	02																																				
LCD Display ⁵	01																																				

Feature	LED Keys	Port Numbers (64-95)																																			
		64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95				
	20																																				
	19																																				
	18																																				
	17																																				
	16																																				
	15																																				
	14																																				
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	12																																				
	11																																				
	10																																				
	09																																				
	08																																				
	07																																				
	06																																				
LCD Indiv. Message ⁴	05																																				
Message Waiting (RCV)	04																																				
	03																																				
LCD Type/32-ON/12-OFF ⁵	02																																				
LCD Display ⁵	01																																				

Notes from page 2-78 apply.

PROGRAM 36
FIXED CALL FORWARD (VOICE CALLS ONLY)



SELECT = Port Number (00~95)
 Enter the port number of the station that needs a Fixed Call Forward location assigned. See Note 3 for a range of ports.

FORWARD TEL = Port Number (00~95)
 Enter the port number of the station or VM port that will be call forwarded to when the Fixed Call Forward key is pressed.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Foward Tel																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data does not assign a Fixed Call Forward location to any port.

3. To enter a range of ports, key in the following sequence: *
Low port High port

4. Press LED/key 01 to enter blanks.
5. See **Program 39**, code 86, to assign Fixed Call Forward keys on EKTs.
6. Fixed Call Forward will forward all calls to the designated port.
7. Stations that have fixed call forward set will not ring.
8. **Program 92-9** does not clear fixed call forward memory.

PROGRAM 37
RING TRANSFER (CAMP-ON) RECALL TIME

A - S 3 7 H - S # H - Z - Z

SELECT = Port Number (00~95)
Enter the number of the port that needs a Ring Transfer Recall time assigned. See Note 3 for entering a range of ports.

HOLD TIME = Ring Transfer Recall Time
Enter the Ring Transfer Recall Time (in seconds). The acceptable range is 011 ~ 999 seconds. Use three digits. See Note 4.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Hold Time																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns a Ring Transfer Recall Time of 032 seconds to all ports.

3. To enter a range of ports, key in the sequence: *

Low port High port

4. The acceptable range of Ring Transfer Recall Times is 11 seconds to 999 seconds (16.65 minutes).
5. Ring Transfer Recall Time is the time it takes to recall a station **that originates an** unanswered or busy (camped-on) transferred call.
6. Ring Transfer must be allowed (**Program 10-1**, LED 07 "ON") for transfer recall to function; otherwise Recall will be immediate.

PROGRAM 38
ELECTRONIC AND DIGITAL TELEPHONE KEYSTRIP TYPE



SELECT = Port Number (00-95)
 Enter the port number of the station that needs a keystrip defined. See Note 4 for entering a range of ports.

KEY MENU = Code
 Enter the appropriate code as follows:

Telephone Type	Code
10-key	21
20-key (A)	31
20-key (B)	32
20-key (C)	33

See Note 5.

Port	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Key Menu																
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns Code 31 to all ports.
3. Always complete **Program 38** before proceeding to **39**.

4. To enter a range of ports, key in the sequence:

		*		
--	--	---	--	--

Low port
High port

5. The default electronic telephone keystrips assigned by the codes follow:

MW/FL
DND
CO7
CO6
CO5
CO4
CO3
CO2
CO1
INT

Code 21
10-key

CO9	MW/FL
CO8	DND
CO7	CO17
CO6	CO16
CO5	CO15
CO4	CO14
CO3	CO13
CO2	CO12
CO1	CO11
INT	CO10

Code 31
20-key (A)

CO9	MW/FL
CO8	DND
CO7	SD5
CO6	SD4
CO5	SD3
CO4	SD2
CO3	SD1
CO2	CO12
CO1	CO11
INT	CO10

Code 32
20-key (B)

SD1	MW/FL
CO8	DND
CO7	SDS
CO6	RDL
CO5	PAU
CO4	SD6
CO3	SD5
CO2	SD4
CO1	SD3
INT	SD2

Code 33
20-key (C)

PROGRAM 38 (continued)
ELECTRONIC AND DIGITAL TELEPHONE KEYSRIP TYPE

6. The default digital telephone keystrips assigned by the codes are as follows:

CO15	CO16	CO17	DND	FLASH
CO10	CO11	CO12	CO13	CO14
CO5	CO6	CO7	CO8	CO9
INT	CO1	CO2	CO3	CO4

Code 31
20-key (A)

SD3	SD4	SD5	DND	FLASH
CO10	CO11	CO12	SD1	SD2
CO5	CO6	CO7	CO8	CO9
INT	CO1	CO2	CO3	CO4

Code 32
20-key (B)

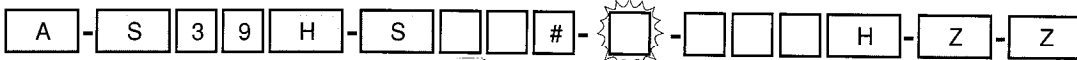
7. The digital telephone keystrip for code 33, shown below, is not provided with your system; however, it still can be assigned.

PAU	RDL	SDS	DND	FLASH
SD2	SD3	SD4	SD5	SD6
CO5	CO6	CO7	CO8	SD1
INT	CO1	CO2	CO3	CO4

Code 33
20-key (C)

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
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PROGRAM 39
FLEXIBLE KEY ASSIGNMENT REFERENCE GUIDE



SELECT = Port Number
or range. See Note 4.

Press LED key to be defined. See tables on the following pages.

Code:
Enter the appropriate code that corresponds to the feature to be assigned. See the feature code reference table below.

Key Name	Abbrev.	Code	Notes	Key Name	Abbrev.	Code	Notes
Account Code (R3)	ACCOUNT	50	Allows a voluntary account code to be entered	Door Lock 1 thru Door Lock 4 (HDCB 1 ~ 4, R2)	DRLK 1 DRLK 2 DRLK 3 DRLK 4	72 73 74 75	Momentarily unlocks door (3 or 6 sec.). See Prog. 77-1 and 77-2.
Alarm	ALRM	77	Resets alarm condition system wide	Intercom	INT	00	Intercom line access key
All Call Voice Page	AC	89	Pages all idle electronic/digital telephones over speaker	LCD Message	MSG	81	Begins LCD message selection
Automatic Busy Redial	ABR	70	Sets ABR of busy outgoing number. See Prog. 30, 06	Message Waiting and Flash	MW/FL	99	Provides message waiting LED and Flash key
Automatic Callback Busy	ACB	94	Sets ACB for station recalled by busy line	Microphone Cut-off	MCO	88	Sets microphone on/off for incoming handsfree intercom calls
Background Music	BGM	78	Turns BGM ON or OFF through station speaker	Modem (R3)	MODEM	55	Used to reserve modem in modem pool
Call Forward All Calls	CF-AC	87	All calls forward to selected station	Night Transfer Tenant 1	NT1	91	Sets Tenant 1 CO DAY/NIGHT ringing mode
Call Forward A.C. Fixed	CF-Fixed	86	Forwards all calls to pre-defined destination. See Prog. 36	Night Transfer Tenant 2	NT2	92	Sets Tenant 2 CO DAY/NIGHT ringing mode
Call Forward Busy (R2)	CF-Busy	59	Forwards calls to selected station if station is busy	Pause	PAU	95	Sets a pause in Speed Dial. See Program 12-3
Call Forward Busy/No Answer (R2)	CF-B/NA	57	Forwards calls to selected station if station is busy or does not answer	Pause (Long)	PAU(L)	93	Sets a 10-second pause in Speed Dial
Call Forward No Answer (R2)	CF-NA	58	Forwards calls to selected station if station does not answer	Pooled Line	PL	61 ~ 68	Multiple CO lines may appear under one key
Call Pickup	PKUP	84	Picks up ringing Intercom, CO calls, and Page	Privacy (R3)	PRIVACY	53	Prevents Privacy Override (not Exc. Over.)
Call Pickup Tenant 1	PKUP1	83	Picks up tenant 1 ringing CO calls	Privacy Release	PRV RLS	79	Changes station Privacy mode to Non-private for COs
Call Pickup Tenant 2	PKUP2	82	Picks up tenant 2 ringing CO calls	Redial Last Number (F key)	RDL	96	Redials the last number
CO Line Appearance	CO 01 ~ CO 36	01 ~ 36	CO line access of appearing calls	Release (R2)	RLS	76	Releases current call and makes station idle
Data (R3)	DATA	56	Used to place data call	Save Last Number	SAVE	85	Saves last number dialed for future speed dial
Data Release (R3)	DRLS	54	Releases data call	Speed Dial Select (F key)	SDS	97	Begins speed dial selection
Direct Station Selection	DSS	#00 ~ #95	Assigns DSS hotline keys to port number	Speed Dial	SD	* 10 ~ * 49	Reserves key for station speed dial
Do Not Disturb	DND	98	Prevents calls to station	Speed Dial (Fixed)	SD(F)	* 60 ~ * 99	Speed dial number set by station port #00
Door Lock 0	DRLK 0	71	Momentarily unlocks door (3 or 6 sec.) PIOUS/PIOU/PEPU	Tone	TONE	90	CO dial signals set to tone or pulse

NOTES:

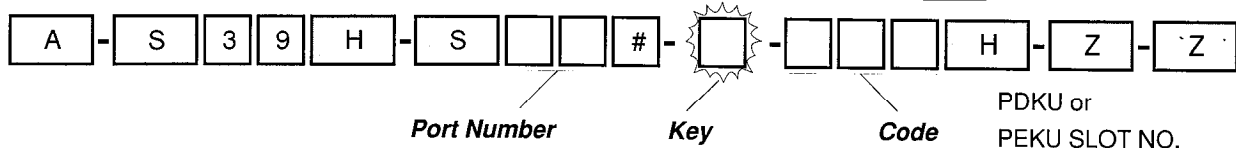
- For more information, see the instructions preceding the record sheets.
- Complete **Program 38** before **Program 39**.
- Initialized data assigns keystrip pattern associated with Code 31 from **Program 38**.
- Specify a range of ports by keying in *

Low port High port

- MW/FL** — Sets pauses in Speed Dial if telephone does not have a pause key.
- RDL & SDS** — Both keys must be programmed on electronic telephone; not allowed separately. Recommended on all stations using voice mail, since they allow easy access of F and F DTMF keys.
- PL** — Codes 61 ~ 68 represent CO line groups 81 ~ 88.
— Maximum 4 PL keys per pooled line group on each station.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
SECTION 200-096-302
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PROGRAM 39
FLEXIBLE KEY ASSIGNMENT FOR PORTS _____ TO _____



KEY	CODE
ACCOUNT	50
ALRM	77
AC	89
ABR	70
ACB	94
BGM	78
CF-AC	87
CF-Fixed	86
CF-Busy	59
CF-B/NA	57
CF-NA	58
PKUP	84

KEY	CODE
PKUP1	83
PKUP2	82
CO 01 ~	01 ~ 36
CO 36	
DATA	56
DRLS	54
DSS ²	#00 ~ #95
DND	98
DRLK 0	71
DRLK 1	72

KEY	CODE
DRLK 2	73
DRLK 3	74
DRLK 4	75
INT	00
MSG	81
MW/FL	99
MCO	88
MODEM	55
NT1	91
NT2	92
PAU	95
PAU(L)	93

KEY	CODE
PL	61 ~ 68
PRIVACY	53
PRV RLS	79
RDL ³	96
RLS	76
SAVE	85
SDS ³	97
SD ²	*10 ~ *49
SD(F) ²	*60 ~ *99
TONE	90

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

PORT NO. _____ . LCD DIU

LOCATION:

Key	Code	Key	Code
10		20	
09		19	
08		18	
07		17	
06		16	
05		15	
04		14	
03		13	
02		12	
01		11	

- NOTES: 1. See Program 39 on previous page for more flexible key information.
 2. DSS buttons are used for Voice calls only; Speed Dial (SD) buttons are used for Voice and/or DATA calls.
 3. To allow a station to set **1** and **##** DTMF tones in speed dial numbers, the station must have the SDS and RDL buttons. 1000 series Digital Telephone only require the **SDS** button because the **REDIAL** button is permanent and replaces the **RDL** function.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
SECTION 200-096-302
FEBRUARY 1991

PROGRAM 40
STATION CO LINE ACCESS
(PORTS 00 ~ 35)



SELECT = Port Numbers **Key LEDs = CO Lines**
 Light LEDs for the port(s) specified.

CO	Key LED	Port Numbers 00~35																																						
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35			
Off-hook	36	16																																						
	35	15																																						
	34	14																																						
	33	13																																						
	32	12																																						
	31	11																																						
	30	10																																						
	29	09																																						
	28	08																																						
	27	07																																						
	26	06																																						
	25	05																																						
24	04																																							
23	03																																							
22	02																																							
21	01																																							
On-hook	20	20																																						
	19	19																																						
	18	18																																						
	17	17																																						
	16	16																																						
	15	15																																						
	14	14																																						
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07	07																																							
06	06																																							
05	05																																							
04	04																																							
03	03																																							
02	02																																							
01	01																																							

- NOTES:**
- For more information, see the instructions preceding the record sheets.
 - Ports 36 ~ 71 on next page. The same notes apply.
 - Initialized data reads all LEDs ON for all CO lines. Complete CO line access is allowed on all ports.
 - Denying access in this program applies to **all** access options, including LCR.
 - This program also denies Pickup CO line access.
 - A range of ports may be entered by keying in: *

Low port in range — High port in range

PROGRAM 40
STATION CO LINE ACCESS
(PORTS 36 ~ 71)



SELECT = Port Numbers

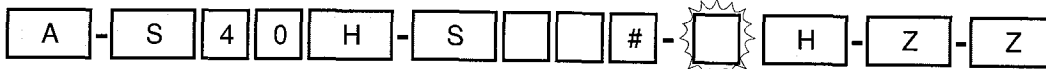
Key LEDs = CO Lines

Light LEDs for the port(s) specified.

CO Key LED		Port Numbers 36~71																																								
		36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71					
Off-hook	36	16																																								
	35	15																																								
	34	14																																								
	33	13																																								
	32	12																																								
	31	11																																								
	30	10																																								
	29	09																																								
	28	08																																								
	27	07																																								
	26	06																																								
	25	05																																								
24	04																																									
23	03																																									
22	02																																									
21	01																																									
On-hook	20	20																																								
	19	19																																								
	18	18																																								
	17	17																																								
	16	16																																								
	15	15																																								
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	06	06																																								
	05	05																																								
04	04																																									
03	03																																									
02	02																																									
01	01																																									

NOTE: Ports 72 ~ 95 and 99 on next page. The same notes apply.

PROGRAM 40
STATION CO LINE ACCESS
(PORTS 72 ~ 95, AND 99)



SELECT = Port Numbers Key LEDs = CO Lines
Light LEDs for the port(s) specified.

	CO	Key LED	Port Numbers 72~95																											
			72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	99			
Off-hook	36	16																												
	35	15																												
	34	14																												
	33	13																												
	32	12																												
	31	11																												
	30	10																												
	29	09																												
	28	08																												
	27	07																												
	26	06																												
	25	05																												
24	04																													
23	03																													
22	02																													
21	01																													
On-hook	20	20																												
	19	19																												
	18	18																												
	17	17																												
	16	16																												
	15	15																												
	14	14																												
	13	13																												
	12	12																												
	11	11																												
	10	10																												
	09	09																												
08	08																													
07	07																													
06	06																													
05	05																													
04	04																													
03	03																													
02	02																													
01	01																													

**PROGRAM 41
STATION OUTGOING CALL RESTRICTION
(PORTS 00 ~ 35)**



SELECT = Port Numbers

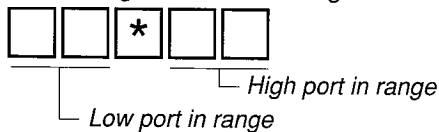
Key LEDs = CO Lines

Light LEDs for the port(s) to be restricted.

CO	Key LED	Port Numbers 00~35																																					
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
Off-hook	36 16																																						
	35 15																																						
	34 14																																						
	33 13																																						
	32 12																																						
	31 11																																						
	30 10																																						
	29 09																																						
	28 08																																						
	27 07																																						
	26 06																																						
	25 05																																						
	24 04																																						
	23 03																																						
22 02																																							
21 01																																							
On-hook	20 20																																						
	19 19																																						
	18 18																																						
	17 17																																						
	16 16																																						
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	08 08																																						
	07 07																																						
	06 06																																						
	05 05																																						
04 04																																							
03 03																																							
02 02																																							
01 01																																							

NOTES:

- For more information, see the instructions preceding the record sheets.
- Ports 36 ~ 71 on next page. The same notes apply to all ports.
- Initialized data reads all LEDs OFF for all CO lines (all stations allowed outgoing access to all CO lines).
- This program denies all outgoing calls except when using least cost routing.
- A range of ports may be entered by keying in:
- With **Release 1** software, CO lines restricted (LED "ON") in **Program 41** may not be accessed for ABR calls; with **Release 2** and above, restricted CO lines may be accessed for ABR calls.



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PROGRAM 41
STATION OUTGOING CALL RESTRICTION
(PORTS 36 ~ 71)



SELECT = Port Numbers

Key LEDs = CO Lines

Light LEDs for the port(s) to be restricted.

	CO	Key LED	Port Numbers 36~71																																					
			36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71		
Off-hook	36	16																																						
	35	15																																						
	34	14																																						
	33	13																																						
	32	12																																						
	31	11																																						
	30	10																																						
	29	09																																						
	28	08																																						
	27	07																																						
	26	06																																						
	25	05																																						
	24	04																																						
	23	03																																						
22	02																																							
21	01																																							
On-hook	20	20																																						
	19	19																																						
	18	18																																						
	17	17																																						
	16	16																																						
	15	15																																						
	14	14																																						
	13	13																																						
	12	12																																						
	11	11																																						
	10	10																																						
	09	09																																						
	08	08																																						
	07	07																																						
06	06																																							
05	05																																							
04	04																																							
03	03																																							
02	02																																							
01	01																																							

NOTE: Ports 72 ~ 95 and 99 on next page. The same notes apply.

**PROGRAM 41
STATION OUTGOING CALL RESTRICTION
(PORTS 72 ~ 95, AND 99)**

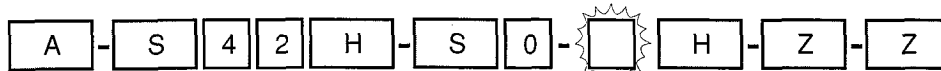


*SELECT = Port Numbers Key LEDs = CO Lines
Light LEDs for the port(s) to be restricted.*

	CO	Key LED	Port Numbers 72~95																											
			72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	99			
Off-hook	36	16																												
	35	15																												
	34	14																												
	33	13																												
	32	12																												
	31	11																												
	30	10																												
	29	09																												
	28	08																												
	27	07																												
	26	06																												
	25	05																												
	24	04																												
	23	03																												
22	02																													
21	01																													
On-hook	20	20																												
	19	19																												
	18	18																												
	17	17																												
	16	16																												
	15	15																												
	14	14																												
	13	13																												
	12	12																												
	11	11																												
	10	10																												
	09	09																												
	08	08																												
	07	07																												
06	06																													
05	05																													
04	04																													
03	03																													
02	02																													
01	01																													

NOTE: 99 is used to restrict DISA access to CO lines for outgoing calls through the system.

PROGRAM 42-0
CO LINE TO PBX/CENTREX CONNECTION



SELECT = 0

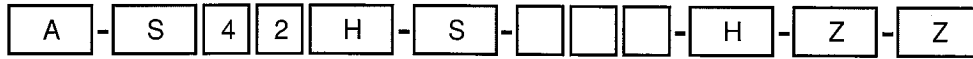
Specify CO lines by setting key LEDs as defined by the table below.

	Key (CO LED Line)	Set Key LEDs	
		CENTREX/PBX Connection (LED on)	Normal (LED off)
Off-hook	16 (36)		
	15 (35)		
	14 (34)		
	13 (33)		
	12 (32)		
	11 (31)		
	10 (30)		
	09 (29)		
	08 (28)		
	07 (27)		
	06 (26)		
	05 (25)		
	04 (24)		
	03 (23)		
	02 (22)		
01 (21)			
On-hook	20 (20)		
	19 (19)		
	18 (18)		
	17 (17)		
	16 (16)		
	15 (15)		
	14 (14)		
	13 (13)		
	12 (12)		
	11 (11)		
	10 (10)		
	09 (09)		
	08 (08)		
	07 (07)		
	06 (06)		
05 (05)			
04 (04)			
03 (03)			
02 (02)			
01 (01)			

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data reads all LEDs OFF for all CO lines.
3. This program must be utilized to allow CENTREX/PBX (after flash) features to operate.
4. If CO line is programmed for behind CENTREX/PBX (LED ON), re-seize guard time is 1.5 seconds. If CO line is programmed for normal operation guard time is 0.45 seconds. See **Program 10-1, Key/LED 02 (Release 2 and above)**.

**PROGRAM 42-1 ~ 8
PBX/CENTREX ACCESS CODES**



SELECT = 1~8
PBX Access Code Group
Enter the PBX Group number 1 ~ 8 that needs an access code assigned.

ACCESS CODE =
Enter a 2-digit access code for the group, as defined by the table below. See Note 3.

PBX/CENTREX Access Code Number	PBX/CENTREX Outgoing Trunk Access Code(s)	
	1st digit	2nd digit
1		
2		
3		
4		
5		
6		
7		
8		

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns no access codes to PBX groups.
3. ● If access code is single digit, enter the first digit and press key/LED 01 as second digit.
 - Press LED key 01 to delete a digit.
 - Press key/LED 02 for don't care. For example, pressing **8** + key/LED 02 allows 80 ~ 89.
4. This program must be utilized to allow correct toll restriction and CENTREX/PBX transfer operation.

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PROGRAM 43
STATION/CO LINE CREDIT CARD CALL ALLOWED (RELEASE 3)
(PORTS 00 ~ 35)



SELECT = Station Port Numbers

Key LEDs = CO Lines

Assigned to allow dial 0+ calls with selected stations

CO	Key LED	Port Numbers 00~35																																					
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
Off-hook	36 16																																						
	35 15																																						
	34 14																																						
	33 13																																						
	32 12																																						
	31 11																																						
	30 10																																						
	29 09																																						
	28 08																																						
	27 07																																						
	26 06																																						
	25 05																																						
24 04																																							
23 03																																							
22 02																																							
21 01																																							
On-hook	20 20																																						
	19 19																																						
	18 18																																						
	17 17																																						
	16 16																																						
	15 15																																						
	14 14																																						
	13 13																																						
	12 12																																						
	11 11																																						
	10 10																																						
	09 09																																						
08 08																																							
07 07																																							
06 06																																							
05 05																																							
04 04																																							
03 03																																							
02 02																																							
01 01																																							

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. For Stations and CO lines enabled in this program: 0+ calls override system toll restriction, and calls will disconnect automatically if the number of digits set in **Program 60-7** is not dialed when "0" is dialed as the first digit. This restricts the operator from placing calls that would be charged back to the telephone line.

**PROGRAM 43
STATION/CO LINE CREDIT CARD CALL ALLOWED
(PORTS 36 ~ 71)**



SELECT = Station Port Numbers

Key LEDs = CO Lines

Assigned to allow dial 0+ calls with selected stations

CO	Key LED	Port Numbers 36~71																																				
		36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	
Off-hook	36	16																																				
	35	15																																				
	34	14																																				
	33	13																																				
	32	12																																				
	31	11																																				
	30	10																																				
	29	09																																				
	28	08																																				
	27	07																																				
	26	06																																				
	25	05																																				
24	04																																					
23	03																																					
22	02																																					
21	01																																					
On-hook	20	20																																				
	19	19																																				
	18	18																																				
	17	17																																				
	16	16																																				
	15	15																																				
	14	14																																				
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	09	09																																				
	08	08																																				
	07	07																																				
	06	06																																				
	05	05																																				
	04	04																																				
	03	03																																				
02	02																																					
01	01																																					

NOTE: Ports 72 ~ 95 and 99 on next page. The same notes apply.

PROGRAM 43
STATION/CO LINE CREDIT CARD CALL ALLOWED
(PORTS 72 ~ 95)



SELECT = Station Port Numbers

Key LEDs = CO Lines

Assigned to allow dial 0+ calls with selected stations.

CO	Key LED	Port Numbers 72~95																											
		72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	99			
Off-hook	36	16																											
	35	15																											
	34	14																											
	33	13																											
	32	12																											
	31	11																											
	30	10																											
	29	09																											
	28	08																											
	27	07																											
	26	06																											
25	05																												
24	04																												
23	03																												
22	02																												
21	01																												
On-hook	20	20																											
	19	19																											
	18	18																											
	17	17																											
	16	16																											
	15	15																											
	14	14																											
	13	13																											
	12	12																											
	11	11																											
	10	10																											
09	09																												
08	08																												
07	07																												
06	06																												
05	05																												
04	04																												
03	03																												
02	02																												
01	01																												

NOTE: Notes from page 2-94 apply.

**PROGRAM 44A (RELEASE 3)
EMERGENCY BYPASS OF FORCED/VERIFIED ACCOUNT CODES**

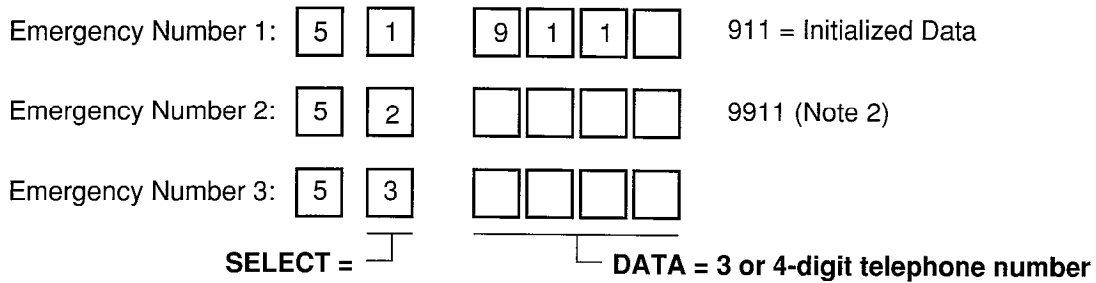


SELECT = 51, 52, or 53
to set emergency
number 1, 2 or 3

DATA = 3 or 4 digit emergency
telephone number

To enter blanks,
Press: LED/Key 01

Example



NOTES:

1. The emergency telephone numbers assigned in this program will be sent out the CO line immediately when dialed; they will bypass the forced/verified account code dialing restriction.
2. If CO lines are behind PBX or CENTREX, program the PBX/CENTREX outside trunk access code: Example: "9". A pause is automatically inserted following the first 9. See **Programs 42-0 and 42-1** to assign the CO line and access code for behind PBX/CENTREX operation. Also, if the system CO lines are behind CENTREX/PBX, the CENTREX/PBX trunk access codes must be programmed in front of the emergency telephone number. Example: If the CENTREX/PBX access code is '9', then enter 9911 in **Program 44-51**.
3. If verified account codes assigned in **Program 69** conflict (are the same) with emergency telephone numbers assigned in **Program 44A**; **Program 44A** has priority.
4. This feature is for use with forced (verified or nonverified) account codes, but not with ABR and DISA. It also does not override Toll Restriction; emergency numbers must be allowed using system Toll Restriction tables per normal Toll Restriction programming procedures.
5. **Program 44B** is related to Toll Restriction and is placed with the other Toll Restriction programs in this chapter.

Programs 44B through **48** can be found in the
Toll Restriction System Record section.

Programs 50 through **56** can be found in the
Least Cost Routing System Record section.

PROGRAM 60
SMDR OUTPUT/ACCOUNT CODE DIGIT LENGTH

A	-	S	6	0	H	-	S	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	-	H	-	Z	-	Z
---	---	---	---	---	---	---	---	----------------------	----------------------	----------------------	----------------------	----------------------	---	---	---	---	---	---

SELECT = 3 ~ 6 (Item)
Make a selection to indicate which item is being assigned. Select 3 for SMDR output. Select 4 to assign Forced/Voluntary Account code digit length, etc.

For "3" SMDR COR = 0 or 1 (Data)
Enter one digit to indicate SMDR output operation.
0 = No Incoming Record
1 = Incoming and Outgoing Record
For "4" ACCOUNT = 04 ~ 15
Enter the number of digits allowed for forced/voluntary account codes. The range is 04 ~ 15. Enter two digits.
For "5" TOLL DIAL
Enter one digit (the range is 0 ~ 5).
For "6" DATA = DISA security code; 1 ~ 15 digits.
For "7" CREDIT = Credit Card Digits; 1 ~ 30 digits

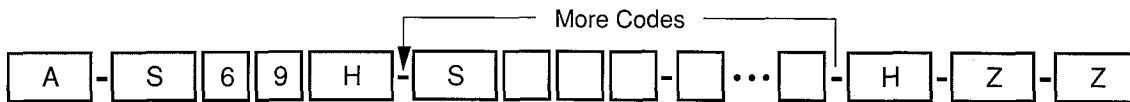
Item	Description	Data
3	SMDR Output when a call is completed. 0 = Outgoing Only 1 = Incoming and Outgoing	(SMDR COR) <input type="text"/>
4	¹⁰ Forced/Voluntary Account Code Digit Length 04 ~ 15. (Digits are verified per Prog. 30 , Key/LED 14, and Prog. 69 .)	(ACCOUNT) <input type="text"/> <input type="text"/>
(R2) 5	Printout options Toll Dial = <input type="text"/> 0 All Calls (Note 7) = <input type="text"/> 1 Dial "0" calls only = <input type="text"/> 2 Dial "1" calls only = <input type="text"/> 3 Dial "00" calls only = <input type="text"/> 4 Dial "1", "0", calls only = <input type="text"/> 5 Dial "1" or "00" calls only	(TOLL DIAL DATA) <input type="text"/>
(R2) 6	DISA Security Code ⁹ (may be changed from station, per Program 30)	DATA <input type="text"/> ~ <input type="text"/>
(R3) 7	Credit card call digit length, 01 ~ 30 digits, (see Program 43)	CREDIT ¹¹ <input type="text"/> <input type="text"/>

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. For Selection 3, initialized data assigns SMDR output to be enabled for incoming calls that are answered.
3. For selection 4, initialized data assigns a 6-digit length to all Forced/Voluntary Account Codes.
4. If PBX code is dialed, numbers dialed after the code will be checked.
5. If A/C, O/C or SPCC code begins with "0", "1", or "00", that call will print out.
6. When accessing LCR feature, all digits sent to CO will be output.
7. Programming 60-3-0 (printout outgoing call only) is still available.
8. Key/LED 1 = blank, key/LED 2 = don't care.
9. If a security code is not programmed, outgoing CO line access via DISA will not require a security code when dialing.
10. See **Program 69** for verified account codes (R3).
11. Number of digits required when "0" is the first digit dialed; if this number of digits is not dialed, the system will disconnect the call after 20 seconds. "0" is counted as a digit. **Example:** 0 + 1 + 714 + 583 - 3700 = 12 digits; 12 should be programmed as a minimum in this case.

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PROGRAM 69 (RELEASE 3)
VERIFIED ACCOUNT CODES (000 ~ 049)



SELECT = Verified Account Code Number (VACN)

Verified Account Code (1 ~ 15 digits)

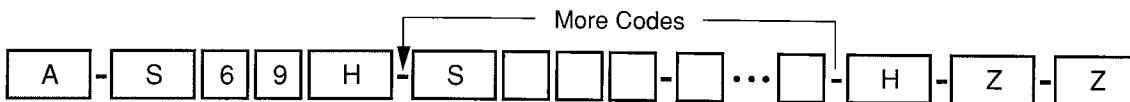
VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
000															
001															
002															
003															
004															
005															
006															
007															
008															
009															
010															
011															
012															
013															
014															
015															
016															
017															
018															
019															
020															
021															
022															
023															
024															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
025															
026															
027															
028															
029															
030															
031															
032															
033															
034															
035															
036															
037															
038															
039															
040															
041															
042															
043															
044															
045															
046															
047															
048															
049															

NOTES:

1. Account code format
 - Account code digit length is defined in **Program 60-4** (4 ~ 15 digits).
 - To dial an account code, station users must always dial the quantity of digits defined in **Program 60-4**.
 - If the quantity of digits in a verified account code is the same as the account code digit length in **Program 60-4**, then all digits will be verified; if the quantity of digits are less, then only those digits will be verified.
2. Account codes may not conflict (be the same as) emergency numbers in **Program 44A**.

PROGRAM 69 (RELEASE 3)
 VERIFIED ACCOUNT CODES (050 ~ 099)



SELECT = Verified Account Code Number (VACN)

Verified Account Code (1 ~ 15 digits)

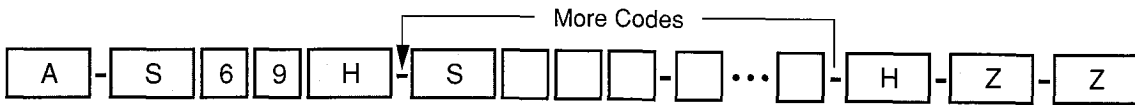
VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
050															
051															
052															
053															
054															
055															
056															
057															
058															
059															
060															
061															
062															
063															
064															
065															
066															
067															
068															
069															
070															
071															
072															
073															
074															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
075															
076															
077															
078															
079															
080															
081															
082															
083															
084															
085															
086															
087															
088															
089															
090															
091															
092															
093															
094															
095															
096															
097															
098															
099															

Notes from page 2-100 apply.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
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PROGRAM 69 (RELEASE 3)
VERIFIED ACCOUNT CODES (100 ~ 149)



SELECT = Verified Account Code Number (VACN)

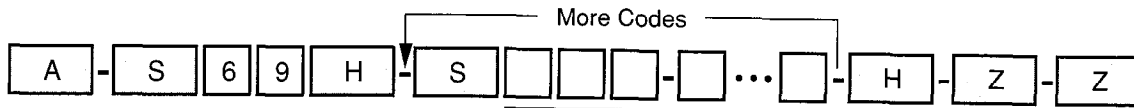
Verified Account Code (1 ~ 15 digits)

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
100															
101															
102															
103															
104															
105															
106															
107															
108															
109															
110															
111															
112															
113															
114															
115															
116															
117															
118															
119															
120															
121															
122															
123															
124															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
125															
126															
127															
128															
129															
130															
131															
132															
133															
134															
135															
136															
137															
138															
139															
140															
141															
142															
143															
144															
145															
146															
147															
148															
149															

Notes from page 2-100 apply.

PROGRAM 69 (RELEASE 3)
 VERIFIED ACCOUNT CODES (150 ~ 199)



SELECT = Verified Account Code Number (VACN)

Verified Account Code (1 ~ 15 digits)

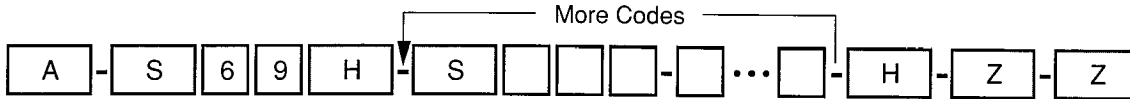
VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
150															
151															
152															
153															
154															
155															
156															
157															
158															
159															
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163															
164															
165															
166															
167															
168															
169															
170															
171															
172															
173															
174															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
175															
176															
177															
178															
179															
180															
181															
182															
183															
184															
185															
186															
187															
188															
189															
190															
191															
192															
193															
194															
195															
196															
197															
198															
199															

Notes from page 2-100 apply.

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PROGRAM 69 (RELEASE 3)
VERIFIED ACCOUNT CODES (200 ~ 249)



SELECT = Verified Account Code Number (VACN)

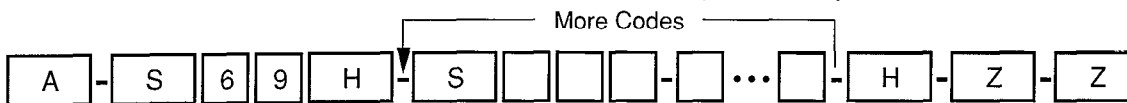
Verified Account Code (1 ~ 15 digits)

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
200															
201															
202															
203															
204															
205															
206															
207															
208															
209															
210															
211															
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223															
224															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
225															
226															
227															
228															
229															
230															
231															
232															
233															
234															
235															
236															
237															
238															
239															
240															
241															
242															
243															
244															
245															
246															
247															
248															
249															

Notes from page 2-100 apply.

PROGRAM 69 (RELEASE 3)
 VERIFIED ACCOUNT CODES (250 ~ 299)



VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
250															
251															
252															
253															
254															
255															
256															
257															
258															
259															
260															
261															
262															
263															
264															
265															
266															
267															
268															
269															
270															
271															
272															
273															
274															

VACN	VERIFIED ACCOUNT CODE (1 ~ 15 DIGITS)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
275															
276															
277															
278															
279															
280															
281															
282															
283															
284															
285															
286															
287															
288															
289															
290															
291															
292															
293															
294															
295															
296															
297															
298															
299															

Notes from page 2-100 apply.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
SECTION 200-096-302
FEBRUARY 1991

PROGRAM 70 (RELEASE 3)
VERIFIED ACCOUNT CODE TOLL RESTRICTION ASSIGNMENTS
(VAC 000 ~ 099)

A - S 7 0 H - S [] [] [] - [] [] - H - Z - Z

SELECT = Verified Account Code Number (VACN)
000 ~ 299

DATA = VAC Digit Restriction Code 0 or 1
 Enter 0 for no digit restriction.
 Enter 1 for digit restriction.

VAC Restrict Code (0 ~ 6)
 Enter 0 for No Station Toll Restriction.
 Enter 1 for Area Code Toll Restriction.
 Enter 2 for Area Code Toll Restriction and 0 or 1 as 1st or 2nd digit.
 Enter 3 for Class 1 Toll Restriction.
 Enter 4 for Class 2 Toll Restriction.
 Enter 5 for Class 3 Toll Restriction.
 Enter 6 for Class 4 Toll Restriction.

VACN	VAC Digit Restrict Code	VAC Restrict Code
000		
001		
002		
003		
004		
005		
006		
007		
008		
009		
010		
011		
012		
013		
014		
015		
016		
017		
018		
019		
020		
021		
022		
023		
024		
025		
026		
027		
028		
029		
030		
031		

VACN	VAC Digit Restrict Code	VAC Restrict Code
032		
033		
034		
035		
036		
037		
038		
039		
040		
041		
042		
043		
044		
045		
046		
047		
048		
049		
050		
051		
052		
053		
054		
055		
056		
057		
058		
059		
060		
061		
062		
063		

VACN	VAC Digit Restrict Code	VAC Restrict Code
064		
065		
066		
067		
068		
069		
070		
071		
072		
073		
074		
075		
076		
077		
078		
079		
080		
081		
082		
083		
084		
085		
086		
087		
088		
089		
090		
091		
092		
093		
094		
095		
099		

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data reads 00 for all VACNs.
3. This restriction overrides the normal station restriction assigned in **Program 48** when a VAC is entered at the station. The station resumes its **Program 48** restriction after the call is disconnected.
4. Range programming is not available.

**PROGRAM 70 (RELEASE 3)
VERIFIED ACCOUNT CODE TOLL RESTRICTION ASSIGNMENTS
(VAC 100 ~ 199)**

A	-	S	7	0	H	-	S				-			-	H	-	Z	-	Z
---	---	---	---	---	---	---	---	--	--	--	---	--	--	---	---	---	---	---	---

SELECT = Verified Account Code Number (VACN)

DATA = VAC Digit Restriction Code 0 or 1
Enter 0 for no digit restriction.
Enter 1 for digit restriction.

VAC Restriction Code (0 ~ 6)
Enter 0 for No Station Toll Restriction.
Enter 1 for Area Code Toll Restriction.
Enter 2 for Area Code Toll Restriction and 0 or 1 as 1st or 2nd digit.
Enter 3 for Class 1 Toll Restriction.
Enter 4 for Class 2 Toll Restriction.
Enter 5 for Class 3 Toll Restriction.
Enter 6 for Class 4 Toll Restriction.

VACN	VAC Digit Restrict Code	VAC Restrict Code
100		
101		
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113		
114		
115		
116		
117		
118		
119		
120		
121		
122		
123		
124		
125		
126		
127		
128		
129		
130		
131		

VACN	VAC Digit Restrict Code	VAC Restrict Code
132		
133		
134		
135		
136		
137		
138		
139		
140		
141		
142		
143		
144		
145		
146		
147		
148		
149		
150		
151		
152		
153		
154		
155		
156		
157		
158		
159		
160		
161		
162		
163		

VACN	VAC Digit Restrict Code	VAC Restrict Code
164		
165		
166		
167		
168		
169		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
180		
181		
182		
183		
184		
185		
186		
187		
188		
189		
190		
191		
192		
193		
194		
195		
199		

Notes from page 2-106 apply.

PROGRAM 70 (RELEASE 3)
VERIFIED ACCOUNT CODE TOLL RESTRICTION ASSIGNMENTS
(VAC 200 ~ 299)

A - S 7 0 H - S - - H - Z - Z

SELECT = Verified Account Code Number (VACN)

DATA = VAC Digit Restriction Code 0 or 1
 Enter 0 for no digit restriction.
 Enter 1 for digit restriction.

VAC Restriction Code (0 ~ 6)
 Enter 0 for No Station Toll Restriction.
 Enter 1 for Area Code Toll Restriction.
 Enter 2 for Area Code Toll Restriction and 0 or 1 as 1st or 2nd digit.
 Enter 3 for Class 1 Toll Restriction.
 Enter 4 for Class 2 Toll Restriction.
 Enter 5 for Class 3 Toll Restriction.
 Enter 6 for Class 4 Toll Restriction.

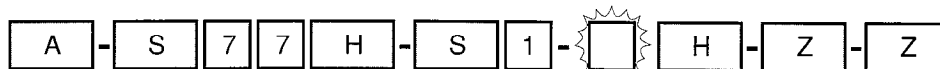
VACN	VAC Digit Restrict Code	VAC Restrict Code
200		
201		
202		
203		
204		
205		
206		
207		
208		
209		
210		
211		
212		
213		
214		
215		
216		
217		
218		
219		
220		
221		
222		
223		
224		
225		
226		
227		
228		
229		
230		
231		

VACN	VAC Digit Restrict Code	VAC Restrict Code
232		
233		
234		
235		
236		
237		
238		
239		
240		
241		
242		
243		
244		
245		
246		
247		
248		
249		
250		
251		
252		
253		
254		
255		
256		
257		
258		
259		
260		
261		
262		
263		

VACN	VAC Digit Restrict Code	VAC Restrict Code
264		
265		
266		
267		
268		
269		
270		
271		
272		
273		
274		
275		
276		
277		
278		
279		
280		
281		
282		
283		
284		
285		
286		
287		
288		
289		
290		
291		
292		
293		
294		
295		
299		

Notes from page 2-106 apply.

**PROGRAM 77-1
PERIPHERAL OPTIONS
(DOOR PHONES/IMDU/PIOU/PIOUS/PEPU)**



SELECT = 1

LED Key

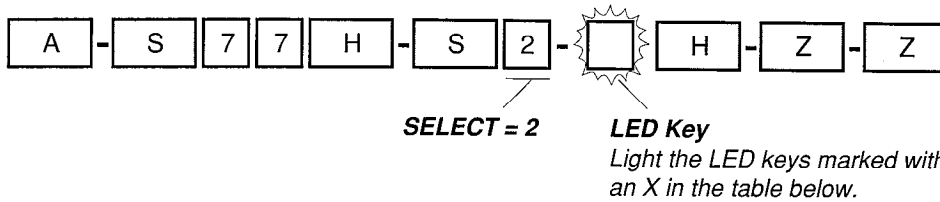
Light the keys/LEDs that are marked with an X in the table below.

LED/Key	X	LED ON	LED OFF
20		Door Lock Time/6 sec.	Door Lock Time/3 sec.
19		PESU/PEKU Port 28/HDCB 4	Port 28/Electronic Telephone
18		PESU/PEKU Port 20/HDCB 3	Port 20/Electronic Telephone
17		PESU/PEKU Port 12/HDCB 2	Port 12/Electronic Telephone
16		PESU/PEKU Port 04/HDCB 1	Port 04/Electronic Telephone
15		—	—
14		IMDU Modem (Station 19)/Enabled ⁴	IMDU Modem (Station 19)/Disabled ⁴
13 (R3) ⁸		Tenant 2 (NT2) CO lines-K4/Zone 4	Tenant 1 (NT1) CO lines-K4/Zone 4
12 (R3) ⁸		Tenant 2 (NT2) CO lines-K3/Zone 3	Tenant 1 (NT1) CO lines-K3/Zone 3
11 (R3) ⁸		Tenant 2 (NT2) CO lines-K2/Zone 2	Tenant 1 (NT1) CO lines-K2/Zone 2
10 (R3) ⁸		Tenant 2 (NT2) CO lines-K1/Zone 1	Tenant 1 (NT1) CO lines-K1/Zone 1
09			
08		Door Phone Ring on Ext Page ⁵	No Ring over Ext Page ⁵
07		Door Lock Relay Enabled ⁶	External Page Relay Enabled ⁶
06		NT Relay Ringing/1 sec. on, 3 sec. off	NT Relay Steady
05		MOH Relay Enabled	NT Relay Enabled
04		—	—
03		—	—
02		—	—
01		—	—

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs off.
3. HDCB = Door Phone Control Box. Up to four HDCBs may be installed in a system. They must be assigned a PEKU or PESU port number to operate.
4. If a modem unit (IMDU) is installed on a PIOU or PIOUS, it can be accessed by dialing station 19.
5. If NT1 is turned on at an electronic or digital telephone, then the door phone will ring over external page.
6. This option applies to the PIOU/PIOUS/PEPU Door Lock Control (DRLK 0) assigned to electronic or digital telephone keys using Code 71 in **Program 39**; it does not apply to HDCB door locks.
7. HDCB4 is available with PCTU (1, 2, or 3), but not with PCTUS1.
8. Assigns Tenants 1 and 2 CO lines to night ring over PIOU external paging zones 1 ~ 4 (see the Installation Section **200-096-208** for more information regarding night ringing over selected paging zones).

PROGRAM 77-2
DOOR PHONE BUSY SIGNAL/DOOR LOCK ASIGNMENTS



LED Key	X	LED ON	LED OFF
20		—	—
19		—	—
18		—	—
17		—	—
16 (R2)		HDCB4 B-jack is Door Lock Control #4 ⁴	B is connected to Door Phone 4B
15		Door phone 4C Busy Out	No Busy Signal
14		Door phone 4B Busy Out	No Busy Signal
13		Door phone 4A Busy Out	No Busy Signal
12 (R2)		HDCB3 B-jack is Door Lock Control #3	B is connected to Door Phone 3B
11		Door phone 3C Busy Out	No Busy Signal
10		Door phone 3B Busy Out	No Busy Signal
09		Door phone 3A Busy Out	No Busy Signal
08 (R2)		HDCB2 B-jack is Door Lock Control #2	B is connected to Door Phone 2B
07		Door phone 2C Busy Out	No Busy Signal
06		Door phone 2B Busy Out	No Busy Signal
05		Door phone 2A Busy Out	No Busy Signal
04 (R2)		HDCB1 B-jack is Door Lock Control #1	B is connected to Door Phone 1B
03		Door phone 1C Busy Out	No Busy Signal
02		Door phone 1B Busy Out	No Busy Signal
01		Door phone 1A Busy Out	No Busy Signal

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data reads all LEDs OFF.
3. HDCB Door Lock Control is available with **Release 2** and higher.
4. HDCB4 is not available with PCTUS.
5. HDCB cannot be connected to PDKU or PSTU ports.

HDCB PEKU/PESU Port Assignments

HDCB	Port No.
1	04
2	12
3	20
4	28

PROGRAM 78
CO LINE SPECIAL RINGING ASSIGNMENTS
DISA/IMDU/NIGHT RINGING OVER EXTERNAL PAGE



SELECT = Feature Number
Enter Feature Number
1, 2 or 5.

Code
Enter Code
Number 1~3.

CO Line
Specify CO lines by setting LED keys
as defined by the table below.
All LEDs with an "X" should be
lit when finished.

On-hook

Feature Number	Code	Feature Description	CO Lines 01 ~ 20 (LED Keys)																			
			01 (01)	02 (02)	03 (03)	04 (04)	05 (05)	06 (06)	07 (07)	08 (08)	09 (09)	10 (10)	11 (11)	12 (12)	13 (13)	14 (14)	15 (15)	16 (16)	17 (17)	18 (18)	19 (19)	20 (20)
1	3	Ring Over External Page ⁵ during NIGHT mode																				
2	1	DISA/DISC CO Line during DAY Mode ⁴																				
	2	DISA/DISC CO Line during DAY2 Mode ⁴																				
	3	DISA/DISC CO Line during NIGHT Mode ⁴																				
5	1	Ring IMDU Maint. Modem during DAY Mode																				
	2	Ring IMDU Maint. Modem during DAY2 Mode																				
	3	Ring IMDU Maint. Modem during NIGHT Mode																				

Off-hook

Feature Number	Code	Feature Description	CO Lines 21 ~ 36 (LED Keys)															
			21 (01)	22 (02)	23 (03)	24 (04)	25 (05)	26 (06)	27 (07)	28 (08)	29 (09)	30 (10)	31 (11)	32 (12)	33 (13)	34 (14)	35 (15)	36 (16)
1	3	Ring Over External Page during NIGHT mode																
2	1	DISA/DISC CO Line during DAY Mode ⁴																
	2	DISA/DISC CO Line during DAY2 Mode ⁴																
	3	DISA/DISC CO Line during NIGHT Mode ⁴																
5	1	Ring IMDU Maint. Modem during DAY Mode																
	2	Ring IMDU Maint. Modem during DAY2 Mode																
	3	Ring IMDU Maint. Modem during NIGHT Mode																

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs off.
3. Shaded table indicates that the handset must be set off-hook during programming.
 - Program CO lines 01 through 20 with handset on-hook.
 - Program CO lines 21 through 36 with handset off-hook.
4. DISA, which allows outgoing CO line access as well as (DISC) internal calling, is available with **Release 2** and above; for DISA, see **Programs 10-1, 15, 60, 40, 41, 48, and 03**, code 92 or 93 (for DISA, the CRCU PCB must be installed on the PCTU).
5. See **Program 77-1** for night ringing configuration.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
SECTION 200-096-302
FEBRUARY 1991

PROGRAM 79
DOOR PHONE RINGING
(PORTS 00 ~ 31)



SELECT = Port Number
 Enter the port number having
 Door Phone Ringing
 assigned.

Key LEDs
 Select keys indicated in the
 table below.

Feature	Key LED	Port Numbers 00~31																																
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Muted ring to busy EKT/DKT ⁶	20																																	
	19																																	
	18																																	
	17																																	
	16																																	
	15																																	
	14																																	
	13																																	
Door phone 4C Ring	12																																	
Door phone 4B Ring	11																																	
Door phone 4A Ring	10																																	
Door phone 3C Ring	09																																	
Door phone 3B Ring	08																																	
Door phone 3A Ring	07																																	
Door phone 2C Ring	06																																	
Door phone 2B Ring	05																																	
Door phone 2A Ring	04																																	
Door phone 1C Ring	03																																	
Door phone 1B Ring	02																																	
Door phone 1A Ring	01																																	

NOTES:

- For more information, see the instructions preceding the record sheets.
- Ports 32 ~ 95 on next page. The same notes apply to all ports.
- Initialized data does not assign door phone ringing to any station port.
All LEDs are OFF.

4. A range of ports may be entered by keying in the following:
 Low port in range High port in range

- Door phones can ring any number of electronic and digital telephones, but do not ring standard telephones or other devices connected to PESU or PSTU station ports.
- Only the **lowest** port in a ringing group will receive muted ring tone if all EKTs/DKTs in the ringing group are busy and the door phone key is pressed.

PROGRAM 80
ELECTRONIC AND DIGITAL TELEPHONE RINGING TONES (CO LINE CALLS)

- - - - -

SELECT = Port Number
 Enter number of port
 having its ringing tone
 defined. See Note 4 for
 entering a range of ports.

Ringling Tone Code
 Enter 1 for Tone 1 (500/640 Hz).
 Enter 2 for Tone 2 (600/800 Hz).

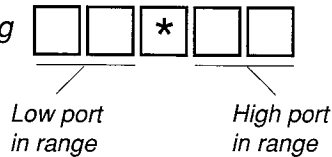
Ringing Tone (Code)	Port Numbers 00~31																																
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Tone 1 (1)																																	
Tone 2 (2)																																	

Ringing Tone (Code)	Port Numbers 32~63																															
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Tone 1 (1)																																
Tone 2 (2)																																

Ringing Tone (Code)	Port Numbers 64~95																															
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Tone 1 (1)																																
Tone 2 (2)																																

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data assigns Tone 1 to all station ports.
- Tone 1 is 500 Hz modulated with 640 Hz.
Tone 2 is 600 Hz modulated with 800 Hz.
- A range of ports may be specified by entering



PROGRAM 8 (1 ~ 9)
 CO LINE/STATION RINGING ASSIGNMENTS
 (Ports 00 ~ 35)



SELECT = 1 ~ 9
for type of ringing

SELECT = Port Number(s)
of station(s) that must ring

Key LEDs = CO Lines
assigned to ring selected port number(s)

Selected CO lines ring selected station ports per Ringing Program options as follows:

DAY

- 8 1 Immediate
- 8 2 12 second delay
- 8 3 24 second delay

DAY 2

- 8 4 Immediate
- 8 5 12 second delay
- 8 6 24 second delay

NIGHT

- 8 7 Immediate
- 8 8 12 second delay
- 8 9 24 second delay

CO	Key LED	Port Numbers 00~35																																							
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35				
Off-hook	36 16																																								
	35 15																																								
	34 14																																								
	33 13																																								
	32 12																																								
	31 11																																								
	30 10																																								
	29 09																																								
	28 08																																								
	27 07																																								
	26 06																																								
25 05																																									
24 04																																									
23 03																																									
22 02																																									
21 01																																									
On-hook	20 20																																								
	19 19																																								
	18 18																																								
	17 17																																								
	16 16																																								
	15 15																																								
	14 14																																								
	13 13																																								
	12 12																																								
	11 11																																								
	10 10																																								
09 09																																									
08 08																																									
07 07																																									
06 06																																									
05 05																																									
04 04																																									
03 03																																									
02 02																																									
01 01																																									

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Ports 36 ~ 71 on next page.
3. Initialized data reads all LEDs ON for port 00 in Program 81 and port 01 in Program 87, all other LEDs are OFF.
4. If a CO line must Call Forward or Hunt from a station, the line must be assigned to ring at that station only.
5. A range of ports may be selected.

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PROGRAM 8 (1 ~ 9)
CO LINE/STATION RINGING ASSIGNMENTS
(Ports 36 ~ 71)



SELECT = 1 ~ 9
for type of ringing

SELECT = Port Number(s)
of station(s) that must ring

Key LEDs = CO Lines
assigned to ring selected port number(s)

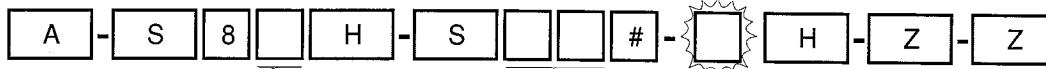
Selected CO lines ring selected station ports per Ringing Program options as follows:

- | | | | | | | | |
|--------------------------|--|--|----------------------------|--|--|----------------------------|--|
| <input type="text"/> DAY | 8 <input type="text"/> 1 Immediate | 8 <input type="text"/> 2 12 second delay | <input type="text"/> DAY 2 | 8 <input type="text"/> 4 Immediate | 8 <input type="text"/> 5 12 second delay | <input type="text"/> NIGHT | 8 <input type="text"/> 7 Immediate |
| | 8 <input type="text"/> 3 24 second delay | | | 8 <input type="text"/> 6 24 second delay | | | 8 <input type="text"/> 8 12 second delay |
| | | | | | | | 8 <input type="text"/> 9 24 second delay |

CO	Key LED	Port Numbers 36~71																																					
		36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71		
Off-hook	36	16																																					
	35	15																																					
	34	14																																					
	33	13																																					
	32	12																																					
	31	11																																					
	30	10																																					
	29	09																																					
	28	08																																					
	27	07																																					
	26	06																																					
	25	05																																					
24	04																																						
23	03																																						
22	02																																						
21	01																																						
On-hook	20	20																																					
	19	19																																					
	18	18																																					
	17	17																																					
	16	16																																					
	15	15																																					
	14	14																																					
	13	13																																					
	12	12																																					
	11	11																																					
	10	10																																					
	09	09																																					
08	08																																						
07	07																																						
06	06																																						
05	05																																						
04	04																																						
03	03																																						
02	02																																						
01	01																																						

- NOTES:**
- Ports 72 ~ 95 on next page. Notes from the previous page apply to all ports.
 - Initialized data reads all LEDs OFF.

PROGRAM 8 (1 ~ 9)
CO LINE/STATION RINGING ASSIGNMENTS
 (Ports 72 ~ 95)



SELECT = 1 ~ 9
for type of ringing

SELECT = Port Number(s)
of station(s) that must ring

Key LEDs = CO Lines
assigned to ring selected port number(s)

Selected CO lines ring selected station ports per Ringing Program options as follows:

- | | | | | | | | | | | | |
|------------------------------|--|--|--|--------------------------------|--|--|--|--------------------------------|--|--|--|
| <input type="checkbox"/> DAY | 8 <input type="checkbox"/> 1 Immediate | 8 <input type="checkbox"/> 2 12 second delay | 8 <input type="checkbox"/> 3 24 second delay | <input type="checkbox"/> DAY 2 | 8 <input type="checkbox"/> 4 Immediate | 8 <input type="checkbox"/> 5 12 second delay | 8 <input type="checkbox"/> 6 24 second delay | <input type="checkbox"/> NIGHT | 8 <input type="checkbox"/> 7 Immediate | 8 <input type="checkbox"/> 8 12 second delay | 8 <input type="checkbox"/> 9 24 second delay |
|------------------------------|--|--|--|--------------------------------|--|--|--|--------------------------------|--|--|--|

CO	Key LED	Port Numbers 72~95																								
		72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
Off-hook	36	16																								
	35	15																								
	34	14																								
	33	13																								
	32	12																								
	31	11																								
	30	10																								
	29	09																								
	28	08																								
	27	07																								
	26	06																								
25	05																									
24	04																									
23	03																									
22	02																									
21	01																									
On-hook	20	20																								
	19	19																								
	18	18																								
	17	17																								
	16	16																								
	15	15																								
	14	14																								
	13	13																								
	12	12																								
	11	11																								
	10	10																								
09	09																									
08	08																									
07	07																									
06	06																									
05	05																									
04	04																									
03	03																									
02	02																									
01	01																									

NOTE:
 Initialized data reads all LEDs OFF. Notes from previous page apply.

System Record Sheets for **Programs 90** and **92** are in the beginning of this section because they must be executed before any other programs.

PROGRAM 93 (continued)
CO LINE IDENTIFICATION ALPHA/NUMERIC ENTRY

- 1) Enter **Program 93** and select the desired CO line.
- 2) Use the guide below to enter CO line identification information.

Numeric Mode

"0" to "9" are treated as numerals.

*NOTE: Key pad starts out in **Numeric Mode**.
 Use **#** key to switch to **Alpha Mode**.*

Alpha Mode

Moves cursor to right, and starts special character entry when in the Alpha Mode

Moves cursor to left.

QZ 1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PRS 7	TUV 8	WXY 9
Cursor Left *	Scroll Key 0	Mode Key #

Changes from Numeric to Alpha Mode and vice versa

Scrolls alpha and special characters

Alpha Entry (Example):

A → 2
 B → 2 0
 C → 2 0 0

Alpha Character Entry Sequence

Special Character Entry:

"Q" → 1 0
 "Z" → 1 0 0
 "." → 1 0 0 0
 "-" → 1 0 0 0 0
 "+" → 1 0 0 0 0 0
 "/" → 1 0 0 0 0 0 0

Special Character Entry Sequence

**PROGRAM 97
PRINTING PROGRAM DATA THROUGH SMDR**



SELECT = Program Number
to be printed on SMDR.
See Note 2 for entering
a range of programs.

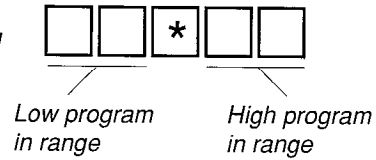
DATA PRINT
Printout begins.

SPKR # # HOLD
Cancels printout
at any time.

NOTES:

1. For more information, see the instructions preceding the record sheets.

2. Enter a range of programs by keying



**SETTING THE DATE,
 TIME AND DAY**

HOW TO SET THE DATE

The date can be set only from the electronic or digital telephone assigned to port 00. Press the following key sequence with the handset on the hook:



*Date in year/month/day
 format (YYMMDD). If month
 or day is a single digit, precede
 with a zero (0).*

*If the EKT
 has a Redial key
 programmed, press
 it instead.*

RDL

HOW TO SET THE TIME

The time can be set only from the electronic or digital telephone assigned to port 00. Press the following key sequence with the handset on the hook:



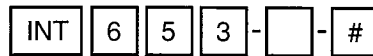
*Time in hours/minutes/seconds
 format (HHMMSS from 000000 to
 235959). If any of these values is
 a single digit, precede with a zero (0).*

*If the EKT
 has a Redial key
 programmed, press
 it instead.*

RDL

HOW TO SET THE DAY

The date can be set only from the electronic or digital telephone assigned to port 00. Press the following key sequence with the handset on the hook:



Enter the digit for today's day:
 1 = Sunday
 2 = Monday
 3 = Tuesday
 4 = Wednesday
 5 = Thursday
 6 = Friday
 7 = Saturday

*If the EKT
 has a Redial key
 programmed, press
 it instead.*

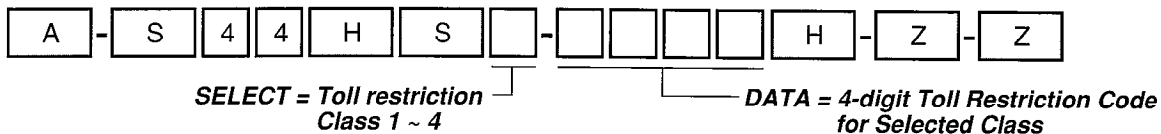
RDL

NOTES:

1. The date, time and day can be set immediately following initialization or after programming is completed.
2. The system should not be in programming mode for the date, time and day to be set.
3. Set date, time and day from station 200, connected to PEKU or PDKU port 00.

PROGRAMMING PROCEDURES
TOLL RESTRICTION SYSTEM RECORD SECTION
Programs 44B ~ 48

PROGRAM 44B
 TOLL RESTRICTION CLASS (1 ~ 4) OVERRIDE CODES



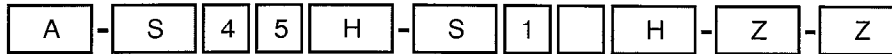
Code for Toll Restriction Class	<input type="text" value="1"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Code for Toll Restriction Class	<input type="text" value="2"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Code for Toll Restriction Class	<input type="text" value="3"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Code for Toll Restriction Class	<input type="text" value="4"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

SELECT = DATA = 4-Digit code

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Classes 1 ~ 4 are defined in **Program 46**.
3. When the Toll Restriction override code is dialed, the station's class defined in **Program 48** will be changed to the class assigned to the code in **Program 44B**.
4. Do not use same codes set in **Program 45** (8 ~ 9).
5. Stations enabled in **Program 30**, Key/LED 16 "ON", are allowed to enter and change Toll Restriction Class (1 ~ 4) override codes.

**PROGRAM 45-1
LCR/TOLL RESTRICTION DIAL PLAN**



SELECT = 1

DATA = Plan 1 ~ 5

Enter codes 1 ~ 5 to indicate the dial plan for the system.

Releases 1 and 2

X	Plan	Toll Restriction/LCR Dial Plans
	5	0+ (Note 7)
	4	Universal (Note 7)
	3	1+AC+NXX/NNX
	2	1+AC+NNX/1+NNX
	1	AC+NNX/1+NNX

Release 3

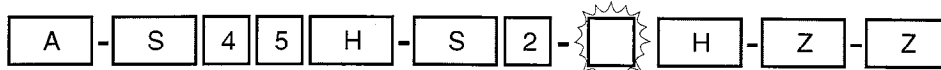
X	Plan	Toll Restriction/LCR Dial Plans
	5	0+ (Note 7)
	4	Universal (Note 7)
	3	1+AC+NXX/NNX
	2	1+AC+NXX/1+NNX
	1	AC+NXX/1+NNX

IMPORTANT: The correct Dial Plan must be assigned to allow system LCR and/or Toll Restriction to function properly.

NOTES:

1. Initialized data assigns Dial Plan Code 1 to the system.
2. In NXX and NNX, X = 0 ~ 9, N = 2 ~ 9.
3. NXX = Office code (interchangeable; 2nd digit can be 1 or 0).
4. NNX = Office code (**not** interchangeable; 2nd digit **cannot** be 1 or 0).
5. AC = Area Code.
6. 0+, and universal (code 5 + 4) are not used in USA.
7. 1+ NNX indicates 1 may be dialed before office codes.

PROGRAM 45-2
TOLL RESTRICTION DISABLE



SELECT = 2

LED Keys

Specify CO lines by setting key LEDs as defined by the table below. All LEDs with an "X" should be lit when finished. ON = Disable Toll Restriction

	LED Key	CO Line	X
Off-hook	16	36	
	15	35	
	14	34	
	13	33	
	12	32	
	11	31	
	10	30	
	09	29	
	08	28	
	07	27	
	06	26	
	05	25	
	04	24	
	03	23	
	02	22	
	01	21	
On-hook	20	20	
	19	19	
	18	18	
	17	17	
	16	16	
	15	15	
	14	14	
	13	13	
	12	12	
	11	11	
	10	10	
	09	09	
	08	08	
	07	07	
	06	06	
	05	05	
	04	04	
	03	03	
	02	02	
	01	01	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Program CO lines 01 ~ 20 by setting LEDs 01 ~ 20 with the handset on-hook.
 Program CO lines 21 ~ 36 by setting LEDs 01 ~ 16 with the handset off-hook.
3. Initialized data reads all LEDs OFF for all CO lines.

PROGRAM 45-3 ~ 6
SPECIAL COMMON CARRIER (SPCC) NUMBERS AND AUTHORIZATION CODE DIGIT LENGTH

A	-	S	4	5	H	-	S		-						-	H	-	Z	-	Z
---	---	---	---	---	---	---	---	--	---	--	--	--	--	--	---	---	---	---	---	---

SELECT = Item 3-6
Enter Item number
3~6 from table below.

DATA =
First five digits of the
SPCC Number, or digit
length specified in the
table below. See Note 3.

Item	Description	1st five digits of SPCC Data = Number or Digit Length
3	SPCC1 Number	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
4	Authorization Code 1 Digit Length (00 ~ 99)	<input type="text"/> <input type="text"/>
5	SPCC2	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
6	Authorization Code 2 Digit Length (00 ~ 99)	<input type="text"/> <input type="text"/>

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns "00" data to items 4 and 6, and assigns blank data to items 3 and 5.
3. When editing,
 - Press **↑** to move cursor.
 - Press LED key 01 to delete or leave a blank.
 - Press LED key 02 for don't care.
4. Do not enter a digit length greater than necessary or Toll Restriction may be able to be defeated.

PROGRAM 45-8, 9
TOLL RESTRICTION OVERRIDE CODE

A	-	S	4	5	H	-	S		-		-		-	H	-	Z	-	Z
---	---	---	---	---	---	---	---	--	---	--	---	--	---	---	---	---	---	---

SELECT = 8 or 9
 Enter 8 to Select Code 1.
 Enter 9 to Select Code 2.

DATA = Code
 Enter the 4-digit code
 from the table below.

Select =		Code (4 digits)				
8	Code 1	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> </tr> </table>				
9	Code 2	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> <td style="width: 20px; height: 20px;"> </td> </tr> </table>				

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. When editing the data field, use key LED 01 to delete a digit; key LED 02 for don't care.
3. Initialized data leaves code assignments blank.
4. Codes may be revised by station users specified in **Program 30**, key LED 09.
5. Do not use same 4-digit codes set in **Program 44B**, Toll Restriction Class (1 ~ 4) Override codes. **Program 45** (8 ~ 9) overrides **Program 44B** (1 ~ 4) if same codes are used.

**PROGRAM 46-2 ~ 4
TOLL RESTRICTION ALLOWED/DENIED AREA CODES ASSIGNED BY CLASS**

- - - - - -

SELECT = Class Number
Enter toll restriction
class number 1 ~ 4.

2, 3 or 4
Enter one of the
following numbers:
2 = add to memory, 3 = delete
from memory, 4# = display
allowed codes in memory.

DATA = Area Codes
Enter or display
area codes.
See Notes 3 and 4.

Class	<input type="text" value="1"/>	Allowed <input type="checkbox"/>	Denied <input type="checkbox"/>	(Check one)
Area Codes				

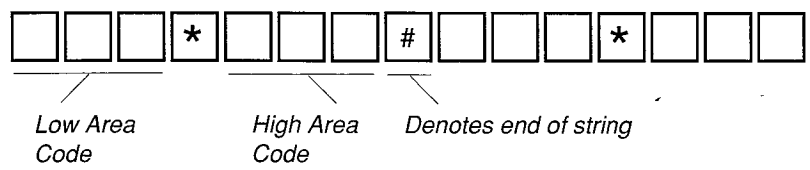
Class	<input type="text" value="2"/>	Allowed <input type="checkbox"/>	Denied <input type="checkbox"/>	(Check one)
Area Codes				

Class	<input type="text" value="3"/>	Allowed <input type="checkbox"/>	Denied <input type="checkbox"/>	(Check one)
Area Codes				

Class	<input type="text" value="4"/>	Allowed <input type="checkbox"/>	Denied <input type="checkbox"/>	(Check one)
Area Codes				

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data includes all area codes in all classes.
3. A range of area codes can be entered by pressing:
4. Several ranges or individual area codes may be entered by separating them with a # key.
5. Tables with deny box checked do not represent memory. All area codes in memory are allowed.



PROGRAM 46-6 ~ 8
TOLL RESTRICTION ALLOWED/DENIED OFFICE CODES ASSIGNED BY CLASS

- - - - - -

SELECT = Class Number
 Enter toll restriction
 class number 1 ~ 4.

6, 7 or 8
 Enter one of the following
 numbers: 6 = add to memory,
 7 = delete from memory,
 8# = display allowed codes
 in memory.

DATA = Office Codes
 Enter or display
 office codes.
 See Notes 3 and 4.

Class	<input type="text" value="1"/>	Allowed	<input type="checkbox"/>	Denied	<input type="checkbox"/>	(Check one)
Office Codes						

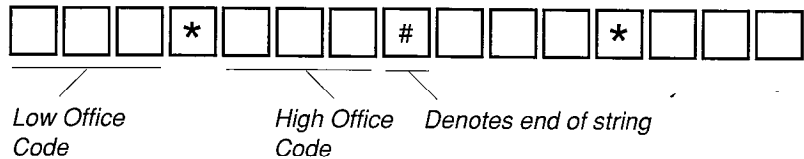
Class	<input type="text" value="2"/>	Allowed	<input type="checkbox"/>	Denied	<input type="checkbox"/>	(Check one)
Office Codes						

Class	<input type="text" value="3"/>	Allowed	<input type="checkbox"/>	Denied	<input type="checkbox"/>	(Check one)
Office Codes						

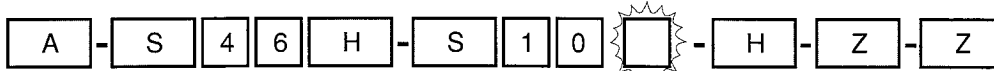
Class	<input type="text" value="4"/>	Allowed	<input type="checkbox"/>	Denied	<input type="checkbox"/>	(Check one)
Office Codes						

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data allows all office codes in all classes.
- A range of office codes can be entered by pressing:
- Several ranges or individual office codes may be entered by separating them with a # key.
- Tables with the denied box checked do not represent memory. All Office Codes in memory are allowed.



PROGRAM 46-10
TOLL RESTRICTION CLASS 1 PARAMETERS



SELECT = 10
 Enter 10 on the keypad for class 1.

Key LEDs
 Light every key LED marked with an X in the table below.

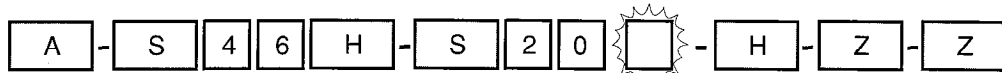
LED	X	LED ON	LED OFF
20			
19			
18		Table 8 Area/Office Exception	Not Selected
17		Table 7 Area/Office Exception	Not Selected
16		Table 6 Area/Office Exception	Not Selected
15		Table 5 Area/Office Exception	Not Selected
14		Table 4 Area/Office Exception	Not Selected
13		Table 3 Area/Office Exception	Not Selected
12		Table 2 Area/Office Exception	Not Selected
11		Table 1 Area/Office Exception	Not Selected
10			
09			
08			
07			
06			
05			
04			
03		1 + A/C + 555/AC + 555 Allowed	Per Area Code Restriction
02		01 Restricted	Allowed
01		0 Restricted	Allowed

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs OFF.

PROGRAMMING PROCEDURES-INSTRUCTIONS/SYSTEM RECORDS
SECTION 200-096-302
FEBRUARY 1991

PROGRAM 46-20
TOLL RESTRICTION CLASS 2 PARAMETERS



SELECT = 20
 Enter 20 on the keypad for class 2.

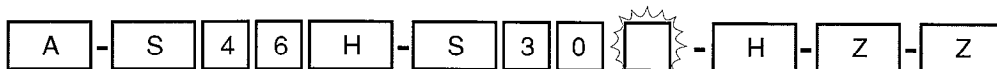
Key LEDs
 Light every key LED marked with an X in the table below.

LED	X	LED ON	LED OFF
20			
19			
18		Table 8 Area/Office Exception	Not Selected
17		Table 7 Area/Office Exception	Not Selected
16		Table 6 Area/Office Exception	Not Selected
15		Table 5 Area/Office Exception	Not Selected
14		Table 4 Area/Office Exception	Not Selected
13		Table 3 Area/Office Exception	Not Selected
12		Table 2 Area/Office Exception	Not Selected
11		Table 1 Area/Office Exception	Not Selected
10			
09			
08			
07			
06			
05			
04			
03		1 + A/C + 555/AC + 555 Allowed	Per Area Code Restriction
02		01 Restricted	Allowed
01		0 Restricted	Allowed

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs OFF.

PROGRAM 46-30
TOLL RESTRICTION CLASS 3 PARAMETERS



SELECT = 30
 Enter 30 on the keypad for class 3.

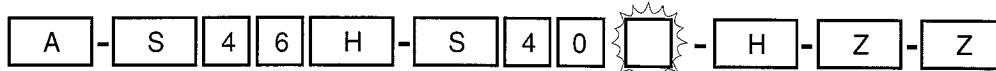
Key LEDs
 Light every key LED marked with an X in the table below.

LED	X	LED ON	LED OFF
20			
19			
18		Table 8 Area/Office Exception	Not Selected
17		Table 7 Area/Office Exception	Not Selected
16		Table 6 Area/Office Exception	Not Selected
15		Table 5 Area/Office Exception	Not Selected
14		Table 4 Area/Office Exception	Not Selected
13		Table 3 Area/Office Exception	Not Selected
12		Table 2 Area/Office Exception	Not Selected
11		Table 1 Area/Office Exception	Not Selected
10			
09			
08			
07			
06			
05			
04			
03		1 + A/C + 555/AC + 555 Allowed	Per Area Code Restriction
02		01 Restricted	Allowed
01		0 Restricted	Allowed

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs OFF.

PROGRAM 46-40
TOLL RESTRICTION CLASS 4 PARAMETERS



SELECT = 40
 Enter 4 on the keypad for class 4.

Key LEDs
 Light every key LED marked with an X in the table below.

LED	X	LED ON	LED OFF
20			
19			
18		Table 8 Area/Office Exception	Not Selected
17		Table 7 Area/Office Exception	Not Selected
16		Table 6 Area/Office Exception	Not Selected
15		Table 5 Area/Office Exception	Not Selected
14		Table 4 Area/Office Exception	Not Selected
13		Table 3 Area/Office Exception	Not Selected
12		Table 2 Area/Office Exception	Not Selected
11		Table 1 Area/Office Exception	Not Selected
10			
09			
08			
07			
06			
05			
04			
03		1 + A/C + 555/AC + 555 Allowed	Per Area Code Restriction
02		01 Restricted	Allowed
01		0 Restricted	Allowed

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all LEDs OFF.

PROGRAM 48
STATION TOLL RESTRICTION CLASSIFICATION



SELECT = Port Number(s)
 Enter the port number(s) of the station(s) being defined.
 See Note 4 for entering a range.

DATA =
Digit Restriction Code 0 or 1
 Enter 0 for no digit restriction.
 Enter 1 for digit restriction.

Station Restriction Code (0 ~ 6)
 Enter 0 for No Station Toll Restriction.
 Enter 1 for Area Code Toll Restriction.
 Enter 2 for Area Code Toll Restriction and 0 or 1 as 1st or 2nd digit.
 Enter 3 for Class 1 Toll Restriction.
 Enter 4 for Class 2 Toll Restriction.
 Enter 5 for Class 3 Toll Restriction.
 Enter 6 for Class 4 Toll Restriction.

Port Number	Digit Restrict Code	Station Restrict Code
00		
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Port Number	Digit Restrict Code	Station Restrict Code
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		

Port Number	Digit Restrict Code	Station Restrict Code
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
99 ³		

NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data reads "10" for all ports.
- Port 99 is DISA COS assignment.
- A range of ports may be entered



Low port in range

High port in range

PROGRAMMING PROCEDURES
LEAST COST ROUTING SYSTEM RECORD SECTION
Programs 50 ~ 56

LCR CO LINE PROGRAMING

1) Use **Program 16** to assign CO lines in groups per the reference chart below.

CO Line Group Reference Chart

Line Group	CO Lines in Group (1 ~ 36)	CO Line Type/Comments
1 (81)		
2 (82)		
3 (83)		
4 (84)		
5 (85)		
6 (86)		
7 (87)		
8 (88)		

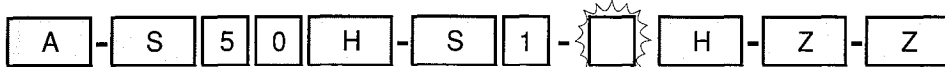
2) Use **Program 40** to allow CO lines access to stations using LCR for outgoing calls.

3) Use **Program 41** to deny outgoing CO line access except for LCR access.

Important: Area code and office code structure must be defined by **Program 45-1** (Toll Restriction Dial Plan) for LCR to work properly.

4) Use **Program 45-1** to enable the dial plan that is appropriate for the area where LCR calls will originate.

PROGRAM 50-1
LCR PARAMETERS



SELECT = 1

Press Key LEDs for each LCR parameter.

LED Key	X	LED On	LED Off
1		Enable System LCR	No LCR
2		Not Used	Not Used
3		555 LDI Route Per Program 50-4	Per Area Code Table
4		Dial Tone After LCR Access	Silent
5		Warning Tone Last Choice Route No.	No Warning Tone

NOTES:

- For more information, see the instructions preceding the record sheets.
- Program 40** denies CO line access via LCR and denies all other access methods.
- Program 41** allows CO line access via LCR but denies all other outgoing access methods: (701-736, 81-88, CO key).
- Initialized data: All LEDs OFF.

**PROGRAM 50-2
LCR HOME AREA CODE**

- - - -

SELECT = 2

DATA = Home Area Code
Enter the local area code.

LCR Home Area Code

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Typically this code is entered in **Program 51** table for the LCR route plan number defined for the local calls in **Program 50-5**.
3. Initialized data leaves the home area code blank.

**PROGRAM 50-31 ~ 35
LCR SPECIAL CODES**

- - - - -

SELECT = 31 ~ 35

Enter 31 ~ 35 to indicate
the special code.

DATA = Special Code

Enter the code from the table below.

	Special Code	Examples
31	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	1-411
32	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	911
33	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	611
34	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
35	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all codes blank.
3. Press LED key 01 to erase data; and leave blank.
4. These calls follow the local call route defined in **Program 50-5**.

PROGRAM 50-4
LCR LONG DISTANCE INFORMATION (LDI) PLAN NUMBER

A - S 5 0 H - S 4 H - Z - Z

SELECT = 4

DATA = LDI Route Plan (1 ~ 8)
Identify the LDI Route Plan
by entering 1 ~ 8.

LDI Plan Number:

(1 ~ 8)

NOTES:

1. For more information, see the instructions preceding the record sheets.
 2. Initialized data assigns LDI Plan Number 8.
 3. Typically, LDI Plan Number = Local Call Plan Number.
-

PROGRAM 50-5
LCR LOCAL CALL PLAN NUMBER

A - S 5 0 H - S 5 H - Z - Z

SELECT = 5

DATA = Local Route Plan (1 ~ 8)
Identify the Local Route Plan
by entering 1 ~ 8.

Local Call Plan Number:

(1 ~ 8)

NOTES:

1. For more information, see the instructions preceding the record sheets.
 2. Initialized data assigns plan 8 to be the local call plan.
 3. The local plan handles special codes and operator calls.
-

PROGRAM 50-6
LCR DIAL ZERO TIMEOUT

A - S 5 0 H - S 6 H - Z - Z

SELECT = 6

DATA = Timeout Value
Enter a timeout value from
04 ~ 10 seconds long.

Dial Zero Timeout:

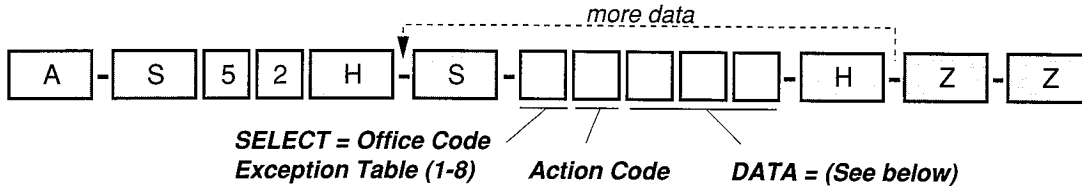
(04 ~ 10 seconds)

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns an LCR Dial Zero Timeout value of 06.
3. This value determines pause time before sending a call on to an operator, etc.

PROGRAM 52
LCR OFFICE CODE EXCEPTIONS FOR SPECIFIED AREA CODE

To assign Office Code Exception Table (1 ~ 4) to an LCR Plan:



Action Code Function	Action Codes	DATA =
Assign Exception Table to LCR Plan	<input type="text" value="0"/>	<input type="text"/> LCR Plan 1 ~ 8
Assign Area Code to LCR Plan	<input type="text" value="1"/>	<input type="text"/> <input type="text"/> <input type="text"/> 3-digit Area Code
Add Office Codes to Exception Table	<input type="text" value="2"/>	<input type="text"/> <input type="text"/> <input type="text"/> 3-digit Office Code
Delete Office Codes from Exception Table	<input type="text" value="3"/>	<input type="text"/> <input type="text"/> <input type="text"/> 3-digit Office Code
Display Office Codes in Exception Table	<input type="text" value="4"/> <input type="text" value="#"/> more <input type="text" value="#"/>	<input type="text"/> <input type="text"/> <input type="text"/> 3-digit Office Code

Office Code Exception Table for Area Code

Assign to LCR Route Plan Number Office Codes:

Office Code Exception Table for Area Code

Assign to LCR Route Plan Number Office Codes:

Office Code Exception Table for Area Code

Assign to LCR Route Plan Number Office Codes:

Office Code Exception Table for Area Code

Assign to LCR Route Plan Number Office Codes:

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all codes blank.
3. To enter a range of office codes, press

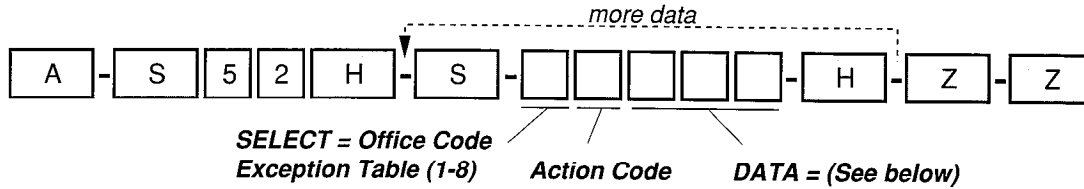


Low Office Code
High Office Code
Designates end of String

4. Several ranges or individual codes can be expressed at once by separating them with a # key.
5. Copy as required, maximum eight Office Code Exception Tables.

PROGRAM 52
LCR OFFICE CODE EXCEPTIONS FOR SPECIFIED AREA CODE

To assign Office Code Exception Table (5 ~ 8) to an LCR Plan:



Action Code Function	Action Codes	DATA =
Assign Exception Table to LCR Plan	[0]	[] LCR Plan 1 ~ 8
Assign Area Code to LCR Plan	[1]	[] [] [] 3-digit Area Code
Add Office Codes to Exception Table	[2]	[] [] [] 3-digit Office Code
Delete Office Codes from Exception Table	[3]	[] [] [] 3-digit Office Code
Display Office Codes in Exception Table	[4] # more #	[] [] [] 3-digit Office Code

Office Code Exception Table **5** for Area Code [] [] []
 Assign to LCR Route Plan Number [] Office Codes:

[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

Office Code Exception Table **6** for Area Code [] [] []
 Assign to LCR Route Plan Number [] Office Codes:

[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

Office Code Exception Table **7** for Area Code [] [] []
 Assign to LCR Route Plan Number [] Office Codes:

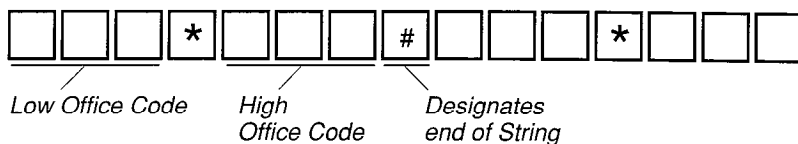
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

Office Code Exception Table **8** for Area Code [] [] []
 Assign to LCR Route Plan Number [] Office Codes:

[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

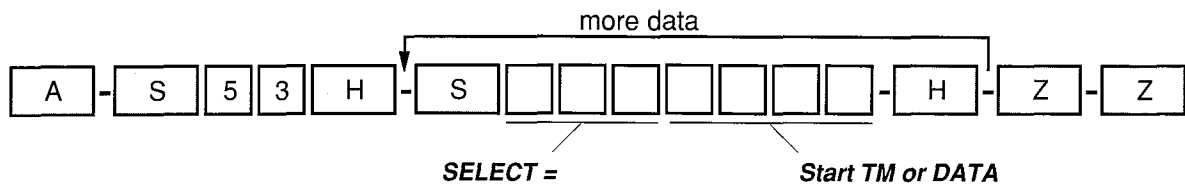
NOTES:

- For more information, see the instructions preceding the record sheets.
- Initialized data leaves all codes blank.
- To enter a range of office codes, press



- Several ranges or individual codes can be expressed at once by separating them with a # key.

PROGRAM 53
LCR SCHEDULE ASSIGNMENTS
FOR LCR PLAN NO. 3 AND 4



	SELECT			Start TM			
Start TM	3	1	0				
Schedule (1 ~ 3)	3	2	0				
Plan <u>3</u>	3	3	0				
LCR Plan				H	H	M	M
Schedule (1 ~ 3)				(HH = 00 ~ 23 MM = 00 ~ 59)			
Action Code							

	SELECT			Start TM			
Start TM	4	1	0				
Schedule (1 ~ 3)	4	2	0				
Plan <u>4</u>	4	3	0				
LCR Plan				H	H	M	M
Schedule (1 ~ 3)				(HH = 00 ~ 23 MM = 00 ~ 59)			
Action Code							

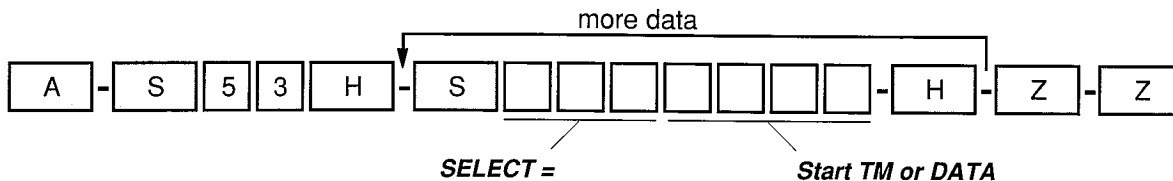
	SELECT DATA (Route Choices)						
Schedule 1 Route Choices For Plan <u>3</u>	3	1	1				
	3	1	2				
	3	1	3				
	3	1	4				
Schedule 2 Route Choices For Plan <u>3</u>	3	2	1				
	3	2	2				
	3	2	3				
	3	2	4				
Schedule 3 Route Choices For Plan <u>3</u>	3	3	1				
	3	3	2				
	3	3	3				
	3	3	4				
LCR Plan				1st	2nd	3rd	Last
Schedule (1 ~ 3)				(Route Definition No's (1 ~ 4) From Program 54)			
LCR Station Group No. (1 ~ 4) (see Program 56)							

	SELECT DATA (Route Choices)						
Schedule 1 Route Choices For Plan <u>4</u>	4	1	1				
	4	1	2				
	4	1	3				
	4	1	4				
Schedule 2 Route Choices For Plan <u>4</u>	4	2	1				
	4	2	2				
	4	2	3				
	4	2	4				
Schedule 3 Route Choices For Plan <u>4</u>	4	3	1				
	4	3	2				
	4	3	3				
	4	3	4				
LCR Plan				1st	2nd	3rd	Last
Schedule (1 ~ 3)				(Route Definition No's (1 ~ 4) From Program 54)			
LCR Station Group No. (1 ~ 4) (see Program 56)							

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns starting time as 0000 and Route Definitions as blank for all schedules.
3. If schedules 1 & 2 start at the same time, then Time of Day schedule change does not occur, and data only needs to be entered for schedule 1.
4. Press LED key 01 to erase data (LED does not light).

**PROGRAM 53
LCR SCHEDULE ASSIGNMENTS
FOR LCR PLAN NO. 5 AND 6**



	SELECT	Start TM
Start TM Schedule (1 ~ 3) Plan <u>5</u>	5 1 0 5 2 0 5 3 0	[] [] [] [] [] [] [] [] []
LCR Plan _____		H H M M
Schedule (1 ~ 3) _____		(HH = 00 ~ 23 MM = 00 ~ 59)
Action Code _____		

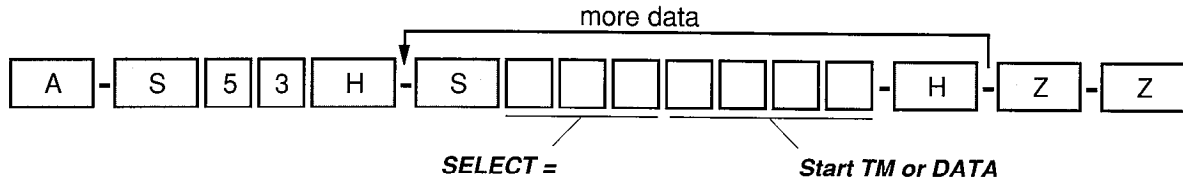
	SELECT	Start TM
Start TM Schedule (1 ~ 3) Plan <u>6</u>	6 1 0 6 2 0 6 3 0	[] [] [] [] [] [] [] [] []
LCR Plan _____		H H M M
Schedule (1 ~ 3) _____		(HH = 00 ~ 23 MM = 00 ~ 59)
Action Code _____		

	SELECT DATA (Route Choices)	
Schedule 1 Route Choices For Plan <u>5</u>	5 1 1 5 1 2 5 1 3 5 1 4	[] [] [] [] [] [] [] [] [] [] [] []
Schedule 2 Route Choices For Plan <u>5</u>	5 2 1 5 2 2 5 2 3 5 2 4	[] [] [] [] [] [] [] [] [] [] [] []
Schedule 3 Route Choices For Plan <u>5</u>	5 3 1 5 3 2 5 3 3 5 3 4	[] [] [] [] [] [] [] [] [] [] [] []
LCR Plan _____		1st 2nd 3rd Last
Schedule (1 ~ 3) _____		(Route Definition No's (1 ~ 4) From Program 54)
LCR Station _____		
Group No. (1 ~ 4) (see Program 56)		

	SELECT DATA (Route Choices)	
Schedule 1 Route Choices For Plan <u>6</u>	6 1 1 6 1 2 6 1 3 6 1 4	[] [] [] [] [] [] [] [] [] [] [] []
Schedule 2 Route Choices For Plan <u>6</u>	6 2 1 6 2 2 6 2 3 6 2 4	[] [] [] [] [] [] [] [] [] [] [] []
Schedule 3 Route Choices For Plan <u>6</u>	6 3 1 6 3 2 6 3 3 6 3 4	[] [] [] [] [] [] [] [] [] [] [] []
LCR Plan _____		1st 2nd 3rd Last
Schedule (1 ~ 3) _____		(Route Definition No's (1 ~ 4) From Program 54)
LCR Station _____		
Group No. (1 ~ 4) (see Program 56)		

- NOTES:**
1. For more information, see the instructions preceding the record sheets.
 2. Initialized data assigns starting time as 0000 and Route Definitions as blank for all schedules.
 3. If schedules 1 & 2 start at the same time, then Time of Day schedule change does not occur, and data only needs to be entered for schedule 1.
 4. Press LED key 01 to erase data (LED does not light).

PROGRAM 53
LCR SCHEDULE ASSIGNMENTS
FOR LCR PLAN NO. 7 AND 8



	SELECT			Start TM			
Start TM	7	1	0				
Schedule (1 ~ 3)	7	2	0				
Plan <u>7</u>	7	3	0				
LCR Plan				H	H	M	M
Schedule (1 ~ 3)				(HH = 00 ~ 23 MM = 00 ~ 59)			
Action Code							

	SELECT			Start TM			
Start TM	8	1	0				
Schedule (1 ~ 3)	8	2	0				
Plan <u>8</u>	8	3	0				
LCR Plan				H	H	M	M
Schedule (1 ~ 3)				(HH = 00 ~ 23 MM = 00 ~ 59)			
Action Code							

	SELECT DATA (Route Choices)						
Schedule 1 Route Choices For Plan <u>7</u>	7	1	1				
	7	1	2				
	7	1	3				
	7	1	4				
Schedule 2 Route Choices For Plan <u>7</u>	7	2	1				
	7	2	2				
	7	2	3				
	7	2	4				
Schedule 3 Route Choices For Plan <u>7</u>	7	3	1				
	7	3	2				
	7	3	3				
	7	3	4				
LCR Plan				1st	2nd	3rd	Last
Schedule (1 ~ 3)				(Route Definition No's (1 ~ 4) From Program 54)			
LCR Station Group No. (1 ~ 4) (see Program 56)							

	SELECT DATA (Route Choices)						
Schedule 1 Route Choices For Plan <u>8</u>	8	1	1				
	8	1	2				
	8	1	3				
	8	1	4				
Schedule 2 Route Choices For Plan <u>8</u>	8	2	1				
	8	2	2				
	8	2	3				
	8	2	4				
Schedule 3 Route Choices For Plan <u>8</u>	8	3	1				
	8	3	2				
	8	3	3				
	8	3	4				
LCR Plan				1st	2nd	3rd	Last
Schedule (1 ~ 3)				(Route Definition No's (1 ~ 4) From Program 54)			
LCR Station Group No. (1 ~ 4) (see Program 56)							

NOTES:

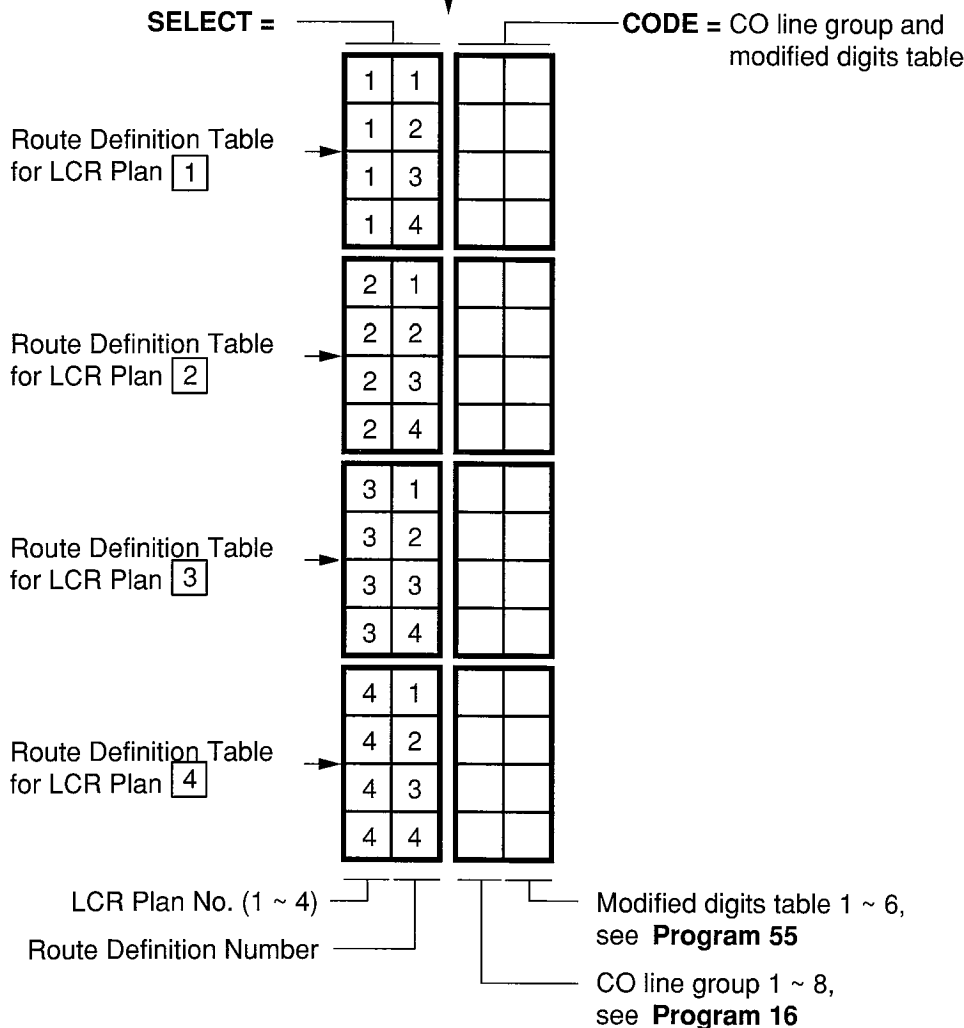
1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns starting time as 0000 and Route Definitions as blank for all schedules.
3. If schedules 1 & 2 start at the same time, then Time of Day schedule change does not occur, and data only needs to be entered for schedule 1.
4. Press LED key 01 to erase data (LED does not light).

PROGRAM 54
LCR ROUTE DEFINITION TABLES (1 ~ 4)



SELECT = CODE =

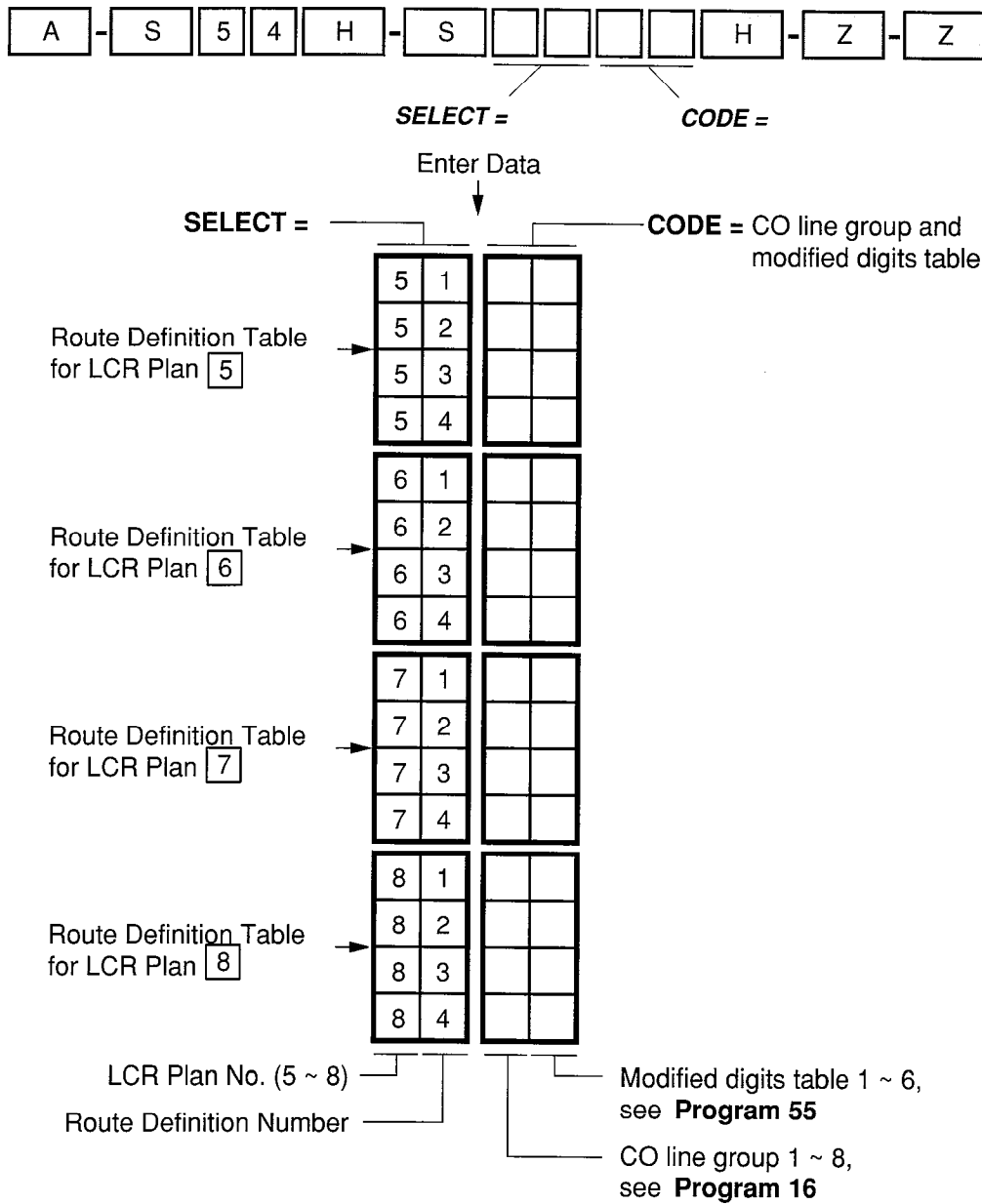
Enter Data



NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data is "11".

PROGRAM 54
LCR ROUTE DEFINITION TABLES (5 ~ 8)



NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data is "11".

PROGRAM 55
LCR MODIFIED DIGITS TABLES

PROGRAM 55-0 LCR MODIFIED DIGITS – DELETE FROM FRONT



SELECT = Modified Digits
 Table 1 ~ 6 (six available)

FIGURE = Quantity of Digits
 (00 ~ 10) to be deleted.

PROGRAM 55-1 and 2 LCR MODIFIED DIGITS – ADD



SELECT = Modified Digits Table (1 ~ 6)

CODE = Digits added (up to 22). Enter the digits to be added. Pauses may be coded as described in the pause entry reference table below.

Enter 1 to add digits in front of number dialed
 Enter 2 to add digits at end of number dialed

DELETE DIGITS TABLES

Table No.	Quantity of Digits
1	
2	
3	
4	
5	
6	

Quantity 10 Max. (00 ~ 10)

PAUSE ENTRY REFERENCE
 (Program 55-1, 55-2)

Key/LED	Pause (Seconds)	Record Entry
08	16	P8
07	14	P7
06	12	P6
05	10	P5
04	8	P4
03	6	P3
02	4	P2
01	2	P1

Special Keys:

Key/LED

11 – Clear

10 – Convert DP to DTMF

ADD DIGIT TABLES

Add to FRONT of Dialed Number (Program 55-1)

Table No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Comments	
1																								
2																								
3																								
4																								
5																								
6																								

Add to END of Dialed Number (Program 55-2)

Table No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Comments	
1																								
2																								
3																								
4																								
5																								
6																								

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data leaves all tables blank except Delete Digits, which are all 00.

PROGRAM 56
LCR STATION GROUP ASSIGNMENT

- - # - -

SELECT = Port number(s)
 Enter port numbers of stations
 being assigned. See Note 3
 for entering a range of ports.

Enter LCR station Group (1 ~ 4)

Port Number	LCR Station Group No. (1 ~ 4)	Port Number	LCR Station Group No. (1 ~ 4)	Port Number	LCR Station Group No. (1 ~ 4)	Port Number	LCR Station Group No. (1 ~ 4)
00		24		48		72	
01		25		49		73	
02		26		50		74	
03		27		51		75	
04		28		52		76	
05		29		53		77	
06		30		54		78	
07		31		55		79	
08		32		56		80	
09		33		57		81	
10		34		58		82	
11		35		59		83	
12		36		60		84	
13		37		61		85	
14		38		62		86	
15		39		63		87	
16		40		64		88	
17		41		65		89	
18		42		66		90	
19		43		67		91	
20		44		68		92	
21		45		69		93	
22		46		70		94	
23		47		71		95	

NOTES:

1. For more information, see the instructions preceding the record sheets.
2. Initialized data assigns all stations to group 1.

3. To enter a range of ports, press
4. Refer to **Program 53**.

*
 Low Port High Port

This table below shows the program options for stations and CO lines for verified, forced and voluntary account code dialing.

TABLE 2-B
ACCOUNT CODE PROGRAM OPTION MATRIX

	Account Code Program Options		
	Station		CO Line
	Verified Program 30 LED 14	Forced Program 30 LED 08	Forced Program 15-7 CO LED
Account Code Dial Plan			
Verified (Forced)	On	On	On
Verified (Voluntary)	On	On	Off
Verified (Voluntary)	On	Off	On
Verified (Voluntary)	On	Off	Off
Not Verified (Forced)	Off	On	On
Not Verified (Voluntary)	Off	On	Off
Not Verified (Voluntary)	Off	Off	On
Not Verified (Voluntary)	Off	Off	Off

← System Initialization

TABLE 2-C
OVERRIDE OPTION MATRIX

Station A May Override Station B ¹		Privacy Override Station A Options Program 30 ³ LED 19	Privacy Override Block Station B Options Program 31 LED 18	Station B Button Options (Program 39)	
Executive ³	Privacy			PRIVACY ² Button	PRVRLS ² Button
Yes	No	Off	Off	Off	Off
Yes	Yes	Off	Off	Off	On
Yes	No	Off	Off	On	Off
Yes	Yes	Off	Off	On	On
No	No	Off	On	Off	Off
No	Yes	Off	On	Off	On
No	No	Off	On	On	Off
No	Yes	Off	On	On	On
Yes	Yes	On	Off	Off	Off
Yes	Yes	On	Off	Off	On
Yes	No	On	Off	On	Off
Yes	Yes	On	Off	On	On
No	No	On	On	Off	Off
No	Yes	On	On	Off	On
No	No	On	On	On	Off
No	Yes	On	On	On	On

NOTES:

1. Station "A" attempts to override (Executive or Privacy) Station "B".
2. Normally only one button PRIVACY or PRVRLS is assigned to a telephone (Program 39) depending on how it should operate with Privacy Override.
3. Program 30, Key/LED 13 is turned "ON" for Station A, allowing Station A to have executive override to Station B for all possibilities in this table. If Program 30, LED 13 is "OFF" for station A, then it can never executive override any station.

Strata[®] *DK*

OPERATING PROCEDURES

TABLE of CONTENTS

SUBJECT

DIRECT STATION SELECTION CONSOLE

STANDARD TELEPHONE

ELECTRONIC TELEPHONE

LIQUID CRYSTAL DISPLAY FEATURES ELECTRONIC TELEPHONE

DIGITAL TELEPHONE

LIQUID CRYSTAL DISPLAY FEATURES DIGITAL TELEPHONE

STRATA® DK**DIGITAL KEY
TELEPHONE SYSTEMS****STRATA DK 24
DK 56 AND DK 96
RELEASE 1, 2, & 3****DIRECT STATION SELECTION
CONSOLE USER GUIDE**

The Direct Station Selection console has been designed for use where the volume of incoming calls warrants a dedicated call forwarding location.

Similar in shape and size to the electronic and digital telephone, the DSS console makes an attractive and easy-to-use companion for the busy attendant. It features 60 buttons with associated LEDs. The DSS console buttons can be programmed as stations, CO lines, or speed dial buttons. A total of four consoles can be installed in a system.

There are two DSS console models, the HDSS6560 (compatible with electronic telephones) and the DDSS1060 (compatible with digital telephones). All features for both models are executed the same way. However, their LED color displays differ on some functions. The HDSS6560 LEDs are always red; the DDSS1060's are red, except in the following situations:

- 1) A CO line LED will be green on a DDSS1060 when the CO line is in-use by the console user and the CO line does not appear on the consoles associated telephone.
- 2) A DSS button's LED will be green when calling or transferring a CO call to a station; the LED becomes red when the call is camped on to or answered by the station.

BUTTON FUNCTIONS

Your DSS console may be provided with the following buttons (these buttons are assigned flexibly in system programming, see the back page of this guide for initialized assignments):

ALL CALL BUTTON **AC***

A single dedicated button that provides direct access to all electronic/digital telephone or external speakers for paging.

CO LINE BUTTONS

Provides direct access of individual CO lines for incoming and outgoing calls. In most cases, only those CO lines that cannot fit on the accompanying electronic telephone will be placed on the DSS.

DIRECT STATION SELECTION (DSS) BUTTON/LED

Provides one-touch dialing to call another station. A dedicated button may be provided for each station up to the limits of the console(s). The associated LED displays the busy/idle status of the station.

NIGHT TRANSFER BUTTON NT*

Controls the system's CO/PBX line ringing patterns. Different ringing patterns are chosen by pressing the NT button.

SPEED DIAL BUTTONS SD

Provides one-touch dialing of up to 20 digits for each button after accessing dial tone. Personal and System Speed Dial numbers may be flexibly assigned.

** These buttons may be programmed as DSS, CO line, or Speed Dial buttons.*

OPERATIONS

ALL CALL PAGE

TO PAGE ALL STATIONS:

- 1) Lift the handset.
- 2) Press the AC button.
 - AC LED lights steadily.
- 3) Make your announcement in a normal voice level.
- 4) Hang up when you have completed your announcement.

CALL ANSWERING CO LINE/INTERCOM

Use the same procedures as with an electronic or digital telephone.

CALL TRANSFER WITH CAMP-ON

Allows you to transfer an outside call to a station that is either busy or idle.

TO TRANSFER A CO LINE CALL TO AN IDLE STATION:

- 1) Press the DSS button corresponding to the station to be called.
 - CO line is placed on hold automatically.
 - CO LED flashes at double the On-hold rate.
 - DSS console station LED flashes.
 - You hear a single ring tone.
- 2) Announce the call. You can speak with the station user without pressing any other buttons.
- 3) Hang up.
 - CO LED changes to the On-hold flash rate.
 - CO line rings the called station.
 - CO LED illuminates steadily when the called station connects with the transferred call.

TO TRANSFER A CO LINE CALL TO A BUSY STATION:

- 1) Press the DSS button corresponding to the station to be called.
 - CO line is placed on hold automatically.
 - CO LED flashes at double the On-hold rate.
 - DSS console station LED flashes.
 - You hear a single ring tone.
- 2) Hang up.
 - CO LED changes to the On-hold flash rate.
 - CO line rings the called station.
 - CO LED illuminates steadily when the called station connects with the transferred call.

NOTES:

1. *The call will recall you and camp-on is cancelled if the station does not pick it up within a pre-determined time. Inform the caller of the situation, and repeat the procedure (if necessary).*
2. *You may reconnect to a transferred line (anytime before it is answered) by pressing the appropriate CO button.*
3. *The Busy Override feature may be used instead of Call Transfer with Camp-on. See the Electronic or Digital Telephone User Guide for details.*



DDSS/DSS CONSOLE CALL FORWARD OVERRIDE

Calls to Forwarded stations will ring the dialed station and will not forward. This feature can be used to notify a person who forgets to deactivate the call forward feature after returning to the office.

TO RING A FORWARDED STATION:

Call that station from your dialpad and not the console's **DSS** button assigned to that station.

NOTE:

*This option may be reversed in system programming; i.e., **DSS** button calls will not forward and telephone dialpad calls will.*

NIGHT TRANSFER

- 1) Different ringing patterns are chosen by pressing the **NT** button (NT1 or NT2, see notes).
- 2) Depending upon system programming, either two or three night transfer patterns are available. The active pattern is shown by the state of the NT LED:

	Three-pattern	Two-pattern
DAY	OFF	OFF
DAY 2	FLASH	N/A
NIGHT	ON	ON

NOTES:

1. *For Non-tenant Service: Ringing pattern can be changed by any DSS console(s).*
2. *For Tenant Service: CO lines are assigned and controlled independently:
NT1, TENANT 1 CO Lines
NT2, TENANT 2 CO Lines*
3. *In Tenant Service, one system is split so two businesses can use their telephones independently of each other.*

DATE/TIME/DAY ADJUSTMENT

This operation is possible from port 00 only (usually station 200). Station 200 is typically an attendant station for a DSS console.

TO SET DATE

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 1**.
- 3) Dial the time (year/month/day) in the format YYMMDD. Enter a leading 0 for any single digit month or day.
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

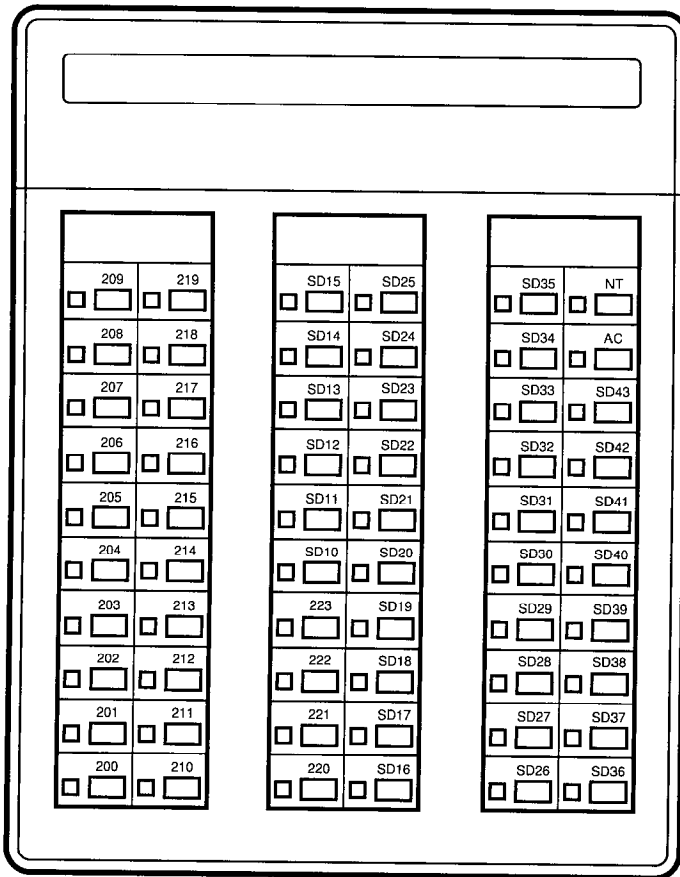
TO SET TIME

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 2**.
- 3) Dial the time (hour/minute/second) in the 24-hour clock format HHMMSS. Enter a leading 0 for any single digit entered.
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

TO SET DAY

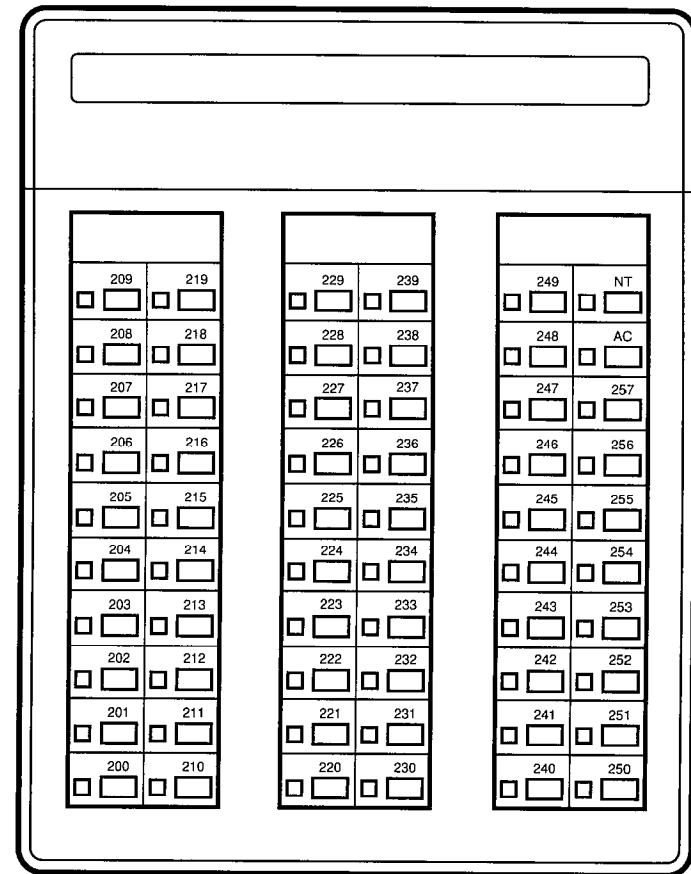
- 1) Place handset on-hook.
- 2) Dial **INT 6 5 3**.
- 3) Dial the day
 - 1 = Sunday
 - 2 = Monday
 - 3 = Tuesday
 - 4 = Wednesday
 - 5 = Thursday
 - 6 = Friday
 - 7 = Saturday
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

STRATA DK24 DSS Console Buttons



Initialized DSS console button assignments for the DK24 system; assignments are flexible and may be changed by service personnel.

STRATA DK56 and 96 DSS/DDSS Console Buttons



Initialized DSS/DDSS console button assignments for the DK56 and 96 systems; assignments are flexible and may be changed by service personnel.

TOSHIBA

**S T A N D A R D
T E L E P H O N E
U S E R G U I D E**

**B U S I N E S S
T E L E P H O N E
S O L U T I O N S**

S T R A T A[®] D K

**D I G I T A L K E Y
T E L E P H O N E S Y S T E M S**

**S T R A T A D K 2 4
D K 5 6 A N D D K 9 6
R E L A S E 1, 2, & 3**

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GENERAL INFORMATION

Using a standard telephone with your STRATA DK digital telephone system provides easy access to the wide range of features listed in this guide.

Intercom dial tone must be heard before dialing; if you have just lifted the handset, you will hear intercom dial tone. During a conversation, intercom dial tone is obtained by "flashing" the hookswitch (plunger) located in the handset cradle. To flash, depress the hookswitch momentarily (for about a 1/2 second), and you will hear intercom dial tone.

Periodically in this guide you will see footnote numbers either imbedded in the sentence or at the end of a sentence. (For example: When the party answers,² flash the hookswitch.) These numbers refer you to the notes following the feature. Each note will have a corresponding number, to provide you with additional important information about that feature.

IMPORTANT!

All features in this guide are available with each STRATA DK system and most with each software version (Releases 1, 2, and 3). Exceptions are duly noted.

OUTSIDE CALLS

TO MAKE AN OUTSIDE CALL

- 1) Lift the handset
 - You will hear intercom dial tone.
- 2) Dial the CO line access code.*
- 3) Listen for CO (outside line) dial tone.
- 4) Dial the desired telephone number.
- 5) Hang up when the call is completed.

* Dial **9** to access the general group or to use least cost routing; or dial a CO line number **701** ~ **736**; or dial **81** ~ **89** to access line groups 1 ~ 8, respectively.

TO RECEIVE AN INCOMING CALL

- 1) You will hear ringing (two short rings every four seconds¹ or one ring every four seconds²).
- 2) Lift the handset.
- 3) Hang up when the call is completed.

NOTES:

1. Two short rings indicate a direct outside call (optional with **Release 2** and higher).
2. One ring every four seconds indicates an intercom call or a transferred outside call.

INTERCOM CALLS

TO MAKE AN INTERCOM CALL

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the desired station number.
 - You will hear a single ring tone if calling to an electronic or digital telephone.
- 3) Speak when the ring tone ends.*
- 4) Hang up when the call is completed.

* If you are calling another standard telephone, ring tones will continue. Wait for an answer. Tone signaling can be accomplished when calling an electronic or digital telephone by dialing **1** after the station number.

TO RECEIVE AN INTERCOM CALL

- 1) You will hear a ringing signal (1 second on—3 seconds off).
- 2) Lift the handset and speak to the caller.
- 3) Hang up when the call is completed.

AUTOMATIC CALLBACK—Intercom

After reaching a busy (fast busy—two tones per second) or DND station (very fast busy—four tones per second) on an intercom call, you may use Automatic Callback.

TO USE AUTOMATIC CALLBACK

- 1) Dial **4** to set Automatic Callback.
 - Busy tone stops.
 - You will hear dial tone for two seconds and then busy tone again.
- 2) You may go on-hook or make other calls while waiting for the called station to become available.
- 3) When the called station becomes idle:
 - Your telephone will ring at a fast rate.
- 4) Answer the call within nine seconds to prevent the callback from being cancelled.
 - You will hear a single tone.
- 5) Proceed to voice announcement.
- 6) Proceed with the conversation.

NOTES:

1. You may cancel the request anytime prior to the callback by lifting the handset and dialing **43**.
2. If, after answering a callback, you hear a busy tone, it means the called party has already received or originated another call. Your request is **not** cancelled. You will be called again the next time the station becomes idle.

CALL FORWARDING

TO CALL FORWARD (CF)

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **6** □ □.
 - **601** = Call forward-all calls
 - **602** = Call forward-busy (**Release 2** and higher)
 - **603** = Call forward-no answer (**Release 2** and higher)
 - **604** = Call forward-busy/no answer (**Release 2** and higher)
 - You will receive confirmation tone.
- 3) Dial the desired station number to which calls will be forwarded.
 - You will receive confirmation tone again, then busy tone.
- 4) Hang up.
 - Calls will be forwarded to that number.

NOTES:

1. You may continue using your phone in the usual manner while Call Forwarding is in effect.
2. If call forward-all calls is set, your telephone will not ring when it is called.
3. If call forward is set:
 - CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
 - CO line calls transferred to your station will forward.
 - Intercom calls will forward.
 - Call forward redirects the station hunt feature.

TO CANCEL CALL FORWARDING

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **601**.
 - You will receive confirmation tone again, then busy tone.
- 3) Hang up.

CALL HOLDING

TO HOLD A CALL

- 1) While connected to an outside call, flash the hookswitch.
 - You will hear intercom dial tone.
- 2) Dial **4 1** and hang up (at least 2 seconds).
 - You may now originate or receive other calls.

TO RETURN TO CALL ON HOLD²

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **4 2**.
 - You will be reconnected with the call.

NOTES:

1. *If you do not return to the call within a designated time period, your telephone will ring to recall you.*
2. *Any other station can pick up the held call by:*
 - *Dialing **INT 5** + N (N = the intercom number of the station that placed the call on hold).*
 - *Dialing **INT 5 7** + N (N = the number, 01 ~ 36, of the held CO line), **Release 2** and higher.*

CALL TRANSFER WITH CAMP-ON

This feature allows you to transfer an outside call to a station that is either idle or busy.

TO TRANSFER A CALL

- 1) While connected to an outside line, flash the hookswitch (1/2 second).
 - You will hear intercom dial tone.
- 2) Dial the station number to which the call is to be transferred.
- 3A) If the called station is idle:
 - You will hear a single ring tone.
- 4A) Announce the call when the station answers, or hang up to ring-transfer the call.²
 - . . . or . . .
- 3B) If the called station is busy:
 - You will hear busy tone.
- 4B) Hang up.
 - The call is camped-on to the busy station.²

NOTES:

1. *Flash the hookswitch to reconnect to the line before it is transferred. (If the called station has lifted the handset or depressed the **INT** button, a conference will be formed by the hookswitch flash.)*
2. *The call will recall you and camp-on is cancelled if the station does not answer within a predetermined time. Inform the caller of the situation, and repeat the procedure, if necessary.*

CONFERENCE CALLS

TO CONFERENCE UP TO THREE STATIONS ON ONE CO LINE

While connected to an established CO line call (incoming or outgoing):

- 1) Flash the hookswitch.
 - You will hear intercom dial tone.
 - The existing call will be on hold.
- 2) Dial the number of the desired station.
- 3) Flash the hookswitch after the party answers.*
 - All parties will be conferenced.
- 4) Repeat to add another station. (Two stations, plus yours, and one CO line is maximum.)
- 5) Hang up when the call is completed.

TO CONFERENCE UP TO FOUR STATIONS ON INTERCOM

- 1) Establish a standard two-station intercom call.
- 2) Flash the hookswitch.
 - You will hear intercom dial tone.
 - The existing call will be on hold.
- 3) Dial the number of the desired station.
- 4) Flash the hookswitch after the party answers.*
 - All parties will be conferenced.
- 5) Repeat steps 2 ~ 4 one more time, if necessary to add another station.
- 6) Hang up when the call is completed.

* Called party must come off-hook or depress the **INT** button. If you receive a busy tone or no answer, return to the original connection by flashing the hookswitch.

TO CONFERENCE UP TO TWO STATIONS AND TWO CO LINES (Release 2 and higher)

While connected to an established CO line call (incoming or outgoing):

- 1) Flash the hookswitch.
 - You will hear intercom dial tone.
 - The existing call will be on hold.

CONFERENCE CALLS (continued)

- 2) Dial the access code (_____) for another CO line.¹
- 3) Dial the desired telephone number of the second party.
- 4) Flash the hookswitch after the party answers.²
 - All parties will be conferenced.
- 5) To connect another station flash the hookswitch.³
 - You will hear intercom dial tone.
 - The existing calls will be on hold.
- 6) Dial the number of the desired station.
- 7) Flash the hookswitch after the party answers.²
 - All parties will be conferenced. (Two stations, including yours, and two CO lines are maximum.)
- 8) Hang up when the call is completed.

NOTES:

1. All access codes are allowed depending on system programming: 701 ~ 736, line numbers; 81 ~ 88, line group numbers; or 9, for LCR or general group, with **Release 2** and higher.
2. If the second outside party does not answer or is busy, hang up to receive an immediate recall from the first party.
3. While the conference is being set up, all outside parties are held separately and cannot converse with each other.
4. If a 4-party conference is set, either inside station will maintain the conference if the other hangs up. But one station must remain in the conference to maintain the outside connections.

DOOR PHONE

TO CALL/MONITOR A DOOR PHONE

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the intercom number for the desired door location.

151	Location _____
152	Location _____
153	Location _____
154	Location _____
155	Location _____
156	Location _____
157	Location _____
158	Location _____
159	Location _____
161	Location _____
162	Location _____
163	Location _____
- 3) Hang up when the call is completed or when you no longer wish to monitor the door phone.

NOTE:

Door phones will not ring standard telephones.

FLASH CO LINE

Some CO line features like conferencing, Centrex features or behind PBX operation require “flashing” the CO (or like) line.

TO FLASH A CO LINE

- 1) Momentarily press hookswitch.
- 2) Dial **45**.
 - You will receive dial tone.

ACCOUNT CODE CALLS

Account codes can be forced or voluntary, and, with **Release 3** only, verified or nonverified.

TO ENTER FORCED ACCOUNT CODE (Outgoing only)

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the CO line access code (701 ~ 736, 81 ~ 88, 9).
 - You will hear dial tone (see note).
- 3) Dial the account code digits (_____).
 - You will hear dial tone if a valid code is dialed.
... or ...
 - You will hear busy tone if an invalid code is dialed (with verified account code option, **Release 3** only)
- 4) Dial the outside number.

NOTE:

*If a CO line is accessed using LCR (dial **9**), dial tone is not returned.*

EMERGENCY OVERRIDE OF FORCED ACCOUNT CODE DIALING REQUIREMENTS

With **Release 3**, forced account code requirements can be bypassed by three emergency numbers, including 911. See your system administrator for these numbers:

- 1) 911 2) _____ 3) _____

TO ENTER VOLUNTARY ACCOUNT CODE (Incoming or Outgoing)

After completing an external call (incoming or outgoing), do not hang up:

- 1) Flash the hookswitch (the speech path is broken).
 - You will hear intercom dial tone.
- 2) Dial **46**.
 - You will hear intercom dial tone.
- 3) Dial the account code digits (_____).

ACCOUNT CODE CALLS (continued)

4A) Hang up or resume talking.

. . . or . . .

4B) If voluntary account codes are verified (**Release 3**):

- If a valid code is dialed, you will hear one confirmation burst tone. Hang up or resume talking.
- If an invalid code is dialed, you will hear two confirmation burst tones. Repeat steps 1~ 3 to enter another code, or hang up, or resume talking.

MESSAGE SENDING

TO SET MESSAGE WAITING TO AN ELECTRONIC OR DIGITAL TELEPHONE

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the station number.
- 3) Dial **7**.
- 4) Hang up handset.

TO CANCEL MESSAGE WAITING SET AT AN ELECTRONIC OR DIGITAL TELEPHONE

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the station number.
- 3) Dial **77**.
- 4) Hang up the handset.

OVERRIDE

After reaching a busy station (fast busy – two tones per second), you may signal that station that a call is waiting.

TO INITIATE A BUSY OVERRIDE SIGNAL

- 1) Dial **2**.
 - A tone signal will be heard at the busy station.
- 2) After reaching a DND station (very fast busy—four tones per second), you may signal that station that a call is waiting.

OVERRIDE (continued)

TO OVERRIDE DND (Programmable Option)

- 1) Dial **2**.
 - A tone signal will be heard at the DND station indicating an override call.
- 2) After reaching a busy station, Executive Override allows you to enter an established conversation.

TO INITIATE EXECUTIVE OVERRIDE (Programmable Option)

- Dial **3**.
- A tone signal will be heard prior to entering the conversation.

PAGING

TO PAGE

- 1) Lift the handset.
- 2) Listen for intercom dial tone and dial the following:
 - 30** = All Call (all electronic and digital telephones)
 - 31** = Group #1
 - 32** = Group #2
 - 33** = Group #3
 - 34** = Group #4
 - 35** ~ **38** = External Page Zones
 - 39** = All Call (with External Page).*
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

**Programmable option; also see call pickup.*



REPEAT LAST NUMBER DIALED

TO USE REPEAT LAST NUMBER DIALED

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **#**.
 - You will hear dial tone and the number will be dialed.

SPEED DIAL

TO STORE A STATION SPEED DIAL NUMBER

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **66**.
 - You will hear a short tone.
- 3) Dial **#**.
- 4) Dial a 2-digit dialing code (10 ~ 49).
- 5) Dial the CO line access code to be stored (701 ~ 736, 81 ~ 89, 9).
- 6) Dial the telephone number to be stored (20 digits maximum, including the digits dialed in step 5).
- 7) Dial **#**.
 - You will hear a short tone.
 - Your telephone number has been stored for future use.

TO DIAL SPEED DIAL TELEPHONE NUMBER

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **#**.
 - You will hear intercom dial tone.
- 3) Dial the 2-digit dialing code for the desired telephone number. Use 10 ~ 49 for telephone numbers you have previously stored. Use 60 ~ 99 for system speed dial numbers.
 - You will hear CO dial tone and the system will automatically dial the number for you.

VOICE/TONE SIGNALING PROGRAMMABLE OPTION

TO MAKE A TONE SIGNAL CALL

- 1) Call an electronic telephone via intercom.
 - You will hear one ring, then you will be able to voice announce.
- 2) To activate the ring tone, dial **1**.
 - The called telephone will begin ringing.

NOTE:

Calls made to standard telephones will ring signal only.

CO LINE QUEUING

This feature provides a means for station users to be placed in a waiting queue for a busy outgoing CO line group, and to be called back when a CO line in the group is available.

TO USE CO LINE QUEUING

- 1) If all CO lines are busy, you will hear a fast busy tone after dialing **9** or other CO access codes.
- 2) Dial **4** to set Automatic Callback.
 - Busy tone will stop, you will hear dial tone for two seconds and then busy tone again.
 - You may go on-hook or make other calls while waiting for a CO line to become available.¹
- 3) When a CO line becomes idle:
 - Your telephone will ring at a fast rate.
- 4) Lift the handset within six seconds to prevent the callback from being cancelled.²
 - You will hear CO dial tone.³
- 5) Dial the desired telephone number.²

CO LINE QUEUING (continued)

NOTES:

1. You may cancel the request at anytime prior to the actual callback by lifting the handset and dialing **4 3**.
2. If the call was placed using LCR (dial **9**), the telephone number is automatically redialed in step 4.
3. If, after answering a callback, you hear a busy tone, it means the trunk has already been accessed or received an incoming call. Your request is **not** cancelled. You will be called again the next time a trunk becomes idle.

CALL PICKUP

TO ANSWER A CALL THAT IS PAGING, RINGING OR ON HOLD

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial **5**.
- 3) Dial one of the following:
Station number (intercom, CO and on hold)
 - 3 0** = Intercom Page
 - 3 5** = External Page
 - 9** = Any CO line ringing.

CALL PARK

Park allows you to hold an existing call and consult with an internal station or external CO line call, then return to the original call.

TO PARK

- 1) While connected to an outside call, flash the hookswitch.
 - You will hear intercom dial tone.
- 2) Dial **4 1** and listen for confirmation tone (call is parked).
- 3) Hang up (remain on-hook for at least two seconds).
 - You may now originate or receive other calls.¹

CALL PARK (continued)

TO RETRIEVE THE PARKED CALL (from any station²)

If you parked the call:

- 1) Lift the handset.
 - You will hear intercom dial tone,
- 2) Dial **4 2**.

From any other station:

- A. Dial **5** □ □ □ (□ □ □ = the number of the station that parked the call).
... or ...
- B. Dial **5 7** □ □ (□ □ = the number of the parked CO line, can be 01 ~ 36).³

NOTES:

1. If your station has a predetermined hold recall time set, the parked call will recall your station at that time. If your station is busy at recall time, recall will occur when your station becomes idle.
2. You can page another person to pick up the parked call.
3. Selected pickup of held CO lines is available with **Release 2** and higher.

DIRECT INWARD SYSTEM ACCESS (DISA)

When calling into your system from the outside on certain telephone lines.

TO MAKE A DIRECT INWARD STATION CALL USING DISA

- 1) Call the DISA CO line telephone number:
_____.
- 2) Listen for the ringback tone signal, and then listen for the intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the intercom number of the desired station.
 - You will be connected when the station answers.²
... or ...
 - If you receive busy tone or wish to dial another number while ringing the station, press the **3** button to receive dial tone, allowing another number to be dialed.



DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

TO CALL THROUGH YOUR SYSTEM ON AN OUTGOING CO LINE USING DISA (Release 2 and higher)

- 1) Call the DISA CO line telephone number:
_____.
- 2) Listen for the ringback tone signal, and then listen for the STRATA DK intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the access code³ () of the CO line or CO line group that is to be used to place the outgoing call.
- 4A) If a DISA security code is required⁴, dial the code and listen for CO dial tone.⁵
- 4B) If a DISA security code is not required, listen for CO dial tone.
- 5) After receiving CO dial tone, dial the desired telephone number.
- 6) A timer tone will sound⁶ approximately four minutes after the time the call was made. Dial **0** to reset the timer⁷ each time the tone sounds (this allows an additional four minutes of conversation).
- 7) Hang up when the call is completed.

NOTES:

1. Dial tone will be present for 10 seconds to allow direct dialing of station intercom number or CO line access code. If a number is not dialed, the system automatically causes the DISA CO line to ring at telephones as a normal incoming call. However, if the call is not answered within 15 seconds after the ringing starts, it will disconnect.
- 2A. If the station does not answer after six rings or twenty-four seconds, whichever occurs first, a busy tone will be sent. Dial **#** to return to dial tone and dial the same or another number.

DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

- 2B. If you wish to call another station after completing a DISA station call, it is necessary for the internal party to transfer your call.
3. A direct CO line or line group access code must be dialed (701 ~ 736 or 81 ~ 88). The LCR code (9) is not allowed.
4. The DISA security code is a system program option.
5. If the correct code is not entered, the call will be disconnected.
6. All parties will hear the timer tone and timer reset DTMF tone.
7. If the timer is not reset, the call will disconnect approximately one minute after the timer tone is sent.
8. Station and system page is not available to DISA callers.

DISA SECURITY CODE ENTRY/CHANGE/CANCEL

From designated station(s) only.

- 1) Lift the handset.
 - Receive intercom dial tone.
- 2) Dial **□ □ □** (3-digit access code).
 - Receive confirmation tone.
- 3) Dial the new DISA security code² (**□ ... □**—1 ~ 15 digits).
- 4) Press the **#** button.
 - Receive confirmation tone.

NOTES:

1. For security purposes, the 3-digit access code is not published; it is available from your telephone system maintenance provider.
2. If a DISA security code is not entered in step 3, the security code will be cancelled and outgoing line access via DISA will not require a security code.

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS

Toll restriction at a station can be completely overridden, or, with **Release 3**, the station's normal class can be changed to another class (traveling class). The following procedure applies to complete Toll Restriction override codes and to Toll Restriction Traveling Class (1 ~ 4) override codes.

TO OVERRIDE TOLL RESTRICTION AT A STATION FOR A SINGLE CALL

- 1) Access a CO line, as normal.
- 2) Flash the hookswitch, then dial **47**.
 - If there was dial tone, it will now cease.
- 3) Dial the Toll Restriction Override Code (four digits).
 - You hear dial tone.
- 4) Dial the desired telephone number.

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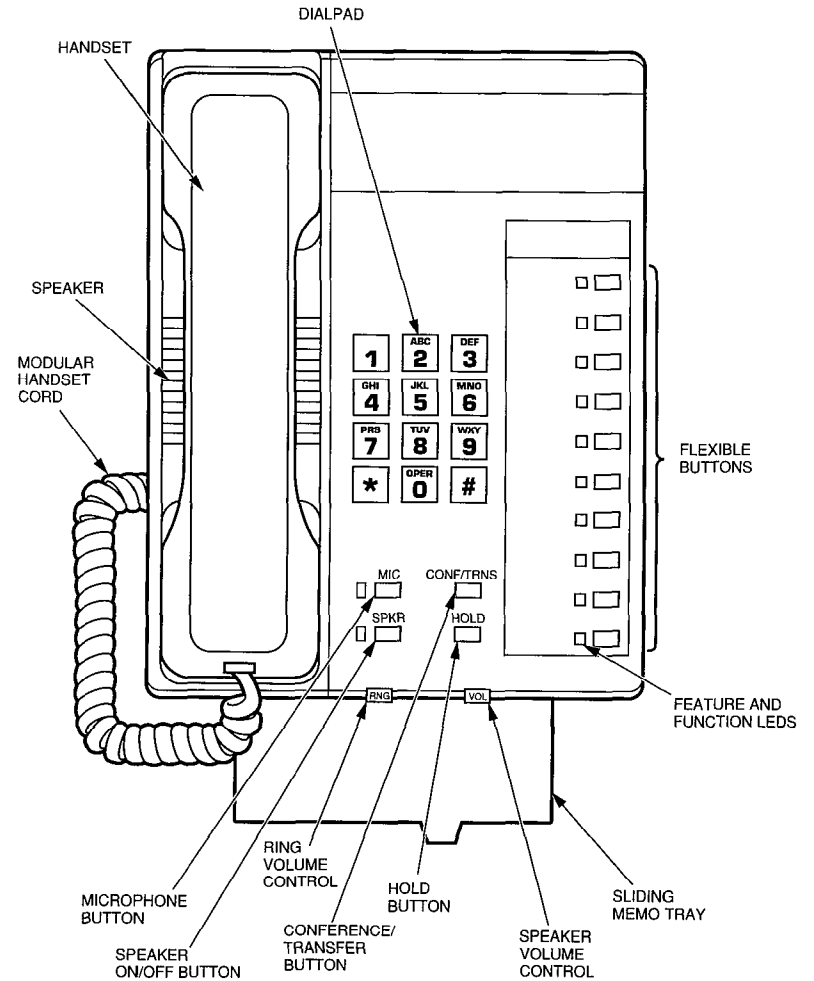
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STRATA® DK**DIGITAL KEY
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DK56 AND DK96
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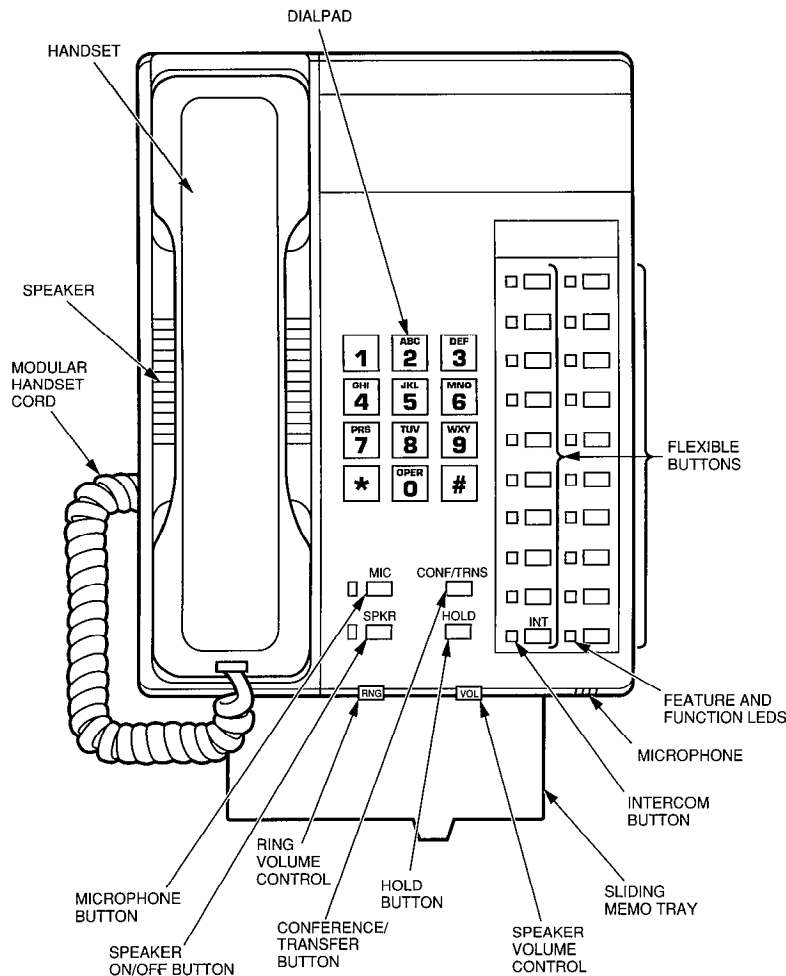
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10-button – Electronic Telephone

GENERAL INFORMATION



20-button – Electronic Telephone

Your electronic telephone has been designed to provide easy access to the wide range of features offered by your telephone system. Each phone is equipped with a dialpad, 14, or 24 feature buttons, a speaker with volume control, a ringer volume control, and a handset.

All feature buttons are plainly marked to indicate their function. Four buttons have fixed assignments: **SPKR**, **MIC**, **CONF/TRNS**, and **HOLD**. The remaining 10 or 20 buttons are assigned flexibly as **CO** buttons, or as access buttons for various features.

Voice and ring tone volume levels are controlled by separate adjustable slides located at the bottom of the front panel. The right control adjusts speaker volume for dial tone and voice level; the left control adjusts ring tone and voice announcement volume.

This guide also contains a section on the Centrex Application, which enhances the system feature capability when installed behind a Centrex or PBX system.

Periodically in this guide you will see footnote numbers either imbedded in the sentence or at the end of a sentence. (For example: When the party answers,² press the **CONF/TRNS** button.) These numbers refer you to the notes following the feature. Each note will have a corresponding number, to provide you with additional important information about that feature.

NOTE:

Wherever a **CO** line is indicated, it can also be a Centrex (CTX) and/or PBX line.

IMPORTANT!

All of the features in this guide are available with each STRATA DK system and most with each software version (Releases 1, 2, and 3). Exceptions are duly noted. Also, please be aware that some of the features listed in this guide may not appear on your telephone due to hardware configuration or programming.

GENERAL INFORMATION

BUTTON DESCRIPTIONS

ACCOUNT CODE BUTTON **ACCOUNT** (Release 3 only)

Allows a station user to enter a voluntary account code anytime during a CO line call without interrupting the conversation.

ALARM RESET BUTTON **ALRM**

A station programmable option that will turn off the electronic telephone alarm if connected to a facility alarm mechanism.

ALL CALL VOICE PAGE BUTTON **AC**

A single dedicated button that allows a station to voice page all of the electronic/digital telephones in the system simultaneously.

AUTOMATIC BUSY REDIAL BUTTON **ABR**

Allows the user to set up an Automatic Busy Redial after receiving busy tone on a dialed CO line call.

AUTOMATIC CALLBACK BUTTON **ACB**

Recalls a busy or Do Not Disturb station on intercom as soon as that station becomes idle. Also used for CO line queuing.

BACKGROUND MUSIC BUTTON **BGM**

Allows background music to be switched on/off of the station speaker.

CALL FORWARD-ALL CALLS BUTTON **CFAC**

With this feature, all calls will forward to another station.

CALL FORWARD-BUSY BUTTON **CFB** (Release 2 and higher)

Whenever the called station is busy, this feature forwards calls to another station.

CALL FORWARD-BUSY/NO ANSWER BUTTON **CFB/NA** (Release 2 and higher)

Whenever the called station is busy or does not answer prior to a predetermined period, this feature forwards calls to another station. If the called station is busy, the calls forward immediately.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

All non-answered calls (station is not busy) forward after either three rings or 12 seconds, whichever occurs first.

CALL FORWARD-NO ANSWER BUTTON **CFNA** (Release 2 and higher)

Whenever the called station does not answer after either three rings or 12 seconds, whichever occurs first, this feature forwards calls to another station.

CALL FORWARD-FIXED BUTTON **CFF**

Sets Call Forward to a pre-assigned station. (The destination station is assigned in system programming.)

NOTE:

CO line calls will forward only if the CO line is programmed to ring at one station (and that station has set the Call Forward feature). If a CO line is programmed to ring at more than one station, the CO line will not forward.

CALL PICKUP BUTTON **PKUP**

Initiates directed call pickup of CO line, intercom, and page calls.

CALL PICKUP BUTTONS **PKUP1** and **PKUP2**

If the system is shared by two tenants, the **PKUP1** button picks up Tenant 1 ringing CO line calls and the **PKUP2** button picks up Tenant 2 ringing CO line calls.

CENTRAL OFFICE LINE BUTTON **CO**

Accesses an outside line.

CONFERENCE/TRANSFER BUTTON **CONF/TRNS**

Sets up conference calls and also used to transfer calls.

DIRECT STATION SELECTION BUTTON(S) **DSS**

Causes a preselected station to ring by pressing an assigned button. The LED associated with each **DSS** button provides the status (idle/busy) of the station assigned to the button.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

DO NOT DISTURB BUTTON **DND**

Locks the individual station in or out of the Do Not Disturb mode.

DOOR LOCK BUTTON **DRLK**

Controls a door lock mechanism.

HOLD BUTTON **HOLD**

Holds internal or outside calls.

INTERCOM BUTTON **INT**

Accesses an intercom line.

MESSAGE SELECT BUTTON **MSG**

Allows system and personal messages to be displayed on the 32-character Liquid Crystal Display (LCD).

MESSAGE WAITING/FLASH BUTTON **MW/FL**

MW: The MW/FL LED flashes to indicate a message is waiting.

FL: Disconnects and recalls dial tone on a CO line, or is used to access Centrex or PBX features.

FL: Also used to enter a pause or flash signal when programming speed dial numbers.

MICROPHONE BUTTON **MIC**

Controls the microphone off/on while telephone is in use.

MICROPHONE CUTOFF BUTTON **MCO**

Allows a station to turn its microphone off/on while idle. Functional when station receives calls; the **MIC** key controls the microphone when the station originates calls.

NIGHT TRANSFER BUTTON **NT**

Controls the system's CO line ringing pattern for after hours incoming calls.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

PAUSE BUTTON **PAU**

Applies a 1/2- or 2-second pause when used in programming speed dial numbers (time is set in system programming).

PAUSE (LONG) BUTTON **PAU/L**

Inserts a 10-second pause when used in programming speed dial numbers.

POOLED LINE BUTTON **PL**

Allows a group of CO lines to appear under one button.

PRIVACY BUTTON **PRIVACY (Release 3 only)**

Blocks Privacy Override of CO lines from stations that have common CO line button appearances. This button does not block Busy and Executive Override.

PRIVACY RELEASE BUTTON **PRV RLS**

Releases privacy on a CO line so another station can enter the conversation.

REDIAL BUTTON **RDL**

Redials the last telephone number dialed.

RELEASE BUTTON **RLS (Release 2 and higher)**

This feature disconnects the existing call and places the station into an idle condition, whether the electronic telephone is on- or off-hook.

SAVE BUTTON **SAVE**

Saves a telephone number after dialing and automatically redials that number when button is pressed in the idle state.

SPEAKER BUTTON **SPKR**

Turns the speaker on/off. The speaker button will also select a CO or intercom line if programmed for auto preference in system programming. Also, used to disconnect when the handset is in the cradle.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

SPEED DIAL BUTTON **SD**

Provides single-button speed dial of personally assigned telephone number.

SPEED DIAL (FIXED) BUTTON **SDF**

This button dials a pre-assigned number or Centrex/PBX feature access code.

SPEED DIAL SELECT **SDS**

Provides access to station or system speed dial numbers.

STONE BUTTON **STONE**

Changes the outgoing dialing of the CO line in use from dial pulse to tone signaling.

LED INDICATIONS

CO INCOMING CALL

A slow flash rate (1/2-second on—1/2-second off) indicates the CO line on which the call is ringing.

CONFERENCE

A very fast flash rate (10 impulses per second (IPS)) indicates the CO line presently in the Conference mode. Other stations' LEDs also show a steady (busy) indication for these lines.

EXCLUSIVE HOLD

A very fast flash rate (10 IPS) indicates the CO line is placed on Exclusive Hold at the holding station. The LED is on steady (busy) on all other stations.

HOLD RECALL

A quick flash rate matching the tones (2 IPS for 1 second—10 IPS for 1 second) reminds a station which line has been on hold for the programmed period of time.

GENERAL INFORMATION

LED INDICATIONS (continued)

INTERCOM CALL

A pulsating on/off flash rate (10 IPS for 1 second on and 1 second off) appears on the INT LED at the station that is being called.

IN-USE

A steady, double flash rate (2 second on—1/8-second off—1/8-second on—1/8-second off) indicates the CO line presently in use at the station that originated the call. Other stations' LEDs are on steady for that time.

ON-HOLD

A fast (4 IPS) flash rate (1/8-second on—1/8-second off) indicates the CO line placed on hold at the station. The LEDs of the CO line on hold flash at a medium rate (3/4-second on—1/4-second off) at the other stations. If using the Pooled Line button, the hold indication is only at the station that places the call on hold.

FEATURE USE

OUTSIDE CALLS

TO MAKE AN OUTGOING CALL (Direct Access)

- 1) Lift the handset.
- 2) Press any available **CO** line button (or **PL** button).
 - Listen for dial tone.
 - CO/PL LED flashes at the In-use rate.
- 3) Dial the desired telephone number.
- 4) Hang up when the call is completed.

TO MAKE AN OUTGOING CALL (Dial Access)

- 1) Lift the handset.
- 2) Press the **INT** button.
 - Listen for intercom tone.
 - INT LED flashes at In-use rate.
- 3) Dial CO line access code¹_____.
 - Listen for CO dial tone.²
- 4) Dial desired number.
- 5) Hang up when the call is completed.

NOTES:

1. Dial **9** to access the general group or to use Least Cost Routing; or dial **7** and a CO line number (**01** ~ **36**); or dial **81** ~ **89** to access line group 1 ~ 8, respectively.
2. CO dial tone is not returned when dialing via LCR, dial **9**; intercom dial tone may be returned, depending on system programming.

TO RECEIVE AN INCOMING CALL

- 1) You hear a ringing tone.
 - CO LED flashes at the CO Incoming Call rate.
- 2) Press **CO** line button and lift the handset.
 - CO LED flashes at the In-use rate.
- 3) Hang up when the call is completed.

TO RECEIVE INCOMING CALLS WITH POOLED LINE BUTTON

- 1) Ringing tone is heard.
 - PL LED flashes at the CO Incoming Call rate.

FEATURE USE

OUTSIDE CALLS (continued)

- 2) Lift the handset or press the **PL** button.
 - PL LED on steady.
- 3) A muted ringing indicates a new incoming call, or recall.
- 4) Transfer the present call or place it on hold.
- 5) Press and release the hookswitch to answer the next call.
- 6) Repeat steps 4 and 5 until all calls are completed.
- 7) Hang up.

NOTES:

1. A transfer to a busy station will automatically Camp-on.
2. If step 5 is performed before step 4, the current call is terminated.

ON-HOOK DIALING

(Handsfree model only—see **Speakerphone for speakerphone electronic telephones**)

TO MAKE AN OUTSIDE CALL

- 1) Leave the handset on-hook.
- 2) Press any available **CO** line button (or **PL** button) and listen for dial tone, or follow previous directions for Dial Access.
 - LED flashes at the In-use rate.
- 3) Dial the desired telephone number.
- 4) Lift the handset when the distant party answers.*
- 5) Hang up when the call is completed.

TO MAKE AN INTERCOM CALL

- 1) Leave the handset on-hook.
- 2) Press the **INT** button.
 - INT LED flashes at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.*
- 4) Lift the handset to converse.
- 5) Hang up when the call is completed.

*If busy tone is heard, press the **SPKR** button to disconnect.

FEATURE USE

GROUP LISTENING

Allows all persons present to hear the distant party's responses.

TO USE GROUP LISTENING

- 1) With the handset off-hook, press and hold the **SPKR** button then place the handset on-hook and release the **SPKR** button.
 - SPKR and MIC LEDs light and the distant party's voice is heard via the telephone's speaker.
- 2) When local response is required, lift the handset off-hook.
 - SPKR and MIC LEDs go off.
 - Telephone speaker is silenced.
 - Handset is activated.

NOTE:

Repeat the procedure as required.

AUTOMATIC OFF-HOOK SELECTION PROGRAMMABLE OPTION

Allows Automatic Off-hook Selection of either an intercom path, a CO line, or a CO line group. (The particulars must be programmed by your system administrator.)

NOTE:

*The **SPKR** button also selects the designated line/group automatically.*

TO MAKE A CALL

Lift the handset.

- You will be connected to the option programmed.

NOTE:

*If you hear silence after going off-hook, you must press the **INT** button or a **CO** line button before making a call.*

FEATURE USE

REPEAT LAST NUMBER DIALED PROGRAMMABLE OPTION

This feature enables you to automatically redial the last number called by pressing the **RDL** button. If your telephone does not have an **RDL** button, the **#** button serves the same function.

TO REDIAL LAST NUMBER CALLED

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.
- 3) Press the **RDL** (or the **#**) button.
 - The last telephone number you dialed will automatically be redialed.
- 4) Hang up when the call is completed.

AUTO BUSY REDIAL

After reaching a busy outside number, the system will automatically redial that number at programmed intervals.

TO USE AUTO BUSY REDIAL

- 1) Access any available CO line and dial the outside telephone number.
 - Receive busy tone.
- 2) Press the **ABR** button (or **CONF/TRNS 4 4**).
 - ABR LED blinks (or hear confirmation tone).
- 3) Hang up (or press the **SPKR** button).
- 4) At programmed intervals (30 or 60 seconds), the system will redial the number (15 times maximum).
 - With each attempt, if busy, ABR will reset for next try.
- 5) When the connection is made and the called party is ringing:
 - CO (or INT) and SPKR LEDs blink.
 - Ringing tone is heard.
- 6) Pick up handset (or press the **SPKR** button) and wait for party to answer.

FEATURE USE

AUTO BUSY REDIAL (continued)

TO CANCEL ABR

Press the **ABR** button (or **INT 4 4**).

NOTES:

1. *ABR will not be attempted while the station is busy on another call but will continue to time-out.*
2. *With each attempt:*
 - *The CO (or INT) and SPKR LEDs blink when the line is seized.*
 - *Dial tone is heard via the speaker.*
 - *Telephone number is redialed.*
 - *If busy, ABR will reset and try again.*
 - *If a connection is made, ring tone sounds until called party answers.*
 - *If the originating station does not pick up the handset (or press the **SPKR** button) after a connection is made (it will ring back three times), ACB mute ring sounds for 30 seconds and then the call disconnects.*

SPEED DIAL

TO CALL A SPEED DIAL NUMBER

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.
- 3) Press the **SDS** (or the **#**) button (see Note).
- 4) Dial the 2-digit speed dial code for the desired telephone number.
 - Your system will automatically dial the number for you.
- 5) Hang up when the call is completed.

TO CHAIN DIAL AUTOMATICALLY

Dials two or more speed dial numbers during one call.

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.
- 3) Press the **SDS** (or the **#**) button (see Note).
- 4) Dial the 2-digit speed dial code for the first telephone number to be dialed.

FEATURE USE

SPEED DIAL (continued)

- 5) Press the **SDS** (or the **#**) button.
- 6) Dial the 2-digit speed dial code for the second telephone number to be dialed.
- 7) Repeat the above steps for each subsequent number to be dialed.
 - Your system will automatically dial the number for you.
- 8) Hang up when the call is completed.

NOTE:

*If your telephone does not have an **SDS** button, the **#** button serves the same function.*

SPEED DIAL BUTTONS PROGRAMMABLE OPTION

After accessing a CO line, speed dial is available by pressing an **SD** button instead of a 2-digit access code. Each **SD** button stores one telephone number (up to 20 digits).¹

TO STORE A TELEPHONE NUMBER²

- 1) **Do not** lift the handset.
- 2) Press the **#** (or **RDL**) and **#** (or **SDS**) buttons, respectively.
- 3) Press the **SD** button you wish to use.
- 4) Dial the telephone number to be stored (20 digits maximum).³
- 5) Press the **#** (or **RDL**) button to record the number in memory.
- 6) Repeat the above steps for each **SD** button.

NOTES:

1. *Up to 37 digits by linking two speed dial numbers (see the link procedure that follows).*
2. *Repeat this procedure to replace the stored telephone numbers with new ones.*
3. *It may be necessary to insert a pause after the CO line access code to allow for dial tone delay. If so, press the **MW/FL** (or **PAU**) button after entering the Centrex or PBX access code (see Telephone Number Storage-Pauses).*

FEATURE USE

SPEED DIAL BUTTONS PROGRAMMABLE OPTION (continued)

4. To store * or # DTMF tones in speed dial numbers, the telephone that stores the numbers must have the **SDS** and **RDL** buttons.

SAVED NUMBER REDIAL PROGRAMMABLE OPTION

This feature enables you to store a dialed telephone number and later redial that number by pressing a single button.

TO SAVE A TELEPHONE NUMBER

- 1) Lift the handset.
- 2) Obtain dial tone.
- 3) Dial the desired telephone number.
- 4) Press the **SAVE** button.
 - The telephone number is saved for future use.

TO DIAL A SAVED TELEPHONE NUMBER

- 1) Lift the handset.
- 2) Obtain dial tone.
- 3) Press the **SAVE** button.
 - Saved number will be automatically dialed.

TELEPHONE NUMBER STORAGE

STORING A SYSTEM SPEED DIAL NUMBER

System speed dial telephone numbers can be stored in the system memory by station 200 only.

- 1) **Do not** lift the handset.
- 2) Press the **#** and ***** (or **RDL** and **SDS**) buttons, respectively.
- 3) Dial a 2-digit speed dial code.
 - System speed dial codes run consecutively from 60 ~ 99.
- 4) Dial the telephone number to be stored (20 digits maximum).
- 5) Press the **#** (or **RDL**) button to record the telephone number in memory.

FEATURE USE

TELEPHONE NUMBER STORAGE (continued)

- 6) Repeat the steps above with every telephone number to be stored (up to the maximum of 40).
- 7) Write down the speed dial codes and telephone numbers for future reference.

NOTE:

Repeat steps 1 ~ 5 to replace the stored telephone numbers with new ones.

TO STORE PAUSES (1/2- or 2-second/10-second) and FLASHES (Hookflash) ALONG WITH SPEED DIAL NUMBERS

- 1) Press the **PAU** (or **PAU/L**) button to store a pause.
- 2) Press the **MW/FL** button to store a flash. The flash must be stored as the first entry: a flash cannot be stored after a digit is entered into the speed dial number.

NOTES:

1. If a **PAU** button is not available, the **MW/FL** button will store pauses only, not flashes.
2. The **PAU** button is 1/2- or 2-seconds per system program assignments.
3. A 10-second pause is programmed using the **PAU/L** button.

STORING A STATION SPEED DIAL NUMBER

Speed dial telephone numbers can be stored by each station.

- 1) **Do not** lift the handset.
- 2) Press the **#** and ***** (or **RDL** and **SDS**) buttons, respectively.
- 3) Dial a 2-digit speed dial code.
 - Station speed dial codes run consecutively from 10 ~ 49.
- 4) Dial the telephone number to be stored (20 digits maximum).
- 5) Press the **#** button to record the number in memory.
- 6) Repeat the above steps with every number to be stored (up to the maximum of 40).
- 7) Write down the speed dial codes and telephone numbers for future reference.

FEATURE USE

TELEPHONE NUMBER STORAGE (continued)

NOTE:

To store * or # DTMF tones in speed dial numbers, the telephone that stores the numbers must have the **SDS** and **RDL** buttons.

TO LINK TWO SPEED DIAL NUMBERS UNDER ONE **SD** BUTTON

You can link a second number to a number stored in one of ten locations in the system speed dial memory (90 ~ 99). This allows up to 37 digits to be stored under one speed dial button or code. Any station can link any of its assigned speed dial numbers (10 ~ 49) to codes 90 ~ 99, however station 200 is required for linking codes 60 ~ 89. (All other procedures for entering numbers apply.)

- 1) Press the **#** and **1** (or **RDL** and **SDS**) buttons.
- 2) Dial an applicable 2-digit speed dial code (10 ~ 49 for all stations, 60 ~ 99 at station 200 only).
- 3) Press the **1** (or **SDS**) button.
- 4) Dial the 2-digit code to which this number will be linked (90 ~ 99).
- 5) Dial the number to be chained (17 digits maximum).
- 6) Press the **#** (or **RDL**) button to record the number in memory.

NOTE:

The number stored in location 90 ~ 99 will dial out first, followed by the number linked to it in location 10 ~ 49 or 60 ~ 89. The company's special carrier access telephone numbers are normally stored in locations 90 ~ 99, allowing other numbers to be linked to them to dial both numbers using a one-button speed dial.

* AND # DTMF TONE DIALING

When the * or # tones must be output (for computer input service or other use), the speed dial feature must be disabled to permit manual dialing of the **1** and **#** buttons. (Applicable only if **SDS** and **RDL** buttons are *not* programmed.)

FEATURE USE

* AND # DTMF TONE DIALING (continued)

TO OUTPUT * AND # DTMF TONES

- 1) Lift the handset.
- 2) Press any available **CO** line button.
- 3) Dial any desired directory number.
- 4) To enable * and # tones to be sent, press ***#**.

NOTE:

Only manual dialing will be possible; the special * and # tones as well as digits 0 ~ 9 will be output as DTMF tones when dialed. The speed dial feature will be restored when the station is disconnected or placed on hold.

TONE/PULSE DIALING PROGRAMMABLE OPTION

For some CO lines, calls must be made using rotary dial pulses. In order to access remote equipment requiring tones in these areas (such as automatic tellers or answering machines), you must change to DTMF tone sending after you have dialed the outside directory number.

Pressing the **TONE** button changes the dialing status of the CO line in use: TONE LED ON indicates DTMF tones are output; LED OFF indicates dial pulses are output.

TO CHANGE TO TONE SENDING

After you have dialed a telephone number and the call is in progress, press the **TONE** button.

- TONE LED goes on.
- Pressing the dialpad buttons will cause DTMF tones to be transmitted.

NOTE:

After the **TONE** button is pressed, the TONE LED will remain on and DTMF tones will be sent when dialing until the call is released. When originating or receiving a new CO line call, the system automatically places the line in the dial pulse mode until the **TONE** button is used.

FEATURE USE

PRIVACY OVERRIDE PROGRAMMABLE OPTION

Allows stations with common CO line buttons to override an existing conversation by pressing the busy **CO** line button. Up to two stations maximum may override an existing CO line-to-station call (allowing a total of up to three stations being connected to an outside line)

TO ENTER AN EXISTING CALL BETWEEN A CO LINE AND ANOTHER STATION

Press the busy **CO** line button.

- An optional tone signal is heard by the connected parties prior to the new station entering the conversation.

NOTE:

*To allow Privacy Override, the overriding station must be programmed with Privacy Override; or, the Privacy Release LED must be **on** at the talking station (see Privacy Release).*

PRIVACY BUTTON PROGRAMMABLE OPTION (Release 3 only)

This option blocks any station programmed with Privacy Override from entering your CO line conversation by pressing a common CO line button.

TO MAKE ALL CO LINES ON YOUR STATION PRIVATE

Press the **PRIVACY** button.

TO CANCEL PRIVACY

Press the **PRIVACY** button again

NOTE:

Privacy will not block Busy Override or Executive Override.

FEATURE USE

PRIVACY RELEASE PROGRAMMABLE OPTION

The **PRV RLS** button allows any other station to enter an in-progress CO line call (see Privacy Override).

TO USE PRIVACY RELEASE FEATURE

Press the **PRV RLS** button.

- PRV RLS LED goes on.
- Your station does not have CO line privacy.
- Any station user can press a common CO line button to enter your conversation.

INTERCOM CALLS

TO MAKE AN INTERCOM CALL (Voice First)

- 1) Lift the handset.
- 2) Press the **INT** button (see Note).
 - You hear intercom dial tone.
 - INT LED flashes at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.
- 4) Speak when the ring tone ends.
- 5) Hang up when the call is completed.

NOTES:

1. See Automatic Off-hook Selection.
2. Tone Signaling can be accomplished by dialing **1** after the station number.

TO RECEIVE AN INTERCOM CALL

- 1) You hear a single long tone, followed by the caller's voice.
 - INT LED flashes at the Incoming Call rate.
- 2) Lift the handset.
 - INT LED flashes at the In-use rate.
- 3) Hang up when the call is completed.

FEATURE USE

HANDSFREE ANSWERBACK

TO RECEIVE AN INTERCOM CALL (HANDSFREE)

- 1) You will hear a single long tone, followed by the caller's voice.
 - INT LED flashes at the Incoming Call rate.
- 2) Leave the handset on-hook.
- 3) Speak at a normal voice level in the direction of the telephone.

NOTE:

The **INT** button must be pressed (or the handset must be taken off-hook) before placing an intercom call on hold.

MICROPHONE CUT-OFF PROGRAMMABLE OPTION

The **MCO** button allows a station to turn its microphone off/on while idle. Handsfree Answerback is inoperable while the microphone is off; provides privacy by blocking room monitor to calling parties.

TO USE MICROPHONE CUT-OFF

- 1) Press the **MCO** button.
 - MCO LED goes on.
 - Microphone is turned off.
- 2) Press the **MCO** button to turn the microphone on again.
 - MCO LED goes off.

NOTE:

Functional when telephone receives calls, the **MIC** button controls the microphone when the telephone originates calls.

OFF-HOOK CALL ANNOUNCE (OCA) OPTIONAL FEATURE

Allows a station user to call and speak to an off-hook, busy electronic telephone through the speaker, if that called station has optional OCA feature.

FEATURE USE

OFF-HOOK CALL ANNOUNCE (OCA) OPTIONAL FEATURE (continued)

TO USE OFF-HOOK CALL ANNOUNCE

- 1) Lift the handset.
- 2) Call the desired station.
 - Hear warning tone.
 - If busy tone is heard, dial **2**.
- 3) Speak to called party (automatic OCA).

TO FORCE A DISCONNECT

A forced disconnect allows the called station to disconnect the OCA call.

- Press the SPKR button to disconnect an OCA caller.

NOTES:

1. DND prevents OCA calls.
2. The **MIC** and **MCO** buttons can prevent the OCA caller from listening to your conversation.

CALL TRANSFER WITH CAMP-ON

Allows you to transfer an outside call to a station that is either idle or busy.

TO TRANSFER A CALL

- 1) While connected to an outside call, press the **CONF/TRNS** button.
 - CO LED changes to the Conference flash rate.
 - INT LED flashes at the In-use rate.
- 2) Dial the station number to which the call is to be transferred.
- 3A) If the called station is idle:
 - You hear a single ring tone.
- 4A) Announce the call.
- 5A) Hang up.
 - INT LED goes off.
 - CO LED changes to the On-hold flash rate.
 - CO line rings the called station.¹

FEATURE USE

CALL TRANSFER WITH CAMP-ON (continued)

- CO LED illuminates steadily when the called station connects with the transferred call.
- If the station fails to answer the call, you will receive a recall ring after a predetermined time.

... Or ...

3B) If the called station is busy:

- Busy tone is heard.

4B) Hang up.

- INT LED goes off.
- CO LED changes to On-hold flash rate.
- CO line is camped-on to the called station.¹
- Called station hears a warning tone.
- CO LED illuminates steadily when the station connects with the transferred call.²

NOTES:

1. You may reconnect to a transferred line (anytime before it is answered) by pressing the appropriate **CO** button or dial **INT 42** if the **CO** line does not appear on your telephone.
2. The call will recall you and camp-on is cancelled if the station does not pick it up within a predetermined time. Inform the caller of the situation, and repeat the procedure (if necessary).

TO ANSWER A TRANSFERRED CALL (if your station is idle)

1) Voice Signaling:

- a) You will hear a single long tone, followed by an announcement.
 - INT LED flashes at the Incoming Call rate.
- b) Acknowledge the announcement.
- c) When the transferring station hangs up, you will hear a ringing tone.
 - CO LED changes to the Incoming Call flash rate.
- d) Press the appropriate **CO** button.
 - CO LED changes to the In-use flash rate.

FEATURE USE

CALL TRANSFER WITH CAMP-ON (continued)

NOTE:

If your electronic telephone has the Ringing Line Preference feature, you may press the **SPKR** button or lift the handset instead of pressing the **CO** button.

2) Tone Signaling:

- a) You will hear intercom ringing.
 - INT LED flashes at the Incoming Call rate.
- b) Lift the handset (or press the **SPKR** button).
 - INT LED changes to the In-use flash rate.
- c) Speak to the transferring station.
- d) You will be connected to the outside call when the transferring station hangs up.
 - INT LED goes off.
 - The LED of the transferred CO line changes to the In-use flash rate.

TO ANSWER A TRANSFERRED CALL (if your station is busy)

- 1) You will hear a 1-second warning tone.
 - The outside call is camped-on to your station.
 - CO LED flashes at the On-hold rate.
- 2) You have several choices:
 - a) Press the appropriate **CO** button.
 - Existing call is terminated.
 - The new line is answered and its LED changes to the In-use flash rate.

... Or ...
 - b1) Hang up.
 - Existing call is terminated.
 - The camped-on line rings at your station.
 - CO LED changes to the Incoming Call flash rate.
 - b2) Press the **CO** button (or lift the handset) to answer the call.
 - CO LED changes to the In-use flash rate.

... Or ...

FEATURE USE

CALL TRANSFER WITH CAMP-ON (continued)

- c1) Press the **HOLD** button (if conversing on a CO line).
 - Existing CO call is put on hold.
 - The camped-on line rings at your station.
 - CO LED changes to the Incoming Call flash rate.
- c2) Press the **CO** button to answer the call.
 - CO LED changes to the In-use flash rate.

CONFERENCE CALLS

TO CONFERENCE UP TO TWO STATIONS AND TWO CO LINES, OR THREE STATIONS AND ONE CO LINE

Establish a CO line call using a CO line button, dial the appropriate access code, or you may already be talking on a CO line call.

TO ADD A SECOND CO LINE

- 1) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LED flashes at the Conference rate.
 - INT LED flashes at the fast rate.
- 2) Access a second CO line¹ and dial the next telephone number.²
- 3) Press the **CONF/TRNS** button after the party answers.
 - CO LEDs flash at the In-use rate.
 - All parties will be conferenced.

NOTES:

1. Press a **CO** line button or dial an access code: 701 ~ 736, line number; 81 ~ 88, line group number; or with **Releases 2 and 3**, LCR access code "9" is allowed.
2. If you receive a busy tone or no answer, return to the original connection by pressing the **CO** button. If the line is not on your telephone, hang up and the original connection will recall you immediately.

FEATURE USE

CONFERENCE CALLS (continued)

TO ADD ANOTHER STATION

- 1) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LED flashes at the Conference rate.
 - INT LED flashes at the In-use rate.
- 2) Dial the number of the other station.¹
- 3) Press the **CONF/TRNS** button after the party answers.²
 - CO LED(s) will flash at the In-use rate.
 - All parties will be conferenced.
- 4) Repeat to add another party:
 - Three stations/one CO line maximum.
- 5) Hang up when conference call is completed.

NOTES:

1. If you receive a busy tone or no answer, return to the original connection by pressing the **CONF/TRNS** button.
2. The new station will not be conferenced unless the user lifts the handset or presses the **INT** button to answer.

TO CONFERENCE UP TO FOUR STATIONS ON ONE INTERCOM LINE

- 1) Establish a two-station intercom call.
- 2) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - INT LED flashes at the Conference rate.
- 3) Dial the third station's number.
- 4) Press the **CONF/TRNS** button after the party answers.
 - INT LED flashes at the In-use rate.
 - All parties will be conferenced.
- 5) To add the fourth party, repeat steps 2 ~ 4.

FEATURE USE

CALL FORWARD-ALL CALLS

For Intercom and CO line calls (all calls will forward to a selected station at all times—your station will not ring when called).

TO SET CALL FORWARD-ALL CALLS

- 1) Press the **CFAC** button (or dial **INT 6 0 1**).
 - CFAC LED flashes (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 1** was dialed.
- 3) Press the **CFAC** (or **SPKR**) button.
 - CFAC LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-ALL CALLS

Press the **CFAC** button (or dial **INT 6 0 1**).

- CFAC LED goes off (or hear confirmation tone).
- Press SPKR button if INT 6 0 1 was dialed.

NOTE:

If call forward is set:

- *CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.*
- *CO line calls transferred to your station will forward.*
- *Intercom calls will forward.*
- *Call forward redirects the station hunt feature.*
- *Call forward must be set before the call is received.*

CALL FORWARD-BUSY (Release 2 and higher)

When your station is busy, all calls will forward immediately. When your station is idle, calls will ring at your station as usual.

TO SET CALL FORWARD-BUSY

- 1) Press the **CFB** button (or dial **INT 6 0 2**).
 - CFB LED flashes (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 2** was dialed.

FEATURE USE

CALL FORWARD-BUSY (continued)

- 3) Press the **CFB** (or **SPKR**) button.
 - CFB LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-BUSY

Press the **CFB** button (or dial **INT 6 0 2**).

- CFB LED goes off (or hear confirmation tone).
- Press SPKR button if INT 6 0 2 was dialed.

NOTE:

If call forward is set:

- *CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.*
- *CO line calls transferred to your station will forward.*
- *Intercom calls will forward.*
- *Call forward redirects the station hunt feature.*
- *Call forward must be set before the call is received.*

CALL FORWARD-NO ANSWER (Release 2 and higher)

For Intercom and CO line calls (all calls will forward to a selected station whenever your telephone is not answered within 12 seconds or three rings, whichever occurs first).

TO SET CALL FORWARD-NO ANSWER

- 1) Press the **CFNA** button (or dial **INT 6 0 3**).
 - CFNA LED flashes (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 3** was dialed.
- 3) Press the **CFNA** (or **SPKR**) button.
 - CFNA LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-NO ANSWER

Press the **CFNA** button (or dial **INT 6 0 3**).

- CFNA LED goes off (or hear confirmation tone).
- Press SPKR button if INT 6 0 3 was dialed.

FEATURE USE

CALL FORWARD-NO ANSWER (continued)

NOTE:

If call forward is set:

- CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
- CO line calls transferred to your station will forward.
- Intercom calls will forward.
- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL FORWARD-BUSY/NO ANSWER (Release 2 and higher)

For Intercom and CO line calls (all calls will forward immediately to a selected station whenever your telephone is busy, or if not answered calls will forward within 12 seconds or three rings, whichever occurs first).

TO SET CALL FORWARD-BUSY/NO ANSWER

- 1) Press the **CFB/NA** button (or dial **INT 6 0 4**).
 - CFB/NA LED flashes (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 4** was dialed.
- 3) Press the **CFB/NA** (or **SPKR**) button.
 - CFB/NA LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-BUSY/NO ANSWER

Press the **CFB/NA** button (or dial **INT 6 0 4**).

- CFB/NA LED goes off (or hear confirmation tone).
- Press SPKR button if INT 6 0 4 was dialed.

NOTE:

If call forward is set:

- CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
- CO line calls transferred to your station will forward.
- Intercom calls will forward.

FEATURE USE

CALL FORWARD-BUSY/NO ANSWER (continued)

- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL FORWARD-FIXED

All intercom and CO line calls to your station will forward to a predetermined station or voice mail device. The "Forward to" station/device is determined (Fixed) in system programming for each station. Your station will not ring when Call Forward-Fixed is set.

TO USE FIXED CALL FORWARD (ALL CALLS)

- 1) Press the **CFF** button.
 - CFF LED on steady.
 - All calls will forward to the fixed programmed station.
- 2) To cancel, press the **CFF** button again.
 - CFF LED off.

NOTE:

If call forward is set:

- CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
- CO line calls transferred to your station will forward.
- Intercom calls will forward.
- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL HOLDING

TO HOLD A CALL (CO line or **INT** button appears on your station)

While connected to a CO line or intercom call, press the **HOLD** button.

- CO or intercom LED flashes at the On-hold rate.
- To reconnect the call, press the CO or INT button on hold.

FEATURE USE

CALL HOLDING (continued)

NOTE:

Regarding handsfree answerback, an intercom call must be answered by pressing the **INT** button or lifting the handset before it can be placed on hold.

TO HOLD/PARK A CALL AND PLACE ANOTHER CALL (CO line does not appear on your station)

- 1) While connected to a CO or intercom call press the **CONF/TRNS** button and dial **4 1**.
- 2) To make another call, press the **INT** or a **CO** button and dial the desired number.
- 3) Hang up or press the **SPKR** button when the call is completed.
- 4) To retrieve the held call made in step 1, press the **INT** button and dial **4 2** (see Note 3).

NOTES:

1. The on-hold recall tone will be heard within a predetermined time.
2. The held call may be released automatically if the other party hangs up (if the CO provides a hold-release signal).
3. When a CO line is placed on hold, it may be picked up from any station:
 - Press a **CO** button with common appearance.
 - Press the **INT** button and dial **5 + N** (N = the holding station's intercom number).
 - Press the **INT** button and dial **5 7 + N** (N = the holding CO line's number—01 ~ 36, **Release 2** and higher).

EXCLUSIVE HOLD

TO USE EXCLUSIVE HOLD (CO line must appear on your station)

While connected to an outside call, press the **HOLD** button twice.

- CO LED flashes at a fast (10 IPS) rate.
- To reconnect the call, press the CO button that is on hold.

FEATURE USE

EXCLUSIVE HOLD (continued)

NOTE:

When a CO line is placed on Exclusive Hold, it may be picked up at another station by dialing **5** and the station number that placed the call on Exclusive Hold; however it cannot be picked up by pressing a common **CO** button at another station.

CALL PICKUP

TO PICK UP RINGING CO LINE (Tenant 1/Tenant 2 Line Groups)

Press the **PKUP1** or **PKUP2** button (or press the **INT** button and dial **5 9**).

TO DIRECT PICK UP ONE OF THE FOLLOWING

- 1) Station: Press the **PKUP** button + station number (intercom, ringing or held CO line).
- 2) Intercom Page: Press the **PKUP** button + **3 0**.
- 3) External Page: Press the **PKUP** button + **3 5**.
- 4) CO line on hold: Press the **PKUP** button + **7 □ □** (□ □ = CO line number: 01 ~ 36, **Release 2** and higher).
- 5) Any ringing CO line: Press the **PKUP** button + **9**.

NOTE:

If a **PKUP** button is not available, press **INT + 5** instead of the **PKUP** button.

DO NOT DISTURB

Allows you to prevent incoming calls from accessing your station. You can still make out-going calls.

TO USE DO NOT DISTURB MODE

Press the **DND** button.

- DND LED goes on.

FEATURE USE

DO NOT DISTURB (continued)

TO RELEASE THE DO NOT DISTURB MODE

Press the **DND** button.

- DND LED goes off.

NOTES:

1. Do Not Disturb prevents Off-hook Call Announce.
2. Outside calls will mute ring your station while in the DND mode.

AUTOMATIC CALLBACK (INTERCOM)

After reaching a busy or DND station on an intercom call, you may use Automatic Callback.

TO USE AUTOMATIC CALLBACK

- 1) Press the **ACB** button (or dial **4**) to set Automatic Callback.
 - Busy tone stops.
 - You will hear dial tone for two seconds and then busy tone again.
- 2) Go on-hook. You may make other calls while waiting for the called station to become available.
- 3) When the called station becomes idle:
 - Your telephone rings at a fast rate.
- 4) Answer the call within nine seconds to prevent the callback from being cancelled.
 - You hear a single tone, as if making a regular intercom call.
- 5) Proceed to voice announcement.
- 6) Proceed with the conversation.

NOTES:

1. You may cancel the request anytime prior to the callback by pressing the **ACB** button (or press the **INT** button and dial **4 3**).
2. If, after answering a callback, you hear a busy tone, it means the called party has already received or originated another call. Your request is not cancelled. You will be called again the next time the station is idle.

FEATURE USE

AUTOMATIC CALLBACK (INTERCOM) (continued)

CO LINE QUEUING

Provides a means for station users to be placed in a waiting queue for a busy outgoing CO line group, and to be called back when a CO line in the group is available.

TO USE CO LINE QUEUING

- 1) If all outgoing lines are busy, you will hear busy tone.
- 2) Press the **ACB** button (or dial **4**) to set Automatic Callback.
 - Busy tone stops. You will hear dial tone for two seconds and then busy tone again.
 - You may go on-hook or make other calls while waiting for a trunk to become available.¹
- 3) When a CO line becomes idle:
 - Your telephone rings at a fast rate.
 - CO LED flashes at the Incoming Call rate.
- 4) Lift the handset within six seconds to prevent the callback from being cancelled.²
 - You hear CO dial tone.³
 - CO LED flashes at the In-use rate.
- 5) Dial the desired telephone number.²
- 6) Hang up when the call is completed.

NOTES:

1. You may cancel the request at any time prior to the actual callback by pressing the **INT** button and dialing **4 3** (or press the **ACB** button).
2. If the original call was made using LCR (dial **9**), the telephone number is automatically dialed in step 4.
3. If, after answering a callback, you hear a busy tone, it means the trunk has already been seized or received an incoming call. Your request is not cancelled. You will be called again the next time a trunk becomes idle.

ACCOUNT CODE CALLS

On some calls, you may be required (forced) to dial an account code before dialing an outside number. On other calls, you may

FEATURE USE

ACCOUNT CODE CALLS (continued)

wish to record an account code voluntarily after either dialing an outside number or receiving an incoming call. The code you enter will be recorded on the Station Message Detail Recording (SMDR) printout with the details of your call. With **Release 3** only, account codes may be verified or nonverified.

TO RECORD A FORCED ACCOUNT CODE (Outgoing Calls Only)

- 1) Access a CO line.¹
 - You hear dial tone.²
- 2) Dial the ____-digit account code with the dialpad.
 - Dial tone stops after you dial the first digit.
 - You will hear dial tone after you press the last digit of a valid account code.
... or ...
 - You will hear busy tone after you press the last digit of an invalid code (**Release 3** only).
- 3) Dial the outside directory number.

NOTES:

1. Press a **CO** button, dial a CO line access code, or dial **9** to call via LCR.
2. If calling via LCR, CO dial tone will not be returned.
3. Unless you dial the correct number of digits, you will not receive dial tone.
4. Any digits dialed after the code will be treated as part of the outside directory number.

EMERGENCY OVERRIDE OF FORCED ACCOUNT CODE DIALING REQUIREMENTS

With **Release 3**, forced account code requirements can be bypassed by three emergency numbers, including 911. See your system administrator for these numbers: 1) 911 2) _____ 3) _____

FEATURE USE

ACCOUNT CODE CALLS (continued)

TO RECORD A VOLUNTARY ACCOUNT CODE WITH RELEASES 1 AND 2 (Incoming or Outgoing)

- 1) After completing an incoming or outgoing call, do not hang up.
- 2) Press the **CONF/TRNS** button and dial **46**.
- 3) Dial the ____-digit account code on the dialpad.
- 4) Hang up after entering the account code.

NOTE:

The account code may be entered using steps 2 and 3 anytime the call is in progress, however, it is not recommended the conversation will be interrupted after you enter step 2.

TO RECORD A VOLUNTARY ACCOUNT CODE WITH RELEASE 3 (Incoming or Outgoing)

- 1) Anytime during the call, dial ***50** or press the **ACCOUNT** button (the conversation will not be interrupted).
- 2) Dial the account code.
 - If the code is valid, you will hear a confirmation burst tone (about 1/2 second duration).
... or ...
 - If the code is invalid, you will hear two short confirmation burst tones. Repeat steps 1 and 2 to dial another account code.
... or ...
 - If the code is nonverified, you will not hear a confirmation tone after an account code is entered.

NOTE:

Confirmation tones are inaudible to the other party.

TO ADD, DELETE, OR CHANGE VERIFIED ACCOUNT CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING

- 1) Press **INT** and dial the verified account code change access code (see Note).
 - You will hear confirmation tone.

FEATURE USE

ACCOUNT CODE CALLS (continued)

- 2) Dial the three-digit verified account code number □ □ □ (000 ~ 299).
- 3) Dial the verified account code □...□ (4 ~ 15 digits).
- 4) Press the **#** or **RDL** button to store the code.
 - You will hear confirmation tone.
- 5) Repeat steps 1 ~ 4 to enter more verified account codes.

NOTE:

For security reasons, the account code change access code is not given in this guide. Contact your telephone system maintenance provider for this access code.

PAGING

TO PAGE

- 1) Lift the handset.
- 2) Press the **INT** button and dial the following:
 - 30** = All Call (electronic and digital telephones only)
 - 31** = Station Group #1
 - 32** = Station Group #2
 - 33** = Station Group #3
 - 34** = Station Group #4
 - 39** = All Call (with External Page)*
 - 35 ~ 38** = External Page Zones (1 ~ 4)*
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

**Programmable Option*

TO PAGE ALL CALL TO ELECTRONIC TELEPHONES ONLY

- 1) Lift the handset.
- 2) Press the **AC** button.
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

NOTE:

The **AC** button does not access external page speakers.

FEATURE USE

DOOR PHONE

TO ANSWER THE DOOR PHONE

- 1) You hear a distinctive ringing tone.
- 2) Lift the handset.
 - INT LED lights.
 - You are connected to the door phone.
- 3) Hang up when the call is completed.

TO CALL/MONITOR A DOOR PHONE

- 1) Lift the handset.
- 2) Press the **INT** button.
 - You hear intercom dial tone.
 - INT LED flashes at the In-use rate.
- 3) Dial the intercom number for the desired door location.

151	Location	_____
152	Location	_____
153	Location	_____
154	Location	_____
155	Location	_____
156	Location	_____
157	Location	_____
158	Location	_____
159	Location	_____
161	Location	_____
162	Location	_____
163	Location	_____
- 4) Hang up when the call is completed or when you no longer wish to monitor the door phone.

TO USE A DOOR PHONE

- 1) Press the button and then release it.
 - You hear a distinctive ringing tone.
- 2) When answered, speak at a normal voice level in the direction of the door phone.

FEATURE USE

HANDSFREE MONITORING

Calls placed on hold by the distant party may be monitored handsfree.

TO USE HANDSFREE MONITORING

- 1) While connected to a call, press and hold the **SPKR** button.
- 2) Place the handset on-hook.
- 3) Release the **SPKR** button.
 - Sounds from the distant party are heard via the telephone's speaker.
- 4) Lift the handset to continue the conversation when the distant party returns.

ALARM RESET

A programmable option used with an optional alarm system to cause an alarm signal on the system's electronic telephone. Pressing the **ALARM** button resets the alarm signal on the telephones.

BACKGROUND MUSIC (BGM)

If a BGM music source is connected to your system, you may listen to background music via your station's speaker, or over the external page speakers.

TO LISTEN TO BGM ON YOUR TELEPHONE SPEAKER

Press the **INT** button and dial **4 8 1** (or press the **BGM** button).

- Adjust volume with the **VOL** control on the front of your phone.

TO CANCEL BGM ON YOUR TELEPHONE SPEAKER

Press the **INT** button and dial **4 8 0** (or press the **BGM** button).

FEATURE USE

BACKGROUND MUSIC OVER EXTERNAL SPEAKERS

NOTE:

Station number 200 is the only station that can turn External BGM On/Off.

TO ALLOW BGM OVER EXTERNAL PAGE

Press the **INT** button and dial **4 9 1**.

TO CANCEL BGM OVER EXTERNAL PAGE

Press the **INT** button and dial **4 9 0**.

DIRECT INWARD SYSTEM ACCESS (DISA)

When calling into your system from the outside on certain telephone lines.

TO MAKE A DIRECT INWARD STATION CALL USING DISA

- 1) Using a DTMF telephone, call the DISA CO line telephone number: ____ - ____.
- 2) Listen for the ringback tone signal, and then listen for the intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the intercom number of the desired station.
 - You will be connected when the station answers²,
... or ...
 - If you receive busy tone or wish to dial another number while ringing the station, press the **INT** button to receive dial tone, allowing another number to be dialed.

TO CALL THROUGH YOUR SYSTEM ON AN OUTGOING CO LINE USING DISA (Release 2 and higher)

- 1) Using a DTMF telephone, call the DISA CO line telephone number: ____ - ____.
- 2) Listen for the ringback tone signal, and then listen for the STRATA DK intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the access code³ () of the CO line or CO line group that is to be used to place the outgoing call.
- 4A) If a DISA security code is required⁴, dial the code and listen for CO dial tone.⁵

FEATURE USE

DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

- 4B) If a DISA security code is not required, listen for CO dial tone.
- 5) After receiving CO dial tone, dial the desired telephone number.
- 6) A timer tone will sound⁶ approximately four minutes after the time the call was made. Dial **0** to reset the timer⁷ each time the tone sounds (this allows an additional four minutes of conversation).
- 7) Hang up when the call is completed.

NOTES:

1. Dial tone will be present for 10 seconds to allow direct dialing of station intercom number or CO line access code. If a number is not dialed, the system automatically causes the DISA CO line to ring at telephones as a normal incoming call. However, if the call is not answered within 15 seconds after the ringing starts, it will disconnect.
- 2A. If the station does not answer after six rings or twenty-four seconds, whichever comes first, busy tone will be sent. Dial **#** to return to dial tone and dial the same or another number.
- 2B. If you wish to call another station after completing a DISA station call, it is necessary for the internal party to transfer your call.
3. A direct CO line or line group access code must be dialed (701 ~ 736 or 81 ~ 88). The LCR code (9) is not allowed.
4. The DISA security code is a system program option that may or may not be required.
5. If the correct code is not entered, the call will be disconnected.
6. All parties will hear the timer tone and timer reset DTMF tone.
7. If the timer is not reset, the call will disconnect approximately one minute after the timer tone is sent.
8. Station and system page cannot be accessed on DISA calls.

FEATURE USE

DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

DISA SECURITY CODE ENTRY/CHANGE/CANCEL (Release 2 and higher)

From designated station(s) only.

- 1) Press the **INT** button and dial **□□□** (3-digit access code).
 - Receive confirmation tone.
- 2) Dial the new DISA security code² (**□ ... □—1 ~ 15 digits**).
- 3) Press the **#** (or **RDL**) button.
 - Receive confirmation tone.

NOTES:

1. For security purposes, the 3-digit access code is not published, it is available from your telephone system maintenance provider.
2. If a DISA security code is not entered in step 2, the security code will be cancelled and outgoing line access via DISA will not require a security code.

DIRECT STATION SELECTION BUTTONS (HOTLINE) PROGRAMMABLE OPTION

Allows stations to be connected directly by pressing a **DSS** button. The button's LED independently shows the status (idle/busy) of that station. If connected to a CO line, pressing this button will put the party on hold. Transfer the call as you would normally, by voice announcing or camping on by hanging up.

DOOR LOCK

Pressing the **DRLK** button momentarily activates a switch connected to a door lock or similar device.

Door Lock Button	Location
DRLK 0	_____
DRLK 1	_____
DRLK 2	_____
DRLK 3	_____
DRLK 4	_____

FEATURE USE

MESSAGE WAITING

If someone calls your telephone and you are unable to answer, the calling party may set the Message Waiting indicator (a flashing LED) on the called party's telephone.

The Message Waiting indicator is the MW/FL LED on the 10- or 20-button electronic telephone.

Up to four Message Waiting indications may be queued on the message indicator at one time. One of the four message indications is always reserved for the Message Center; the other three may be set from any other telephone or voice mail device.

The button associated with the message indicator on the 10- or 20-button telephone is shown as MW/FL.

TO ANSWER A MESSAGE WAITING INDICATION ON YOUR TELEPHONE

- 1) If the MW/FL LED is flashing on your telephone: Lift the handset, press the **INT** and **MW/FL** buttons, respectively.
 - This calls the station that set the message indicator.
 - Wait for an answer to receive the message.

NOTE:

If there is no answer, hang up and try at a later time (the MW/FL LED continues to flash).

- 2) After receiving the message, place the handset on hook.
 - If the MW/FL LED turns off, you have no more messages.
 - If the MW/FL LED continues to flash, you have more messages—repeat steps 1 and 2 to retrieve them.
 - If the flashing message LED was turned on by a voice mail device, the device will cancel the indication after a short delay. The cancel time depends on the voice mail device's parameters.

NOTE:

*If your telephone does not have a **MW/FL** button, dial **INT 408**.*

FEATURE USE

MESSAGE WAITING (continued)

TO SET THE MESSAGE WAITING INDICATOR ON ANOTHER TELEPHONE

- 1) At your telephone: Lift the handset, press the **INT** button and dial the desired intercom number.
- 2) If the called telephone does not answer: Press the **MW/FL** button to set the message indication (or dial **7**).
 - The MW/FL LED flashes at the called telephone.
 - The MW/FL LED illuminates steady at your telephone.
- 3) Place the handset on-hook.
 - The MW/FL LED flashes at the called telephone.
 - The MW/FL LED turns off at your station.
 - The MW/FL LED continues to flash at the called telephone.

TO CANCEL THE MESSAGE WAITING INDICATION SET FROM YOUR TELEPHONE

Lift the handset, dial the intercom number of the telephone that has the message indication, and press the **MW/FL** button twice (or dial **77**).

TO CANCEL THE MESSAGE WAITING INDICATION SET ON YOUR TELEPHONE

- 1) Answer the Message Waiting indication and receive the message.

NOTE:

*The called party must answer (off-hook or **SPKR** button) for the message indication to be canceled.*

... Or ...

- 2) Press the **MW/FL** button (do not press the **INT** button first).

NOTE:

*If your telephone does not have a **MW/FL** button, the message indication can be canceled by dialing **INT 409**.*

FEATURE USE

NIGHT TRANSFER PROGRAMMABLE OPTION

On an optional basis, your system can function with two or three ringing patterns. If three patterns are selected, they are designated **DAY**, **DAY 2**, and **NIGHT**. If only two patterns are selected, **DAY** and **NIGHT** designations are used.

In both cases, different ringing patterns are chosen by pressing the **NT** button. Certain CO lines may be enabled in system programming to switch from normal operation to DISA line operation.

The active pattern is shown by the state of the NT LED as follows:

	Three-pattern	Two pattern
DAY	OFF	OFF
DAY 2	FLASH	N/A
NIGHT	ON	ON

OVERRIDE CALLS

TO INITIATE A BUSY OVERRIDE SIGNAL

After reaching a busy station, you may signal that station that a call is waiting by dialing **2**.

- A tone signal is heard at the busy station.

NOTE:

If the Off-hook Call Announce option is installed on the busy station, then you may talk.

TO OVERRIDE DND (Programmable Option For Selected Stations)

After reaching a DND station, you may signal that station that a call is waiting by dialing **2**.

- A tone signal is heard at the DND station.

FEATURE USE

OVERRIDE CALLS (continued)

TO INITIATE EXECUTIVE OVERRIDE (Programmable Option For Selected Stations)

After reaching a busy station, Executive Override allows you to enter an established conversation by dialing **3**.

- An optional tone signal is heard by the called parties prior to entering the conversation.

NOTE:

Privacy override and off-hook call announce are in a separate section of this guide; see the index.

SPEAKERPHONE

TO MAKE AN OUTSIDE CALL (On-hook Dialing)

- 1) Leave the handset on-hook.
- 2) Press any available **CO** button (or the **INT** button + access code).
 - Listen for dial tone.
 - CO LED flashes at the In-use rate.
- 3) Dial the desired telephone number.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPKR** button when the call is completed to disconnect.

TO RECEIVE AN INCOMING CALL

- 1) You hear a ringing tone.
- 2) Leave the handset on-hook.
- 3) Press the **CO** button next to the flashing LED (CO Incoming Call rate).
 - CO LED flashes at the In-use rate.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPKR** button when the call is completed to disconnect.

FEATURE USE

SPEAKERPHONE (continued)

TO MAKE AN INTERCOM CALL (On-hook Dialing)

- 1) Leave the handset on-hook.
- 2) Press the **INT** button.
 - Listen for intercom dial tone.
 - INT LED flashes at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPKR** button when the call is completed to disconnect.

MICROPHONE CONTROL

The **MIC** button is used to switch the electronic telephone's microphone from ON to OFF or vice versa while the telephone is in use (also see Microphone Cut-off—**MCO** button). The MIC LED indicates the status of the microphone:

LED	MICROPHONE
ON	ON
OFF	OFF

All electronic telephones can answer intercom calls handsfree (on-hook) via the microphone, but only a speakerphone can talk handsfree when originating CO line or intercom calls while on-hook.

The microphone and accompanying LED are always ON when receiving intercom calls to allow handsfree answerback, and may be ON or OFF when beginning to place an on-hook CO line or intercom call.

- Each station's microphone may be set in system programming to be ON or OFF at the start of handsfree dialing.
- Each station's **MIC** button may be set in system programming to switch ON/OFF with one touch or to switch ON/OFF only while pressed.

FEATURE USE

MICROPHONE CONTROL (continued)

NOTES:

1. To change from speakerphone to handset:
 - Lift handset.
2. To change from handset to speakerphone:
 - Press and hold the **SPKR** button.
 - Return handset on-hook.
 - Release the **SPKR** button.
3. The **MIC** and **MCO** buttons function on off-hook call announce calls for privacy.

TWO (TANDEM) CO LINE CONNECTION

TO ESTABLISH A TANDEM CO LINE CONNECTION (TRK-TRK)

- 1) While connected on an established CO line call (incoming or outgoing).¹
- 2) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LED flashes at the Conference rate.
 - INT LED flashes at the In-use rate.
- 3) Access a second CO line and dial the next telephone number.¹
- 4) Press the **CONF/TRNS** button after the party answers.²
 - CO LEDs flash at the In-use rate.
 - All parties will be conferenced.
- 5) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LEDs flash at the Exclusive Hold rate (10 IPS).
 - INT LED flashes at the In-use rate.
- 6) Hang up.
 - Both CO LEDs continue flashing at the Exclusive Hold rate.
 - INT LED goes off.
 - COs are connected and in Exclusive Hold on your station.
 - Connection is released automatically when parties hang up.³

FEATURE USE

TWO (TANDEM) CO LINE CONNECTION (continued)

On some systems, the connection must be supervised and released as follows:

- 1) Press either **CO** button.
 - Both CO LEDs flash at the In-use rate.
 - You will be connected to both CO lines.
- 2) If the parties have hung up, go back on-hook.
 - Both CO LEDs go off.
 - Connection is released.
- 3) If the parties are still talking, proceed to step 5 above.

NOTES:

1. CO lines may be accessed by pressing a **CO** line button or by dialing access codes (line number, 701 ~ 736; line group, 81 ~ 88; or with **Release 2** and higher, LCR access "9" is allowed); however, both CO lines must appear (buttons) on the telephone to allow the station to monitor the tandem connection.
2. If you receive a busy tone or no answer, return to the original connection by pressing the original **CO** line button.
3. Depends on the public telephone company; some provide auto disconnect and some do not.

TIMED REMINDERS

Allows five separate reminders to be set at each station. These reminders will be an audible beeping at the times (hour and minute) set by the station user. They can occur just once or repeated on a daily basis.

TO ENTER A TIMED REMINDER

- 1) Dial **INT** + **605** ~ **609**. You have a choice of five different reminders.
- 2) Enter the desired time (24-hour clock format; i.e., HHMM).
- 3) Dial **0** if reminder will be repeated every day, or **1** if it is a

FEATURE USE

TIMED REMINDERS (continued)

one-time reminder only.

- 4) Press **#** (or **RDL**) button to record the time in memory.
 - A beeping tone will be heard for 30 seconds (or until cancelled by going off-hook) when the hour and minute occur.

TO CANCEL A TIMED REMINDER

- 1) Dial **INT** + **605**.
- 2) Press **#** (or **RDL**).

NOTE:

Repeat for reminders **606** ~ **609**.

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS

Toll restriction at a station can be completely overridden, or, with **Release 3**, the station's normal class can be changed to another class (traveling class). Use the following procedure to completely override or to change a station's toll restriction class.

TO OVERRIDE TOLL RESTRICTION AT A STATION FOR A SINGLE CALL

- 1) Access a CO line as normal.
- 2) Press the **CONF/TRNS** button and dial **47**.
 - If there was dial tone, it will now cease.
- 3) Dial the Toll Restriction Override Code (four digits).
 - You will hear dial tone.
- 4) Dial the desired telephone number.

TO ADD, DELETE, OR CHANGE TOLL RESTRICTION OVERRIDE OR TRAVELING CLASS CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING.

- 1) Press **INT** and dial the three-digit toll restriction override change access code **□□□**.
 - You will hear confirmation tone.
- 2) Dial the four-digit override code **□□□□**.
- 3) Press the **#** or **RDL** button to store code.

FEATURE USE

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS (continued)

- You will hear confirmation tone.
- 4) Repeat steps 1 ~ 4 to enter more toll restriction override or traveling codes.

NOTES:

1. *Traveling class is available with **Release 3** only.*
2. *For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.*

TONE SIGNALING PROGRAMMABLE OPTION

Provides ringing on incoming intercom calls when voice announcing is not activated.

TO MAKE A TONE SIGNAL CALL

- 1) Call another station via intercom.
 - The called party hears one ring, then your voice.
- 2) To send ring tone to the called party, dial **1**.
- 3) Speak to the party when the call is answered.

TO ANSWER A TONE SIGNAL CALL

- 1) Lift the handset or press the **SPKR** button (handsfree answerback is inoperative).
- 2) Hang up when the call is completed.

VOICE MAIL (VM)

Whenever your station is call forwarded to voice mail, certain digits will automatically be sent to the voice mail unit to direct the call to your voice mail box.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 6**.

FEATURE USE

VOICE MAIL (VM) (continued)

- 3) Dial the digits (up to 16) and pauses to be sent (see Note).
- 4) Press the **#** (or **RDL**) button to store data.

NOTE:

Use **PAU** or **MW/FL** button to store pauses.

When you wish to retrieve your messages from voice mail, certain digits will automatically be sent to the voice unit to play back your messages after you press the message waiting button.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 7**.
- 3) Dial the required digits and pauses to be sent.
- 4) Press the **#** (or **RDL**) button to store data.

TO RETRIEVE MESSAGES

Press the **INT** and **MW/FL** buttons.

TO CLEAR ALL DIGITS

- 1) Press **INT**.
- 2) Dial **6 5 6** or **6 5 7**.
- 3) Press **#** (or **RDL**).

NOTE:

The above procedures are required for initial VM set-up only. The digits remain in memory until changed.

CENTREX APPLICATION

Your system may be equipped with the Centrex Application, which enhances the system feature capability when installed behind a Centrex or PBX system.

Your electronic telephone may be equipped with one or more of the enhanced Centrex features listed below:

A) Flexible Intercom Numbering (up to four digits)

A station intercom number can be three or four digits. It is, therefore, possible to match a station's intercom and Centrex line extension number. Dial the entire station number when indicated.

NOTE:

To avoid system numbering plan conflicts, some access code numbers may have to be changed.

B) Centrex Feature Buttons

Certain Centrex features may be operated by pressing a button on your electronic telephone. The Centrex access code, including the necessary Flash and/or Pause sequence, is activated when the appropriate button is pressed. Press the appropriate Centrex feature button instead of dialing a Centrex access code when operation of the feature is desired. See your Centrex or PBX Operations Manual for specific details.

C) Ringing Repeat

The distinctive ring patterns available in your Centrex system are automatically repeated with your electronic telephone, allowing you to answer appropriately for either outside, inside or callback calls.

D) Delayed Ringing

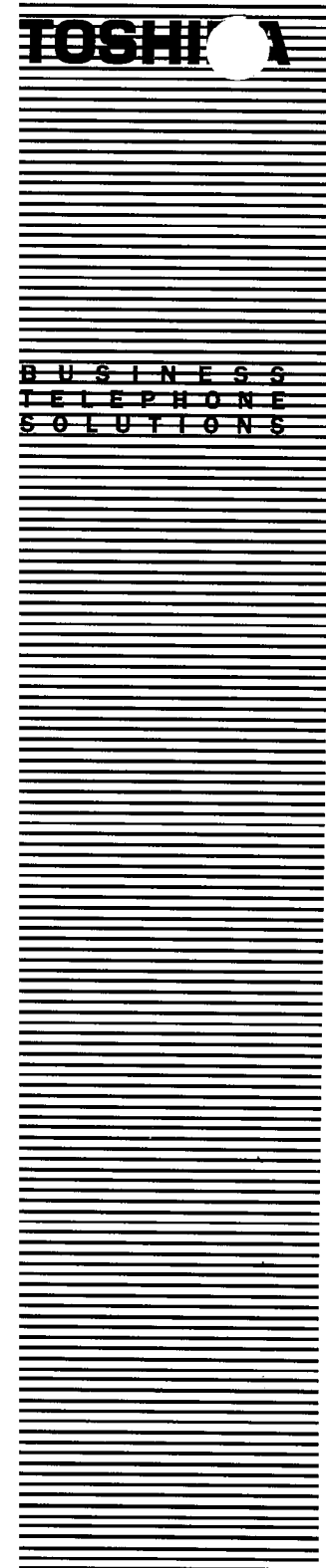
CO or Centrex line(s) may be programmed for a 12-second and/or 24-second ring delay at stations to permit alternate answering conditions. Answer the line when your electronic telephone is ringing.

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**LIQUID CRYSTAL
DISPLAY FEATURES
ELECTRONIC
TELEPHONE
USER GUIDE**

STRATA® DK

**DIGITAL KEY
TELEPHONE SYSTEMS**

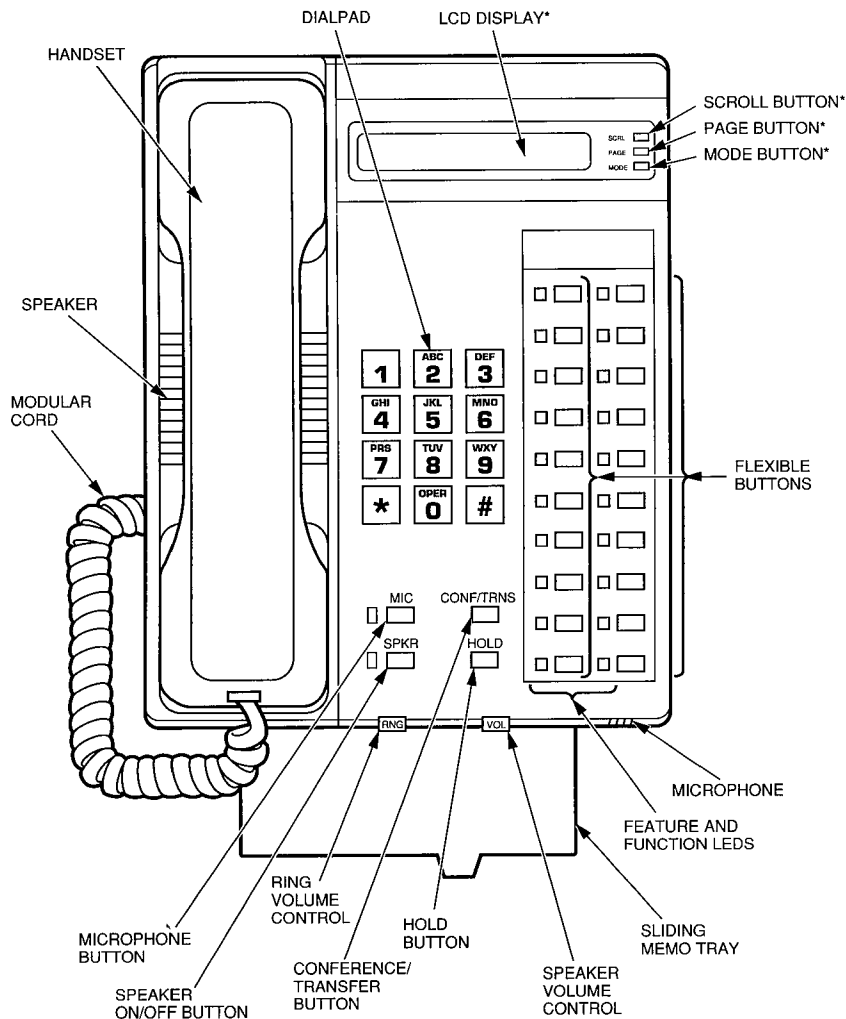
**STRATA DK24
DK56 AND DK96
RELEASE 1, 2, & 3**



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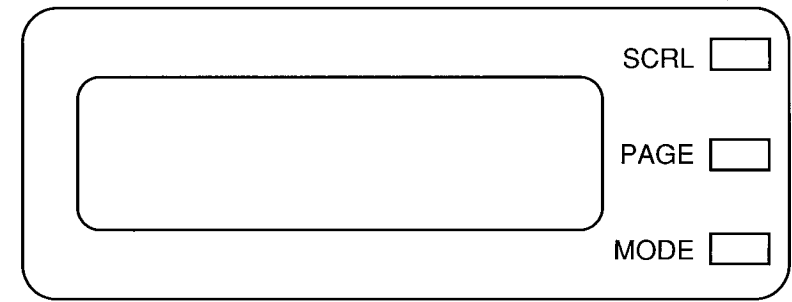
LIQUID CRYSTAL DISPLAY



*AVAILABLE ON LCD MODEL ONLY

20-button Liquid Crystal Display Telephone

In its idle state, the 32-character Liquid Crystal Display (LCD) feature on your electronic telephone gives you an accurate desk clock and calendar combination. When you have an outside call in progress, an elapsed time display gives a constant reminder of the call duration. In addition, a variety of information displays and feature prompting make your call handling more efficient. Alphanumeric messaging capability is also provided. All display functions occur automatically as call processing proceeds.



The uses of the three buttons shown above are:

- SCRL:**
- 1) Scrolls through message waiting numbers.
 - 2) Scrolls through the speed dial digits (if more than 16 digits) when in mode 8.
- PAGE:**
- 1) Changes Busy Field groups.
 - 2) Used by station 200 to record a user NAME/NUMBER for another station. Station 200 must be an LCD electronic telephone to record NAME/NUMBER display for any other station type.
 - 3) Changes displays (date/time, elapsed time, message, call forward, dialed number).
 - 4) Scrolls through speed dial numbers when using mode 8.
- MODE:**
- 1) To enter/exit various mode functions (see below).
 - 2) To cancel beeping tone when using timed reminders.

LIQUID CRYSTAL DISPLAY (continued)

MODE DEFINITION

- MODE 0: Used to exit another mode and return to clock/calendar display.
- MODE 1: Busy Field display.
- MODE 2: Busy station messaging (**Releases 1 and 3**).
- MODE 4: Called station messaging.
- MODE 8: Speed dial number check and memo dialing.
- MODE 94: Remote called station messaging (**Releases 1 and 3**).
- MODE 95: Remote calling station messaging (**Releases 1 and 3**).

SUMMARY OF LCD FUNCTIONS

Type	When Displayed
------	----------------

A) Account Codes

NO. NNN ENTER ACCT CODE	When you press a CO line that requires a forced (verified or nonverified) account code; or dial *50 , or press the ACCOUNT button to enter a voluntary (verified or nonverified) account code (Release 3).
NO. NNN ACCOUNT CODE	When you press a CO line that requires a forced (nonverified) account code, or when you press CONF/TRNS 46 to enter a voluntary (nonverified) account code (Releases 1 and 2).
NO. NNN CODE NOT VALID	When you dial a verified voluntary account code that is not valid (Release 3).

SUMMARY OF LCD FUNCTIONS (continued)

NO. NNN CODE VERIFIED	When you dial a verified voluntary account code that is set in the system account code memory (Release 3).
NO. NNN DIAL RESTRICTED	When you dial a verified forced account code that is not valid (Release 3).
NO. NNN DIAL TEL NUMBER	After you dial a verified forced account code that is valid (Release 3).
NO. NNN DIAL TEL NUMBER	After you dial a forced or voluntary account code (Releases 1 and 2).
B) Auto Busy Redial (ABR)	
HOLD LINE NN ABR SET	After setting auto busy redial, your display prompts you that it has been set.
NO. NNN P583 3700	When the system retrieves the call, your display shows the called number.

When the called station is ringing, your station's CO LED (or INT LED) and SPKR LED will flash and a warning beep will sound.

C) Automatic Callback (ACB)

NO. NNN INT NNN ACB SET	When you set automatic callback at a busy station, its number is displayed.
NO. NNN NNN ACB	When you receive an automatic callback, the station number you called is displayed.
NO. NNN LINE 10 ACB	When you receive an automatic callback for a CO line, the seized line's number is displayed.

SUMMARY OF LCD FUNCTIONS (continued)

NO. NNN
LINE NN ACB

Your station will display the called number, followed by LINE NN ACB.

D) Automatic Line Selection

1) Intercom Line

NO. NNN
INT

If your station automatically accesses an intercom line when you go off-hook, INT is displayed.

2) CO Line

NO. NNN
USING LINE 11

If your station automatically accesses a CO line when you go off-hook, the number of the seized CO line is displayed.

3) Dial Access Code

NO. NNN
USING LINE 20

When you access a CO line by dialing a CO line group access code, the accessed CO line number is displayed.

E) Alphanumeric Messages

BACK AT 2PM-CALL
MEETING FOR 3PM

Messages of up to 32 characters may be used in alphanumeric messaging. Messages may either be programmed or set as one-time messages. (Messages may also be used with a timed reminder.)

F) Busy Field

00 0 5
10 7

20 7
30 . . 2 . 4 9

FORWARD TO NNN
DATE & TIME

The Busy Field display indicates, in groups of 10, the last two digits of the station numbers that are busy or set for DND. The top display indicates that stations X00, X05, and X17 are either in use or in DND; the bottom display indicates the same for stations X27, X32, X34, and X39. If the **PAGE** button is pressed, the 00/10 group will change to 10/20, and the busy/DND states of that group of stations will be displayed. The station groups will increment each time the **PAGE** button is pressed, thereby displaying all stations.

SUMMARY OF LCD FUNCTIONS (continued)

G) Call Forward

When you initiate any type of call forward, the LCD displays, CALL FORWARD TO.

After you set call forward, the station number to which your calls will be forwarded is displayed, along with one of the following abbreviations:

CF-AC (Call Forward-All Calls)

CF-BUSY (Call Forward-Busy)

CF-NA (Call Forward-No Answer)

CF-B/NA (Call Forward-Busy/No Answer)

CF-FIXED (Call Forward-Fixed)

NOTE:

*Call Forward-Busy, Call Forward-No Answer, and Call Forward-Busy/No Answer are available only with **Release 2** or higher.*

NO. NNN
NNN

When your call is forwarded to another station, the station you called is shown. It then changes to the station to which your call was forwarded.

NO. NNN
NNN CALL NNN

When a call is forwarded to your station, the calling station number is displayed on the left and the station called is displayed on the right.

H) Call Pickup

NO. NNN
200 CALL 201

When you pick up an intercom call, the calling station's number is displayed on the left and the station number called is displayed on the right.

SUMMARY OF LCD FUNCTIONS (continued)

NO. NNN
NNN PICKUP NNN

Your LCD telephone displays information noting that your call to station NNN was picked up by station NNN.

I) Calling Number-Intercom

NO. NNN
NNN CALLING

When you receive an intercom call, the calling station's number is displayed.

J) CO Line Identification

TOSHIBA TELECOM

The CO lines can be programmed to display an identifying name of up to 16 characters. The name will be displayed on outgoing and incoming calls.

DR. JONES OFFICE

K) CO Line Number

1) Incoming Call

NO. NNN
LINE 10 RINGING

Incoming CO call—If your station is programmed for incoming ringing on that CO line.

Transferred CO call—CO line is transferred to your station in the ringing state by another station.

Camped-on CO call—CO line was camped-on to your busy station and rings your station when you hang up.

2) When Call Is Answered

NO. NNN
ANSWERED LINE 10

The display changes to indicate calling status.

3) Hold

HOLD LINE 10
JAN 01 SUN 12:19

You have put a CO line call on hold at your station.

SUMMARY OF LCD FUNCTIONS (continued)

4) Hold Recall

HOLD LINE NNN
LINE 10 RECALL

Held call automatically recalls your station after a programmed period of time.

5) Outgoing

NO. NNN
USING LINE 6

When you manually select a CO line, it is displayed. This display is replaced by the dialed number as you dial.

6) CO Line Queuing (Callback)

NO. NNN
LINE 3 ACB

When the CO line queuing feature rings back to your station with an available CO line, that line number will be displayed.

L) Date/Time

NO. NNN
MAY 24 MON 12:05

Idle Telephone

NOTES:

1. Press the **PAGE** button to display date/time when talking on a CO line.
2. The date/time is adjusted on a system-wide basis by the station located in port 00 (usually station 200).

M) Dialed Number

1) CO Line

NO. NNN
5551374

The digits are displayed as you dial over either a CO line or the intercom using:

- Manual dialing
- Automatic dialing
- Repeat last number dialed
- Saved number redial

SUMMARY OF LCD FUNCTIONS (continued)

2) Intercom

NO. NNN 201

NOTE:

If you are calling on a CO line, the display will automatically change from dialed number to elapsed time after a programmed period of time.

N) Door Phone/Monitor

NO. NNN DOOR PHONE 1A

When you are called from a door phone, its designating characters are displayed.

NO. NNN DOOR PHONE 1A

When you call a door phone, its designating characters are displayed.

NOTE:

The door phone designators are NA, NB, and/or NC (N = 1 ~ 4, and indicates which of the 12 possible door phones is calling or is being called).

O) Elapsed Time

NO. NNN 00:13:23

While you are making an outgoing CO line call, the elapsed time of the call is displayed. Elapsed time automatically replaces the dialed number on the display after a programmed period of time. (Timing begins when a **CO** button is pressed.)

NOTES:

1. On a CO line call, the display can be alternated between date/time, elapsed time, and dialed number by pressing the **PAGE** button.
2. Elapsed time is displayed for 15 seconds after you hang up, and then changes automatically to date/time.

SUMMARY OF LCD FUNCTIONS (continued)

P) Intercom Number Display

NO. NNN INT = NNN

If an access code is entered (**INT 4 0 1**, **CONF 4 0 1** when on a CO line), the programmed intercom number will be displayed.

Q) LCD Name/Number Display (**Release 2** and higher)

1) Idle station

NAME/NUMBER DATE DAY TIME

A name or title may be set in memory for each station. When an LCD station is idle, the name displays on the top line of the LCD. When a station calls an LCD station, the name of the calling station displays on the bottom line of the called station's LCD.

2) Called station

NO. NNN NAME/NUMBER

R) Least Cost Routing (LCR)

NO. NNN DIAL TEL NUMBER

When you are making a call via LCR, your display will prompt you to dial a number by displaying, DIAL TEL NUMBER.

NO. NNN 5833700

As you dial the number, it is shown on your display.

S) Message Waiting

NO. NNN INT NNN MW SET

When you set message waiting at another station, the number of that station is displayed.

SENT NNN JAN 01 SUN 12:19

When you hang up after setting message waiting at another station, a reminder is shown on the top row of your display.

NO. NNN CALL 203 201 200

Your display will show the numbers of up to three stations that have left messages for you. Four numbers may be stored in message memory (see Recalling Station).

SUMMARY OF LCD FUNCTIONS (continued)

T) Message Waiting/Voice Mail

```
NO. NNN
CALL 200 216V+
```

When a message waiting voice mail is displayed, a "V" will follow the station number. A "+" indicates that there is a station message in memory. Press the **SCRL** button to rotate through the numbers.

U) Off-hook Call Announce

```
NO. NNN
NNN
```

When you off-hook call announce to a busy station, your LCD displays the number of that station.

```
NO. NNN
NN BUSY OVR
```

When another station off-hook call announces to your station, your LCD displays the number of that station.

V) Overrides

1) Busy Override

```
NO. NNN
NNN BUSY OVR
```

When you activate the override feature after calling a busy station, the station number and the feature are displayed.

```
NO. NNN
NNN BUSY OVR
```

Your LCD telephone displays the number of a station initiating override when you are on the telephone. The number will remain displayed until override is disconnected.

2) Executive Override

```
NO. NNN
NNN EXEC OVRD
```

When you initiate executive override, your LCD telephone displays the number of the station that is overridden. The station that receives the override displays your station number. The number will remain displayed until the call is ended.

SUMMARY OF LCD FUNCTIONS (continued)

3) Do Not Disturb (DND) Override

```
NO. NNN
INT NNN DND
```

The station you have called is in the do not disturb mode.

```
NO. NNN
NNN DND OVR
```

When you initiate do not disturb override, the station number you have overridden is displayed.

```
NO. NNN
NNN DND OVR
```

When another station overrides do not disturb at your station, its number is displayed. (The display remains until the end of override.)

4) Privacy Override

```
NO. NNN
NNN PRV OVRD
```

When a station presses a busy line button to enter an existing conversation: The station that initiates the override displays the CO line identification on the LCD. The overridden station's LCD displays initiating station's number. (The display remains until the end of the call.)

W) Recalling Station

```
HOLD LINE 2
LN 2 RECALL NNN
```

When a transferred call goes unanswered, it will recall to the station that transferred it. The display shows the CO line number and the station number to which it was originally transferred.

X) Speed Dial Memo

```
*11 TOSHIBA
7145833700
```

When using Speed Dial Memo (mode 8), the name and number are displayed.

TOSHIBA is the memo (up to 12 characters).
714 583 3700 is the number (up to 16 digits).

SUMMARY OF LCD FUNCTIONS (continued)

Y) Toll Restriction Override Codes

NO. NNN OVERRIDE CODE

After you access a CO line and press **CONF/TRNS 4 7** to dial a complete toll restriction override or traveling class code (traveling class override codes are available with **Release 3** only) your LCD display will prompt you to dial a code.

Z) Two-CO Line Calls

1) Tandem

TRK-TRK N ₁ N ₂ JAN 10 THU 11:57

After you establish a two-CO line conference call and then release. N₁ and N₂ identify the connected CO lines.

2) Conference

NO. NNN CONF LINE N ₁ N ₂
--

When you are talking with two external parties on two CO lines. N₁ and N₂ identify the connected CO lines.

3) Amplified

NO. NNN AMP CNF LN N ₁ N ₂

When you are talking with two external parties on two CO lines that are externally amplified (optional with **Release 3**).

DATE/TIME/DAY ADJUSTMENT

This operation is possible from port 00 only (usually station 200).

TO SET DATE

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 1**.
- 3) Dial the date (year/month/day) in the format YYMMDD. Enter a leading 0 for any single-digit month or day.
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

TO SET TIME

- 1) Place handset on-hook.

DATE/TIME/DAY ADJUSTMENT (continued)

- 2) Dial **INT 6 5 2**.
- 3) Dial the time (hour/minute/second) in the 24-hour clock format HHMMSS. Enter a leading 0 for any single digit entered.
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

TO SET DAY

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 3**.
- 3) Dial the day.
 - **1** = Sunday
 - **2** = Monday
 - **3** = Tuesday
 - **4** = Wednesday
 - **5** = Thursday
 - **6** = Friday
 - **7** = Saturday
- 4) Press the **#** (or **RDL**) button.
 - Listen for confirmation tone.

CALL FORWARD DISPLAY

TO SET CALL FORWARD

When any type of call forward is initiated, the CALL FORWARD TO prompt displays on the lower row of the LCD.

When your station has call forward set, the LCD displays as shown (NNN = the forward to number).

1) Call Forward-All Calls

CF-AC TO: NNN JAN 26 TUE 01:43	Press INT 6 0 1 + N N N + SPKR (or CFAC + N N N + CFAC).
-----------------------------------	--

2) Call Forward-Busy (**Releases 2 and 3**)

CF-BUSY TO: NNN JAN 26 TUE 01:43	Press INT 6 0 2 + N N N + SPKR (or CFB + N N N + CFB).
-------------------------------------	--

CALL FORWARD DISPLAY (continued)

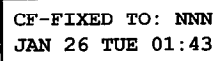
3) Call Forward-No Answer (Releases 2 and 3)

 Press **INT 6 0 3** + N N N + **SPKR**
(or **CFNA** + N N N + **CFNA**).

4) Call Forward-Busy/No Answer (Releases 2 and 3)

 Press **INT 6 0 4** + N N N + **SPKR**
(or **CFB/NA** + N N N + **CFB/NA**).

5) Call Forward-Fixed

 Press the **CFF** button.

NOTES:

- To cancel call forward, press **INT 6 0 1** **SPKR** (or press the call forward button used to set call forward).
- If call forward is set:
 - CO lines that ring at your station **only** will forward (CO lines that ring into more than one station will not forward).
 - CO line calls transferred to your station will forward.
 - Intercom calls will forward.
 - Call forward redirects the station hunt feature.

STATION-TO-STATION MESSAGE WAITING

TO USE STATION-TO-STATION MESSAGE WAITING

- Lift the handset.
- Dial the desired station number.
 - If there is no answer (busy or DND), press the **MW/FL** button (or dial **7**). This causes the MW/FL LED on the called station to flash.
 - The called station's LCD displays the calling station's number.
- The called station user presses the **INT** and **MW/FL** buttons to return the call.
- To clear the MW/FL LED from the called station, press the **MW/FL** button.

STATION-TO-STATION MESSAGE WAITING

(continued)

- To clear the MW/FL LED from the calling station, press the **INT** button, dial the station number and press the **MW/FL** button twice (or **7 7**).

NOTE:

Up to four message waiting displays may be stored on the LCD. The station number in the left-most position will be called when the **MW/FL** button is pressed. To rotate the station numbers, press the **SCRL** button. The fourth message is reserved for the Message Center.

VOICE MAIL (VM)

Whenever your station is call forwarded to voice mail, certain digits will automatically be sent to the voice mail unit to *direct the call to your mailbox*.

TO STORE THE DIGITS TO BE SENT

- Press the **INT** button.
- Dial **6 5 6**.
 - The LCD displays, 6 5 6 ID CODE SET.
- Dial the digits (up to 16) and pauses (**MW/FL**) to be sent.
 - The LCD displays the digits and pauses.
- Press the **#** button to store data.
 - Listen for confirmation tone.

When you want to retrieve your messages from voice mail, certain digits will automatically be sent to the voice mail unit to *play back your messages*.

TO STORE THE DIGITS TO BE SENT

- Press the **INT** button.
- Dial **6 5 7**.
 - The LCD displays, 6 5 7 ID CODE SET.
- Dial the required digits and pauses to be sent.
 - The LCD displays the data as it is entered.
- Press the **#** button to store data.
 - Listen for confirmation tone.

VOICE MAIL (continued)

TO RETRIEVE MESSAGES

Press the **INT** and **MW/FL** buttons.

TO CLEAR ALL DIGITS

- 1) Press the **INT** button.
- 2) Dial **6 5 6** or **6 5 7**.
- 3) Press the **#** button.

NOTES:

1. The above procedures are required for initial VM set-up only. The digits remain in memory until changed.
2. Digits are not sent to camped-on VM calls.

BUSY FIELD DISPLAY

TO DISPLAY BUSY FIELD STATUS ON THE LCD DISPLAY

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **1**. Refer to the figure in Summary of LCD Functions.
- 3) Press the **PAGE** button to rotate Busy Field groups.

MODE EXIT

TO EXIT ANY MODE

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **0**.
 - The LCD displays date/day/time.

DISA SECURITY CODE: ADD/DELETE/CHANGE

From designated station(s) only.

TO STORE NEW DISA SECURITY CODE

- 1) Press the **INT** button and dial **□□□**' (3-digit access code).

DISA SECURITY CODE: ADD/DELETE/CHANGE (continued)

- Receive confirmation tone.

NO. NNN
□□□ ID CODE SET

- 2) Dial the new DISA security code (**□ . . . □**).²
- 3) Press the **#** button.

- Receive confirmation tone.

NO. NNN
DATA PROGRAMMED

NOTES:

1. For security purposes, the 3-digit access code is not given in this guide. It is available from your telephone system maintenance provider.
2. The DISA security code can be 1 ~ 15 digits.
3. To cancel the DISA code, complete steps 1 and 3, skipping step 2. If the DISA code is canceled, outgoing access of CO lines on DISA calls will not require a security code.

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS CODE CHANGE

TO ADD, DELETE, OR CHANGE TOLL RESTRICTION OVERRIDE OR TRAVELING CLASS' CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING.

- 1) Press **INT** and dial the three-digit toll restriction override change access code **□□□**.²
 - You will hear confirmation tone.

NO. NNN
ENTER OUR CODE

- 2) Dial the four-digit override code **□□□□**.

NO. NNN
ENTER OUR CODE □□□□

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS CODE (continued)

- 3) Press the **#** (or **RDL**) button to store code.
- You will hear confirmation tone.

NO. NNN DATA PROGRAMMED

- 4) Repeat steps 1 ~ 4 to enter up to four traveling class codes or two toll restriction override codes.

NOTES:

- Traveling class is available with **Release 3** only.
- For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.

VERIFIED ACCOUNT CODE CHANGE (Release 3)

TO ADD, DELETE, OR CHANGE VERIFIED ACCOUNT CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING

- 1) Press **INT** and dial the verified account code change access code **□□□** (see Note).

NO. NNN VERIFY ACC SET

- 2) Dial the three-digit verified account code number **□□□** (000 ~ 299).

NO. NNN VERIFY ACC SET □□□

- 3) Dial the verified account code **□ ... □** (4 ~ 15 digits).

NO. NNN □□□ □□□

└── VERIFIED ACCOUNT CODE
└── ACCOUNT CODE NUMBER

VERIFIED ACCOUNT CODE CHANGE (continued)

- 4) Press the **#** (or **RDL**) button to store code.
- You will hear confirmation tone.

NO. NNN DATA PROGRAMMED

- 5) Repeat steps 1 ~ 4 to enter more verified account codes.

NOTE:

For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.

MESSAGE ADMINISTRATION FUNCTIONS

ADDING TO A PREPROGRAMMED MESSAGE

When you select a message, it appears on your station display. A cursor (–) also appears immediately to the right of the last letter in the message. You can now input additional information (up to a total of 32 digits for each message). Some system messages may expect you to add more information. For example:

- CALL _____
 - Add a station or outside telephone number.
- BACK AT _____
 - Add the time you will return.
- RETURN AT _____
 - Add the date you will return.

NOTE:

Refer to *Recording a Message* for adding to a preprogrammed message.

MESSAGE ADMINISTRATION FUNCTIONS (continued)

EDITING OR SETTING A NEW CALLING STATION MESSAGE

You can set a completely new, personalized message by overwriting any of the existing preprogrammed messages. To do this, simply call up one of the messages as explained previously. When the cursor appears to the right of the message, shift it to the left margin and write your new message over the preprogrammed one. The new message will remain on your station until canceled. It will then be erased and the original preprogrammed message will be restored.²

NOTES:

- 1) Refer to *Recording a Message for leaving a new message at your station.*
- 2) Messages 60 ~ 99 will be erased. Messages 10 ~ 19 will remain in memory until changed.

PREPROGRAMMING SYSTEM MESSAGES

System messages can only be programmed or permanently changed at port 00, station number _____ (usually 200). Five preprogrammed messages are automatically stored in memory when the Alphanumeric Messaging with LCD feature is initialized.

- 60) OUT TO LUNCH
- 61) IN A MEETING
- 62) CALL _____
- 63) BACK AT _____
- 64) RETURN ON _____

You can use these messages and add 35 more messages designed specifically for your system, or you can overwrite the initialized messages and program up to 10 of your own. Any messages programmed at port 00 will remain in memory until canceled from port 00 or until the system is reinitialized. After reinitialization, only the original five messages will be in memory.

System messages are written and stored in memory as explained in *Storing a Message.*

MESSAGE ADMINISTRATION FUNCTIONS (continued)

RECORDING A MESSAGE

Use this procedure to enter the characters of a personal message (10 ~ 19) or system message (60 ~ 99), to add to a preprogrammed message, or to edit and set a new message. After calling up a message on your display (see *Storing a Message*, steps 1 and 2), perform one of the following procedures:

TO RECORD A MESSAGE

- 1) Press the **#** button to access alpha characters. Refer to Figure 1 for an explanation of the dialpad buttons.
- 2) Move the cursor (–) to the desired position (the left edge of the display for a new message, or two spaces to the right of the preprogrammed message to add information).
- 3) Press the button that has the letter you want to enter. Use the **0** button to shift from letter to letter on the button. For example:
 - If you press **3**, a D will be displayed. By pressing **0**, the D is changed to E. By pressing **0** again, the E is changed to F. Press **0** again and the F changes to D.
 - To enter a space, press **1**.
- 4) If you want to enter a number, press the **#** button to change to numeric characters. Numbers are also entered on the dialpad. Press the **#** button again to return to alpha characters.

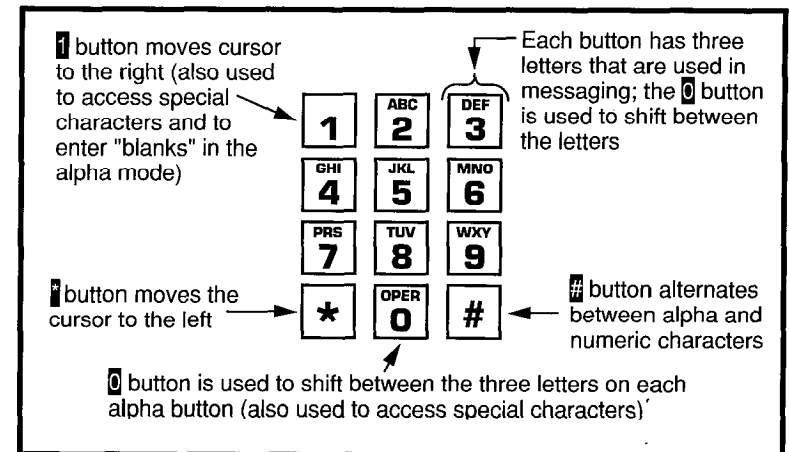


FIGURE 1-DIALPAD INFORMATION

MESSAGE ADMINISTRATION FUNCTIONS (continued)

- 5) The following special characters are set by pressing **1** and then pressing **0** to step through the available characters:

Q, Z, :, -, +, /.

- 6) When the message is complete, press the **MSG** button (or, if you do not have a **MSG** button, press the **SPKR** button).
- Your message is now stored on your station.

STORING A MESSAGE

TO STORE A MESSAGE

- Press the **MSG** (or **INT 6 8**) button.
 - The MSG LED flashes.
 - LCD displays, MSG NO.?
- Dial the 2-digit message number to be stored.
 - Personal (10 ~ 19).
 - System (60 ~ 99 port 00 only).
- Use the Recording a Message procedure to enter the message characters.
- Press the **MSG** (or **SPKR**) button.
 - The MSG LED lights steadily.
 - The LCD displays, MSG.
- Press the **MSG** (or **INT 6 8 SPKR**) button.
 - The MSG LED goes out.
 - The message is now stored.

LCD NAME/NUMBER DISPLAY (Release 2 and higher)

This feature allows you to store a title (such as your name, telephone number, location, etc.) in system memory. This title (i.e., LOBBY) will display on your station's LCD while it is idle, and it will appear at other stations' LCDs when they are called from your station. Name display information for non-LCD telephones or voice mail/auto attendant devices may be stored from station 200. When NAME/NUMBER is recorded for non-LCD telephones or other devices, their NAME/NUMBER is displayed on LCD telephones when called.

LCD NAME/NUMBER DISPLAY (continued)

TO ENTER NAME/NUMBER INFORMATION FROM YOUR STATION

- Press the **INT** button and dial **6 2 1**.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information will appear on the lower line of the LCD.

USER NAME? TOSHIBA EXT.200

- Enter the new information via the dialpad (refer to Record LCD Messages for method).
 - Up to 16 characters can be recorded.
- Press the **SPKR** button.
 - The new information is stored.

TOSHIBA EXT.200 DATE DAY TIME

TO CLEAR NAME/NUMBER DISPLAY

Press the **INT** button, dial **6 2 0** and press the **SPKR** button.

- Listen for confirmation tone, then busy tone.

During clear:

NO. NNN USER NAME RESET

After clear:

NO. NNN DATE DAY TIME

NOTES:

- Your title will appear on the LCD during direct intercom, forwarded, and hunted calls. On override or OCA calls, the LCD will not display the title.
- After a name is cleared, it may be redisplayed at anytime by dialing **INT 6 2 1**.
- A name is displaced by message and call forward settings if they are set.
- To erase NAME/NUMBER information from memory, repeat steps 1 ~ 3 above and enter blanks in step 2. Blanks are entered by pressing **1** in the alpha mode.

LCD NAME/NUMBER DISPLAY (continued)

TO ENTER NAME/NUMBER INFORMATION FOR ANOTHER STATION OR VOICE MAIL DEVICE FROM STATION 200

- 1) Press the **INT** button and dial **6 2 1**.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information for station 200 will appear on the lower line of the LCD.

USER NAME? TOSHIBA EXT. 200

- 2) Press the **PAGE** button.
 - The LCD displays, DEST. EKT NO.?
- 3) Dial the intercom number (**N N N**) of the NAME/NUMBER information to be recorded.
 - The LCD displays, DEST EKT NO. NNN.
- 4) Press the **PAGE** button.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information for station NNN will appear on the lower line of the LCD.
- 5) Enter the new information via the dialpad (refer to Record LCD Message method).
 - Up to 16 characters can be recorded.
- 6) Press the **SPKR** button.
 - The new information is stored and appears on the top line of station NNN's LCD.
 - Station 200's LCD returns to the normal idle display.

NOTES:

1. To erase the NAME/NUMBER information of another station from station 200, repeat steps 1 ~ 6 above and enter blanks in step 5. Blanks are entered by pressing **1** in the alpha mode.
2. Station NNN may set and clear the NAME/NUMBER feature anytime:
 - Set: **INT 6 2 1**.
 - Clear: **INT 6 2 0**, "clear" eliminates the display when calling, but does not erase it from memory; only station 200 can erase the NAME/NUMBER of a non-LCD station.

SPEED DIAL MEMO

Allows an LCD user to program a 12-character name for each of his/her 40 personal speed dial numbers. The memo pad of names may be stepped through to select the appropriate party. Memos may also be added to the 40 system speed dial codes via the station connected to port 00, station number _____ (usually 200).

TO PROGRAM NAMES AND NUMBERS

- 1) Press the **# 1** buttons.
- 2) Dial the desired speed dial number.
 - The LCD displays, # * NNN SPEED DIAL.
- 3) Press the **MODE** button.
 - The LCD displays, # *NNN __ SPEED DIAL.
- 4) Enter the name or memo (refer to Recording a Message).
- 5) Press the **MODE** button.
 - The LCD displays, *NN MEMO SPEED DIAL.
- 6) Enter the desired telephone number (16 digits maximum).
- 7) Press the **#** button to record data in memory.

TO DIAL A SPEED DIAL NUMBER

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **8 □ □ □** (□ □ = **1 0 ~ 4 9** or **6 0 ~ 6 9**).
 - The speed dial number appears with name or memo.
- 3) Press the **PAGE** button to scan the directory for the appropriate number/memo.
- 4) Press any available **CO** button.
- 5) The number is dialed.

NOTES:

1. A station must be enabled via system programming for LCD message memory.
2. Personal speed dial code numbers are 10 ~ 49, and system numbers, stored from station 200 only, are 60 ~ 99.
3. Speed dial numbers and memos and their corresponding 2-digit codes may be recorded on the record sheet provided in back of this guide.

SPEED DIAL MEMO (continued)

TO CHECK A SPEED DIAL NUMBER

- 1) Press **MODE** 8.
- 2) Dial a 2-digit speed dial number (see Note).
- 3) If the number is longer than 16 digits, press the **SCRL** button to display the remaining digits.

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

TIMED REMINDERS WITH MEMO

Allows five separate messages to be set at each LCD station. These messages will be displayed at the times (hour and minute) set by the station user. They can either be displayed just once or repeated on a daily basis.

TO SET A TIMED REMINDER WITH MEMO

- 1) Press the **INT** button.
- 2) Dial a 3-digit reminder number (605 ~ 609).
- 3) Enter the desired time (24-hour clock format; i.e., HHMM) for the message to be displayed.
- 4) Dial **0** if the message is to be repeated every day, or **1** if it is a one-time message only.
- 5) Enter the desired message number.*
- 6) Press the **#** button to record the data in memory.
 - Listen for confirmation tone.
 - The message will be displayed at the specified time, and a beeping tone will be heard for 30 seconds (or until it is canceled by pressing the **MODE** button).

* Personal (10 ~ 19) and system (60 ~ 99). The message does not display when setting a timed reminder—it displays when the reminder activates. Messages are set using the Record a Message method.

MESSAGE SENDING

The Alphanumeric Messaging feature on your LCD electronic telephone enables you to set short text (up to 32 characters) at your station to ensure that you do not miss important calls. Any station may record a message; however, only stations with the LCD are able to display messages. To record messages, see the message administration functions in this guide.

Your system has up to 40 preprogrammed messages that may be sent to other LCD electronic telephones. You can temporarily add to or change any of these messages, in order to leave a personalized message at your station (see Note).

Some stations may record and save up to 10 personal messages to be used for all types of station messaging. This is a station option that is enabled in system programming.

NOTE:

Stored messages and their corresponding message number(s) may be recorded on the record sheet provided in the back of this guide.

CALLED STATION MESSAGING

Your station number and a message indication may be sent to another LCD station. When that station responds, it will receive the message.

TO SET A CALLED STATION MESSAGE

- 1) Dial the station number (station does not answer).
- 2) Press the **MODE** button.
 - The LCD displays, MODE?
- 3) Dial **4**.
 - The LCD displays, MW TO STNNN MSG NO?
- 4) Enter the desired message number.*
 - The LCD displays the message.
- 5) Press the **MW/FL** button.
 - The LCD displays, INT NNN MW SET.
- 6) Press the **SPKR** button to release.

MESSAGE SENDING (continued)

- 7) CALL NNM is displayed at the called station and the MW/FL LED flashes.
- 8) SENT NNM is displayed at your station.

**Personal (10 ~ 19), system (60 ~ 99).*

TO RECEIVE A CALLED STATION MESSAGE

Press the **INT** and **MW/FL** buttons.

GROUP CALLED STATION MESSAGING (Releases 1 and 3 only)

Allows a station to set a Called Station Message for a group of stations.

TO SET A "CALLED STATION" MESSAGE FOR ANOTHER STATION OR GROUP OF STATIONS

- 1) Press the **MODE** button.
 - The LCD displays, MODE?
- 2) Dial **9 4**.
 - The LCD displays, MODE 94 DEST EKT NO.?
- 3) Dial the "destination" station's number (or enter 30 for all stations, or 31 ~ 34 for page groups).
 - The LCD displays, MODE 94 DEST EKT NO.NN.
- 4) Press the **PAGE** button.
 - The LCD displays, MODE 94 ORG EKT NO.?
- 5) Dial the "originating" station's number.*
 - The LCD displays, MODE 94 ORG EKT NO.NN.
- 6) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 7) Enter the desired message's number.
 - The LCD displays, the message.
- 8) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 9) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 10) Dial **0**.
 - The LCD displays, date/day/time.
- 11) The LCD displays, SENT NN M, at originating station.

MESSAGE SENDING (continued)

- 12) The originating station number and a message indication are displayed on the destination station LCD.

**Your number or another station number.*

TO RECEIVE CALLED STATION MESSAGE

- 1) Press the **INT** and **MW/FL** button.

CALLING STATION MESSAGING

TO SET A MESSAGE (ON YOUR LCD) THAT WILL BE RECEIVED BY LCD TELEPHONES THAT CALL YOUR TELEPHONE

- 1) Press the **MSG** button.
 - The MSG LED flashes.
 - The LCD displays, MSG NO.?
- 2) Dial the number of the message you want (see Note).
 - The selected message is displayed.
- 3) Press the **MSG** button.
 - The MSG LED lights steadily.

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

GROUP CALLING STATION MESSAGING

TO SET A CALLING STATION MESSAGE FOR ANOTHER STATION

- 1) Press the **MODE** button.
 - The LCD displays, MODE?
- 2) Dial **9 5**.
 - The LCD displays, MODE 95 DEST EKT NO.?
- 3) Dial the "destination" station number.
 - The LCD displays, MODE 95 DEST EKT NO.NN.
- 4) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 5) Enter the desired message number.
 - The LCD displays the message.
- 6) Press the **PAGE** button.
 - The LCD displays, MSG NO.?

MESSAGE SENDING (continued)

NOTE:

Group calling station messaging allows you to set a calling station message for only one station at a time.

- 7) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 8) Dial **0**.
 - Your LCD shows the time and date.
 - The message is displayed at the “destination” station.
 - Any station calling the “destination” station receives the message.

TO SET A MESSAGE IF YOU DO NOT HAVE A **MSG** BUTTON

- 1) Press the **INT** button.
 - The INT LED lights.
- 2) Dial **6 8**.
- 3) Dial the number of the message you want (see Note).
- 4) Press the **SPKR** button.
 - The INT LED goes out (your message is now stored).

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

TO CANCEL A MESSAGE THAT HAS BEEN SET AT YOUR STATION

Press the **MSG** button.

- The MSG LED goes out.

TO CANCEL A MESSAGE IF YOU DO NOT HAVE A **MSG** BUTTON

- 1) Press the **INT** button.
 - The INT LED lights.
- 2) Dial **6 8**.
- 3) Press the **SPKR** button.
 - The INT LED goes out.

NOTE:

A personal message (10 ~ 19) will remain stored in memory.

MESSAGE SENDING (continued)

BUSY STATION MESSAGING

(Releases 1 and 3 only)

When reaching a busy LCD station, a message can be sent to that station (an audible tone will be heard). The busy station may also return a message to the calling station's LCD. The two stations may continue this procedure to carry on a “silent” conversation.

TO SEND A MESSAGE TO A BUSY STATION

- 1) Call the desired station.
 - Listen for busy tone.
- 2) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 3) Dial **2**.
 - The LCD displays, OVER TO STNN MSG NO?
- 4) Enter the desired message number.*
 - The LCD displays the message.
- 5) Press the **PAGE** button.
 - The LCD displays, MSG SEND.
- 6) The destination station beeps four times and the message is displayed for 30 seconds, or until originating station hangs up.

*Personal (10 ~ 19) and system (60 ~ 99).

TO RETURN A MESSAGE (Within 30 Seconds) FROM THE BUSY STATION AFTER RECEIVING A “BUSY STATION” MESSAGE.

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO?
- 2) Dial **2**.
 - The LCD displays, OVER TO STNN MSG NO?
- 3) Enter the desired message number.*
 - The LCD displays the message.
- 4) Press the **PAGE** button.
 - The LCD displays, MSG SEND.

MESSAGE DIRECTORY

Messages are limited to 32 alphanumeric characters and are displayed in two rows of 16.

This directory is provided for reference and recording messages.

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

USER NAME/NUMBER DIRECTORY

NAME/NUMBERS are limited to 16 alphanumeric characters and are displayed on the top row of idle LCD stations and the bottom row of called LCD stations.

This directory is provided for station 200 reference and recording of other station NAME/NUMBERS.

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

SPEED DIAL MEMO DIRECTORY

Speed Dial memos are limited to 12 characters for the memo (top row of LCD) and 16-digits/pauses for the dial number (bottom row of LCD).

This directory is provided for recording Speed Dial numbers with memos.

* Code: 12-Character Memo: (Example)

*	1	0	-	M	E	M	O		H	E	R	E						
S	P	E	E	D					D	I	A	L	#		H	E	R	E

*			-											

*			-											

*			-											

*			-											

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INDEX

* Code:

12-Character Memo:

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TOSHIBA

**D I G I T A L
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U S E R G U I D E**

**B U S I N E S S
T E L E P H O N E
S O L U T I O N S**

STRATA® DK

**D I G I T A L K E Y
T E L E P H O N E S Y S T E M S**

**S T R A T A D K 2 4
D K 5 6 A N D D K 9 6
R E L E A S E 3**

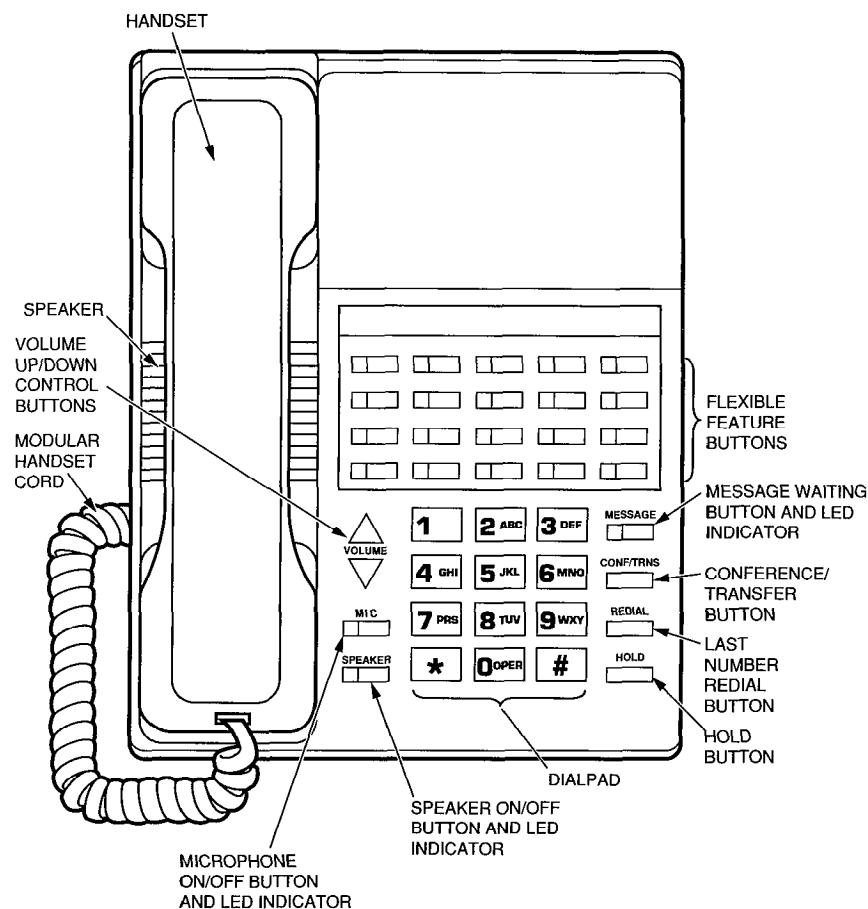


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20-button Digital Telephone

GENERAL INFORMATION

Toshiba digital telephones can access a wide range of useful features. This user guide provides brief, step-by-step instructions for each of these features, which are activated by access codes or feature buttons. It is possible that your digital telephone cannot access all of the listed features; this is because feature accessibility is assigned on a phone-by-phone basis in system programming.

Each digital telephone includes a dialpad, 26 feature buttons, and volume control up-and-down buttons. The feature buttons on each side of the dialpad are fixed, and their functions cannot be changed. The feature buttons above the dialpad are flexible and can be changed in programming.

All of the flexible feature buttons and some of the fixed feature buttons have LEDs. These LEDs indicate call status by their color and flash rate. Activated LEDs can be one of two colors, red or green. If a station user makes or receives a CO line or intercom call, the intercom or appropriate CO line LED on the telephone will be green. If a common CO line is accessed, the line's LED will be red at the stations not on the line. If a feature button is activated, its LED will be red.

This guide also contains a section on the Centrex Application, which enhances the system feature capability when installed behind a Centrex or PBX system.

NOTE:

Wherever a CO line is indicated, it can also be a Centrex and/or PBX line.

IMPORTANT!

Some of the features listed in this guide may not appear on your telephone due to hardware configuration or programming.

GENERAL INFORMATION

BUTTON DESCRIPTIONS

ACCOUNT CODE BUTTON **ACCOUNT**

Allows a station user to enter a voluntary account code anytime during a CO line call without interrupting the conversation.

ALARM RESET BUTTON **ALRM**

A station programmable option that will turn off the digital telephone alarm if connected to a facility alarm mechanism.

ALL CALL VOICE PAGE BUTTON **AC**

A single dedicated button that allows a station to voice page all of the digital/electronic telephones in the system simultaneously.

AUTOMATIC BUSY REDIAL BUTTON **ABR**

Allows the user to set up an Automatic Busy Redial after receiving busy tone on a dialed CO line call.

AUTOMATIC CALLBACK BUTTON **ACB**

Recalls a busy or Do Not Disturb station on intercom as soon as that station becomes idle. Also used for CO line queuing.

BACKGROUND MUSIC BUTTON **BGM**

Allows background music to be switched on/off the station speaker.

CALL FORWARD-ALL CALLS BUTTON **CFAC**

With this feature, all calls will forward to another station.

CALL FORWARD-BUSY BUTTON **CFB**

Whenever the called station is busy, this feature forwards calls to another station.

CALL FORWARD-BUSY/NO ANSWER BUTTON **CFB/NA**

Whenever the called station is busy or does not answer prior to a predetermined period, this feature forwards calls to another station. If the called station is busy, the calls forward immediately. All non-answered calls (station is not busy) forward after either three rings or 12 seconds, whichever occurs first.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

CALL FORWARD-NO ANSWER BUTTON **CFNA**

Whenever the called station does not answer after either three rings or 12 seconds, whichever occurs first, this feature forwards calls to another station.

CALL FORWARD-FIXED BUTTON **CFE**

Sets Call Forward to a station assigned in system programming.

NOTE:

CO line calls will forward only if the CO line is programmed to ring at one station. If a CO line is programmed to ring at more than one station, the CO line will not forward.

CALL PICKUP BUTTON **PKUP**

Initiates directed call pickup of CO line, intercom, and page calls.

CALL PICKUP BUTTONS **PKUP1** and **PKUP2**

If the system is shared by two tenants, the **PKUP1** button picks up Tenant 1 ringing CO line calls and the **PKUP2** button picks up Tenant 2 ringing CO line calls.

CENTRAL OFFICE LINE BUTTON **CO**

Accesses an outside line.

CONFERENCE/TRANSFER BUTTON **CONF/TRNS**

Sets up conference and transfer calls.

DATA BUTTON **DATA**

Allows manual dialing for internal data calls. See the *Data Interface User Guide*.

DATA RELEASE BUTTON **DRLS**

Releases data calls. See the *Data Interface User Guide*.

DIRECT STATION SELECTION BUTTON(S) **DSS**

Rings a preselected station. The LED associated with each **DSS** button provides the status (idle/busy) of the station assigned to the button.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

DO NOT DISTURB BUTTON **DND**

Locks the individual station in or out of the Do Not Disturb mode.

DOOR LOCK BUTTON **DRLK**

Controls a door lock mechanism.

FLASH BUTTON **FLASH**

Can be used to perform the following functions: Disconnect and recall dial tone on a CO line; access Centrex or PBX features; and enter a pause or flash signal when programming speed dial numbers.

HOLD BUTTON **HOLD**

Holds internal or outside calls.

INTERCOM BUTTON **INT**

Accesses an intercom line.

MESSAGE SELECT BUTTON **MSG**

Allows system and personal messages to be displayed on the 32-character Liquid Crystal Display (LCD).

MESSAGE WAITING BUTTON **MESSAGE**

The message LED flashes to indicate a message is waiting.

MICROPHONE BUTTON **MIC**

Controls the microphone off/on while telephone is in use.

MODEM BUTTON **MODEM**

Used to reserve a modem from a pool, to indicate that your telephone is connected to a modem, or that all modems in the pool are busy. See the *Data Interface User Guide*.

MICROPHONE CUTOFF BUTTON **MCO**

Allows a station to turn its microphone off/on while idle. Functional when station receives calls; the **MIC** button controls the microphone when the station originates calls.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

NIGHT TRANSFER BUTTON **NT**

Controls the system's CO line ringing pattern for after hours incoming calls.

PAUSE BUTTON **PAU**

Applies a 1/2- or 2-second pause when used in programming speed dial numbers (time is set in system programming).

PAUSE (LONG) BUTTON **PAU/L**

Inserts a 10-second pause when used in programming speed dial numbers.

POOLED LINE BUTTON **PL**

Allows a group of CO lines to appear under one button.

PRIVACY BUTTON **PRIVACY**

Blocks Privacy Override of CO lines from stations that have common CO line button appearances. This button does not block Busy and Executive Override.

PRIVACY RELEASE BUTTON **PRV RLS**

Releases privacy on a CO line so another station can enter the conversation.

REDIAL BUTTON **REDIAL**

Redials the last telephone number dialed.

RELEASE BUTTON **RLS**

This feature disconnects the existing call and places the station into an idle condition, whether the digital telephone is on- or off-hook.

SAVE BUTTON **SAVE**

Saves a telephone number after dialing and automatically redials that number when button is pressed in the idle state.

GENERAL INFORMATION

BUTTON DESCRIPTIONS (continued)

SPEAKER BUTTON **SPEAKER**

Turns the speaker on/off. The speaker button will also select a CO or intercom line if programmed for auto preference in system programming. Also, used to disconnect when the handset is in the cradle.

SPEED DIAL BUTTON **SD**

Provides single-button speed dial of a personally assigned telephone number.

SPEED DIAL (FIXED) BUTTON **SDF**

This button dials a pre-assigned number or Centrex/PBX feature access code.

SPEED DIAL SELECT **SDS**

Provides access to station or system speed dial numbers.

tone button **tone**

Changes the outgoing dialing of the CO line in use from dial pulse to tone signaling.

VOLUME CONTROLS

These two **VOLUME** buttons, left of the dialpad, control the ring, speaker, handset, and muted tone burst volume levels. The buttons consist of two arrows: one that points up, and one that points down. To increase any of the volume levels listed above, press the upward pointing arrow; to decrease any of the levels, press the downward pointing arrow.

IMPORTANT!

Either button must be held down for at least an eighth of a second for any volume change to occur. If either button is continually held down, the volume will continually change until the button is released.

GENERAL INFORMATION

VOLUME CONTROLS (continued)

TO ADJUST RING TONE (Also Controls Incoming Handsfree Intercom Volume Before Answer)

- 1) Ensure that the handset is on-hook.
- 2) Press the **VOLUME** button continuous ring tone will be heard.
- 3) Hold down the **VOLUME** button until the desired ring volume is set.

...or...

- 1) Press **INT** and dial **6102**.
 - The phone will ring for 15 seconds or until disconnected.
- 2) Hold down the **VOLUME** button until the desired ring volume is set.

TO ADJUST THE HANDSET VOLUME

While the handset is off-hook on an established call, press the **VOLUME** button until the desired volume is achieved.

TO ADJUST THE SPEAKER VOLUME (On-hook Call Origination, Intercom and CO Dial Tone; Incoming Handsfree Answerback after Answer; and BGM)

Press **INT** and then press the **VOLUME** button until desired volume is set.

...or...

While on an On-hook call, press the **VOLUME** button until desired volume is set.

TO ADJUST INCOMING INTERCOM HANDSFREE VOLUME

While receiving a handsfree intercom call, press the **VOLUME** button until the desired volume is set.

TO ADJUST MUTED TONE BURST*

- 1) Press the **INT** button and dial **6101**.
- 2) Press the **VOLUME** button until the desired volume is set.

* The muted tone burst is a warning-type tone that is used with a number of features, including Busy Override, Do Not Disturb Override, and Call Waiting. This tone warns or informs users that another party is calling their telephone when it is busy or in Do Not Disturb mode.

GENERAL INFORMATION

LED INDICATIONS

CO INCOMING CALL

A slow flash rate (1/2-sec. on—1/2-sec. off) indicates the CO/PBX line on which the call is ringing. The line's LED will be red on all stations with this button.

CONFERENCE

A very fast flash rate (10 impulses per second (IPS)) indicates the CO line presently in the Conference mode. Other stations' LEDs also show a steady (busy) indication for these lines. The line LED of the digital telephone that initiates the conference will be green. All other stations' LEDs will be red.

EXCLUSIVE HOLD

A very fast flash rate (10 IPS) indicates the CO line is placed on Exclusive Hold at the holding station. The LED is on steady (busy) on all other stations. The holding station's LED will be green, and other stations' LEDs will be red.

FLEXIBLE FEATURE BUTTON ACCESS

The LED of a flexible feature button (such as **PRIVACY**, **MCO**, **CFB/NA**, etc.) will be red at the station that activated it. Stations do not share these buttons with each other; therefore, other stations' LEDs will not be affected.

HOLD RECALL

A quick flash rate matching the tones (2 IPS for 1 sec.—10 IPS for 1 sec.) reminds a station which line has been on hold for the programmed period of time. The line LED of the holding station will be green during Hold Recall. All other stations' LEDs will be red.

INTERCOM CALL

A pulsating on/off flash rate (10 IPS for 1 sec. on—1 sec. off) appears on the INT LED at the station that is being called. The INT LEDs of the called and calling stations will be green during the ring state and the conversation. Both stations' MIC and SPEAKER LEDs will be red.

GENERAL INFORMATION

LED INDICATIONS (continued)

IN-USE

A steady, double flash rate (2 sec. on—1/8-sec. off—1/8-sec. on—1/8-sec. off) indicates the CO line presently in use at the station that originated the call. Other stations' LEDs are on steady for that time. The line LED will be green at the station that is participating in the CO call. Other stations' LEDs will be red.

ON-HOLD

A fast (4 IPS) flash rate (1/8-sec. on—1/8-sec. off) indicates the CO line placed on hold at the station. The LEDs of the CO line on hold flash at a medium rate (3/4-sec. on—1/4-sec. off) at the other stations. If using the Pooled Line button, the hold indication is only at the station that places the call on hold. The line LED will be green at the station that placed the call on hold. All other stations' LEDs will be red.

FEATURE USE

OUTSIDE CALLS

TO MAKE AN OUTGOING CALL (Direct Access)

- 1) Lift the handset.
- 2) Press any available **CO** line button (or **PL** button).
 - Listen for dial tone.
 - CO/PL LED flashes green at the In-use rate.
- 3) Dial the desired telephone number.
- 4) Hang up when the call is completed.

TO MAKE AN OUTGOING CALL (Dial Access)

- 1) Lift the handset.
- 2) Press the **INT** button.
 - Listen for intercom tone.
 - INT LED flashes green at In-use rate.
- 3) Dial CO line access code¹ _____.
 - Listen for CO dial tone.²
- 4) Dial desired number.
- 5) Hang up when the call is completed.

NOTES:

1. Dial **9** to access the general group or to use Least Cost Routing; or dial **7** and a CO line number (**01** ~ **36**); or dial **81** ~ **89** to access line group 1 ~ 8, respectively.
2. CO dial tone is not returned when dialing via LCR, dial **9**; intercom dial tone may be returned, depending on system programming.

TO RECEIVE AN INCOMING CALL

- 1) You hear a ringing tone.
 - CO LED flashes red at the CO Incoming Call rate.
- 2) Press **CO** line button and lift the handset.
 - CO LED flashes green at the In-use rate.
- 3) Hang up when the call is completed.

TO RECEIVE INCOMING CALLS WITH POOLED LINE BUTTON

- 1) Ringing tone is heard.
 - PL LED flashes red at the CO Incoming Call rate.

FEATURE USE

OUTSIDE CALLS (continued)

- 2) Lift the handset or press the **PL** button.
 - PL LED is on steady green.
- 3) A muted ringing indicates a new incoming call, or recall.
- 4) Transfer the present call or place it on hold.
- 5) Press and release the hookswitch to answer the next call.
- 6) Repeat steps 4 and 5 until all calls are completed.
- 7) Hang up.

NOTES:

1. A transfer to a busy station will automatically Camp-on.
2. If step 5 is performed before step 4, the current call is terminated.

ON-HOOK DIALING

TO MAKE AN OUTSIDE CALL

- 1) Leave the handset on-hook.
- 2) Press any available **CO** line button (or **PL** button) and listen for dial tone, or follow previous directions for Dial Access.
 - LED flashes green at the In-use rate.
- 3) Dial the desired telephone number.
- 4) Lift the handset when the distant party answers.*
- 5) Hang up when the call is completed.

TO MAKE AN INTERCOM CALL

- 1) Leave the handset on-hook.
- 2) Press the **INT** button.
 - INT LED flashes green at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.*
- 4) Lift the handset to converse.
- 5) Hang up when the call is completed.

*If busy tone is heard, press the **SPEAKER** button to disconnect.

FEATURE USE

GROUP LISTENING

Allows all persons present to hear the distant party's responses.

TO USE GROUP LISTENING

- 1) With the handset off-hook, press and hold the **SPEAKER** button then place the handset on-hook and release the **SPEAKER** button.
 - SPEAKER and MIC LEDs light and the distant party's voice is heard via the telephone's speaker.
- 2) When local response is required, lift the handset off-hook.
 - SPEAKER and MIC LEDs go off.
 - Telephone speaker is silenced.
 - Handset is activated.

AUTOMATIC OFF-HOOK SELECTION PROGRAMMABLE OPTION

Allows Automatic Off-hook Selection of either an intercom path, a CO line, or a CO line group. (The particulars must be programmed by your system administrator.)

NOTE:

The **SPEAKER** button also selects the designated line/group automatically.

TO MAKE A CALL

Lift the handset.

- You will be connected to the option programmed.

NOTE:

If you hear silence after going off-hook, you must press the **INT** button or a **CO** line button before making a call.

FEATURE USE

REPEAT LAST NUMBER DIALED

This feature enables you to automatically redial the last number called by pressing the **REDIAL** button. The **#** button serves the same function.

TO REDIAL LAST NUMBER CALLED

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.
- 3) Press the **REDIAL** (or the **#**) button.
 - The last telephone number you dialed will automatically be redialed.
- 4) Hang up when the call is completed.

AUTO BUSY REDIAL PROGRAMMABLE OPTION

After reaching a busy outside number, the system will automatically redial that number at programmed intervals.

TO USE AUTO BUSY REDIAL

- 1) Access any available CO line and dial the outside telephone number.
 - Receive busy tone.
- 2) Press the **ABR** button (or **CONF/TRNS 4 4**).
 - ABR LED blinks red (or hear confirmation tone).
- 3) Hang up (or press the **SPEAKER** button).
- 4) At programmed intervals (30 or 60 seconds), the system will redial the number (15 times maximum).
 - With each attempt, if busy, ABR will reset for next try.
- 5) When the connection is made and the called party is ringing:
 - CO (or INT) and SPEAKER LEDs blink green.
 - Ringing tone is heard.
- 6) Pick up handset (or press the **SPEAKER** button) and wait for party to answer.

FEATURE USE

AUTO BUSY REDIAL (continued)

TO CANCEL ABR

Press the **ABR** button (or **INT 4 4**).

NOTES:

1. *ABR will not be attempted while the station is busy on another call but will continue to time-out.*
2. *With each attempt:*
 - *The CO (or INT) and SPEAKER LEDs blink when the line is seized.*
 - *Dial tone is heard via the speaker.*
 - *Telephone number is redialed.*
 - *If busy, ABR will reset and try again.*
 - *If a connection is made, ring tone sounds until called party answers.*
 - *If the originating station does not pick up the handset (or press the **SPEAKER** button) after a connection is made (it will ring back three times), ACB mute ring sounds for 30 seconds and then the call disconnects.*

SPEED DIAL

TO CALL A SPEED DIAL NUMBER

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.
- 3) Press the **SDS** (or the *****) button (see Note).
- 4) Dial the 2-digit speed dial code for the desired telephone number.
 - Your system will automatically dial the number for you.
- 5) Hang up when the call is completed.

TO CHAIN DIAL AUTOMATICALLY

Dials two or more speed dial numbers during one call.

- 1) Lift the handset.
- 2) Press any available **CO** line button.
 - Listen for dial tone.

FEATURE USE

SPEED DIAL (continued)

- 3) Press the **SDS** (or the *****) button (see Note).
- 4) Dial the 2-digit speed dial code for the first telephone number to be dialed.
- 5) Press the **SDS** (or the *****) button.
- 6) Dial the 2-digit speed dial code for the second telephone number to be dialed.
- 7) Repeat the above steps for each subsequent number to be dialed.
 - Your system will automatically dial the number for you.
- 8) Hang up when the call is completed.

NOTE:

*If your telephone does not have an **SDS** button, the ***** button serves the same function.*

SPEED DIAL BUTTONS PROGRAMMABLE OPTION

After accessing a CO line, speed dial is available by pressing an **SD** button instead of a 2-digit access code. Each **SD** button stores one telephone number (up to 20 digits).¹

TO STORE A TELEPHONE NUMBER²

- 1) **Do not** lift the handset.
- 2) Press the **#** (or **REDIAL**) and ***** (or **SDS**) buttons, respectively.
- 3) Press the **SD** button you wish to use.
- 4) Dial the telephone number to be stored (20 digits maximum).³
- 5) Press the **#** (or **REDIAL**) button to record the number in memory.
- 6) Repeat the above steps for each **SD** button.

NOTES:

1. *Up to 37 digits by linking two speed dial numbers (see the link procedure that follows).*



FEATURE USE

SPEED DIAL BUTTONS PROGRAMMABLE OPTION (continued)

2. Repeat this procedure to replace the stored telephone numbers with new ones.
3. It may be necessary to insert a pause after the CO line access code to allow for dial tone delay. If so, press the **FLASH** (or **PAU**) button after entering the Centrex or PBX access code (see Telephone Number Storage-Pauses).
4. To store * or # DTMF tones in speed dial numbers, the telephone that is used to store the numbers must have the **SDS** button. These tones can be entered anywhere in a speed dial number.

SAVED NUMBER REDIAL PROGRAMMABLE OPTION

This feature enables you to store a dialed telephone number and later redial that number by pressing a single button.

TO SAVE A TELEPHONE NUMBER

- 1) Lift the handset.
- 2) Obtain dial tone.
- 3) Dial the desired telephone number.
- 4) Press the **SAVE** button.
 - The telephone number is saved for future use.

TO DIAL A SAVED TELEPHONE NUMBER

- 1) Lift the handset.
- 2) Obtain dial tone.
- 3) Press the **SAVE** button.
 - Saved number will be automatically dialed.

TELEPHONE NUMBER STORAGE

STORING A SYSTEM SPEED DIAL NUMBER

System speed dial telephone numbers can be stored in the system memory by station 200 only.

- 1) **Do not** lift the handset.

FEATURE USE

TELEPHONE NUMBER STORAGE (continued)

- 2) Press the **#** and ***** (or **REDIAL** and **SDS**) buttons, respectively.
- 3) Dial a 2-digit speed dial code.
 - System speed dial codes run consecutively from 60 ~ 99.
- 4) Dial the telephone number to be stored (20 digits maximum).
- 5) Press the **#** (or **REDIAL**) button to record the telephone number in memory.
- 6) Repeat the steps above with every telephone number to be stored (up to the maximum of 40).
- 7) Write down the speed dial codes and telephone numbers for future reference.

NOTE:

Repeat steps 1 ~ 5 to replace the stored telephone numbers with new ones.

TO STORE PAUSES (1/2- or 2-second/10-second) and FLASHES (Hookflash) ALONG WITH SPEED DIAL NUMBERS

- 1) Press the **PAU** (or **PAU/L**) button to store a pause. Pauses can be inserted anywhere in speed dial number.
- 2) Press the **FLASH** button to store a flash. The flash must be stored as the first entry, a flash cannot be stored after a digit is entered into the speed dial number.

NOTES:

1. If a **PAU** button is not available, the **FLASH** button will store a pause (flashes cannot be stored).
2. The **PAU** button is 1/2- or 2-seconds per system program assignments.
3. A 10-second pause is programmed using the **PAU/L** button.

FEATURE USE

TELEPHONE NUMBER STORAGE (continued)

STORING A STATION SPEED DIAL NUMBER

Speed dial telephone numbers can be stored by each station.

- 1) **Do not** lift the handset.
- 2) Press the **#** and ***** (or **REDIAL** and **SDS**) buttons, respectively.
- 3) Dial a 2-digit speed dial code.
 - Station speed dial codes run consecutively from 10 ~ 49.
- 4) Dial the telephone number to be stored (20 digits maximum).
- 5) Press the **#** button to record the number in memory.
- 6) Repeat the above steps with every number to be stored (up to the maximum of 40).
- 7) Write down the speed dial codes and telephone numbers for future reference.

TO LINK TWO SPEED DIAL NUMBERS UNDER ONE **SD** BUTTON

You can link a second number to a number stored in one of ten locations in the system speed dial memory (90 ~ 99). This allows up to 37 digits to be stored under one speed dial button or code. Any station can link any of its assigned speed dial numbers (10 ~ 49) to codes 90 ~ 99, however station 200 is required for linking codes 60 ~ 89. (All other procedures for entering numbers apply.)

- 1) Press the **#** and ***** (or **REDIAL** and **SDS**) buttons.
- 2) Dial an applicable 2-digit speed dial code (10 ~ 49 for all stations, 60 ~ 99 at station 200 only).
- 3) Press the ***** (or **SDS**) button.
- 4) Dial the 2-digit code to which this number will be linked (90 ~ 99).
- 5) Dial the number to be chained (17 digits maximum).
- 6) Press the **#** (or **REDIAL**) button to record the number in memory.

NOTE:

The number stored in location 90 ~ 99 will dial out first, followed by the number linked to it in location 10 ~ 49 or 60

FEATURE USE

TELEPHONE NUMBER STORAGE (continued)

~ 89. The company's special carrier access telephone numbers are normally stored in locations 90 ~ 99, allowing other numbers to be linked to them to dial both numbers using a one-button speed dial.

* AND # DTMF TONE DIALING

When the * or # tones must be output (for computer input service or other use), the speed dial feature must be disabled to permit manual dialing of the ***** and **#** buttons. (Applicable only if **SDS** and **RDL** buttons are *not* programmed.)

TO OUTPUT * AND # DTMF TONES

- 1) Lift the handset.
- 2) Press any available **CO** line button.
- 3) Dial any desired directory number.
- 4) To enable * and # tones to be sent, press ***#** first.

NOTE:

*Only manual dialing will be possible; the special * and # tones as well as digits 0 ~ 9 will be output as DTMF tones when dialed. The speed dial feature will be restored when the station is disconnected or placed on hold.*

TONE/PULSE DIALING PROGRAMMABLE OPTION

For some CO lines, calls must be made using rotary dial pulses. In order to access remote equipment requiring tones in these areas (such as automatic tellers or answering machines), you must change to DTMF tone sending after you have dialed the outside directory number.

Pressing the **TONE** button changes the dialing status of the CO line in use: TONE LED ON indicates DTMF tones are output; LED OFF indicates dial pulses are output.

FEATURE USE

TONE/PULSE DIALING PROGRAMMABLE OPTION (continued)

TO CHANGE TO TONE SENDING

After you have dialed a telephone number and the call is in progress, press the **TONE** button.

- TONE LED goes on.
- Pressing the dialpad buttons will cause DTMF tones to be transmitted.

NOTE:

After the **TONE** button is pressed, the Tone LED will remain on and DTMF tones will be sent when dialing until the call is released. When originating or receiving a new CO line call, the system automatically places the line in the dial pulse mode until the **TONE** button is used.

PRIVACY OVERRIDE PROGRAMMABLE OPTION

Allows stations with common CO lines to override an existing conversation by pressing the busy **CO** line button. Up to two stations maximum may override an existing CO line-to-station call (allowing a total of up to three stations being connected to an outside line).

TO ENTER AN EXISTING CALL BETWEEN A CO LINE AND ANOTHER STATION

Press the busy **CO** line button.

- An optional tone signal is heard by the connected parties prior to the new station entering the conversation.

NOTE:

To allow Privacy Override, the overriding station must be programmed with Privacy Override; or, the Privacy Release LED must be **on** at the talking station (see Privacy Release).

FEATURE USE

PRIVACY OVERRIDE (continued) PROGRAMMABLE OPTION

PRIVACY BUTTON PROGRAMMABLE OPTION

This option blocks any station programmed with Privacy Override from entering your CO line conversation by pressing a common CO line button.

TO MAKE ALL CO LINES ON YOUR STATION PRIVATE

Press the **PRIVACY** button.

TO CANCEL PRIVACY

Press the **PRIVACY** button again

NOTE:

Privacy will not block Busy Override or Executive Override.

PRIVACY RELEASE PROGRAMMABLE OPTION

On a private system, activating the **PRV RLS** button allows any other station to enter an in-progress CO line call (see Privacy Override).

TO USE PRIVACY RELEASE FEATURE

Press the **PRV RLS** button.

- PRV RLS LED goes on.
- Your station does not have CO line privacy.

INTERCOM CALLS

TO MAKE AN INTERCOM CALL (Voice First)

- 1) Lift the handset.
- 2) Press the **INT** button (see Note).
 - You hear intercom dial tone.

FEATURE USE

INTERCOM CALLS (continued)

- INT LED flashes green at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.
 - 4) Speak when the ring tone ends.
 - 5) Hang up when the call is completed.

NOTES:

1. See *Automatic Off-hook Selection*.
2. *Tone Signaling can be accomplished by dialing 1 after the station number.*

TO RECEIVE AN INTERCOM CALL

- 1) You hear a single long tone, followed by the caller's voice.
 - INT LED flashes green at the Incoming Call rate.
- 2) Lift the handset.
 - INT LED flashes green at the In-use rate.
- 3) Hang up when the call is completed.

HANDSFREE ANSWERBACK

TO RECEIVE AN INTERCOM CALL (HANDSFREE)

- 1) You will hear a single long tone, followed by the caller's voice.
 - INT LED flashes green at the Incoming Call rate.
 - MIC LED is on steady red, indicating your microphone is active.
 - SPEAKER LED flashes red.
- 2) Leave the handset on-hook.
- 3) Speak at a normal voice level in the direction of the telephone.

NOTE:

The **INT** button must be pressed (or the handset must be taken off-hook) before placing an intercom call on hold.

FEATURE USE

MICROPHONE CUT-OFF PROGRAMMABLE OPTION

The **MCO** button allows a station to turn its microphone off/on while idle. Handsfree Answerback is inoperable while the microphone is off.

TO USE MICROPHONE CUT-OFF

- 1) Press the **MCO** button.
 - MCO LED goes on.
 - Microphone is turned off.
- 2) Press the **MCO** button to turn the microphone on again.
 - MCO LED goes off.

OFF-HOOK CALL ANNOUNCE (OCA) OPTIONAL FEATURE

Allows a station user to call and speak to an off-hook, busy digital telephone through the speaker. The called digital telephone must be equipped for OCA capability.

TO USE OFF-HOOK CALL ANNOUNCE

- 1) Lift the handset.
- 2) Call the desired station.
 - Hear warning tone.
 - If busy tone is heard, dial 2.
- 3) Speak to called party (automatic OCA).

TO FORCE A DISCONNECT

A forced disconnect allows the called station to disconnect the OCA call.

- Press the **SPEAKER** button to disconnect an OCA caller.

NOTES:

1. *DND prevents OCA calls.*
2. *The **MIC** and **MCO** buttons can prevent the OCA caller from listening to your conversation.*

FEATURE USE

CALL TRANSFER WITH CAMP-ON

Allows you to transfer an outside call to a station that is either idle or busy.

TO TRANSFER A CALL

- 1) While connected to an outside call, press the **CONF/TRNS** button.
 - CO LED remains green, but changes to the Conference fast flash rate.
 - INT LED flashes at the In-use rate.
- 2) Dial the station number to which the call is to be transferred.
- 3A) If the called station is idle:
 - You hear a single ring tone.
- 4A) Announce the call.
- 5A) Hang up.
 - INT LED goes off.
 - CO LED remains green, but changes to the On-hold flash rate.
 - CO line rings the called station.¹
 - CO LED changes to steady red when the called station connects with the transferred call.
 - If the station fails to answer the call, you will receive a recall ring after a predetermined time.
... or ...
- 3B) If the called station is busy:
 - Busy tone is heard.
- 4B) Hang up.
 - INT LED goes off.
 - CO LED remains green, but changes to On-hold flash rate.
 - CO line is camped-on to the called station.¹
 - Called station hears a warning tone.
 - CO LED changes to steady red when the station connects with the transferred call.²

NOTES:

1. You may reconnect to a transferred line (anytime before it is answered) by pressing the appropriate **CO**

FEATURE USE

CALL TRANSFER WITH CAMP-ON (continued)

button or dial **INT 4 2** if the **CO** line does not appear on your telephone.

2. The call will recall you and camp-on is cancelled if the station does not pick it up within a predetermined time. Inform the caller of the situation, and repeat the procedure (if necessary).

TO ANSWER A TRANSFERRED CALL (if your station is idle)

- 1) Voice Signaling:
 - a) You will hear a single long tone, followed by an announcement.
 - INT LED flashes green at the Incoming Call rate.
 - b) Acknowledge the announcement.
 - c) When the transferring station hangs up, you will hear a ringing tone.
 - CO LED changes from red to green at the Incoming Call flash rate.
 - d) Press the appropriate **CO** button.
 - CO LED changes to the In-use flash rate.

NOTE:

If your digital telephone has the Ringing Line Preference feature, you may press the **SPEAKER** button or lift the handset instead of pressing the **CO** button.

- 2) Tone Signaling:
 - a) You will hear intercom ringing.
 - INT LED flashes green at the Incoming Call rate.
 - b) Lift the handset (or press the **SPEAKER** button).
 - INT LED changes to the In-use flash rate.
 - c) Speak to the transferring station.
 - d) You will be connected to the outside call when the transferring station hangs up.
 - INT LED goes off.
 - The LED of the transferred CO line changes to green at the In-use flash rate.

FEATURE USE

CALL TRANSFER WITH CAMP-ON (continued)

TO ANSWER A TRANSFERRED CALL (if your station is busy)

- 1) You will hear a 1-second warning tone.
 - The outside call is camped-on to your station.
 - CO LED flashes green at the On-hold rate.
- 2) You have several choices:
 - a) Press the appropriate **CO** button.
 - Existing call is terminated.
 - The new line is answered and its LED changes to the In-use flash rate.
... or ...
 - b1) Hang up.
 - Existing call is terminated.
 - The camped-on line rings at your station.
 - CO LED changes to the Incoming Call flash rate.
 - b2) Press the **CO** button (or lift the handset) to answer the call.
 - CO LED changes to the In-use flash rate.
... or ...
 - c1) Press the **HOLD** button (if conversing on a CO line).
 - Existing CO call is put on hold.
 - The camped-on line rings at your station.
 - CO LED changes to the Incoming Call flash rate.
 - c2) Press the **CO** button to answer the call.
 - CO LED changes to the In-use flash rate.

CONFERENCE CALLS

TO CONFERENCE UP TO TWO STATIONS AND TWO CO LINES, OR THREE STATIONS AND ONE CO LINE

Establish a CO line call using a CO line button, dial the appropriate access code, or you may already be talking on a CO line call.

TO ADD A SECOND CO LINE

- 1) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.

FEATURE USE

CONFERENCE CALLS (continued)

- CO LED flashes green at the Conference rate.
 - INT LED flashes green at the fast rate.
- 2) Access a second CO line¹ and dial the next telephone number.²
 - 3) Press the **CONF/TRNS** button after the party answers.
 - Both CO LEDs flash green at the In-use rate.
 - All parties will be conferenced.

NOTES:

1. Press a **CO** line button or dial an access code: 701 ~ 736, line number; 81 ~ 88, line group number; or, 9, LCR access code.
2. If you receive a busy tone or no answer, return to the original connection by pressing the **CO** button. If the line is not on your telephone, hang up and the original connection will recall you immediately.

TO ADD ANOTHER STATION

- 1) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LED flashes green at the Conference rate.
 - INT LED flashes green at the In-use rate.
- 2) Dial the number of the other station.¹
- 3) Press the **CONF/TRNS** button after the party answers.²
 - CO LED(s) will flash at the In-use rate.
 - All parties will be conferenced.
- 4) Repeat to add another party:
 - Three stations/one CO line maximum.
- 5) Hang up when conference call is completed.

NOTES:

1. If you receive a busy tone or no answer, return to the original connection by pressing the **CONF/TRNS** button.
2. The new station will not be conferenced unless the user lifts the handset or presses the **INT** button to answer.

FEATURE USE

CONFERENCE CALLS (continued)

TO CONFERENCE UP TO FOUR STATIONS ON ONE INTERCOM LINE

- 1) Establish a two-station intercom call.
- 2) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - INT LED flashes green at the Conference rate.
- 3) Dial the third station's number.
- 4) Press the **CONF/TRNS** button after the party answers.
 - INT LED flashes at the In-use rate.
 - All parties will be conferenced.
- 5) To add the fourth party, repeat steps 2 ~ 4.

CALL FORWARD-ALL CALLS

For Intercom and CO line calls (all calls will forward to a selected station at all times—your station will not ring when called).

TO SET CALL FORWARD-ALL CALLS

- 1) Press the **CFAC** button (or dial **INT 6 0 1**).
 - CFAC LED flashes (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 1** was dialed.
- 3) Press the **CFAC** (or **SPEAKER**) button.
 - CFAC LED on steady red.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-ALL CALLS

Press the **CFAC** button (or dial **INT 6 0 1**).

- CFAC LED goes off (or hear confirmation tone).
- Press **SPEAKER** button if **INT 6 0 1** was dialed.

NOTE:

If call forward is set:

- CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
- CO line calls transferred to your station will forward.
- Intercom calls will forward.

FEATURE USE

CALL FORWARD-ALL CALLS (continued)

- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL FORWARD-BUSY

When your station is busy, all calls will forward immediately. When your station is idle, calls will ring at your station as usual.

TO SET CALL FORWARD-BUSY

- 1) Press the **CFB** button (or dial **INT 6 0 2**).
 - CFB LED flashes red (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 2** was dialed.
- 3) Press the **CFB** (or **SPEAKER**) button.
 - CFB LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-BUSY

Press the **CFB** button (or dial **INT 6 0 2**).

- CFB LED goes off (or hear confirmation tone).
- Press **SPEAKER** button if **INT 6 0 2** was dialed.

NOTE:

If call forward is set:

- CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.
- CO line calls transferred to your station will forward.
- Intercom calls will forward.
- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL FORWARD-NO ANSWER

For Intercom and CO line calls (all calls will forward to a selected station whenever your telephone is not answered within 12 seconds or three rings, whichever occurs first).

FEATURE USE

CONFERENCE CALLS (continued)

TO SET CALL FORWARD-NO ANSWER

- 1) Press the **CFNA** button (or dial **INT 6 0 3**).
 - CFNA LED flashes red (or hear confirmation tone).
- 2) Dial the station number to which calls will forward
 - Listen for confirmation tone if **6 0 3** was dialed.
- 3) Press the **CFNA** (or **SPEAKER**) button.
 - CFNA LED on steady.
 - Calls will forward to stored station number.

TO CANCEL CALL FORWARD-NO ANSWER

- Press the **CFNA** button (or dial **INT 6 0 3**).
- CFNA LED goes off (or hear confirmation tone).
 - Press **SPEAKER** button if **INT 6 0 3** was dialed.

NOTE:

If call forward is set:

- *CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.*
- *CO line calls transferred to your station will forward.*
- *Intercom calls will forward.*
- *Call forward redirects the station hunt feature.*
- *Call forward must be set before the call is received.*

CALL FORWARD-BUSY/NO ANSWER

For Intercom and CO line calls (all calls will forward immediately to a selected station whenever your telephone is busy, or if not answered calls will forward within 12 seconds or three rings, whichever occurs first).

TO SET CALL FORWARD-BUSY/NO ANSWER

- 1) Press the **CFB/NA** button (or dial **INT 6 0 4**).
 - CFB/NA LED flashes red (or hear confirmation tone).
- 2) Dial the station number to which calls will forward.
 - Listen for confirmation tone if **6 0 4** was dialed.
- 3) Press the **CFB/NA** (or **SPEAKER**) button.

FEATURE USE

CALL FORWARD-BUSY/NO ANSWER (continued)

- CFB/NA LED on steady.
- Calls will forward to stored station number.

TO CANCEL CALL FORWARD-BUSY/NO ANSWER

- Press the **CFB/NA** button (or dial **INT 6 0 4**).
- CFB/NA LED goes off (or hear confirmation tone).
 - Press **SPEAKER** button if **INT 6 0 4** was dialed.

NOTE:

If call forward is set:

- *CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.*
- *CO line calls transferred to your station will forward.*
- *Intercom calls will forward.*
- *Call forward redirects the station hunt feature.*
- *Call forward must be set before the call is received.*

CALL FORWARD-FIXED

All intercom and CO line calls to your station will forward to a predetermined station or voice mail device. The "Forward to" station/device is determined (Fixed) in system programming for each station. Your station will not ring when Call Forward-Fixed is set.

TO USE FIXED CALL FORWARD (ALL CALLS)

- 1) Press the **CFF** button.
 - CFF LED on steady red.
 - All calls will forward to the fixed programmed station.
- 2) To cancel, press the **CFF** button again.
 - CFF LED off.

NOTE:

If call forward is set:

- *CO lines that ring your station **only** will forward—CO lines that ring more than one station will not forward.*

FEATURE USE

CALL FORWARD-FIXED (continued)

- CO line calls transferred to your station will forward.
- Intercom calls will forward.
- Call forward redirects the station hunt feature.
- Call forward must be set before the call is received.

CALL HOLDING

TO HOLD A CALL (CO line or **INT** button appears on your station)

While connected to a CO line or intercom call, press the **HOLD** button.

- CO or intercom LED flashes green at the On-hold rate.
- To reconnect the call, press the **CO** or **INT** button on hold.

NOTE:

Regarding handsfree answerback, an intercom call must be answered by pressing the **INT** button or lifting the handset before it can be placed on hold.

TO HOLD/PARK A CALL AND PLACE ANOTHER CALL (CO line does not appear on your station)

- 1) While connected to a CO or intercom call press the **CONF/TRNS** button and dial **4 1**.
- 2) To make another call, press the **INT** or a **CO** button and dial the desired number.
- 3) Hang up or press the **SPEAKER** button when the call is completed.
- 4) To retrieve the held call made in step 1, press the **INT** button and dial **4 2** (see Note 3).

NOTES:

1. The on-hold recall tone will be heard within a predetermined time.
2. The held call may be released automatically if the other party hangs up (if the CO provides a hold-release signal).
3. When a CO line is placed on hold, it may be picked up from any station:

FEATURE USE

CALL HOLDING (continued)

- Press a **CO** button with common appearance.
- Press the **INT** button and dial **5 + N** (N = the holding station's intercom number).
- Press the **INT** button and dial **5 7 + N** (N = the holding CO line's number—01 ~ 36).

EXCLUSIVE HOLD

TO USE EXCLUSIVE HOLD (CO line must appear on your station)

While connected to an outside call, press the **HOLD** button twice.

- CO LED flashes green at a fast (10 IPS) rate.
- To reconnect the call, press the **CO** button that is on hold.

NOTE:

When a CO line is placed on Exclusive Hold, it may be picked up at another station by dialing **5** and the station number that placed the call on Exclusive Hold; however it cannot be picked up by pressing a common **CO** button at another station.

CALL PICKUP

TO PICK UP RINGING CO LINE (Tenant 1/Tenant 2 Line Groups)

Press the **PKUP1** or **PKUP2** button (or press the **INT** button and dial **5 9**).

TO DIRECT PICK UP ONE OF THE FOLLOWING

- 1) Station: Press the **PKUP** button + station number (intercom, ringing or held CO line).
- 2) Intercom Page: Press the **PKUP** button + **3 0**.
- 3) External Page: Press the **PKUP** button + **3 5**.
- 4) CO line on hold: Press the **PKUP** button + **7 □ □** (□ □ = CO line number: 01 ~ 36).
- 5) Any ringing CO line: Press the **PKUP** button + **9**.

FEATURE USE

CALL PICKUP (continued)

NOTE:

If a **PKUP** button is not available, press **INT** + **5** instead of the **PKUP** button.

DO NOT DISTURB

Allows you to prevent incoming calls from accessing your station. You can still make outgoing calls.

TO USE DO NOT DISTURB MODE

Press the **DND** button.

- DND LED goes on steady red.

TO RELEASE THE DO NOT DISTURB MODE

Press the **DND** button.

- DND LED goes off.

NOTES:

1. Do Not Disturb prevents Off-hook Call Announce.
2. Outside calls will mute ring your station while in the DND mode.

AUTOMATIC CALLBACK (INTERCOM)

After reaching a busy or DND station on an intercom call, you may use Automatic Callback.

TO USE AUTOMATIC CALLBACK

- 1) Press the **ACB** button (or dial **4**) to set Automatic Callback.
 - Busy tone stops.
 - You will hear dial tone for two seconds and then busy tone again.
- 2) Go on-hook. You may make other calls while waiting for the called station to become available.
- 3) When the called station becomes idle:
 - Your telephone rings at a fast rate.

FEATURE USE

AUTOMATIC CALLBACK (INTERCOM) (continued)

- 4) Answer the call within nine seconds to prevent the callback from being cancelled.
 - You hear a single tone, as if making a regular intercom call.
- 5) Proceed to voice announcement.
- 6) Proceed with the conversation.

NOTES:

1. You may cancel the request anytime prior to the callback by pressing the **ACB** button (or press the **INT** button and dial **4 3**).
2. If, after answering a callback, you hear a busy tone, it means the called party has already received or originated another call. Your request is not cancelled. You will be called again the next time the station becomes idle.

CO LINE QUEUING

Provides a means for station users to be placed in a waiting queue for a busy outgoing CO line group, and to be called back when a CO line in the group is available.

TO USE CO LINE QUEUING

- 1) If all outgoing lines are busy, you will hear busy tone.
- 2) Press the **ACB** button (or dial **4**) to set Automatic Callback.
 - Busy tone stops. You will hear dial tone for two seconds and then busy tone again.
 - You may go on-hook or make other calls while waiting for a trunk to become available.¹
- 3) When a CO line becomes idle:
 - Your telephone rings at a fast rate.
 - CO LED flashes green at the Incoming Call rate.
- 4) Lift the handset within six seconds to prevent the callback from being cancelled.²
 - You hear CO dial tone.³
 - CO LED flashes at the In-use rate.

FEATURE USE

AUTOMATIC CALLBACK (INTERCOM) (continued)

- 5) Dial the desired telephone number.²
- 6) Hang up when the call is completed.

NOTES:

1. You may cancel the request at any time prior to the actual callback by pressing the **INT** button and dialing **4 3** (or press the **ACB** button).
2. If the original call was made using LCR (dial **9**), the telephone number is automatically dialed in step 4.
3. If, after answering a callback, you hear a busy tone, it means the trunk has already been seized or received an incoming call. Your request is not cancelled. You will be called again the next time a trunk becomes idle.

ACCOUNT CODE CALLS

On some calls, you may be required (forced) to dial an account code before dialing an outside number. On other calls, you may wish to record an account code voluntarily after either dialing an outside number or receiving an incoming call. The code you enter will be recorded on the Station Message Detail Recording (SMDR) printout with the details of your call. Account codes may be verified or nonverified.

TO RECORD A FORCED ACCOUNT CODE (Outgoing Calls Only)

- 1) Access a CO line.¹
 - You hear dial tone.²
- 2) Dial the ____-digit account code with the dialpad.
 - Dial tone stops after you dial the first digit.
 - You will hear dial tone after you press the last digit of a valid account code.
... or ...
 - You will hear busy tone after you press the last digit of an invalid code.
- 3) Dial the outside directory number.

FEATURE USE

ACCOUNT CODE CALLS (continued)

NOTES:

1. Press a **CO** button, dial a CO line access code, or dial **9** to call via LCR.
2. If calling via LCR, CO dial tone will not be returned.
3. Unless you dial the correct number of digits, you will not receive dial tone.
4. Any digits dialed after the code will be treated as part of the outside directory number.

EMERGENCY OVERRIDE OF FORCED ACCOUNT CODE DIALING REQUIREMENTS

Forced account code requirements can be bypassed by three emergency numbers, including 911. See your system administrator for these numbers:

- 1) 911 2) 3)

TO RECORD A VOLUNTARY ACCOUNT CODE (Incoming or Outgoing)

- 1) Anytime during the call, dial ***50** or press the **ACCOUNT** button (the conversation will not be interrupted).
- 2) Dial the account code.
 - If the code is valid, you will hear a confirmation burst tone (1/2 second duration).
... or ...
 - If the code is invalid, you will hear two short confirmation burst tones. Repeat steps 1 and 2 to dial another account code, or hang up.
... or ...
 - If the code is nonverified, you will not hear a confirmation tone.

NOTE:

Confirmation tones are inaudible to the other party.

FEATURE USE

ACCOUNT CODE CALLS (continued)

TO ADD, DELETE, OR CHANGE VERIFIED ACCOUNT CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING

- 1) Press **INT** and dial the verified account code change access code □ □ □ (see Note).
 - You will hear confirmation tone.
- 2) Dial the three-digit verified account code number □ □ □ (000 ~ 299).
- 3) Dial the verified account code □ ... □ (1 ~ 15 digits).
- 4) Press the **#** or **REDIAL** button to store the code.
 - You will hear confirmation tone.
- 5) Repeat steps 1 ~ 4 to enter more verified account codes.

NOTE:

For security reasons the account code change access code is not given in this guide. Contact your telephone system maintenance provider for this access code.

PAGING

TO PAGE

- 1) Lift the handset.
- 2) Press the **INT** button and dial the following:
 - 30** = All Call (electronic and digital telephones only)
 - 31** = Station Group #1
 - 32** = Station Group #2
 - 33** = Station Group #3
 - 34** = Station Group #4
 - 39** = All Call (with External Page)*
 - 35** ~ **38** = External Page Zones (1 ~ 4)*
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.
**Programmable Option*

TO PAGE ALL CALL TO DIGITAL AND ELECTRONIC TELEPHONES ONLY

- 1) Lift the handset.

FEATURE USE

PAGING (continued)

- 2) Press the **AC** button.
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

NOTE:

The **AC** button does not access external page speakers.

DOOR PHONE

TO ANSWER THE DOOR PHONE

- 1) You hear a distinctive ringing tone.
- 2) Lift the handset.
 - INT LED lights.
 - You are connected to the door phone.
- 3) Hang up when the call is completed.

TO CALL/MONITOR A DOOR PHONE

- 1) Lift the handset.
- 2) Press the **INT** button.
 - You hear intercom dial tone.
 - INT LED flashes at the In-use rate.
- 3) Dial the intercom number for the desired door location.

151	Location	_____
152	Location	_____
153	Location	_____
154	Location	_____
155	Location	_____
156	Location	_____
157	Location	_____
158	Location	_____
159	Location	_____
161	Location	_____
162	Location	_____
163	Location	_____

- 4) Hang up when the call is completed or when you no longer wish to monitor the door phone.

FEATURE USE

DOOR PHONE (continued)

TO USE A DOOR PHONE

- 1) Press the button and then release it.
 - You hear a distinctive ringing tone.
- 2) When answered, speak at a normal voice level in the direction of the door phone.

HANDSFREE MONITORING

Calls placed on hold by the distant party may be monitored handsfree.

TO USE HANDSFREE MONITORING

- 1) While connected to a call, press and hold the **SPEAKER** button.
- 2) Place the handset on-hook.
- 3) Release the **SPEAKER** button.
 - Sounds from the distant party are heard via the telephone's speaker.
- 4) Lift the handset to continue the conversation when the distant party returns.

ALARM RESET

A programmable option used with an optional alarm system to cause an alarm signal on the system's electronic telephone. Pressing the **ALARM** button resets the alarm signal on the telephones.

BACKGROUND MUSIC (BGM)

If a BGM music source is connected to your system, you may listen to background music via your station's speaker, or over the external page speakers.

TO LISTEN TO BGM ON YOUR TELEPHONE SPEAKER

Press the **INT** button and dial **481** (or press the **BGM** button).

- Adjust volume with the **VOL** control on the front of your phone.

FEATURE USE

BACKGROUND MUSIC (BGM) (continued)

TO CANCEL BGM ON YOUR TELEPHONE SPEAKER

Press the **INT** button and dial **480** (or press the **BGM** button).

TO CONTROL BGM VOLUME

- 1) Press the **INT** button.
- 2) Press the **VOLUME** button and adjust to the desired level while listening to system Intercom tone.
- 3) Press **SPEAKER** after setting volume level.
 - The relative volume level of BGM will be the same as Intercom tone.

BACKGROUND MUSIC OVER EXTERNAL SPEAKERS

NOTE:

Station number 200 is the only station that can turn External BGM on/off.

TO ALLOW BGM OVER EXTERNAL PAGE

Press the **INT** button and dial **491**.

TO CANCEL BGM OVER EXTERNAL PAGE

Press the **INT** button and dial **490**.

DIRECT INWARD SYSTEM ACCESS (DISA)

When calling into your system from the outside on certain telephone lines.

TO MAKE A DIRECT INWARD STATION CALL USING DISA

- 1) Using a DTMF telephone, call the DISA CO line telephone number: _____ - _____.
- 2) Listen for the ringback tone signal, and then listen for the intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the intercom number of the desired station.
 - You will be connected when the station answers²,
... or ...

FEATURE USE

DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

- If you receive busy tone or wish to dial another number while ringing the station, press the **#** button to receive dial tone, allowing another number to be dialed.

TO CALL THROUGH YOUR SYSTEM ON AN OUTGOING CO LINE USING DISA

- 1) Using a DTMF telephone, call the DISA CO line telephone number: _____.
- 2) Listen for the ringback tone signal, and then listen for the STRATA DK intercom dial tone¹ (if busy tone is received, try again).
- 3) Dial the access code³ () of the CO line or CO line group that is to be used to place the outgoing call.
- 4A) If a DISA security code is required⁴, dial the code and listen for CO dial tone.⁵
- 4B) If a DISA security code is not required, listen for CO dial tone.
- 5) After receiving CO dial tone, dial the desired telephone number.
- 6) A timer tone will sound⁶ approximately four minutes after the time the call was made. Dial **0** to reset the timer⁷ each time the tone sounds (this allows an additional four minutes of conversation).
- 7) Hang up when the call is completed.

NOTES:

1. Dial tone will be present for 10 seconds to allow direct dialing of station intercom number or CO line access code. If a number is not dialed, the system automatically causes the DISA CO line to ring at telephones as a normal incoming call. However, if the call is not answered within 15 seconds after the ringing starts, it will disconnect.
- 2A. If the station does not answer after six rings or twenty-four seconds, whichever comes first, busy tone will be sent. Dial **#** to return to dial tone and dial the same or another number.

FEATURE USE

DIRECT INWARD SYSTEM ACCESS (DISA) (continued)

- 2B. If you wish to call another station after completing a DISA station call, it is necessary for the internal party to transfer your call.
3. A direct CO line or line group access code must be dialed (701 ~ 736 or 81 ~ 88). The LCR code (9) is not allowed.
4. The DISA security code is a system program option that may or may not be required.
5. If the correct code is not entered, the call will be disconnected.
6. All parties will hear the timer tone and timer reset DTMF tone.
7. If the timer is not reset, the call will disconnect approximately one minute after the timer tone is sent.
8. Station and System Page cannot be accessed on DISA calls.

DISA SECURITY CODE ENTRY/CHANGE/CANCEL

From designated station(s) only.

- 1) Press the **INT** button and dial **□□□** (3-digit access code).
 - Receive confirmation tone.
- 2) Dial the new DISA security code² (**□ ... □**—1 ~ 15 digits).
- 3) Press the **#** (or **REDIAL**) button.
 - Receive confirmation tone.

NOTES:

1. For security purposes; the 3-digit access code is not published, it is available from your telephone system maintenance provider.
2. If a DISA security code is not entered in step 2, the security code will be cancelled and outgoing line access via DISA will not require a security code.

DIRECT STATION SELECTION BUTTONS (HOTLINE) PROGRAMMABLE OPTION

Allows stations to be connected directly by pressing a **DSS** button. The button's LED independently shows the status (idle/

FEATURE USE

DIRECT STATION SELECTION BUTTONS (HOTLINE) PROGRAMMABLE OPTION (continued)

busy) of that station. If connected to a CO line, pressing this button will put the party on hold. Transfer the call as you would normally, by voice announcing or camping on by hanging up.

DOOR LOCK

Pressing the **DRLK** button momentarily activates a switch connected to a door lock or similar device.

Door Lock Button	Location
DRLK 0	_____
DRLK 1	_____
DRLK 2	_____
DRLK 3	_____
DRLK 4	_____

MESSAGE WAITING

If someone calls your telephone and you are unable to answer, the calling party may set the Message Waiting indicator (a flashing red LED) on your telephone.

The Message Waiting indicator is the MESSAGE LED.

Up to four Message Waiting indications may be queued on the message indicator at one time. One of the four message indications is always reserved for the Message Center; the other three may be set from any other telephone or voice mail device.

TO ANSWER A MESSAGE WAITING INDICATION ON YOUR TELEPHONE

- 1) If the MESSAGE LED is flashing on your telephone: Lift the handset, press the **INT** and **MESSAGE** buttons, respectively.
 - This calls the station that set the message indicator.
 - Wait for an answer to receive the message.

FEATURE USE

MESSAGE WAITING (continued)

NOTE:

If there is no answer, hang up and try at a later time (the MESSAGE LED continues to flash).

- 2) After receiving the message, place the handset on hook.
 - If the MESSAGE LED turns off, you have no more messages.
 - If the MESSAGE LED continues to flash, you have more messages—repeat steps 1 and 2 to retrieve them.
 - If the flashing message LED was turned on by a voice mail device, the device will cancel the indication after a short delay. The cancel time depends on the voice mail device's parameters.

NOTE:

*If your telephone does not have a **MESSAGE** button, dial **INT 4 0 8**.*

TO SET THE MESSAGE WAITING INDICATOR ON ANOTHER TELEPHONE

- 1) At your telephone: Lift the handset, press the **INT** button and dial the desired intercom number.
- 2) If the called telephone does not answer: Press the **MESSAGE** button to set the message indication (or dial **7**).
 - The MESSAGE LED flashes at the called telephone.
 - The MESSAGE LED illuminates steady at your telephone.
- 3) Place the handset on-hook.
 - The MESSAGE LED flashes at the called telephone.
 - The MESSAGE LED turns off at your station.
 - The MESSAGE LED continues to flash at the called telephone.

TO CANCEL THE MESSAGE WAITING INDICATION SET FROM YOUR TELEPHONE

Lift the handset, dial the intercom number of the telephone that

FEATURE USE

MESSAGE WAITING (continued)

has the message indication, and press the **MESSAGE** button twice (or dial **77**).

TO CANCEL THE MESSAGE WAITING INDICATION SET ON YOUR TELEPHONE

- 1) Answer the Message Waiting indication and receive the message.

NOTE:

The called party must answer (off-hook or **SPEAKER** button) for the message indication to be canceled.

... or ...

- 2) Press the **MESSAGE** button (do not press the **INT** button first).

NOTE:

If your telephone does not have a **MESSAGE** button, the message indication can be canceled by dialing **INT 409**.

NIGHT TRANSFER PROGRAMMABLE OPTION

On an optional basis, your system can function with two or three ringing patterns. If three patterns are selected, they are designated **DAY**, **DAY 2**, and **NIGHT**. If only two patterns are selected, **DAY** and **NIGHT** designations are used.

In both cases, different ringing patterns are chosen by pressing the **NT** button. Certain CO lines may be enabled in system programming to switch from normal operation to DISA line operation.

The active pattern is shown by the state of the NT LED as follows:

	Three-pattern	Two pattern
DAY	OFF	OFF
DAY 2	FLASH	N/A
NIGHT	ON	ON

FEATURE USE

OVERRIDE CALLS

TO INITIATE A BUSY OVERRIDE SIGNAL

After reaching a busy station, you may signal that station that a call is waiting by dialing **2**.

- A tone signal is heard at the busy station.

NOTE:

If the Off-hook Call Announce option is installed on the busy station, then you may talk.

TO OVERRIDE DND (Programmable Option For Selected Stations)

After reaching a DND station, you may signal that station that a call is waiting by dialing **2**.

- A tone signal is heard at the DND station.

TO INITIATE EXECUTIVE OVERRIDE (Programmable Option For Selected Stations)

After reaching a busy station, Executive Override allows you to enter an established conversation by dialing **3**.

- An optional tone signal is heard by the called parties prior to entering the conversation.

NOTE:

Privacy Override and Off-hook-Call Announce are described in separate sections of this guide and are listed in the index.

SPEAKERPHONE (DKT 1020SD ONLY)

TO MAKE AN OUTSIDE CALL (On-hook Dialing)

- 1) Leave the handset on-hook.
- 2) Press any available **CO** button (or the **INT** button + access code).
 - Listen for dial tone.
 - CO LED flashes green at the In-use rate.
- 3) Dial the desired telephone number.

FEATURE USE

SPEAKERPHONE (continued)

- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPEAKER** button when the call is completed to disconnect.

TO RECEIVE AN INCOMING CALL

- 1) You hear a ringing tone.
- 2) Leave the handset on-hook.
- 3) Press the **CO** button next to the flashing red LED (CO Incoming Call rate).
 - CO LED flashes at the In-use rate.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPEAKER** button when the call is completed to disconnect.

TO MAKE AN INTERCOM CALL (On-hook Dialing)

- 1) Leave the handset on-hook.
- 2) Press the **INT** button.
 - Listen for intercom dial tone.
 - INT LED flashes green at the In-use rate.
- 3) Dial the desired station number.
 - You hear a single ring tone.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Press the **SPEAKER** button when the call is completed to disconnect.

MICROPHONE CONTROL

The **MIC** button is used to switch the digital telephone's microphone from on to off or vice versa while the telephone is in use (also see Microphone Cut-off—**MCO** button). The red MIC LED indicates the status of the microphone:

LED	MICROPHONE
ON	ON
OFF	OFF

FEATURE USE

MICROPHONE CONTROL (continued)

All digital telephones can answer intercom calls handsfree (on-hook) via the microphone, but only a speakerphone can talk handsfree when originating CO line or intercom calls while on-hook.

The microphone and accompanying LED are always ON when receiving intercom calls to allow handsfree answerback, and may be on or off when beginning to place an on-hook CO line or intercom call.

- Each station's microphone may be set in system programming to be on or off at the start of handsfree dialing.
- Each station's **MIC** button may be set in system programming to switch on/off with one touch or to switch on/off only while pressed.

NOTES:

1. To change from speakerphone to handset:
 - Lift handset.
2. To change from handset to speakerphone:
 - Press and hold the **SPEAKER** button.
 - Return handset on-hook.
 - Release the **SPEAKER** button.
3. The **MIC** and **MCO** buttons function on off-hook call announce calls for privacy.

TWO (TANDEM) CO LINE CONNECTION

TO ESTABLISH A TANDEM CO LINE CONNECTION (TRK-TRK)

- 1) While connected on an established CO line call (incoming or outgoing).¹
- 2) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LED flashes green at the Conference rate.
 - INT LED flashes green at the In-use rate.
- 3) Access a second CO line and dial the next telephone number.¹
- 4) Press the **CONF/TRNS** button after the party answers.²

FEATURE USE

TWO (TANDEM) CO LINE CONNECTION (continued)

- CO LEDs flash green at the In-use rate.
 - All parties will be conferenced.
- 5) Press the **CONF/TRNS** button.
 - You hear intercom dial tone.
 - CO LEDs flash green at the Exclusive Hold rate (10 IPS).
 - INT LED flashes at the In-use rate.
 - 6) Hang up.
 - Both CO LEDs continue flashing at the Exclusive Hold rate.
 - INT LED goes off.
 - COs are connected and in Exclusive Hold on your station.
 - Connection is released automatically when parties hang up.³

On some systems, the connection must be supervised and released as follows:

- 1) Press either **CO** button.
 - Both CO LEDs flash at the In-use rate.
 - You will be connected to both CO lines.
- 2) If the parties have hung up, go back on-hook.
 - Both CO LEDs go off.
 - Connection is released.
- 3) If the parties are still talking, proceed to step 5 above.

NOTES:

1. CO lines may be accessed by pressing a **CO** line button or by dialing access codes (line number, 701 ~ 736; line group, 81 ~ 88; or, LCR access 9); however, both CO lines must appear (buttons) on the telephone to allow the station to monitor the tandem connection.
2. If you receive a busy tone or no answer, return to the original connection by pressing the original **CO** line button.
3. Depends on the public telephone company; some provide auto disconnect and some do not.

FEATURE USE

TIMED REMINDERS

Allows five separate reminders to be set at each station. These reminders will be an audible beeping at the times (hour and minute) set by the station user. They can occur just once or repeated on a daily basis.

TO ENTER A TIMED REMINDER

- 1) Dial **INT + 605 ~ 609**. You have a choice of five different reminders.
- 2) Enter the desired time (24-hour clock format; i.e., HHMM).
- 3) Dial **0** if reminder will be repeated every day, or **1** if it is a one-time reminder only.
- 4) Press **#** (or **REDIAL**) button to record the time in memory.
 - A beeping tone will be heard for 30 seconds (or until cancelled by going off-hook) when the hour and minute occur.

TO CANCEL A TIMED REMINDER

- 1) Dial **INT + 605**.
- 2) Press **#** (or **REDIAL**).

NOTE:

Repeat for reminders **606 ~ 609**.

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS

Toll restriction at a station can be completely overridden, or the station's normal class can be changed to another class (traveling class). Use the following procedure to completely override or to change a station's toll restriction class.

TO OVERRIDE TOLL RESTRICTION AT A STATION FOR A SINGLE CALL

- 1) Lift the handset.
- 2) Press a Toll Restricted **CO** button.*
 - Listen for dial tone.
 - CO LED flashes at the In-use rate.
- 3) Press the **CONF/TRNS** button and dial **47**.

FEATURE USE

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS (continued)

- You no longer hear dial tone.
- 4) Dial the Toll Restriction Override Code (four digits).
 - You hear dial tone.
 - 5) Dial the desired telephone number.

* Or press the **INT** button and dial access a CO line.

TO ADD, DELETE, OR CHANGE TOLL RESTRICTION OVERRIDE OR TRAVELING CLASS CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING.

- 1) Press **INT** and dial the three-digit toll restriction override change access code □ □ □ 2.
 - You hear confirmation tone.
- 2) Dial the four-digit override code □ □ □ □.
- 3) Press the **#** or **REDIAL** button to store code.
 - You will hear confirmation tone.
- 4) Repeat steps 1 ~ 4 to enter more toll restriction override or traveling codes.

NOTE:

For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.

VOICE MAIL (VM)

TO ANSWER A TONE SIGNAL CALL

- 1) Lift the handset or press the **SPEAKER** button (handsfree answerback is inoperative).
- 2) Hang up when the call is completed.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 6**.
- 3) Dial the digits (up to 16) and pauses to be sent (see Note).
- 4) Press the **#** (or **REDIAL**) button to store data.

NOTE:

Use **PAU** or **FLASH** button to store pauses.

When you wish to retrieve your messages from voice mail, certain digits will automatically be sent to the voice unit to play back your messages after you press the message waiting button.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 7**.
- 3) Dial the required digits and pauses to be sent.
- 4) Press the **#** (or **REDIAL**) button to store data.

TO RETRIEVE MESSAGES

Press the **INT** and **MESSAGE** buttons.

TO CLEAR ALL DIGITS

- 1) Press **INT**.
- 2) Dial **6 5 6** or **6 5 7**.
- 3) Press **#** (or **REDIAL**).

Provides ringing on incoming intercom calls when voice announcing is not activated.

TO MAKE A TONE SIGNAL CALL

- 1) Call another station via intercom.
 - The called party hears one ring, then your voice.
- 2) To send ring tone to the called party, dial **1**.
- 3) Speak to the party when the call is answered.

FEATURE USE

VOICE MAIL (VM) (continued)

NOTE:

The above procedures are required for initial VM set-up only. The digits remain in memory until changed.

CENTREX APPLICATION

Your system may be equipped with the Centrex Application, which enhances the system feature capability when installed behind a Centrex or PBX system.

Your digital telephone may be equipped with one or more of the enhanced Centrex features listed below:

A) Flexible Intercom Numbering (up to four digits)

A station intercom number can be three or four digits. It is, therefore, possible to match a station's intercom and Centrex line extension number. Dial the entire station number when indicated.

NOTE:

To avoid system numbering plan conflicts, some access code numbers may have to be changed.

B) Centrex Feature Buttons

Certain Centrex features may be operated by pressing a button on your digital telephone. The Centrex access code, including the necessary Flash and/or Pause sequence, is activated when the appropriate button is pressed. Press the appropriate Centrex feature button instead of dialing a Centrex access code when operation of the feature is desired. See your Centrex or PBX Operations Manual for specific details.

C) Ringing Repeat

The distinctive ring patterns available in your Centrex system are automatically repeated with your digital telephone, allowing you to answer appropriately for either outside, inside or callback calls.

D) Delayed Ringing

CO or Centrex line(s) may be programmed for a 12-second and/or 24-second ring delay at stations to permit alternate answering conditions. Answer the line when your digital telephone is ringing.

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TOSHIBA

**LIQUID CRYSTAL
DISPLAY FEATURES
DIGITAL
TELEPHONE
USER GUIDE**

**BUSINESS
TELEPHONE
SOLUTIONS**

STRATA® DK

**DIGITAL KEY
TELEPHONE SYSTEMS**

**STRATA DK24
DK56 AND DK96
RELEASE 3**

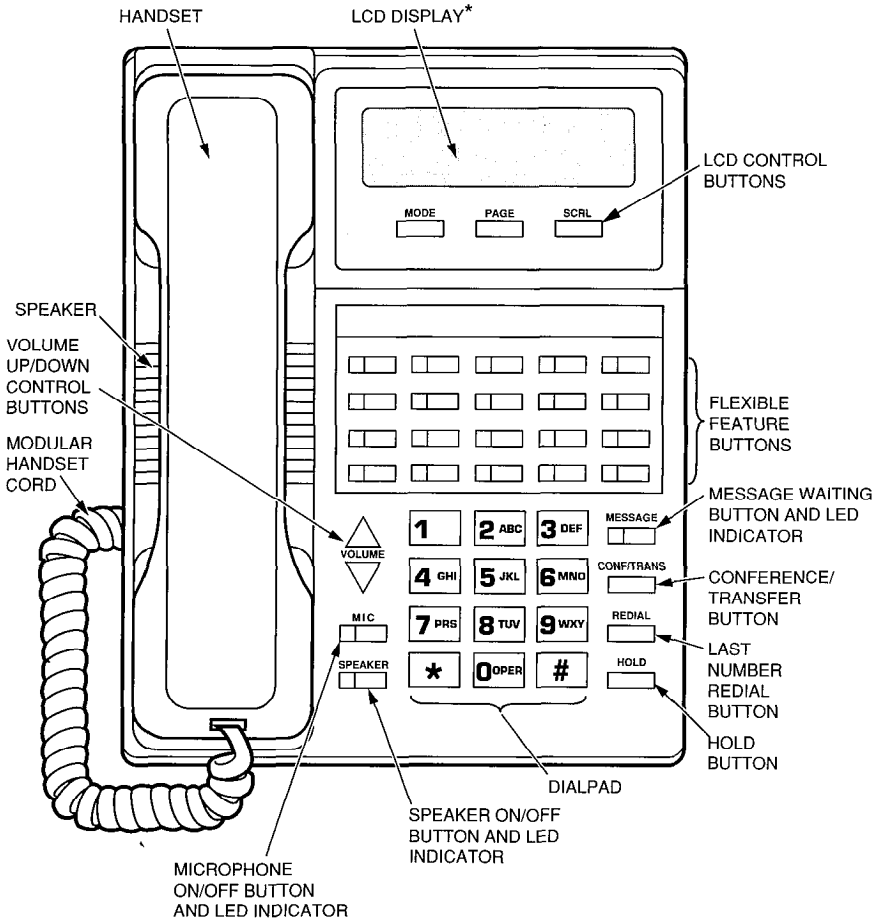


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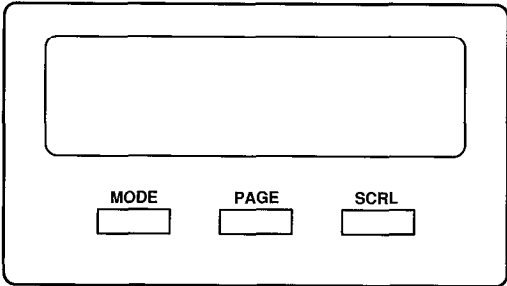
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LIQUID CRYSTAL DISPLAY

In its idle state, the 32-character Liquid Crystal Display (LCD) feature on your digital telephone gives you an accurate desk clock and calendar combination. When you have an outside call in progress, an elapsed time display gives a constant reminder of the call duration. In addition, a variety of information displays and feature prompting make your call handling more efficient. Alphanumeric messaging capability is also provided. All display functions occur automatically as call processing proceeds.



20-button Liquid Crystal Display Digital Telephone



The uses of the three buttons shown above are:

- SCRL:**
- 1) Scrolls through message waiting numbers.
 - 2) Scrolls through the speed dial digits (if more than 16 digits) when in mode 8.
- PAGE:**
- 1) Changes Busy Field groups.
 - 2) Used by station 200 to record a user NAME/NUMBER for another station. Station 200 must be an LCD digital electronic telephone to record NAME/NUMBER display for any other station type.
 - 3) Changes displays (date/time, elapsed time, message, call forward, dialed number).
 - 4) Scrolls through speed dial numbers when using mode 8.
- MODE:**
- 1) To enter/exit various mode functions (see below).
 - 2) To cancel beeping tone when using timed reminders.

LIQUID CRYSTAL DISPLAY (continued)

MODE DEFINITION

- MODE 0: Used to exit another mode and return to clock/calendar display.
- MODE 1: Busy Field display.
- MODE 2: Busy station messaging.
- MODE 4: Called station messaging.
- MODE 8: Speed dial number check and memo dialing.
- MODE 94: Remote called station messaging.
- MODE 95: Remote calling station messaging.

SUMMARY OF LCD FUNCTIONS

Type

When Displayed

A) Account Codes

NO. NNN ENTER ACCT CODE	When you press a CO line that requires a forced (verified or nonverified) account code; or dial *50, or press the ACCOUNT button to enter a voluntary (verified or nonverified) account code.
NO. NNN CODE NOT VALID	When you dial a verified voluntary account code that is not valid.
NO. NNN CODE VERIFIED	When you dial a verified voluntary account code that is set in the system account code memory.

SUMMARY OF LCD FUNCTIONS (continued)

NO. NNN DIAL RESTRICTED	When you dial a verified forced account code that is not valid.
NO. NNN DIAL TEL NUMBER	After you dial a verified forced account code that is valid.
B) Auto Busy Redial (ABR)	
HOLD LINE NN ABR SET	After setting auto busy redial, your display prompts you that it has been set.
NO. NNN P583 3700	When the system retrieves the call, your display shows the called number.
	When the called station is ringing, your station's CO LED (or INT LED) and SPKR LED will flash and a warning beep will sound.

NO. NNN LINE NN ACB	Your station will display the called number, followed by LINE NN ACB.
------------------------	---

C) Automatic Callback (ACB)

NO. NNN INT NNN ACB SET	When you set automatic callback at a busy station, its number is displayed.
NO. NNN NNN ACB	When you receive an automatic callback, the station number you called is displayed.
NO. NNN LINE 10 ACB	When you receive an automatic callback for a CO line, the seized line's number is displayed.

D) Automatic Line Selection

1) Intercom Line	
NO. NNN INT	If your station automatically accesses an intercom line when you go off-hook, INT is displayed.

SUMMARY OF LCD FUNCTIONS (continued)

2) CO Line

NO. NNN
USING LINE 11

If your station automatically accesses a CO line when you go off-hook, the number of the seized CO line is displayed.

3) Dial Access Code

NO. NNN
USING LINE 20

When you access a CO line by dialing a CO line group access code, the accessed CO line number is displayed.

E) Alphanumeric Messages

BACK AT 2PM-CALL
MEETING FOR 3PM

Messages of up to 32 characters may be used in alphanumeric messaging. Messages may either be programmed or set as one-time messages. (Messages may also be used with a timed reminder.)

F) Busy Field

00 0....5....
107..

207..
30 ..2.4....9

FORWARD TO NNN
DATE & TIME

The Busy Field display indicates, in groups of 10, the last two digits of the station numbers that are busy or set for DND. The top display indicates that stations X00, X05, and X17 are either in use or in DND; the bottom display indicates the same for stations X27, X32, X34, and X39. If the **PAGE** button is pressed, the 00/10 group will change to 10/20, and the busy/DND states of that group of stations will be displayed. The station groups will increment each time the **PAGE** button is pressed, thereby displaying all stations.

G) Call Forward

When you initiate any type of call forward, the LCD displays, CALL FORWARD TO.

SUMMARY OF LCD FUNCTIONS (continued)

After you set call forward, the station number to which your calls will be forwarded is displayed, along with one of the following abbreviations:

CF-AC (Call Forward-All Calls)

CF-BUSY (Call Forward-Busy)

CF-NA (Call Forward-No Answer)

CF-B/NA (Call Forward-Busy/No Answer)

CF-FIXED (Call Forward-Fixed)

NO. NNN
NNN

When your call is forwarded to another station, the station you called is shown. It then changes to the station to which your call was forwarded.

NO. NNN
NNN CALL NNN

When a call is forwarded to your station, the calling station number is displayed on the left and the station called is displayed on the right.

H) Call Pickup

NO. NNN
200 CALL 201

When you pick up an intercom call, the calling station's number is displayed on the left and the station number called is displayed on the right.

NO. NNN
NNN PICKUP NNN

Your LCD telephone displays information noting that your call to station NNN was picked up by station NNN.

I) Calling Number-Intercom

NO. NNN
NNN CALLING

When you receive an intercom call, the calling station's number is displayed.

J) CO Line Identification

TOSHIBA TELECOM

The CO lines can be programmed to display an identifying name of up to 16

SUMMARY OF LCD FUNCTIONS (continued)

DR. JONES OFFICE

characters. The name will be displayed on outgoing and incoming calls.

K) CO Line Number

1) Incoming Call

NO. NNN
LINE 10 RINGING

Incoming CO call—If your station is programmed for incoming ringing on that CO line.

Transferred CO call—CO line is transferred to your station in the ringing state by another station.

Camped-on CO call—CO line was camped-on to your busy station and rings your station when you hang up.

2) When Call Is Answered

NO. NNN
ANSWERED LINE 10

The display changes to indicate calling status.

3) Hold

HOLD LINE 10
JAN 01 SUN 12:19

You have put a CO line call on hold at your station.

4) Hold Recall

HOLD LINE NNN
LINE 10 RECALL

Held call automatically recalls your station after a programmed period of time.

5) Outgoing

NO. NNN
USING LINE 6

When you manually select a CO line, it is displayed. This display is replaced by the dialed number as you dial.

6) CO Line Queuing (Callback)

NO. NNN
LINE 3 ACB

When the CO line queuing feature rings back to your station with an available CO line, that line number will be displayed.

SUMMARY OF LCD FUNCTIONS (continued)

L) Date/Time

NO. NNN
MAY 24 MON 12:05

Idle Telephone

NOTES:

1. Press the **PAGE** button to display date/time when talking on a CO line.
2. The date/time is adjusted on a system-wide basis by the station located in port 00 (usually station 200).

M) Dialed Number

1) CO Line

NO. NNN
5551374

The digits are displayed as you dial over either a CO line or the intercom using:

- Manual dialing
- Automatic dialing
- Repeat last number dialed
- Saved number redial

2) Intercom

NO. NNN
201

NOTE:

If you are calling on a CO line, the display will automatically change from dialed number to elapsed time after a programmed period of time.

N) Door Phone/Monitor

NO. NNN
DOOR PHONE 1A

When you are called from a door phone, its designating characters are displayed.

NO. NNN
DOOR PHONE 1A

When you call a door phone, its designating characters are displayed.

NOTE:

The door phone designators are NA, NB, and/or NC (N = 1 ~ 4, and indicates which

SUMMARY OF LCD FUNCTIONS (continued)

of the 12 possible door phones is calling or is being called).

O) Elapsed Time

NO. NNN
00:13:23

While you are making an outgoing CO line call, the elapsed time of the call is displayed. Elapsed time automatically replaces the dialed number on the display after a programmed period of time. (Timing begins when a **CO** button is pressed.)

NOTES:

1. On a CO line call, the display can be alternated between date/time, elapsed time, and dialed number by pressing the **PAGE** button.
2. Elapsed time is displayed for 15 seconds after you hang up, and then changes automatically to date/time.

P) Intercom Number Display

NO. NNN
INT = NNN

If an access code is entered (**INT 4 0 1**, **CONF 4 0 1** when on a CO line), the programmed intercom number will be displayed.

Q) LCD NAME/NUMBER Display

1) Idle Station

NAME/NUMBER
DATE DAY TIME

A name or title may be set in memory for each station. When an LCD station is idle, the name displays on the top line of the LCD. When a station calls an LCD station, the name of the calling station displays on the bottom line of the called station's LCD.

2) Called Station

NO. NNN
NAME/NUMBER

SUMMARY OF LCD FUNCTIONS (continued)

R) Least Cost Routing (LCR)

NO. NNN
DIAL TEL NUMBER

When you are making a call via LCR, your display will prompt you to dial a number by displaying, DIAL TEL NUMBER.

NO. NNN
5833700

As you dial the number, it is shown on your display.

S) Message Waiting

NO. NNN
INT NNN MW SET

When you set message waiting at another station, the number of that station is displayed.

SENT NNN
JAN 01 SUN 12:19

When you hang up after setting message waiting at another station, a reminder is shown on the top row of your display.

NO. NNN
CALL 203 201 200

Your display will show the numbers of up to three stations that have left messages for you. Four numbers may be stored in message memory (see Recalling Station).

T) Message Waiting/Voice Mail

NO. NNN
CALL 200 216V+

When a message waiting voice mail is displayed, a "V" will follow the station number. A "+" indicates that there is a station message in memory. Press the **SCRL** button to rotate through the numbers.

U) Off-hook Call Announce

NO. NNN
NNN

When you off-hook call announce to a busy station, your LCD displays the number of that station.

SUMMARY OF LCD FUNCTIONS (continued)

NO. NNN
NN BUSY OVR

When another station off-hook call announces to your station, your LCD displays the number of that station.

V) Overrides

1) Busy Override

NO. NNN
NNN BUSY OVR

When you activate the override feature after calling a busy station, the station number and the feature are displayed.

NO. NNN
NNN BUSY OVR

Your LCD telephone displays the number of a station initiating override when you are on the telephone. The number will remain displayed until override is disconnected.

2) Executive Override

NO. NNN
NNN EXEC OVRD

When you initiate executive override, your LCD telephone displays the number of the station that is overridden. The station that receives the override displays your station number. The number will remain displayed until the call is ended.

3) Do Not Disturb (DND) Override

NO. NNN
INT NNN DND

The station you have called is in the do not disturb mode.

NO. NNN
NNN DND OVR

When you initiate do not disturb override, the station number you have overridden is displayed.

NO. NNN
NNN DND OVR

When another station overrides do not disturb at your station, its number is displayed. (The display remains until the end of override.)

SUMMARY OF LCD FUNCTIONS (continued)

4) Privacy Override

NO. NNN
NNN PRV OVRD

When a station presses a busy line button to enter an existing conversation: The station that initiates the override displays the CO line identification on the LCD. The overridden station's LCD displays initiating station's number. (The display remains until the end of the call.)

W) Recalling Station

HOLD LINE 2
LN 2 RECALL NNN

When a transferred call goes unanswered, it will recall to the station that transferred it. The display shows the CO line number and the station number to which it was originally transferred.

X) Speed Dial Memo

*11 TOSHIBA
7145833700

When using Speed Dial Memo (mode 8), the name and number are displayed.

TOSHIBA is the memo (up to 12 characters).
714 583 3700 is the number (up to 16 digits).

Y) Toll Restriction Override Codes

NO. NNN
OVERRIDE CODE

After you access a CO line and press **CONF/TRNS 4 7** to dial a complete toll restriction override or traveling class code, your LCD display will prompt you to dial a code.

Z) Two-CO Line Calls

1) Tandem

TRK-TRK N₁ N₂
JAN 10 THU 11:57

After you establish a two-CO line conference call and then release, N₁ and N₂ identify the connected CO lines.

SUMMARY OF LCD FUNCTIONS (continued)

2) Conference

NO. NNN
CONF LINE N₁ N₂

When you are talking with two external parties on two CO lines. N₁ and N₂ identify the connected CO lines.

3) Amplified

NO. NNN
AMP CNF LN N₁ N₂

When you are talking with two external parties on two CO lines that are externally amplified.

DATE/TIME/DAY ADJUSTMENT

This operation is possible from port 00 only (usually station 200).

TO SET DATE

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 1**.
- 3) Dial the date (year/month/day) in the format YYMMDD. Enter a leading 0 for any single-digit month or day.
- 4) Press the **#** (or **REDIAL**) button.
 - Listen for confirmation tone.

TO SET TIME

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 2**.
- 3) Dial the time (hour/minute/second) in the 24-hour clock format HHMMSS. Enter a leading 0 for any single digit entered.
- 4) Press the **#** (or **REDIAL**) button.
 - Listen for confirmation tone.

TO SET DAY

- 1) Place handset on-hook.
- 2) Dial **INT 6 5 3**.
- 3) Dial the day.
 - **1** = Sunday
 - **2** = Monday
 - **3** = Tuesday

DATE/TIME/DAY ADJUSTMENT (continued)

- **4** = Wednesday
 - **5** = Thursday
 - **6** = Friday
 - **7** = Saturday
- 4) Press the **#** (or **REDIAL**) button.
 - Listen for confirmation tone.

CALL FORWARD DISPLAY

TO SET CALL FORWARD

When any type of call forward is initiated, the CALL FORWARD TO prompt displays on the lower row of the LCD.

When your station has call forward set, the LCD displays as shown (NNN = the forward to number).

1) Call Forward-All Calls

CF-AC TO: NNN
JAN 26 TUE 01:43

Press **INT 6 0 1** + N N N + **SPEAKER**
(or **CFAC** + N N N + **CFAC**).

2) Call Forward-Busy

CF-BUSY TO: NNN
JAN 26 TUE 01:43

Press **INT 6 0 2** + N N N + **SPEAKER**
(or **CFB** + N N N + **CFB**).

3) Call Forward-No Answer

CF-NA TO: NNN
JAN 26 TUE 01:43

Press **INT 6 0 3** + N N N + **SPEAKER**
(or **CFNA** + N N N + **CFNA**).

4) Call Forward-Busy/No Answer

CF-B/NA TO: NNN
JAN 26 TUE 01:43

Press **INT 6 0 4** + N N N + **SPEAKER**
(or **CFB/NA** + N N N + **CFB/NA**).

5) Call Forward-Fixed

CF-FIXED TO: NNN
JAN 26 TUE 01:43

Press the **CF** button.

CALL FORWARD DISPLAY (continued)

NOTES:

1. To cancel call forward, press **INT601** **SPEAKER** (or press the call forward button used to set call forward).
2. If call forward is set:
 - CO lines that ring at your station **only** will forward (CO lines that ring into more than one station will not forward).
 - CO line calls transferred to your station will forward.
 - Intercom calls will forward.
 - Call forward redirects the station hunt feature.

STATION-TO-STATION MESSAGE WAITING

TO USE STATION-TO-STATION MESSAGE WAITING

- 1) Lift the handset.
- 2) Dial the desired station number.
 - If there is no answer (busy or DND), press the **MESSAGE** button (or dial **7**). This causes the MESSAGE LED on the called station to flash.
 - The called station's LCD displays the calling station's number.
- 3) The called station user presses the **INT** and **MESSAGE** buttons to return the call.
- 4) To clear the MESSAGE LED from the called station, press the **MESSAGE** button.
- 5) To clear the MESSAGE LED from the calling station, press the **INT** button, dial the station number and press the **MESSAGE** button twice (or **7 7**).

NOTE:

Up to four message waiting displays may be stored on the LCD. The station number in the left-most position will be called when the **MESSAGE** button is pressed. To rotate the station numbers, press the **SCRL** button. The fourth message is reserved for the Message Center.

VOICE MAIL (VM)

Whenever your station is call forwarded to voice mail, certain digits will automatically be sent to the voice mail unit to *direct the call to your mailbox*.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 6**.
 - The LCD displays, 6 5 6 ID CODE SET.
- 3) Dial the digits (up to 16) and pauses (**MESSAGE**) to be sent.
 - The LCD displays the digits and pauses.
- 4) Press the **#** button to store data.
 - Listen for confirmation tone.

When you want to retrieve your messages from voice mail, certain digits will automatically be sent to the voice mail unit to *play back your messages*.

TO STORE THE DIGITS TO BE SENT

- 1) Press the **INT** button.
- 2) Dial **6 5 7**.
 - The LCD displays, 6 5 7 ID CODE SET.
- 3) Dial the required digits and pauses to be sent.
 - The LCD displays the data as it is entered.
- 4) Press the **#** button to store data.
 - Listen for confirmation tone.

TO RETRIEVE MESSAGES

Press the **INT** and **MESSAGE** buttons.

TO CLEAR ALL DIGITS

- 1) Press the **INT** button.
- 2) Dial **6 5 6** or **6 5 7**.
- 3) Press the **#** button.

NOTES:

1. The above procedures are required for initial VM set-up only. The digits remain in memory until changed.
2. Digits are not sent to camped-on VM calls.

BUSY FIELD DISPLAY

TO DISPLAY BUSY FIELD STATUS ON THE LCD DISPLAY

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **1**. Refer to the figure in Summary of LCD Functions.
- 3) Press the **PAGE** button to rotate Busy Field groups.

MODE EXIT

TO EXIT ANY MODE

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **0**.
 - The LCD displays date/day/time.

DISA SECURITY CODE: ADD/DELETE/CHANGE

From designated station(s) only.

TO STORE NEW DISA SECURITY CODE

- 1) Press the **INT** button and dial (3-digit access code).
 - Receive confirmation tone.

NO. NNN <input type="text"/> <input type="text"/> <input type="text"/> ID CODE SET

- 2) Dial the new DISA security code (. . .).²
- 3) Press the **#** button.
 - Receive confirmation tone.

NO. NNN DATA PROGRAMMED

NOTES:

1. For security purposes, the 3-digit access code is not given in this guide. It is available from your telephone system maintenance provider.
2. The DISA security code can be 1 ~ 15 digits.
3. To cancel the DISA code, complete steps 1 and 3,

DISA SECURITY CODE: ADD/DELETE/CHANGE

(continued)

skipping step 2. If the DISA code is canceled, outgoing access of CO lines on DISA calls will not require a security code.

TOLL RESTRICTION OVERRIDE/TRAVELING CLASS CODE CHANGE

TO ADD, DELETE, OR CHANGE TOLL RESTRICTION OVERRIDE OR TRAVELING CLASS CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING.

- 1) Press **INT** and dial the three-digit toll restriction override change access code .²
 - You will hear confirmation tone.

NO. NNN ENTER OUR CODE

- 2) Dial the four-digit override code .

NO. NNN ENTER OUR CODE <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

- 3) Press the **#** (or **REDIAL**) button to store code.
 - You will hear confirmation tone.

NO. NNN DATA PROGRAMMED

- 4) Repeat steps 1 ~ 4 to enter up to four traveling class codes or two toll restriction override codes.

NOTE:

For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.

VERIFIED ACCOUNT CODE CHANGE

TO ADD, DELETE, OR CHANGE VERIFIED ACCOUNT CODES FROM STATIONS SELECTED IN SYSTEM PROGRAMMING

- 1) Press **INT** and dial the verified account code change access code (see Note).

NO. NNN
VERIFY ACC SET

- 2) Dial the three-digit verified account code number (000 ~ 299).

NO. NNN
VERIFY ACC SET

- 3) Dial the verified account code ... (4 ~ 15 digits).

NO. NNN
 ...

VERIFIED ACCOUNT CODE
ACCOUNT CODE NUMBER

- 4) Press the **#** (or **REDIAL**) button to store code.
 - You will hear confirmation tone.

NO. NNN
DATA PROGRAMMED

- 5) Repeat steps 1 ~ 4 to enter more verified account codes.

NOTE:

For security reasons, the change access code is not provided in this guide. It is available from your telephone system maintenance provider.

MESSAGE ADMINISTRATION FUNCTIONS

ADDING TO A PREPROGRAMMED MESSAGE

When you select a message, it appears on your station display. A cursor (–) also appears immediately to the right of the last letter in the message. You can now input additional information (up to a total

MESSAGE ADMINISTRATION FUNCTIONS (continued)

of 32 digits for each message). Some system messages may expect you to add more information. For example:

- 1) CALL _____
 - Add a station or outside telephone number.
- 2) BACK AT _____
 - Add the time you will return.
- 3) RETURN AT _____
 - Add the date you will return.

NOTE:

Refer to *Recording a Message* for adding to a preprogrammed message.

EDITING OR SETTING A NEW CALLING STATION MESSAGE

You can set a completely new, personalized message by overwriting any of the existing preprogrammed messages. To do this, simply call up one of the messages as explained previously. When the cursor appears to the right of the message, shift it to the left margin and write your new message over the preprogrammed one. The new message will remain on your station until canceled. It will then be erased and the original preprogrammed message will be restored.²

NOTES:

1. Refer to *Recording a Message* for leaving a new message at your station.
2. Messages 60 ~ 99 will be erased. Messages 10 ~ 19 will remain in memory until changed.

PREPROGRAMMING SYSTEM MESSAGES

System messages can only be programmed or permanently changed at port 00, station number _____ (usually 200). Five preprogrammed

MESSAGE ADMINISTRATION FUNCTIONS (continued)

messages are automatically stored in memory when the Alphanumeric Messaging with LCD feature is initialized.

- 60) OUT TO LUNCH
- 61) IN A MEETING
- 62) CALL _____
- 63) BACK AT _____
- 64) RETURN ON _____

You can use these messages and add 35 more messages designed specifically for your system, or you can overwrite the initialized messages and program up to 10 of your own. Any messages programmed at port 00 will remain in memory until canceled from port 00 or until the system is reinitialized. After reinitialization, only the original five messages will be in memory.

System messages are written and stored in memory as explained in Storing a Message.

RECORDING A MESSAGE

Use this procedure to enter the characters of a personal message (10 ~ 19) or system message (60 ~ 99), to add to a preprogrammed message, or to edit and set a new message. After calling up a message on your display (see Storing a Message, steps 1 and 2), perform one of the following procedures:

TO RECORD A MESSAGE

- 1) Press the **#** button to access alpha characters. Refer to Figure 1 for an explanation of the dialpad buttons.
- 2) Move the cursor (—) to the desired position (the left edge of the display for a new message, or two spaces to the right of the preprogrammed message to add information).
- 3) Press the button that has the letter you want to enter. Use the **0** button to shift from letter to letter on the button. For example:
 - If you press **3**, a D will be displayed. By pressing **0**, the D is changed to E. By pressing **0** again, the E is changed to F. Press **0** again and the F changes to D.
 - To enter a space, press **1**.

MESSAGE ADMINISTRATION FUNCTIONS (continued)

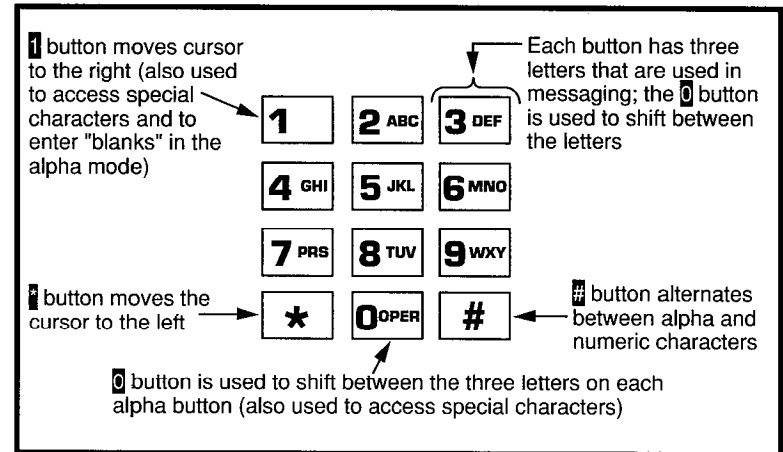


FIGURE 1-DIALPAD INFORMATION

- 4) If you want to enter a number, press the **#** button to change to numeric characters. Numbers are also entered on the dialpad. Press the **#** button again to return to alpha characters.
- 5) The following special characters are set by pressing **1** and then pressing **0** to step through the available characters:
Q, Z, :, -, +, /.
- 6) When the message is complete, press the **MSG** button (or, if you do not have a **MSG** button, press the **SPEAKER** button).
 - Your message is now stored on your station.

STORING A MESSAGE

TO STORE A MESSAGE

- 1) Press the **MSG** (or **INT 6 8**) button.
 - The MSG LED flashes.
 - LCD displays, MSG NO.?
- 2) Dial the 2-digit message number to be stored.
 - Personal (10 ~ 19).
 - System (60 ~ 99 port 00 only).
- 3) Use the Recording a Message procedure to enter the message characters.

MESSAGE ADMINISTRATION FUNCTIONS (continued)

- 4) Press the **MSG** (or **SPEAKER**) button.
 - The MSG LED lights steadily.
 - The LCD displays, MSG.
- 5) Press the **MSG** (or **INT 6 8 SPEAKER**) button.
 - The MSG LED goes out.
 - The message is now stored.

LCD NAME/NUMBER DISPLAY

This feature allows you to store a title (such as your name, telephone number, location, etc.) in system memory. This title (i.e., LOBBY) will display on your station's LCD while it is idle, and it will appear at other stations' LCDs when they are called from your station. Name display information for non-LCD telephones or voice mail/auto attendant devices may be stored from station 200. When NAME/NUMBER is recorded for non-LCD telephones or other devices, their NAME/NUMBER is displayed on LCD telephones when called.

TO ENTER NAME/NUMBER INFORMATION FROM YOUR STATION

- 1) Press the **INT** button and dial **6 2 1**.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information will appear on the lower line of the LCD.

USER NAME? TOSHIBA EXT. 200

- 2) Enter the new information via the dialpad (refer to Record LCD Messages for method).
 - Up to 16 characters can be recorded.
- 3) Press the **SPEAKER** button.
 - The new information is stored.

TOSHIBA EXT. 200 DATE DAY TIME

LCD NAME/NUMBER DISPLAY (continued)

TO CLEAR NAME/NUMBER DISPLAY

Press the **INT** button, dial **6 2 0** and press the **SPEAKER** button.

- Listen for confirmation tone, then busy tone.

During clear:

NO. NNN USER NAME RESET

After clear:

NO. NNN DATE DAY TIME

NOTES:

1. Your title will appear on the LCD during direct intercom, forwarded, and hunted calls. On override or OCA calls, the LCD will not display the title.
2. After a name is cleared, it may be redisplayed at anytime by dialing **INT 6 2 1**.
3. A name is displaced by message and call forward settings if they are set.
4. To erase NAME/NUMBER information from memory, repeat steps 1 ~ 3 above and enter blanks in step 2. Blanks are entered by pressing **1** in the alpha mode.

TO ENTER NAME/NUMBER INFORMATION FOR ANOTHER STATION OR VOICE MAIL DEVICE FROM STATION 200

- 1) Press the **INT** button and dial **6 2 1**.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information for station 200 will appear on the lower line of the LCD.

USER NAME? TOSHIBA EXT. 200

- 2) Press the **PAGE** button.
 - The LCD displays, DEST. EKT NO.?
- 3) Dial the intercom number (**N N N**) of the NAME/NUMBER information to be recorded.
 - The LCD displays, DEST EKT NO. NNN.

LCD NAME/NUMBER DISPLAY (continued)

- 4) Press the **PAGE** button.
 - USER NAME? will appear on the upper line of the LCD.
 - Current information for station NNN will appear on the lower line of the LCD.
- 5) Enter the new information via the dialpad (refer to Record LCD Message method).
 - Up to 16 characters can be recorded.
- 6) Press the **SPEAKER** button.
 - The new information is stored and appears on the top line of station NNN's LCD.
 - Station 200's LCD returns to the normal idle display.

NOTES:

1. To erase the NAME/NUMBER information of another station from station 200, repeat steps 1 ~ 6 above and enter blanks in step 5. Blanks are entered by pressing **1** in the alpha mode.
2. Station NNN may set and clear the NAME/NUMBER feature anytime:
 - Set: **INT 6 2 1**.
 - Clear: **INT 6 2 0**, "clear" eliminates the display when calling, but does not erase it from memory; only station 200 can erase the NAME/NUMBER of a non-LCD station.

SPEED DIAL MEMO

Allows an LCD user to program a 12-character name for each of his/her 40 personal speed dial numbers. The memo pad of names may be stepped through to select the appropriate party. Memos may also be added to the 40 system speed dial codes via the station connected to port 00, station number _____ (usually 200).

TO PROGRAM NAMES AND NUMBERS

- 1) Press the **#** **1** buttons.
- 2) Dial the desired speed dial number.
 - The LCD displays, # * NNN SPEED DIAL.

SPEED DIAL MEMO (continued)

- 3) Press the **MODE** button.
 - The LCD displays, # *NNN __ SPEED DIAL.
- 4) Enter the name or memo (refer to Recording a Message).
- 5) Press the **MODE** button.
 - The LCD displays, *NN MEMO SPEED DIAL.
- 6) Enter the desired telephone number (16 digits maximum).
- 7) Press the **#** button to record data in memory.

TO DIAL A SPEED DIAL NUMBER

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 2) Dial **8** **□** **□** **□** **2**. (**□** **□** = **10** ~ **49** or **60** ~ **69**).
 - The speed dial number appears with name or memo.
- 3) Press the **PAGE** button to scan the directory for the appropriate number/memo.
- 4) Press any available **CO** button.
- 5) The number is dialed.

NOTES:

1. A station must be enabled via system programming for LCD message memory.
2. Personal speed dial code numbers are 10 ~ 49, and system numbers, stored from station 200 only, are 60 ~ 99.
3. Speed dial numbers and memos and their corresponding 2-digit codes may be recorded on the record sheet provided in back of this guide.

TO CHECK A SPEED DIAL NUMBER

- 1) Press **MODE 8**.
- 2) Dial a 2-digit speed dial number (see Note).
- 3) If the number is longer than 16 digits, press the **SCRL** button to display the remaining digits.

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

TIMED REMINDERS WITH MEMO

Allows five separate messages to be set at each LCD station. These messages will be displayed at the times (hour and minute) set by the station user. They can either be displayed just once or repeated on a daily basis.

TO SET A TIMED REMINDER WITH MEMO

- 1) Press the **INT** button.
- 2) Dial a 3-digit reminder number (605 ~ 609).
- 3) Enter the desired time (24-hour clock format; i.e., HHMM) for the message to be displayed.
- 4) Dial **0** if the message is to be repeated every day, or **1** if it is a one-time message only.
- 5) Enter the desired message number.*
- 6) Press the **RECORD** button to record the data in memory.
 - Listen for confirmation tone.
 - The message will be displayed at the specified time, and a beeping tone will be heard for 30 seconds (or until it is canceled by pressing the **MODE** button).

* *Personal (10 ~ 19) and system (60 ~ 99). The message does not display when setting a timed reminder—it displays when the reminder activates. Messages are set using the Record a Message method.*

MESSAGE SENDING

The Alphanumeric Messaging feature on your LCD digital telephone enables you to set short text (up to 32 characters) at your station to ensure that you do not miss important calls. Any station may record a message; however, only stations with the LCD are able to display messages. To record messages, see the message administration functions in this guide.

Your system has up to 40 preprogrammed messages that may be sent to other LCD digital or electronic telephones. You can temporarily add to or change any of these messages, in order to leave a personalized message at your station (see Note).

MESSAGE SENDING (continued)

Some stations may record and save up to 10 personal messages to be used for all types of station messaging. This is a station option that is enabled in system programming.

NOTE:

Stored messages and their corresponding message number(s) may be recorded on the record sheet provided in the back of this guide.

CALLED STATION MESSAGING

Your station number and a message indication may be sent to another LCD station. When that station responds, it will receive the message.

TO SET A CALLED STATION MESSAGE

- 1) Dial the station number (station does not answer).
- 2) Press the **MODE** button.
 - The LCD displays, MODE?
- 3) Dial **4**.
 - The LCD displays, MW TO STNNN MSG NO?
- 4) Enter the desired message number.*
 - The LCD displays the message.
- 5) Press the **MESSAGE** button.
 - The LCD displays, INT NNN MW SET.
- 6) Press the **SPEAKER** button to release.
- 7) CALL NNM is displayed at the called station and the MESSAGE LED flashes.
- 8) SENT NNM is displayed at your station.

* *Personal (10 ~ 19), system (60 ~ 99).*

TO RECEIVE A CALLED STATION MESSAGE

Press the **INT** and **MESSAGE** buttons.

GROUP CALLED STATION MESSAGING

Allows a station to set a Called Station Message for a group of stations.

MESSAGE SENDING (continued)

TO SET A "CALLED STATION" MESSAGE FOR ANOTHER STATION OR GROUP OF STATIONS

- 1) Press the **MODE** button.
 - The LCD displays, MODE?
- 2) Dial **94**.
 - The LCD displays, MODE 94 DEST EKT NO.?
- 3) Dial the "destination" station's number (or enter 30 for all stations, or 31 ~ 34 for page groups).
 - The LCD displays, MODE 94 DEST EKT NO.NN.
- 4) Press the **PAGE** button.
 - The LCD displays, MODE 94 ORG EKT NO.?
- 5) Dial the "originating" station's number.*
 - The LCD displays, MODE 94 ORG EKT NO.NN.
- 6) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 7) Enter the desired message's number.
 - The LCD displays, the message.
- 8) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 9) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 10) Dial **0**.
 - The LCD displays, date/day/time.
- 11) The LCD displays, SENT NN M, at originating station.
- 12) The originating station number and a message indication are displayed on the destination station LCD.

*Your number or another station number.

TO RECEIVE CALLED STATION MESSAGE

- 1) Press the **INT** and **MESSAGE** button.

CALLING STATION MESSAGING

TO SET A MESSAGE (ON YOUR LCD) THAT WILL BE RECEIVED BY LCD TELEPHONES THAT CALL YOUR TELEPHONE

- 1) Press the **MSG** button.
 - The MSG LED flashes.

MESSAGE SENDING (continued)

- The LCD displays, MSG NO.?
- 2) Dial the number of the message you want (see Note).
 - The selected message is displayed.
 - 3) Press the **MSG** button.
 - The MSG LED lights steadily.

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

GROUP CALLING STATION MESSAGING

TO SET A CALLING STATION MESSAGE FOR ANOTHER STATION

- 1) Press the **MODE** button.
 - The LCD displays, MODE?
- 2) Dial **95**.
 - The LCD displays, MODE 95 DEST EKT NO.?
- 3) Dial the "destination" station number.
 - The LCD displays, MODE 95 DEST EKT NO.NN.
- 4) Press the **PAGE** button.
 - The LCD displays, MSG NO.?
- 5) Enter the desired message number.
 - The LCD displays the message.
- 6) Press the **PAGE** button.
 - The LCD displays, MSG NO.?

NOTE:

Group calling station messaging allows you to set a calling station message for only one station at a time.

- 7) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 8) Dial **0**.
 - Your LCD shows the time and date.
 - The message is displayed at the "destination" station.
 - Any station calling the "destination" station receives the message.



MESSAGE SENDING (continued)

TO SET A MESSAGE IF YOU DO NOT HAVE A **MSG** BUTTON

- 1) Press the **INT** button.
 - The INT LED lights.
- 2) Dial **6 8**.
- 3) Dial the number of the message you want (see Note).
- 4) Press the **SPEAKER** button.
 - The INT LED goes out (your message is now stored).

NOTE:

Personal (10 ~ 19) and system (60 ~ 99).

TO CANCEL A MESSAGE THAT HAS BEEN SET AT YOUR STATION

Press the **MSG** button.

- The MSG LED goes out.

TO CANCEL A MESSAGE IF YOU DO NOT HAVE A **MSG** BUTTON

- 1) Press the **INT** button.
 - The INT LED lights.
- 2) Dial **6 8**.
- 3) Press the **SPEAKER** button.
 - The INT LED goes out.

NOTE:

A personal message (10 ~ 19) will remain stored in memory.

BUSY STATION MESSAGING

When reaching a busy LCD station, a message can be sent to that station (an audible tone will be heard). The busy station may also return a message to the calling station's LCD. The two stations may continue this procedure to carry on a "silent" conversation.

TO SEND A MESSAGE TO A BUSY STATION

- 1) Call the desired station.
 - Listen for busy tone.

MESSAGE SENDING (continued)

- 2) Press the **MODE** button.
 - The LCD displays, MODE NO.?
- 3) Dial **2**.
 - The LCD displays, OVER TO STNN MSG NO?
- 4) Enter the desired message number.*
 - The LCD displays the message.
- 5) Press the **PAGE** button.
 - The LCD displays, MSG SEND.
- 6) The destination station beeps four times and the message is displayed for 30 seconds, or until originating station hangs up.

**Personal (10 ~ 19) and system (60 ~ 99).*

TO RETURN A MESSAGE (Within 30 Seconds) FROM THE BUSY STATION AFTER RECEIVING A "BUSY STATION" MESSAGE.

- 1) Press the **MODE** button.
 - The LCD displays, MODE NO?
- 2) Dial **2**.
 - The LCD displays, OVER TO STNN MSG NO?
- 3) Enter the desired message number.*
 - The LCD displays the message.
- 4) Press the **PAGE** button.
 - The LCD displays, MSG SEND.

MESSAGE DIRECTORY

Messages are limited to 32 alphanumeric characters and are displayed in two rows of 16.

This directory is provided for reference and recording messages.

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

Message # _____

USER NAME/NUMBER DIRECTORY

NAME/NUMBERS are limited to 16 alphanumeric characters and are displayed on the top row of idle LCD stations and the bottom row of called LCD stations.

This directory is provided for station 200 reference and recording of other station NAME/NUMBERS.

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

Station # _____

D	A	T	E		D	A	Y		T	I	M	E			

SPEED DIAL MEMO DIRECTORY

Speed Dial memos are limited to 12 characters for the memo (top row of LCD) and 16-digits/pauses for the dial number (bottom row of LCD).

This directory is provided for recording Speed Dial numbers with memos.

* Code: 12-Character Memo: (Example)

*	1	0	-	M	E	M	O		H	E	R	E		
S	P	E	E	D					D	I	A	L	#	

*			-											

*			-											

*			-											

*			-											

*			-											

* Code: 12-Character Memo:

*			-											

*			-											

*			-											

*			-											

*			-											

*			-											

*			-											

* Code: 12-Character Memo:

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

* Code: 12-Character Memo:

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

INDEX

* Code: 12-Character Memo:

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

*			-												

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Strata[®] *DK*

RELEASE 1,2, and 3 FAULT FINDING PROCEDURES

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FIGURE LIST

FIGURE	TITLE	PAGE
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1 GENERAL

1.01 This section describes the maintenance procedures used to diagnose faults in the STRATA DK digital key telephone system. Faults are classified and then cleared by replacing the malfunctioning unit and performing operational tests in the sequences prescribed by the fault clearing flowcharts in Paragraph 5.

2 FAULT CLASSIFICATION

2.01 A Fault Classification Flowchart is provided to ensure that fault clearing is pursued in a logical sequence (Chart No. 1).

2.02 An assumption is made in the flowcharts that the fault was discovered and reported by an electronic telephone user. All faults, therefore, are classified according to the way they would appear at the electronic telephone.

2.03 Faults and associated flowcharts in Table A are organized into the following categories:

**TABLE A
FLOWCHARTS**

Flowchart	Title
1	Fault Classification
2	Power Faults
3	Station Faults
4	KSU Faults
5	CO Line Faults
6	Intercom Faults
7	DSS Console Faults
8	Speed Dial Faults
9	MOH, BGM, Page & Relay Faults
10	SMDR Faults
11	PSTU Faults
12	Door Phone Faults
13	TIE Line Faults
14	Remote Maintenance/TTY Faults

3 FAULT CLEARING PROCEDURES

3.01 Before attempting to clear any fault, ensure that it is in the system and not caused by associated external equipment, such as wiring, MOH source, etc.

IMPORTANT!

Many system features are assigned, enabled or disabled using software entries as described in Programming Procedures. It is important to verify that the system programming is correct and functional before troubleshooting the hardware.

3.02 In new systems, or when the PCTU or PCTUS1 PCB has been changed, the initialization procedure must be performed before testing. The system data stored on the original PCTU or PCTUS1 will be protected from loss by the backup battery on that PCB. Therefore, the initialization sequence *should not* be performed if the original PCB is reinstalled.

NOTE:

In this section all information relating to the PCTU PCB applies to the PCTUS1, PCTU1, PCTU2, and PCTU3 unless otherwise stated.

3.03 Faults in the system are cleared by replacing PCBs, electronic telephones or the power supply, as instructed in the flowcharts.

3.04 Five symbols are used in the flowcharts, which are identified in Figure 1.

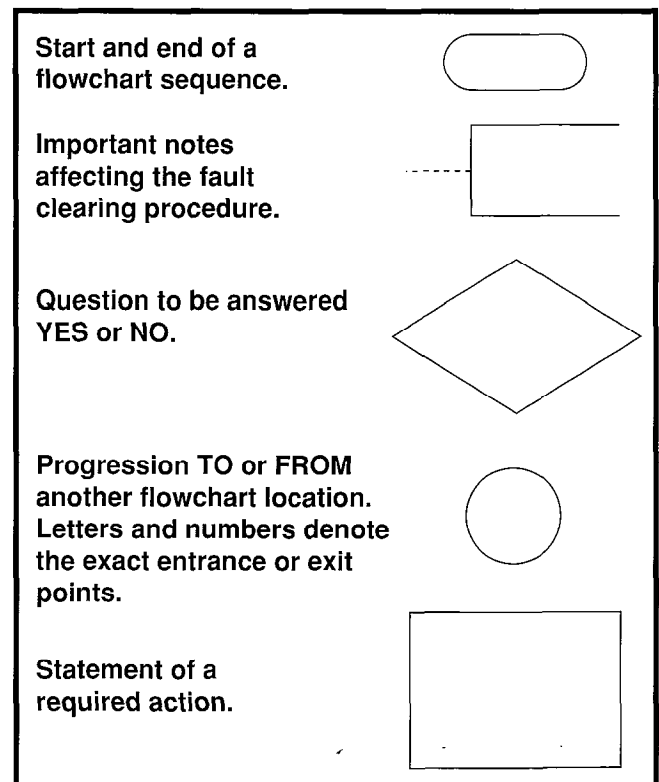


FIGURE 1—FLOWCHART SYMBOLS

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FEBRUARY 1991**

3.05 The flowcharts are sequentially arranged to permit rapid fault localization within the system. *All fault clearing must begin with the Fault Classification Flowchart*, which is arranged in the correct fault locating sequence.

3.06 The following precautions must be observed when handling PCBs:

DO NOT:

- Drop a PCB.
- Stack one PCB on top of another.
- Handle a PCB without discharging any static electricity from your person by touching the grounded cabinet.
- Touch PCB contacts with your fingers.

IMPORTANT!

If the fault is not cleared by substituting a PCB, the original PCB must be reinstalled in the cabinet before trying another PCB.

4 DEFECTIVE APPARATUS RETURNS

4.01 When a defective system apparatus is shipped for repair, the apparatus must be packed in a suitable container (the original box is highly recommended), as follows:

- a) Paper container for the PCTU PCB.
- b) Anti-static containers for all other PCBs.

c) Plastic bags for electronic telephones, KSU, etc.

4.02 NEVER WRITE ON THE APPARATUS ITSELF! Describe the nature of the defect on an information tag. Attach the tag to the front of the unit with string (not wire) so the tag can remain attached during the testing and repair process. Return tags are available from Toshiba America Information Systems, Inc., TSD Division.

4.03 If different and/or additional faults are created in the system by substituting a PCB, tag and return the substitute PCB as a defective unit.

5 FAULT IDENTIFICATION and ELIMINATION PROCEDURES

5.01 The PCTU PCB may contain a "soft" fault due to static electricity. If it is found defective during the fault finding procedures, attempt to clear a soft fault prior to returning the PCTU PCB for repair. The correct procedure for this is to reinstall the PCTU, perform the initialization procedure, and then reprogram the system as necessary to test for the fault. If the fault returns after these procedures are performed, tag the defective PCTU and return it for repair.

6 POWER SUPPLY

6.01 If a DC power fault is detected, all PCBs should be disconnected from the backplane connectors to eliminate them as the cause of the power

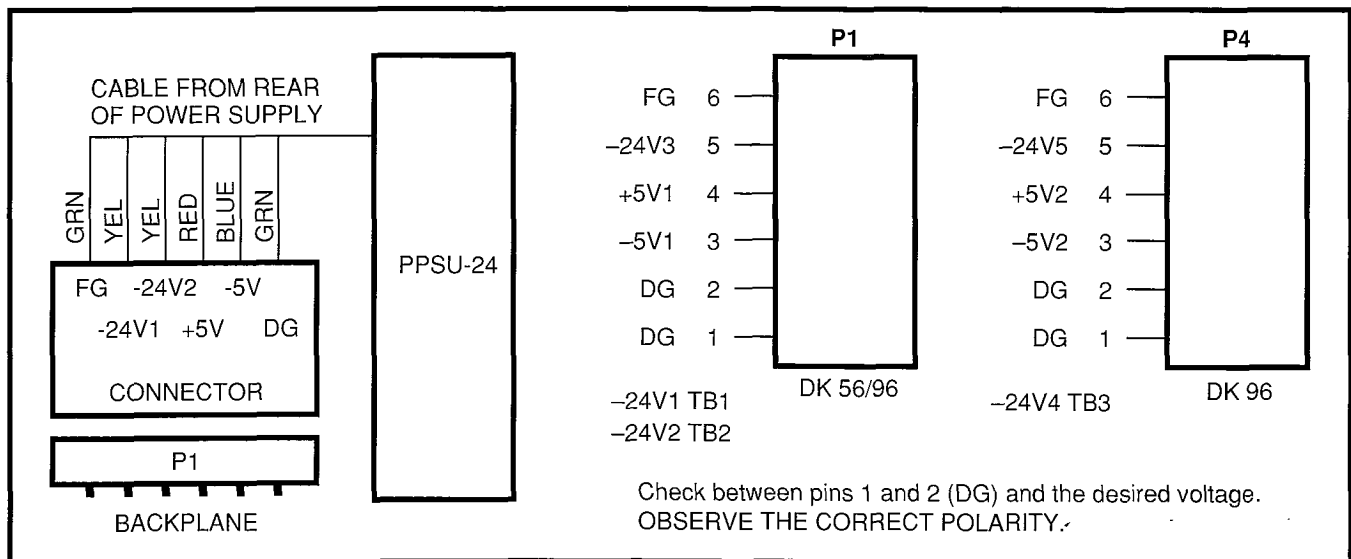


FIGURE 2—BACKPLANE CONNECTORS P1 (DK24), P1 & P4 (DK56/96)

problem. The Power Supply Test Procedure in Paragraph 3, Section **200-096-205**, *Installation*, can be employed to further isolate possible causes before removal of the KSU back cover or the power supply unit. Figure 2 shows backplane connector P1 and P4 and voltages at each pin. Voltages should fall within the following ranges:

Nominal	Range
-24V	-26.3 ~ -27.8
+5V	+4.5 ~ +5.5
-5V	-4.5 ~ -5.5

6.02 If voltage checks indicate a power supply fault, replace the power supply with a correctly operating unit. Refer to Section **200-096-200**, *Installation*, for power supply installation procedures.

**TABLE B
DK24 CIRCUIT BREAKER DISTRIBUTION**

Circuit Breaker	Backplane PCB	PCTUS1
-24V1	Slot 01, 02, 03	—
-24V2	Slot 04, 05, 06	—
+5V	All slots	+5V
-5V	All slots	-5V

**TABLE C
DK56 CIRCUIT BREAKER DISTRIBUTION**

Circuit Breaker	Backplane PCB	PCTU
-24V1	Slots 01, 02	—
-24V2	Slots 03, 04, 05	—
-24V3	Slots 06, 07, 08	—

NOTE:
+5 volts goes to all PCB slots.
-5 volts goes to all PCB slots.

6.03 The circuit breaker distribution charts show which voltages supply the various slot locations. If a circuit breaker pops out, this chart will help to identify a malfunctioning PCB (reference Tables B, C, and D).

**TABLE D
DK96 CIRCUIT BREAKER DISTRIBUTION**

Circuit Breaker	Backplane PCB (upper)	Backplane PCB (lower)	PCTU
+5V1	All Slots	—	+5V
+5V2	—	All Slots	-5V
-24V1	Slot 01, 02	—	—
-24V2	Slot 03, 04, 05	—	—
-24V3	Slot 06, 07, 08	—	—
-24V4	—	Slot 09, 10, 11	—
-24V5	—	Slot 12, 13, 14	—

NOTE:
+5 volts goes to all PCB slots.
-5 volts goes to all PCB slots.

7 STATION CABLE CONTINUITY CHECK

7.01 Voltmeter Test

7.02 The continuity of the cable run between the HKSU and the electronic telephone is checked with a voltmeter as follows:

NOTE:
Perform the following at the locations indicated:

1. Modular block: Check all station cables.
2. MDF: Check cable from KSU to MDF.

- 1) Disconnect the electronic telephone.
- 2) Using a DC voltmeter, measure between the wires of the two pairs to verify the readings shown in Table E (Refer to Table G on page 27 for a PDKU).
- 3) An improper reading indicates an open, crossed or shorted wire.
- 4) For the MDF-to-electronic telephone cable, a more precise check is made using an ohm-meter.

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FEBRUARY 1991**

7.10 Ohmmeter Test

7.11 The continuity of the cable run between the KSU and the electronic telephone is checked with an ohmmeter as follows:

- 1) Disconnect the electronic telephone.
- 2) At the MDF, remove the bridging clips.
- 3) Using an ohmmeter, measure the resistance between all combinations of the four wires at the modular block. All measurements should

exceed 1 M ohm (Refer to Table H on page 27 for a PDKU).

- 4) At the MDF, place shorting jumper wires between the T and R of pair #1 (green-red), the T and R of pair #2 (black-yellow) and the T and R of pair #3 (blue-white).
- 5) At the modular block, measure the resistance between all wire combinations. The proper readings are shown in Table F (Refer to Table H on page 27 for PDKU).

**TABLE E
STATION CABLE CONTINUITY
CHECK USING VOLTMETER**

FROM			TO			VOLTAGE*
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	24 *
1	R	Red	2	T	Black	24 *
1	T	Green	2	R	Yellow	24 *
1	R	Red	2	R	Yellow	24 *
1	T	Green	1	R	Red	0
2	T	Black	2	R	Yellow	0
3	T	White	3	R	Blue	0
3	T	White	1	R	Red	0
3	R	Blue	1	R	Red	0
3	T	White	1	T	Green	0
3	R	Blue	1	T	Green	0
3	T	White	2	T	Black	0
3	R	Blue	2	T	Black	0
3	T	White	2	R	Yellow	0
3	R	Blue	2	R	Yellow	0

**Nominal voltage—within the limits of -26.3 ~ -27.8 VDC while under AC power.*

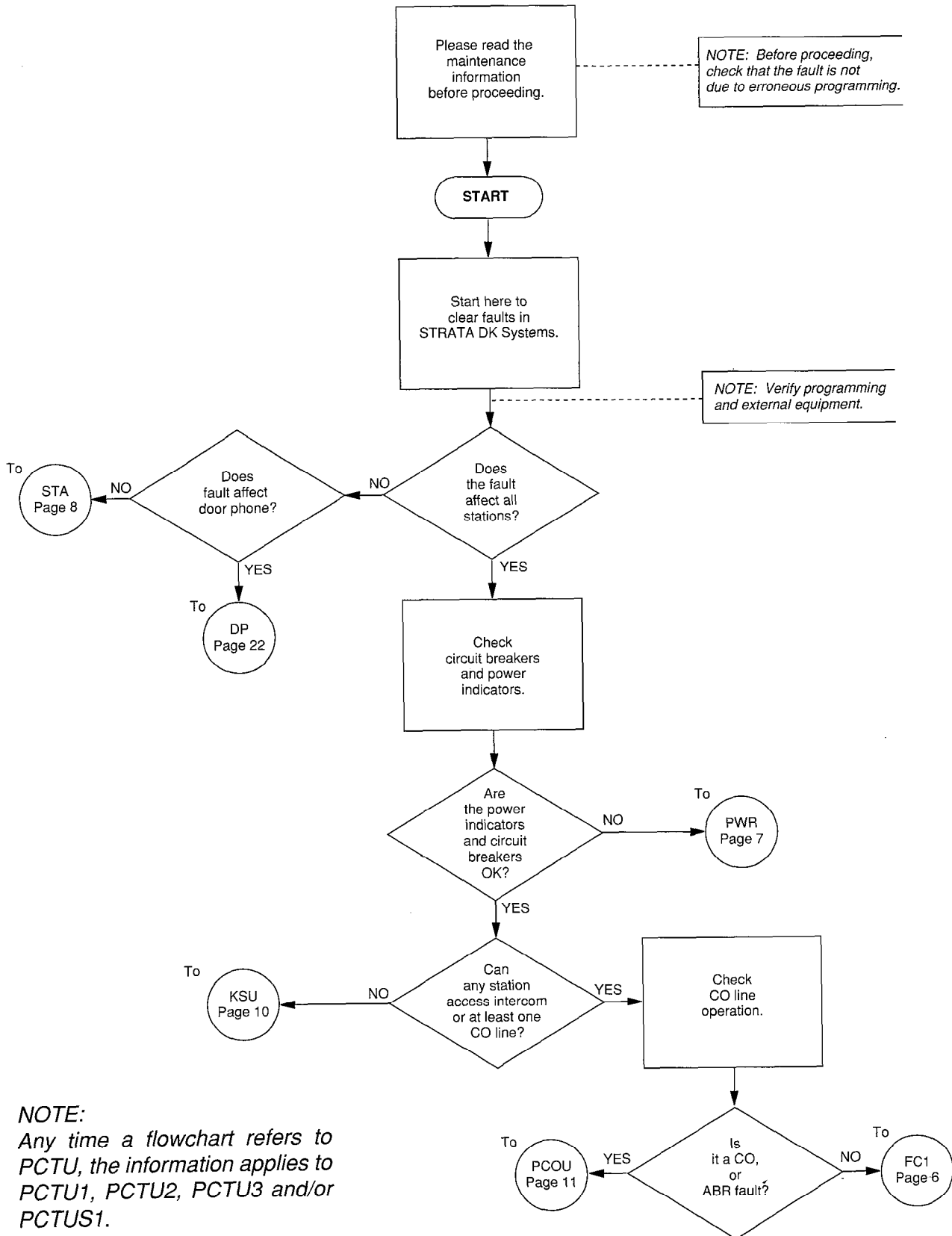
**TABLE F
STATION CABLE CONTINUITY
CHECK USING OHMMETER**

FROM			TO			Resistance
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	1M ohm
1	R	Red	2	T	Black	1M ohm
1	T	Green	2	R	Yellow	1M ohm
1	R	Red	2	R	Yellow	1M ohm
1	T	Green	1	R	Red	22 ohms ¹
2	T	Black	2	R	Yellow	22 ohms ¹
3	T	White	3	R	Blue	22 ohms ¹
3	T	White	1	R	Red	1M ohm
3	R	Blue	1	R	Red	1M ohm
3	T	White	1	T	Green	1M ohm
3	R	Blue	1	T	Green	1M ohm
3	T	White	2	T	Black	1M ohm
3	R	Blue	2	T	Black	1M ohm
3	T	White	2	R	Yellow	1M ohm

NOTES:

1. This is maximum allowable reading.
2. The green-red, black-yellow and white-blue measurements should be within 10% of each other.

CHART NO. 1
FAULT CLASSIFICATION



NOTE:
Any time a flowchart refers to PCTU, the information applies to PCTU1, PCTU2, PCTU3 and/or PCTUS1.

CHART NO. 1
FAULT CLASSIFICATION (cont.)

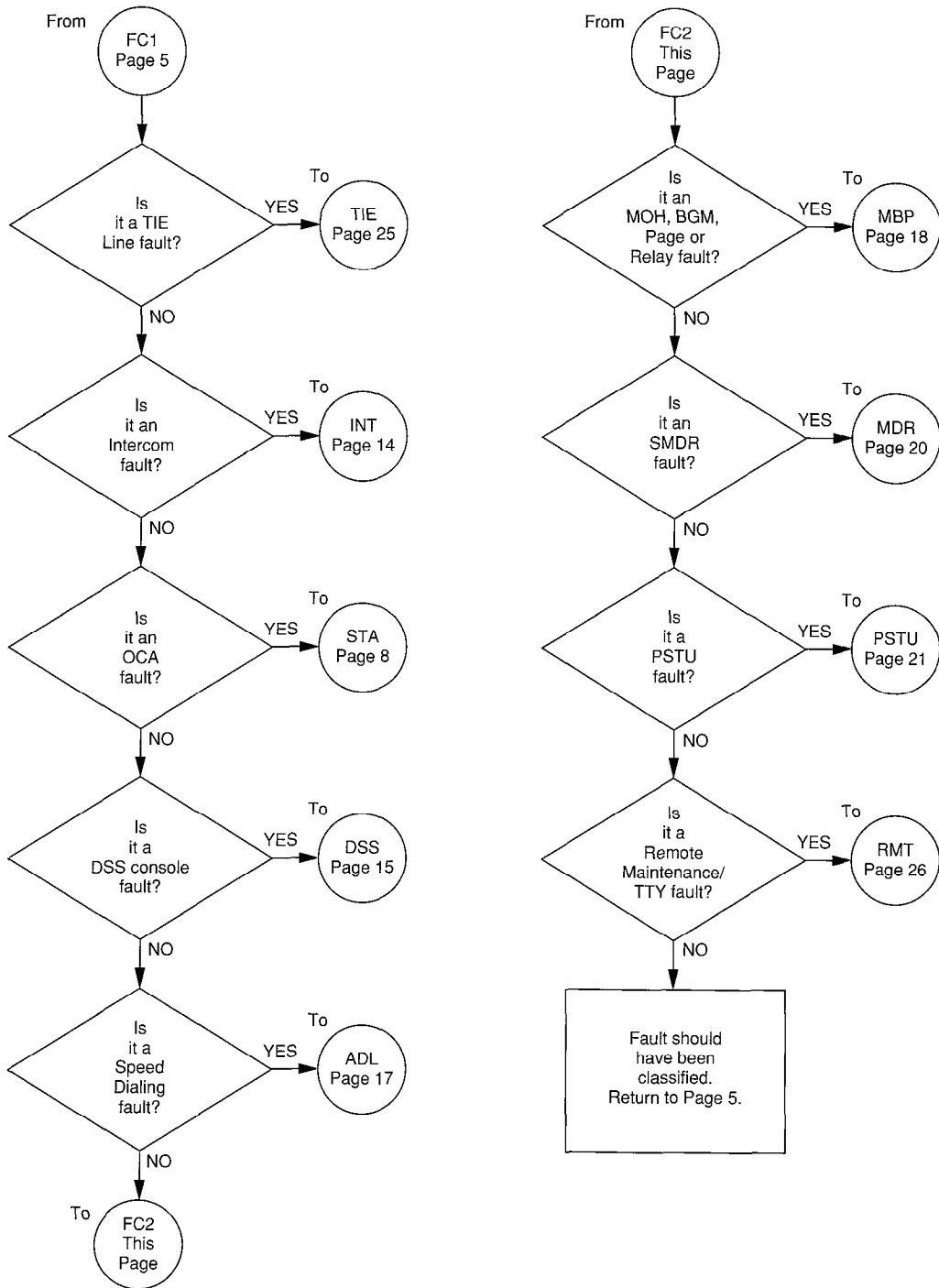
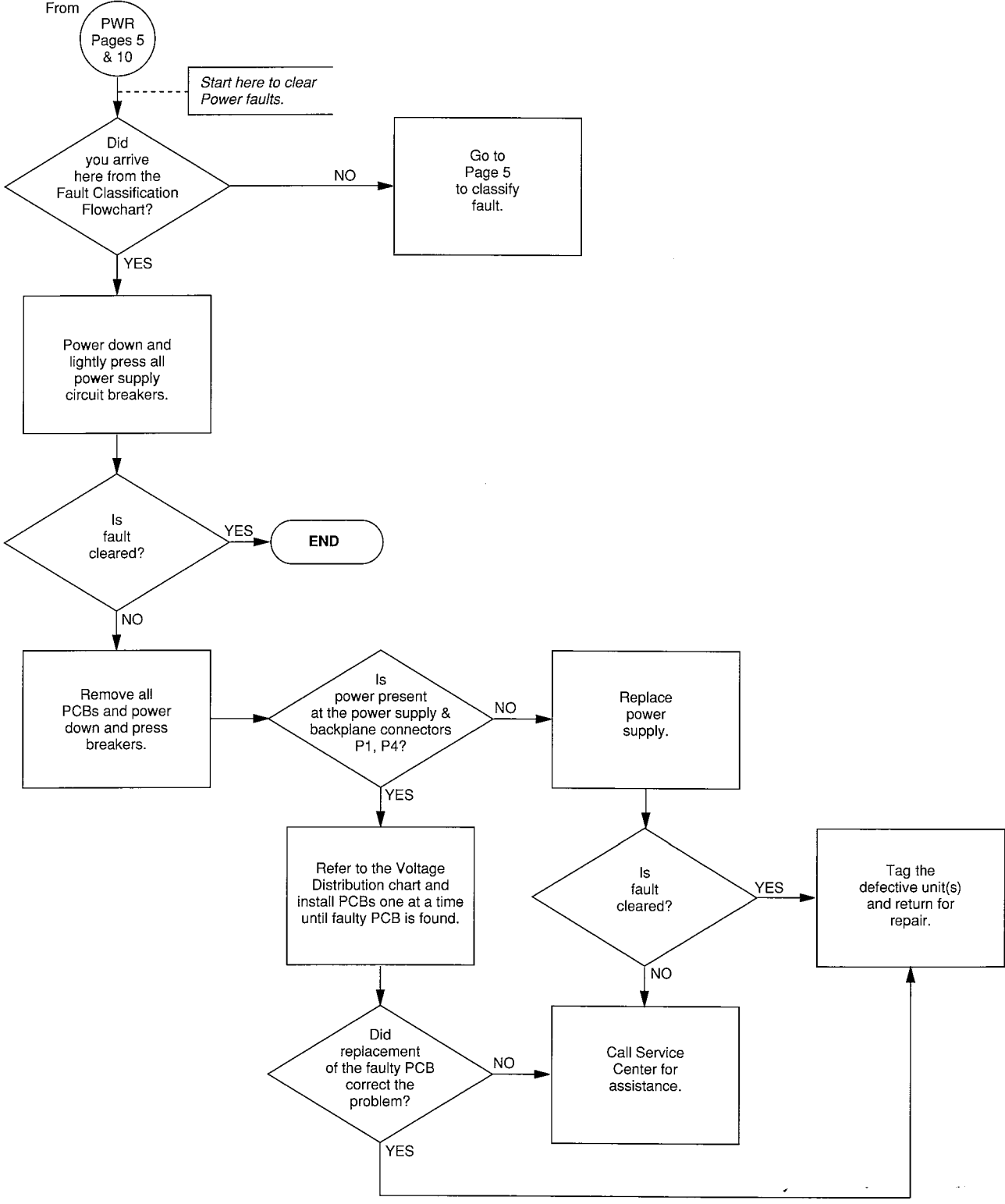


CHART NO. 2
POWER FAULTS



**CHART NO. 3
STATION FAULTS**

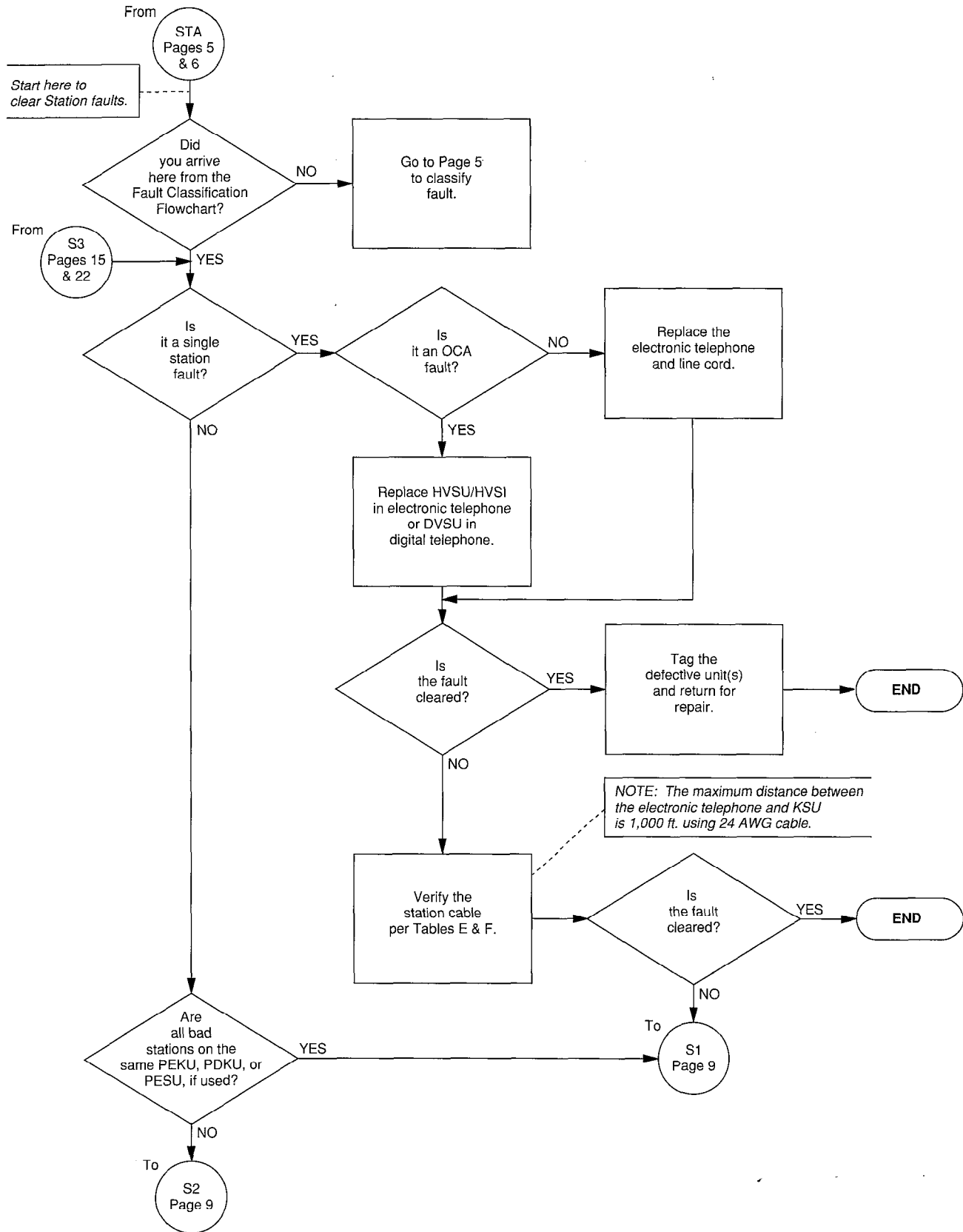


CHART NO. 3
STATION FAULTS (cont.)

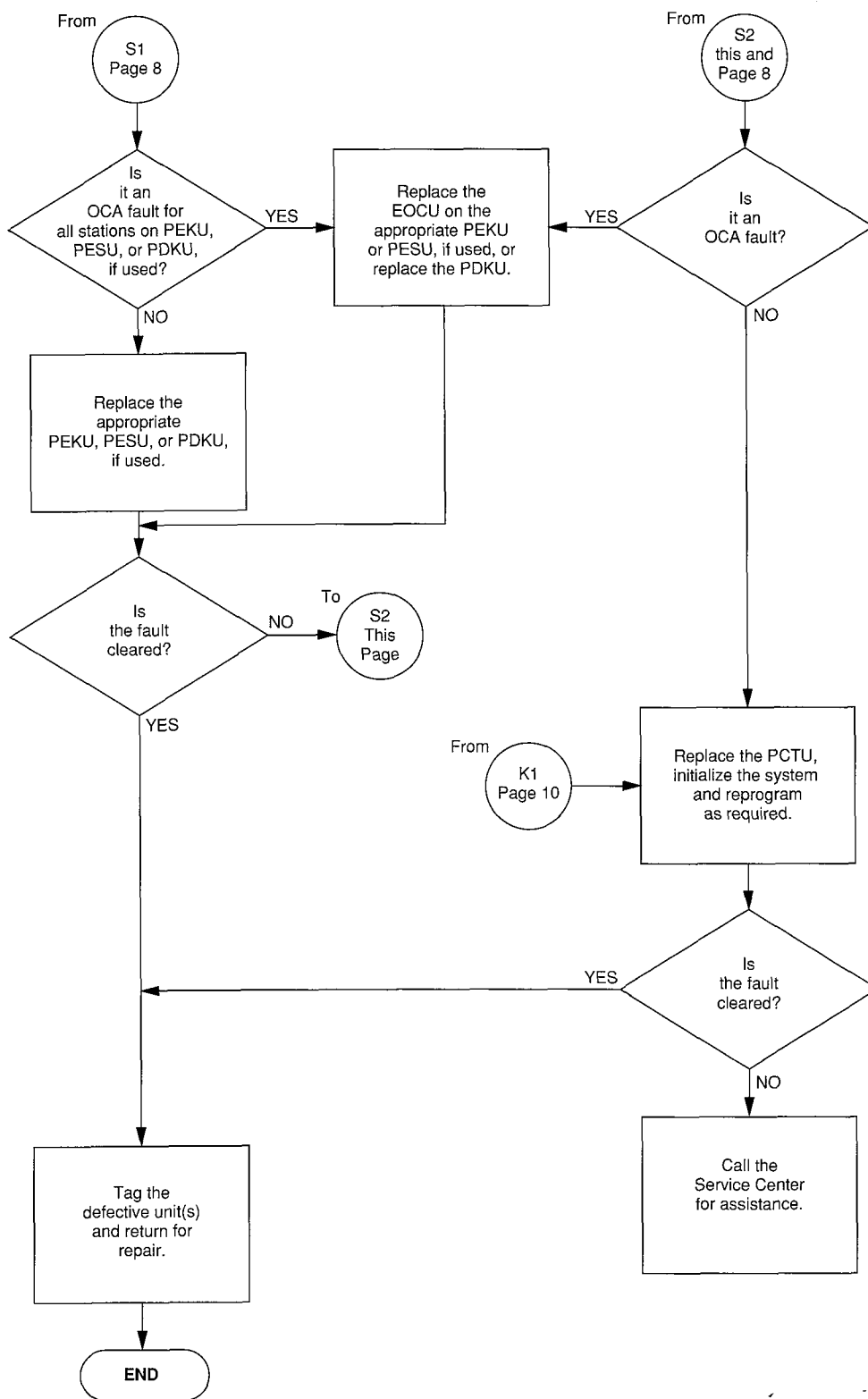


CHART NO. 4
KSU FAULTS

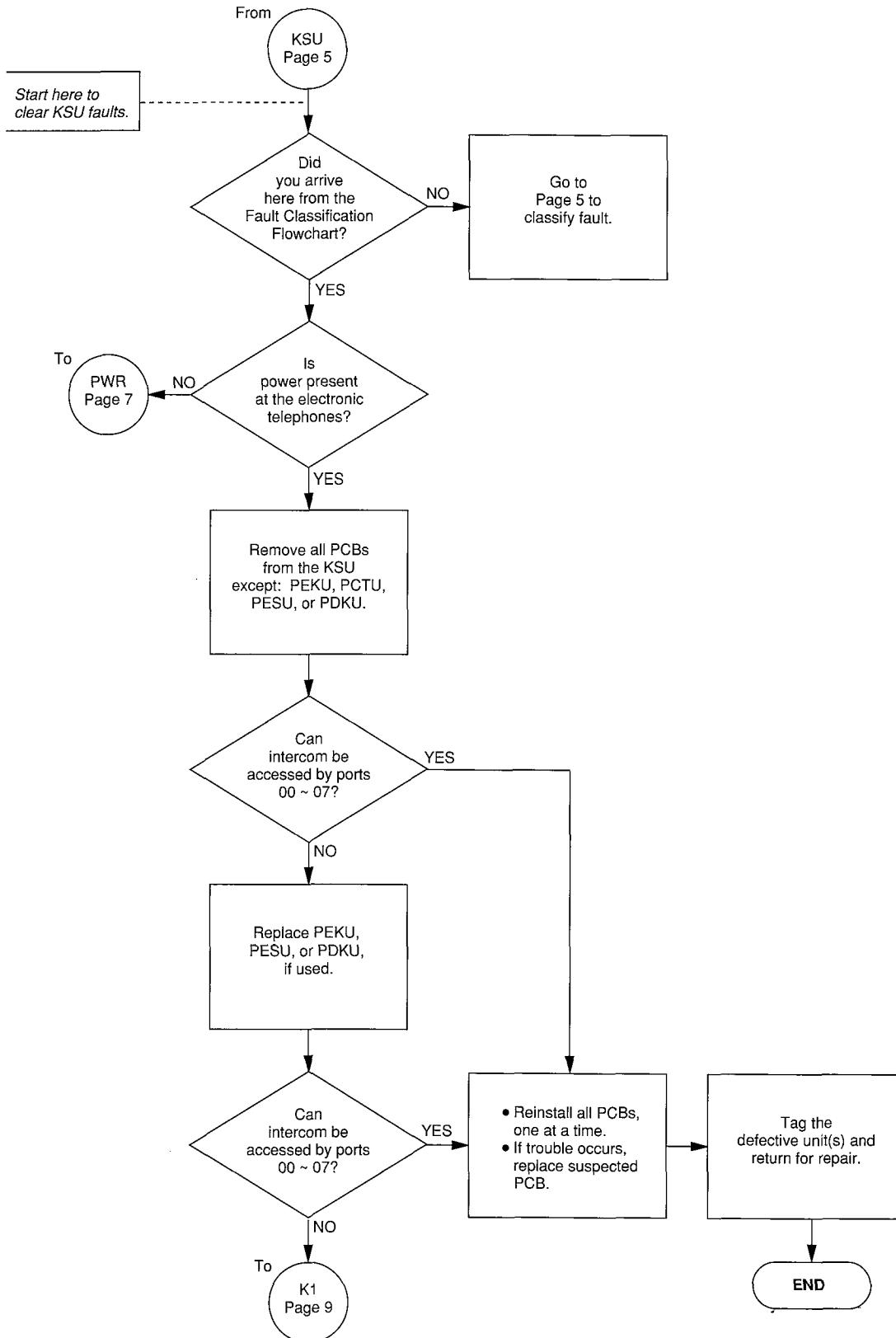


CHART NO. 5
CO LINE FAULTS

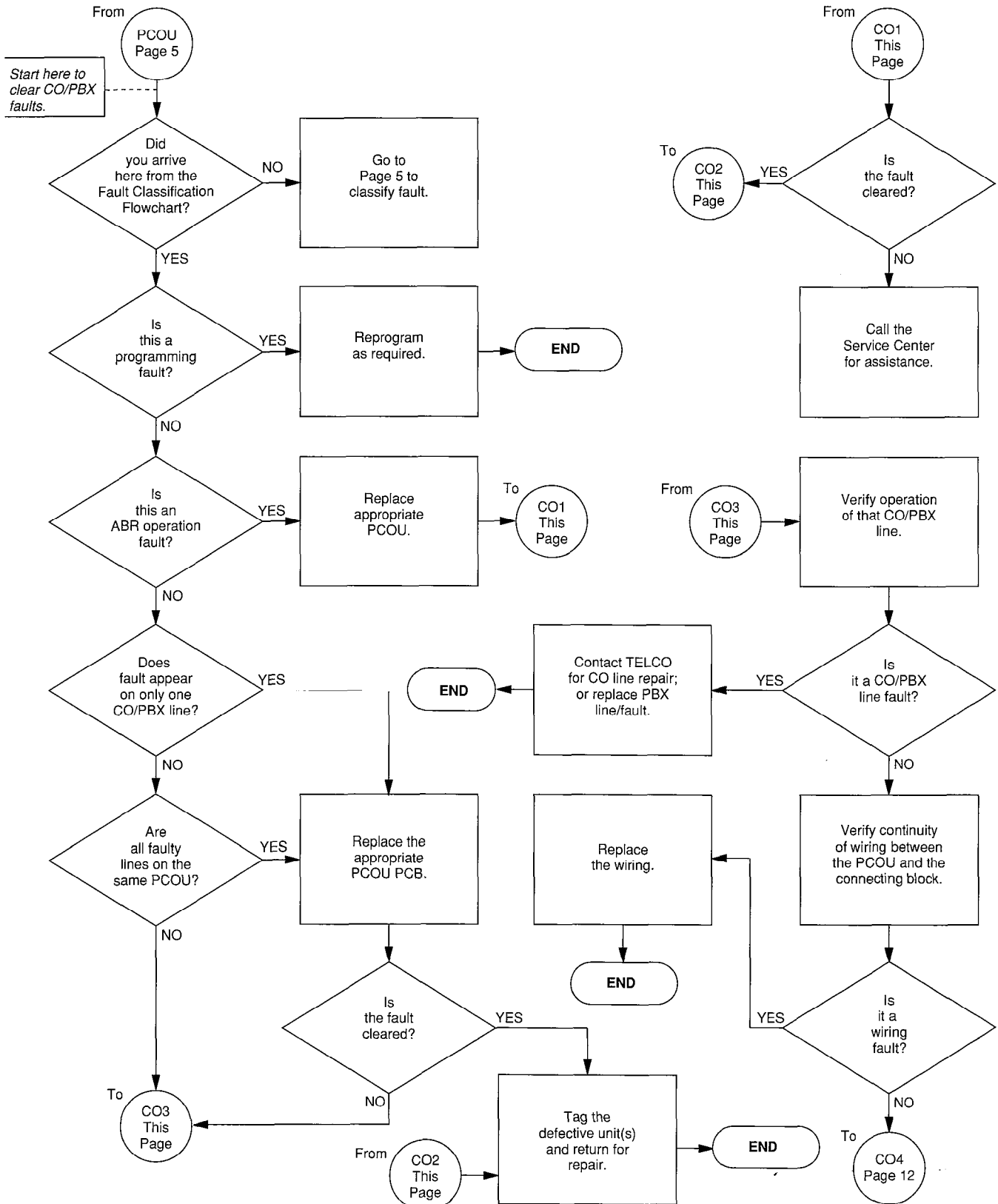


CHART NO. 5
CO LINE FAULTS (cont.)

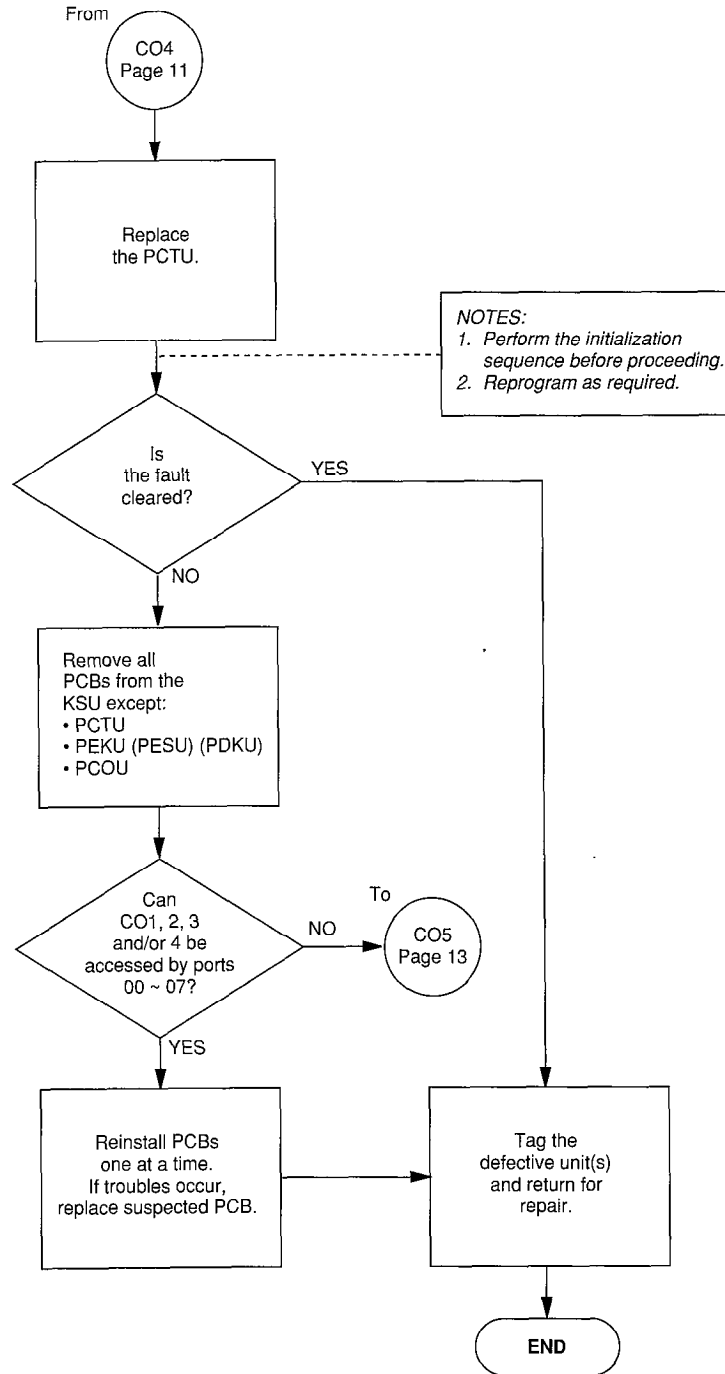


CHART NO. 5
CO LINE FAULTS (cont.)

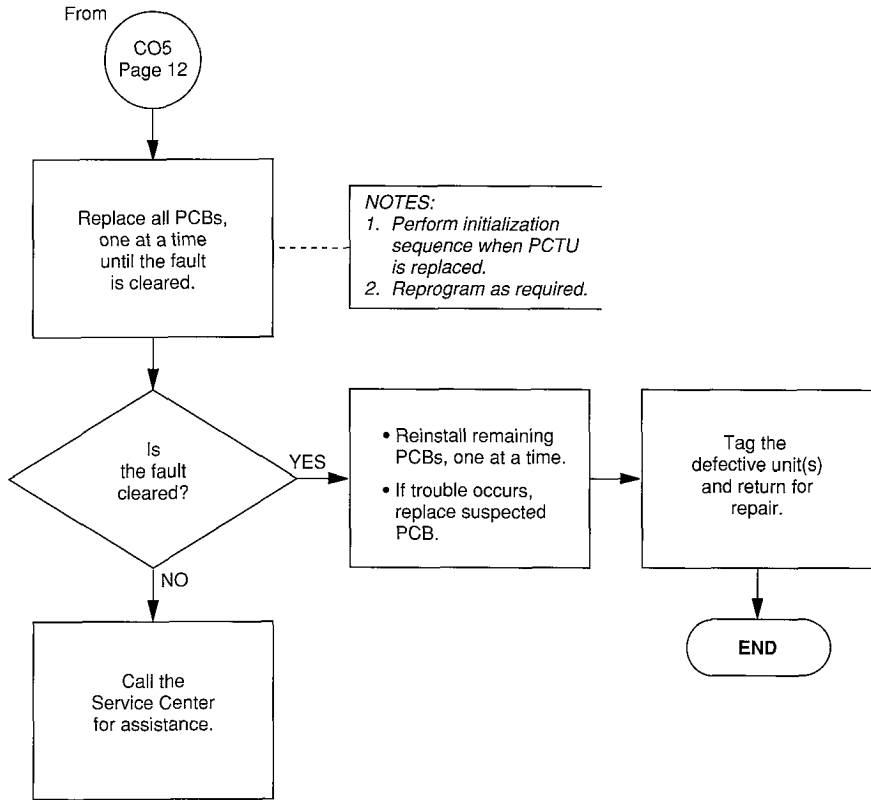


CHART NO. 6
INTERCOM FAULTS

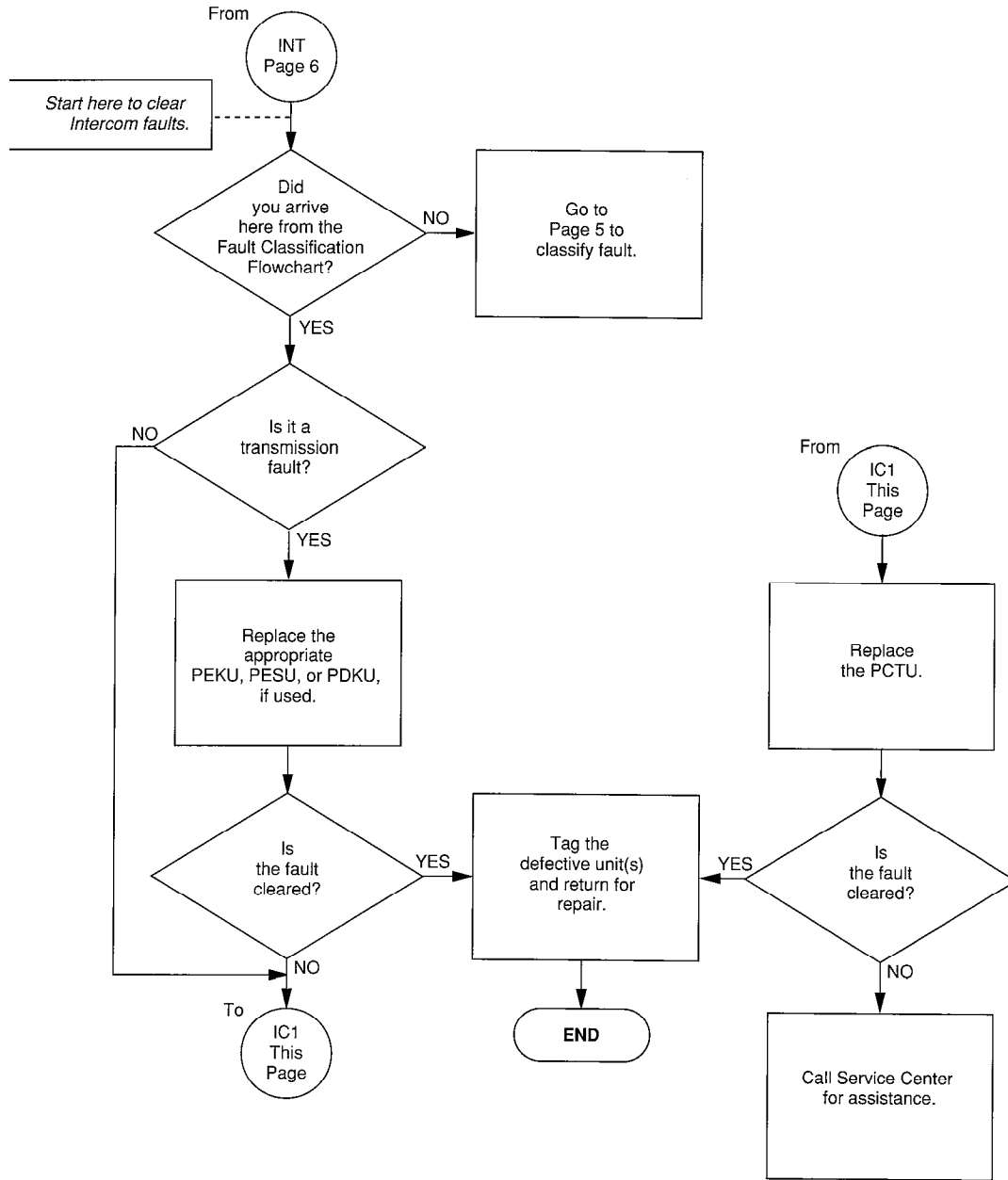
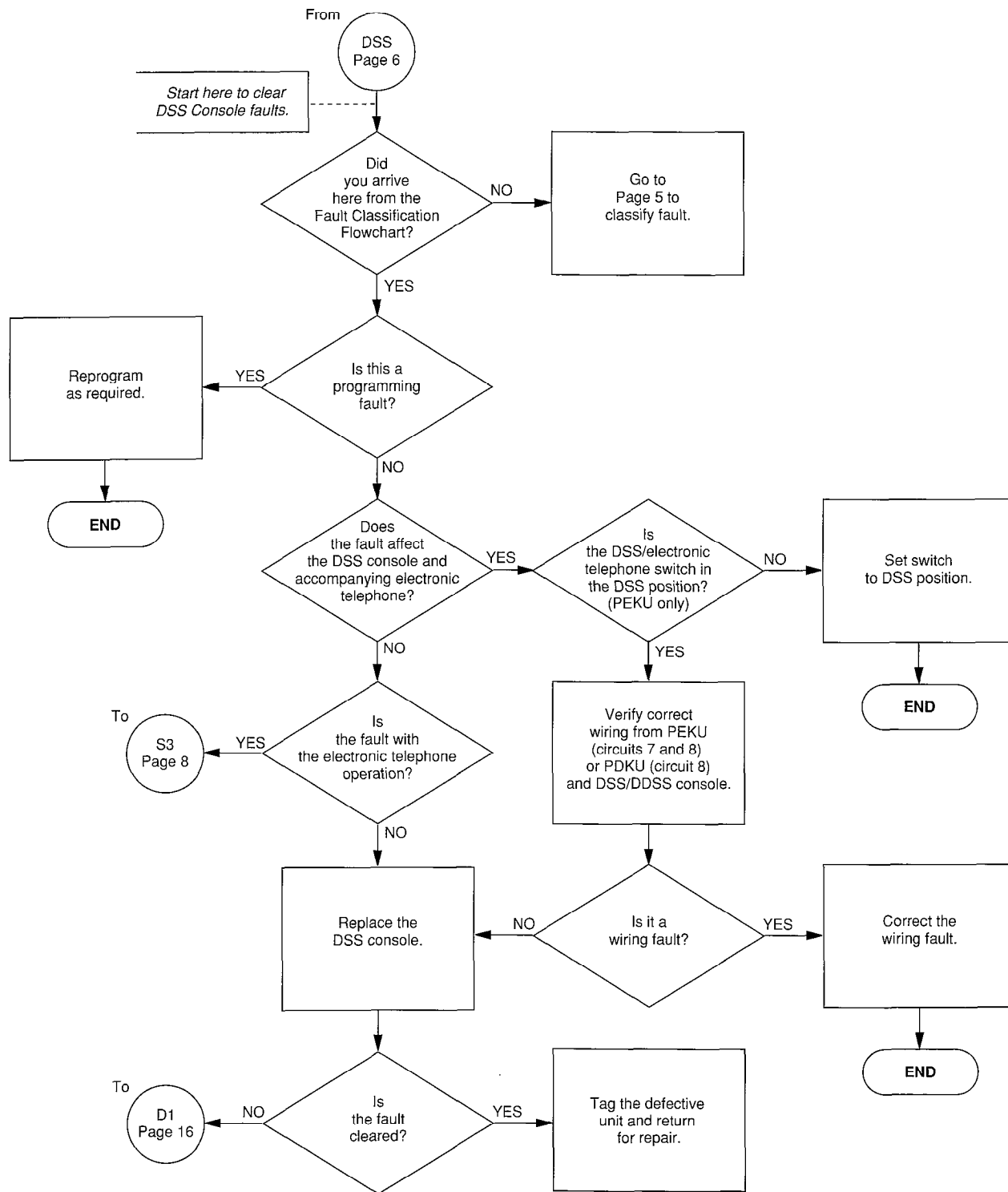


CHART NO. 7
DSS CONSOLE FAULTS*



* Procedures also apply to digital DSS consoles.

CHART NO. 7
DSS CONSOLE FAULTS (cont.)

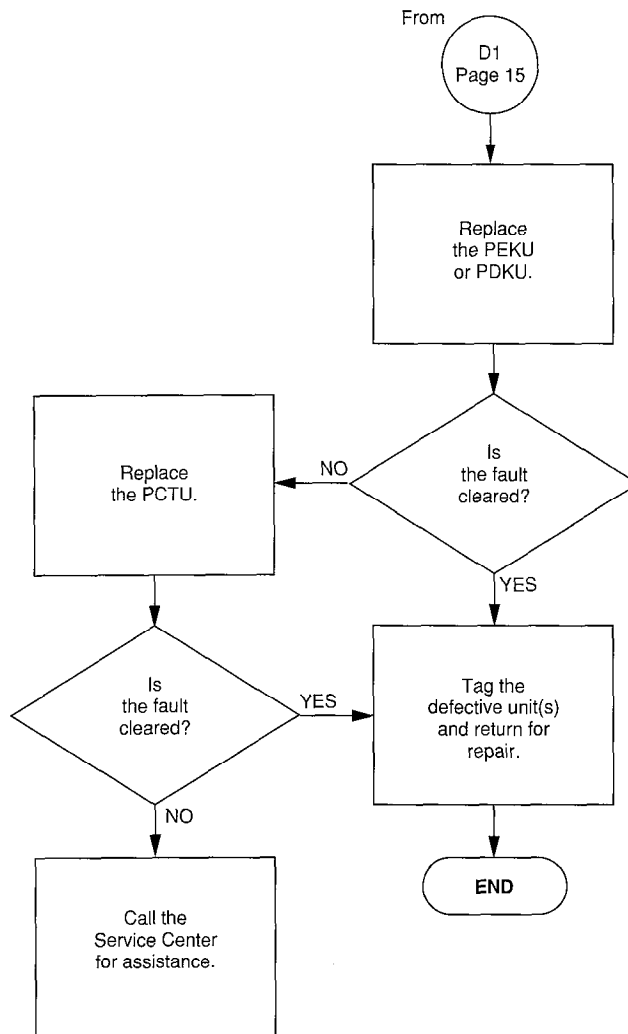


CHART NO. 8
SPEED DIAL FAULTS

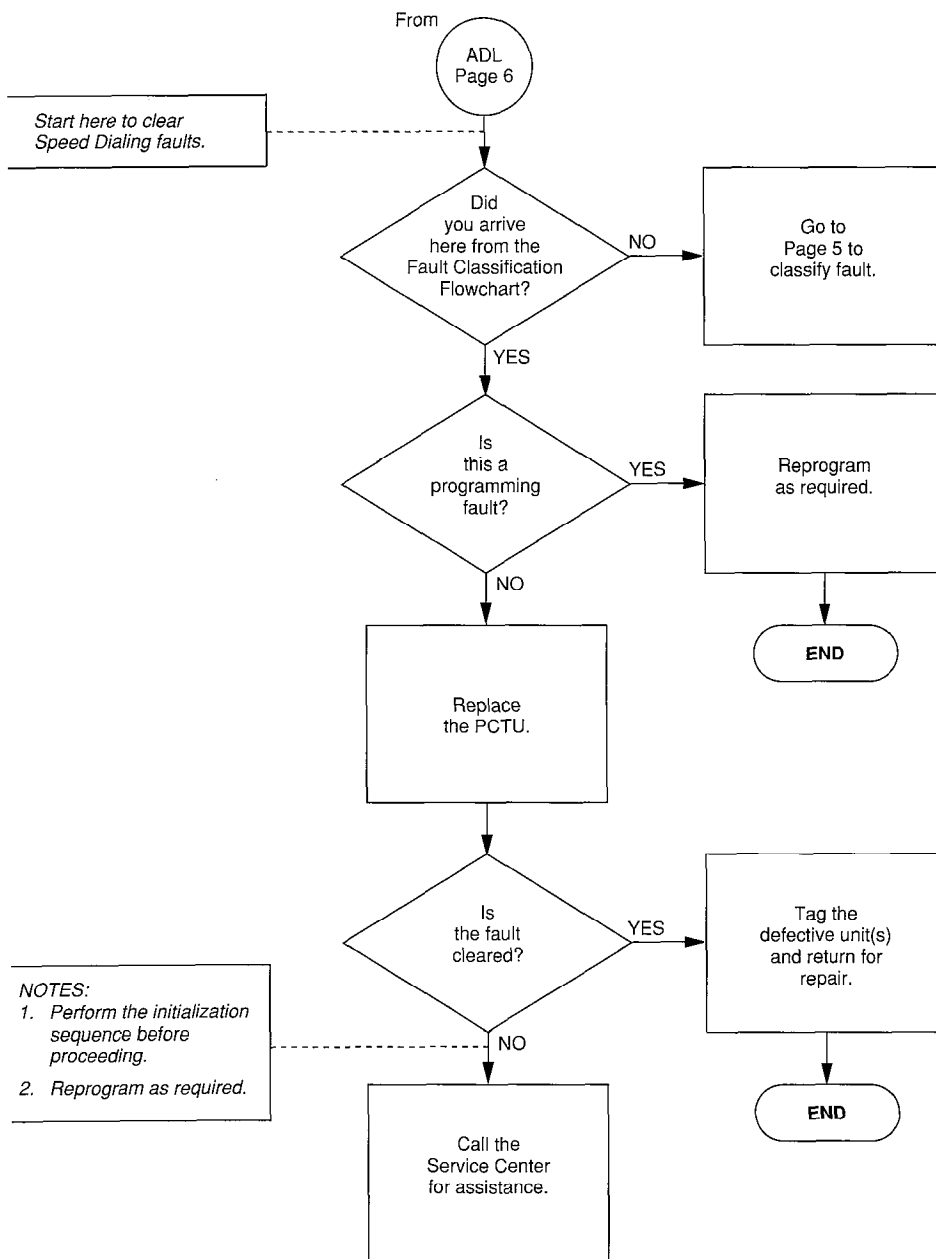


CHART NO. 9
MOH, BGM, PAGE & RELAY FAULTS

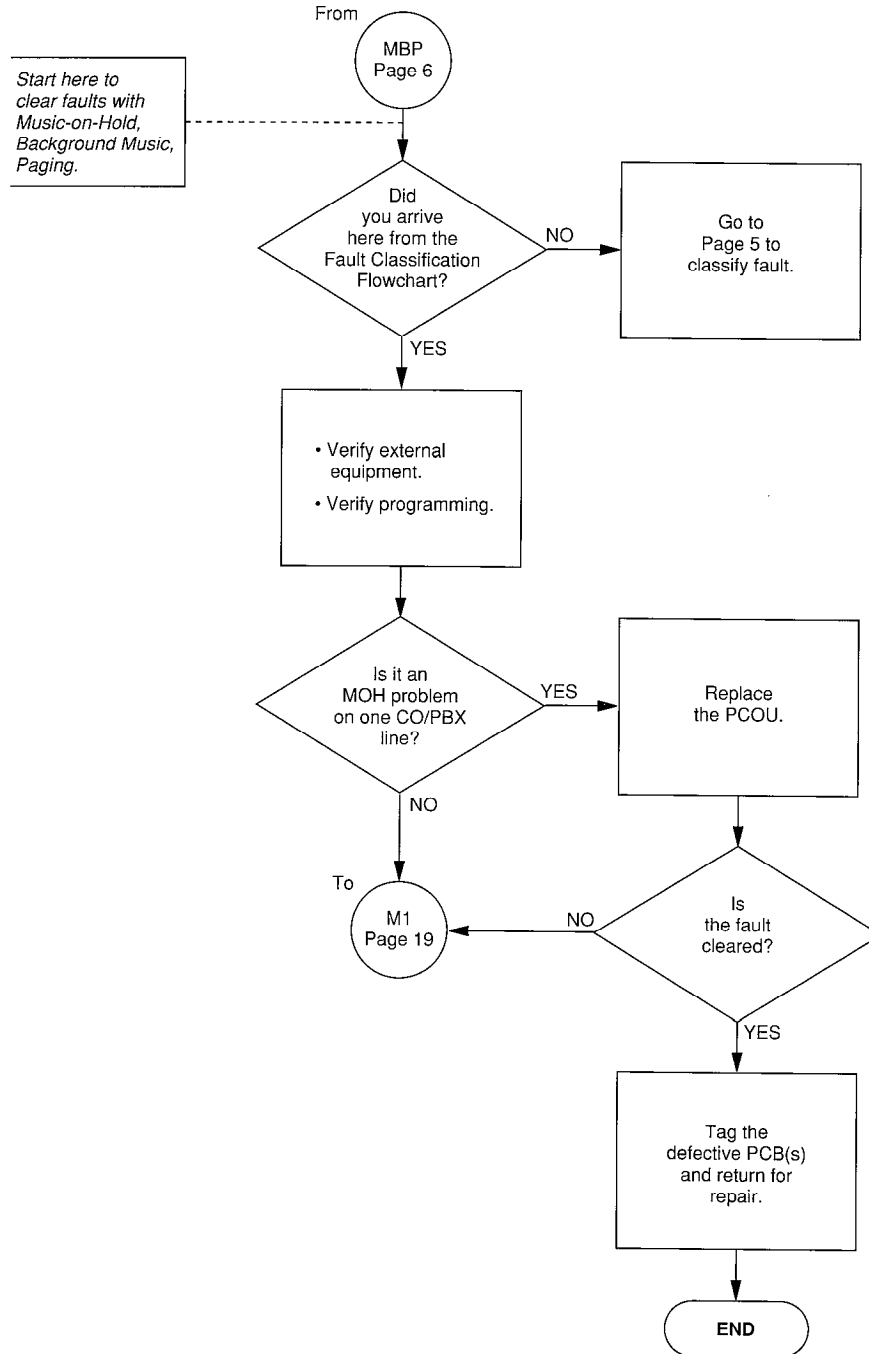


CHART NO. 9
MOH, BGM, PAGE & RELAY FAULTS (cont.)

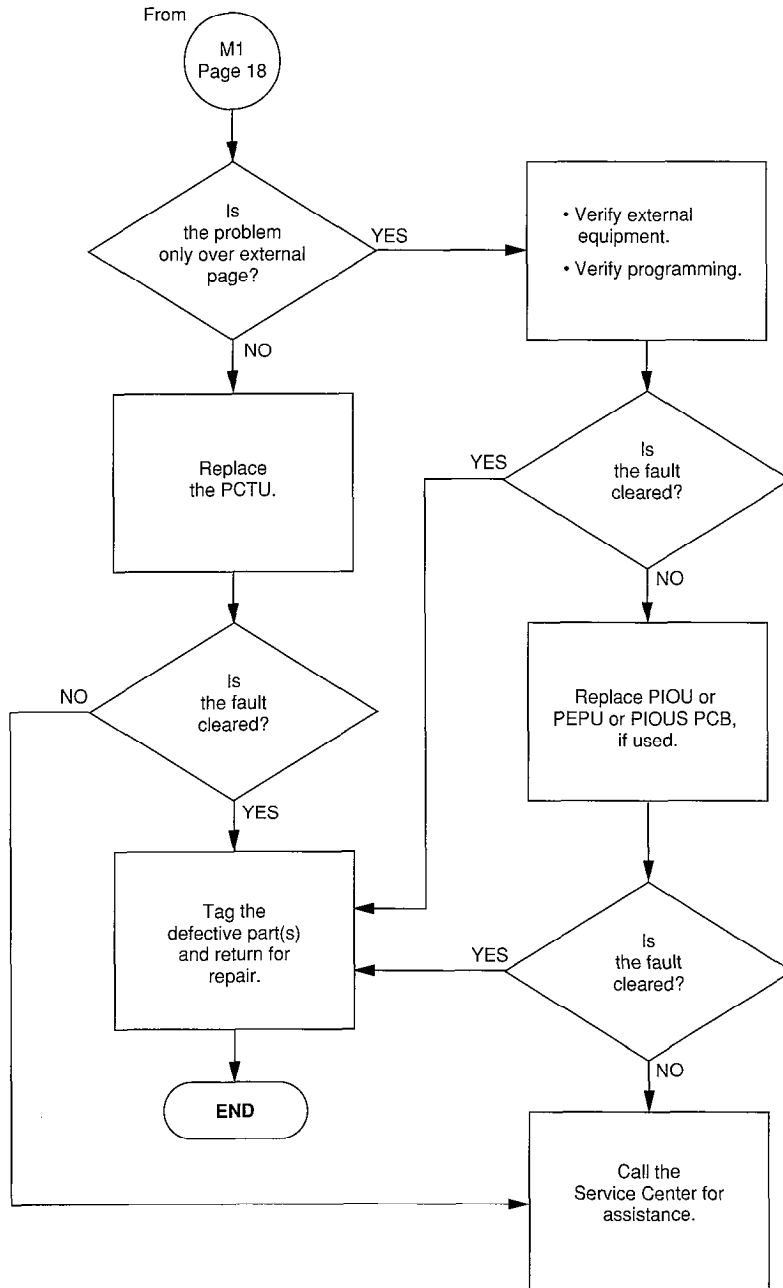


CHART NO. 10
SMDR FAULTS

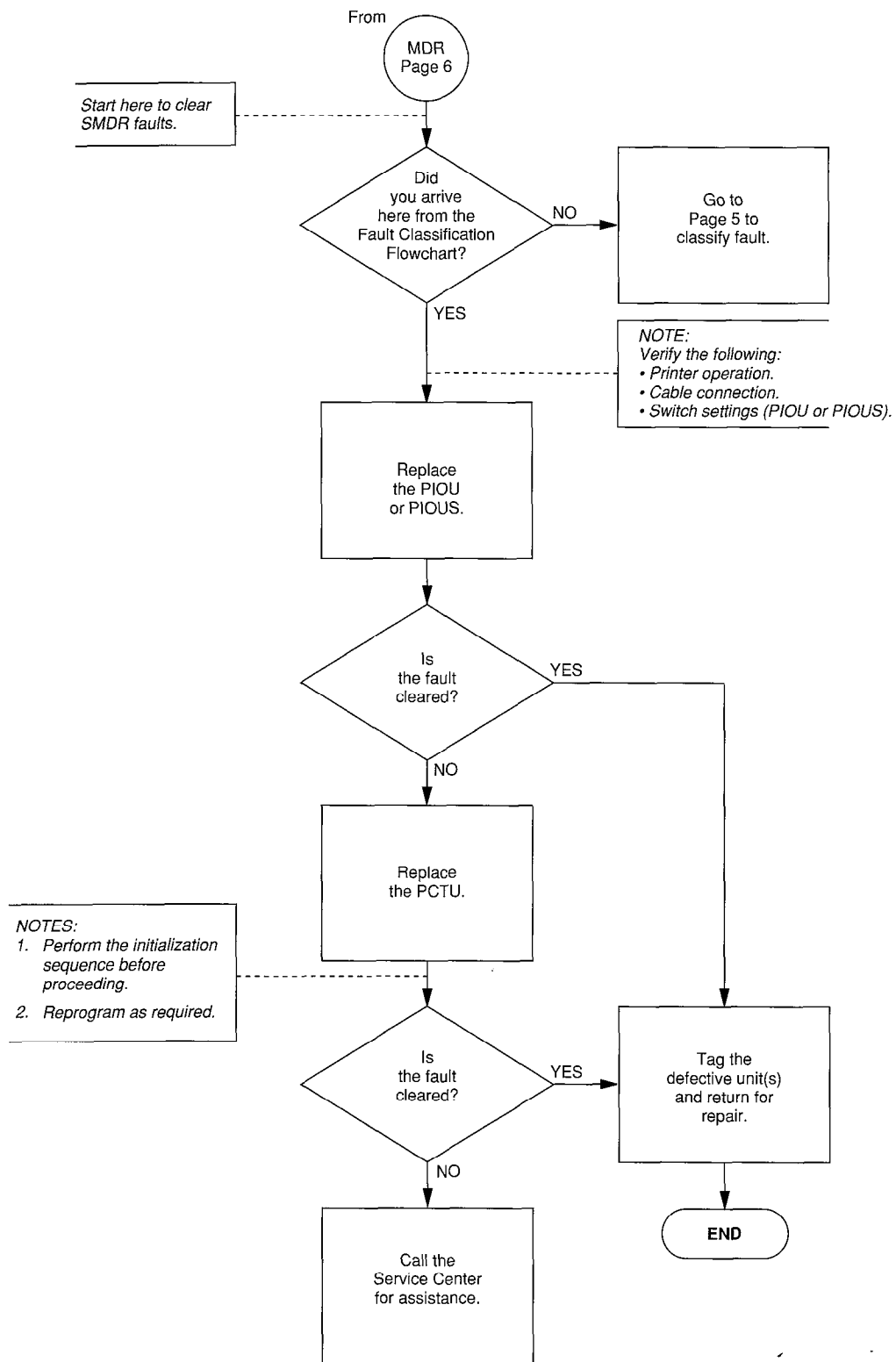
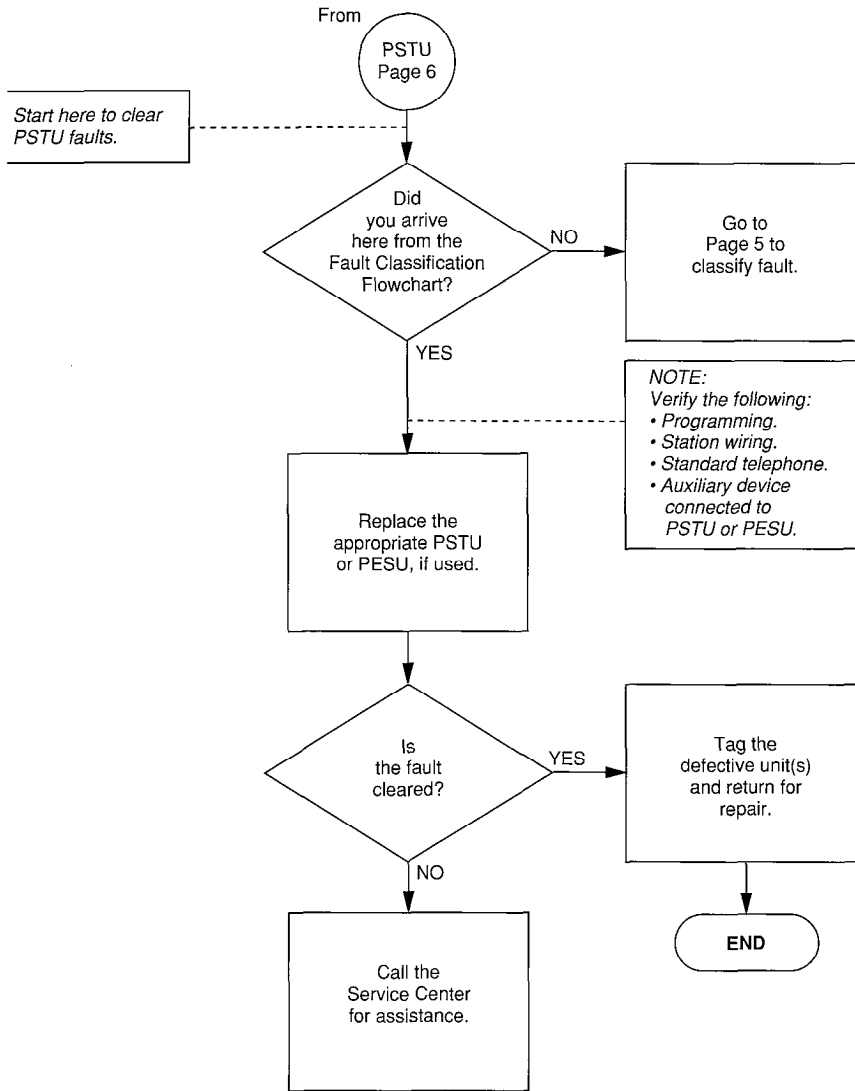


CHART NO. 11
PSTU FAULTS



NOTE:
If "Ring-Trip" is the fault, set the ring generator jumper plug to the "L" (Low) position. The ring generator jumper plug is equipped on the PESU and PTSU2 PCBs.

CHART NO. 12
DOOR PHONE FAULTS

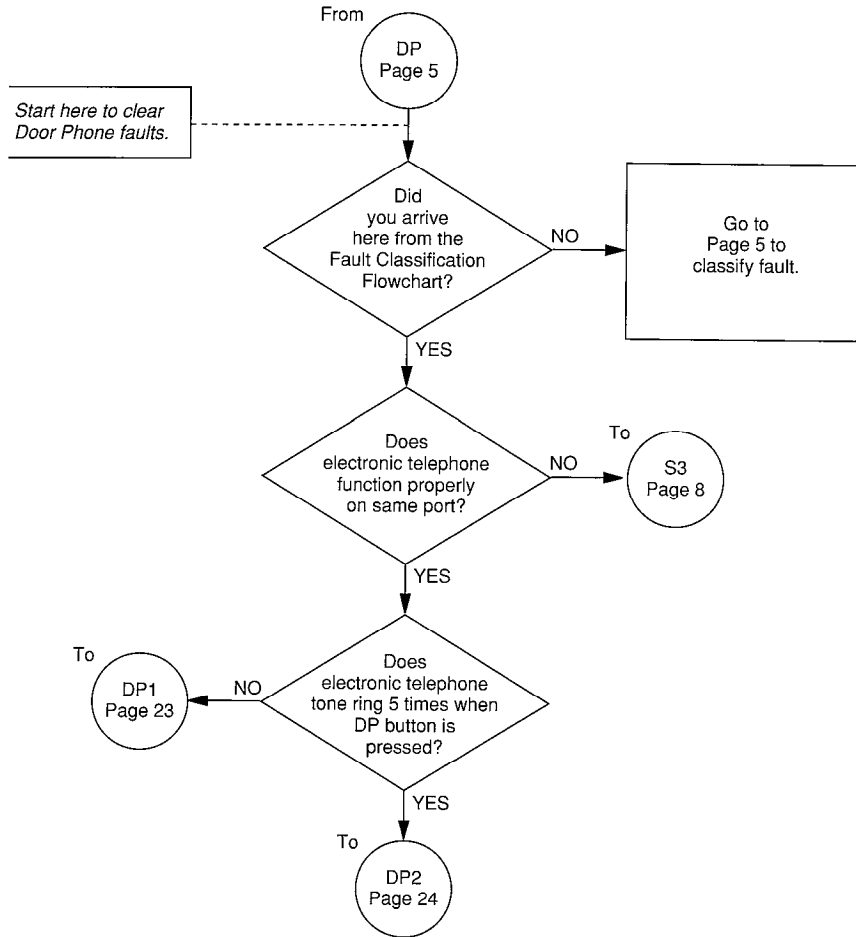


CHART NO. 12
DOOR PHONE FAULTS (cont.)

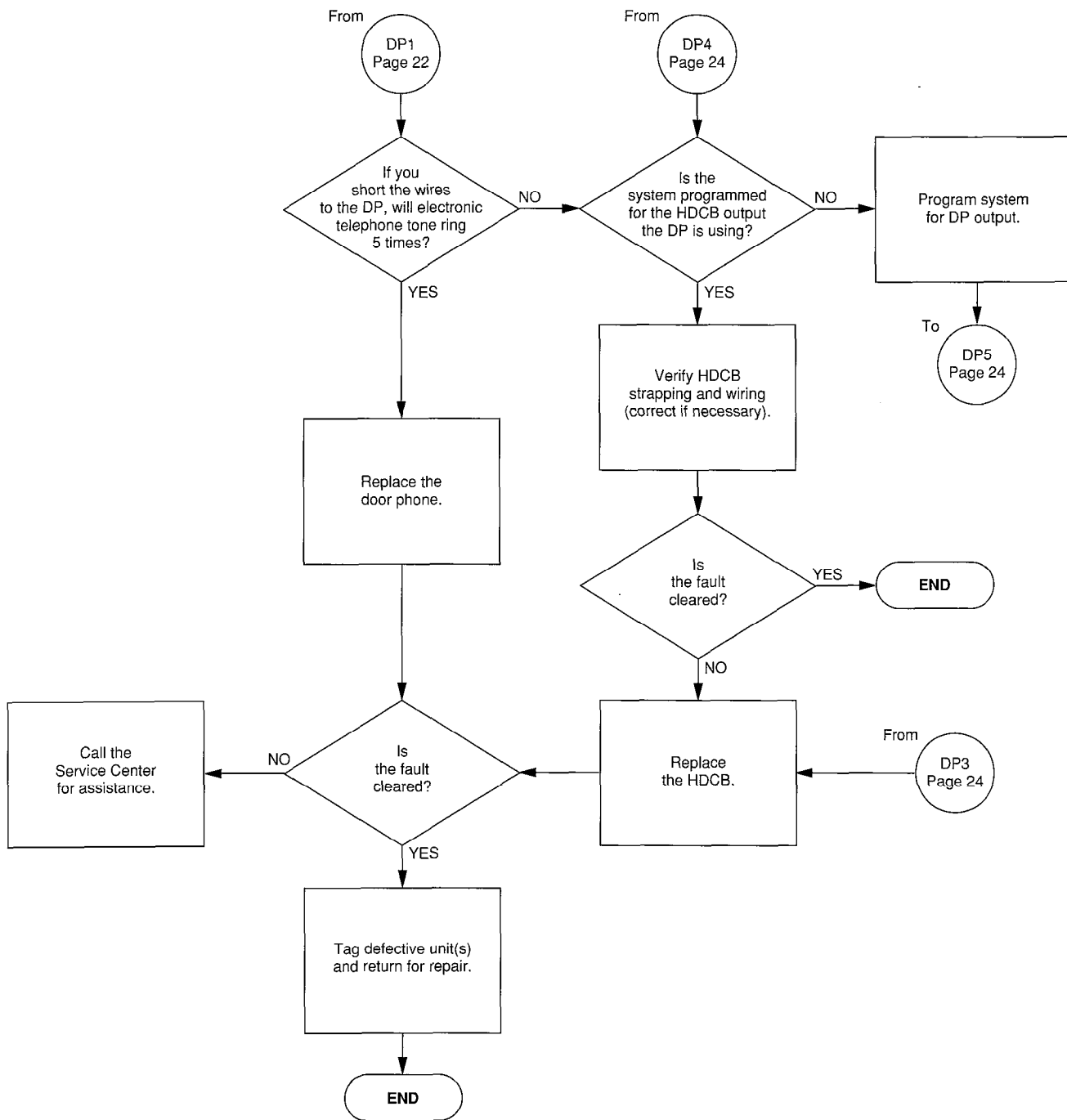


CHART NO. 12
DOOR PHONE FAULTS (cont.)

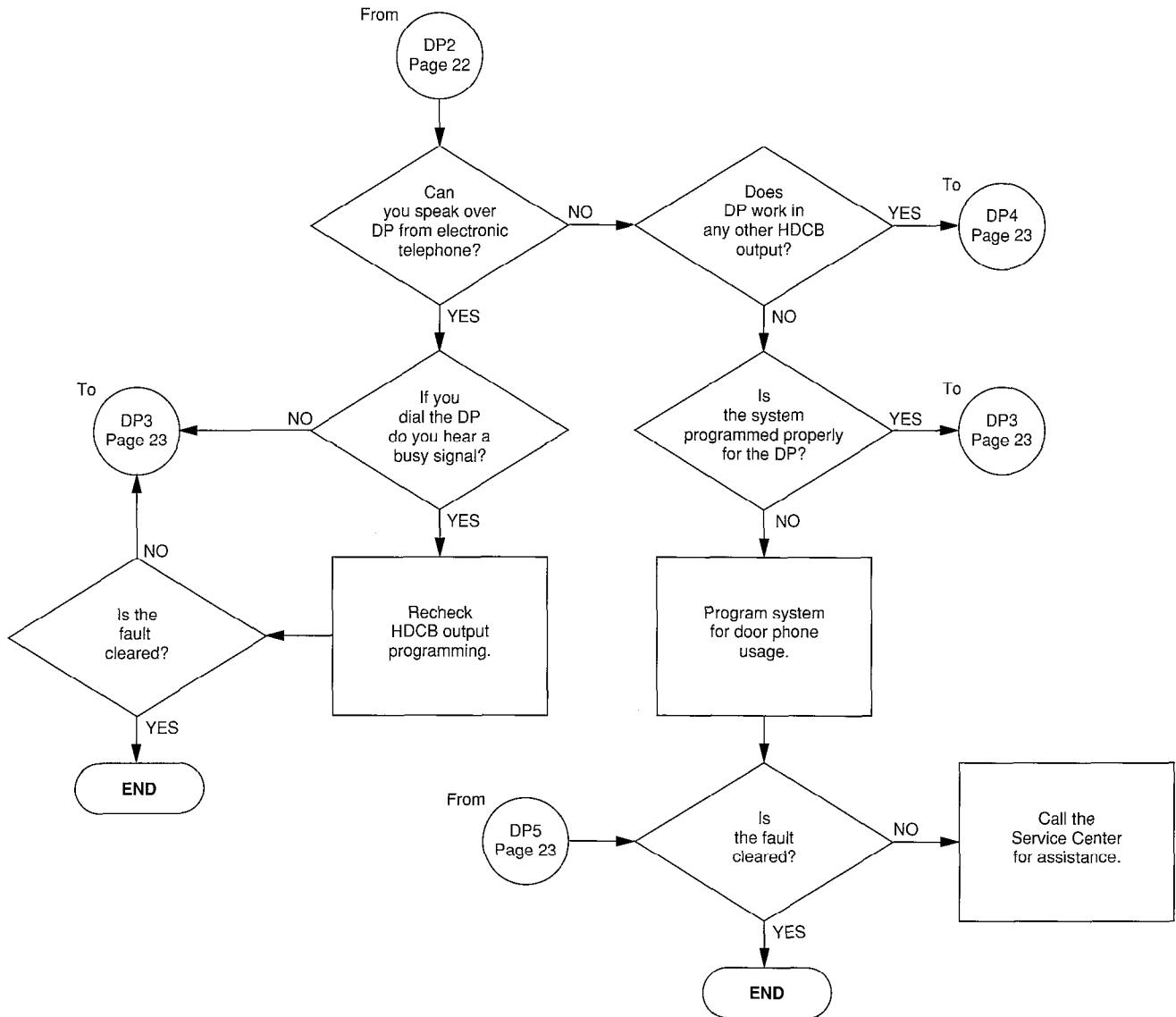
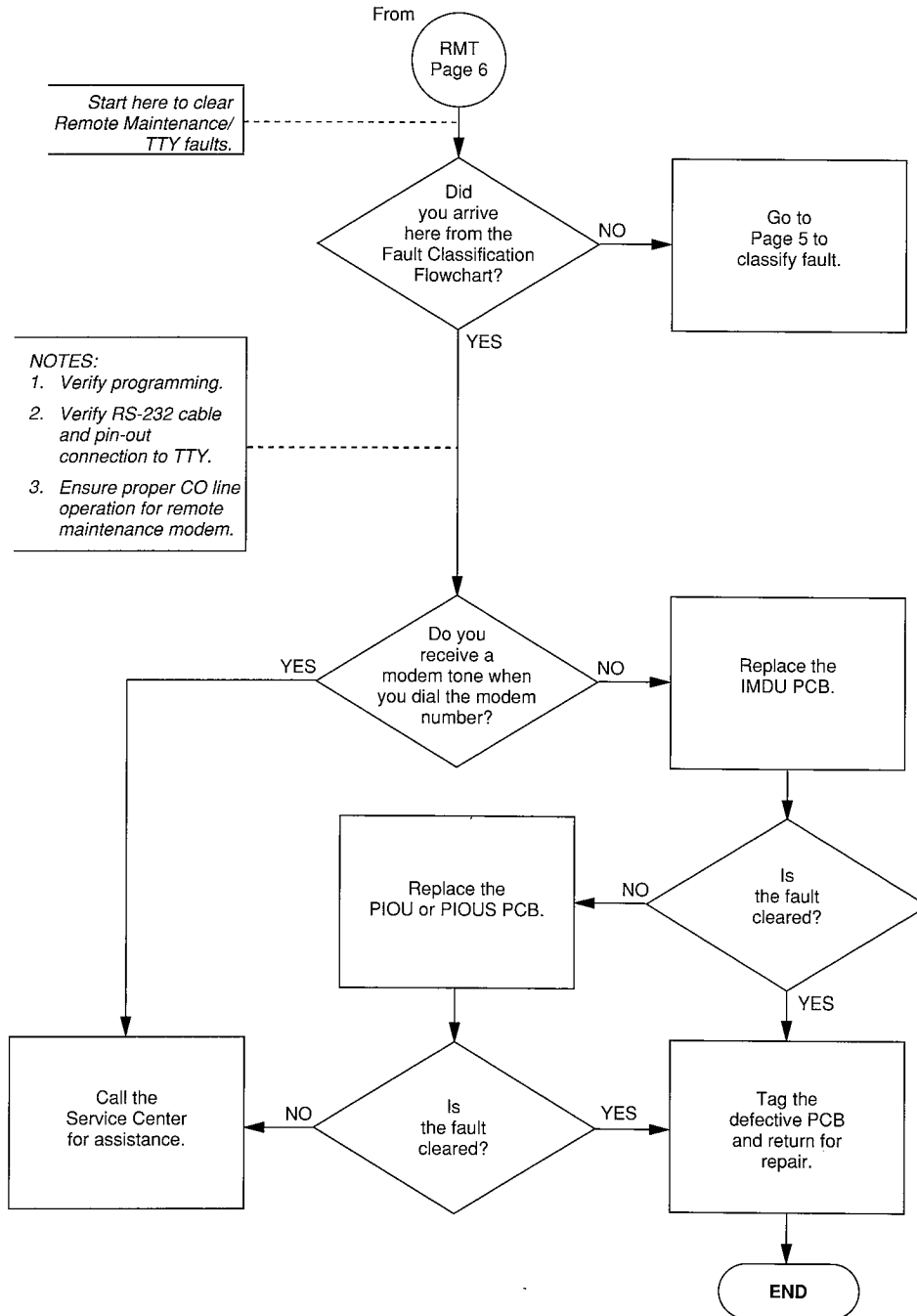


CHART NO. 14
REMOTE MAINTENANCE/TTY FAULTS



**TABLE G (PDKU)
STATION CABLE CONTINUITY
CHECK USING VOLTMETER**

FROM			TO			VOLTAGE
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	0
1	R	Red	2	T	Black	27.6
1	T	Green	2	R	Yellow	27.6
1	R	Red	2	R	Yellow	0
1	T	Green	1	R	Red	27.6
2	T	Black	2	R	Yellow	27.6

**TABLE H (PDKU)
STATION CABLE CONTINUITY
CHECK USING OHMMETER**

FROM			TO			Resistance
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	14 ohms
1	R	Red	2	T	Black	370 ohms
1	T	Green	2	R	Yellow	980 ohms
1	R	Red	2	R	Yellow	5 ohms
1	T	Green	1	R	Red	983 ohms
2	T	Black	2	R	Yellow	12 ohms

Strata[®] *DK*

**RELEASE 1, 2, and 3
REMOTE
ADMINISTRATION & MAINTENANCE
PROCEDURES**

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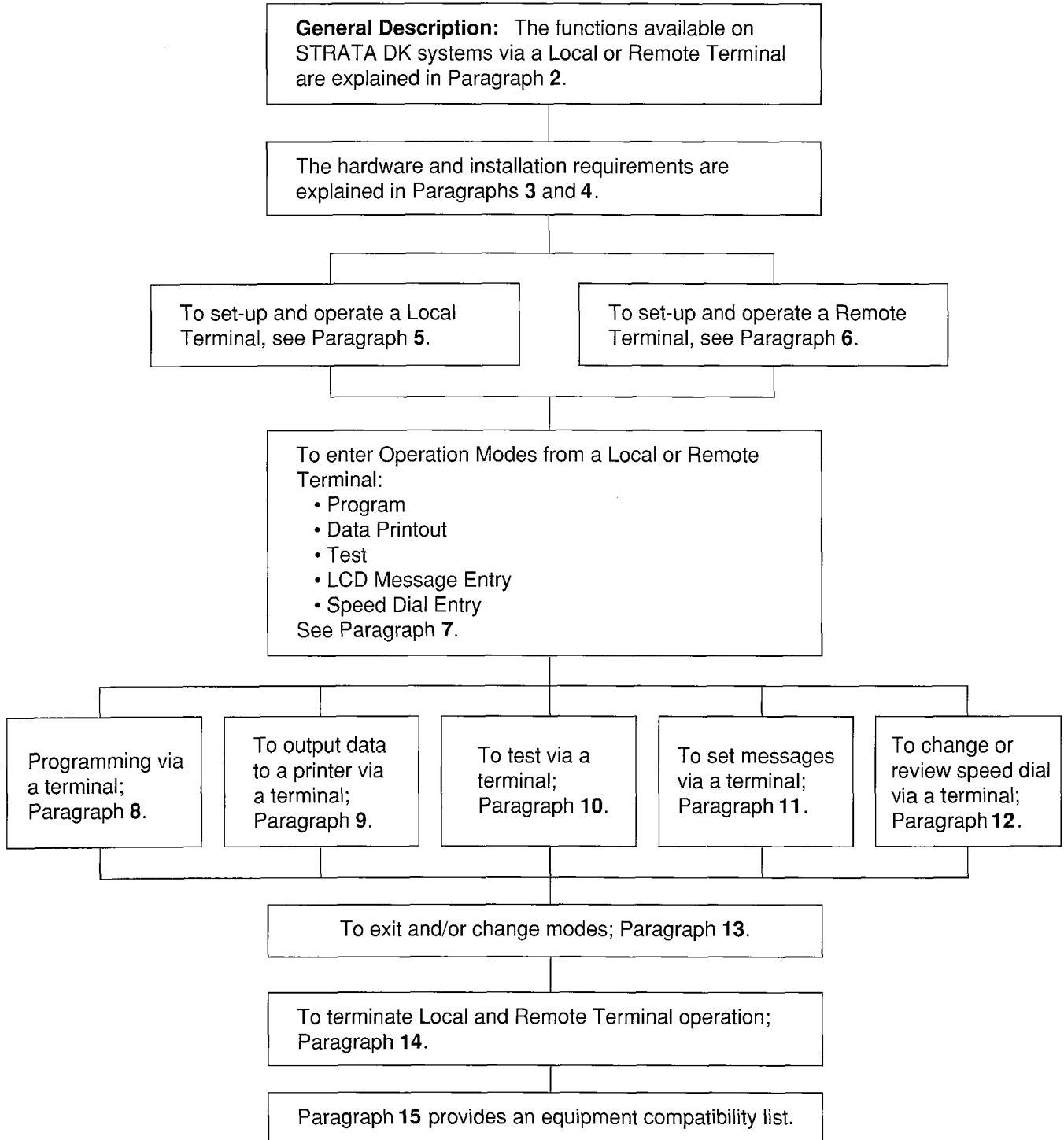
FIGURE LIST

FIGURE	SUBJECT	PAGE
1	PIOUS/IMDU CIRCUIT DIAGRAM	2
2	LOCAL TERMINAL CONNECTION	4
3	DATA DUMP PRINTOUT EXAMPLE	7
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1 USING REMOTE ADMINISTRATION AND MAINTENANCE

1.01 Table RM-A is provided as a quick reference aid in using this section.

TABLE RM-A—SECTION FLOWCHART



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2 GENERAL DESCRIPTION

2.01 Remote Administration and Maintenance is accomplished with a remote terminal/modem communicating over the public telephone network via a Modem Unit (IMDU) installed in the STRATA DK KSU. The IMDU is a built-in modem so an external, customer-supplied modem is not required (see Figure 1).

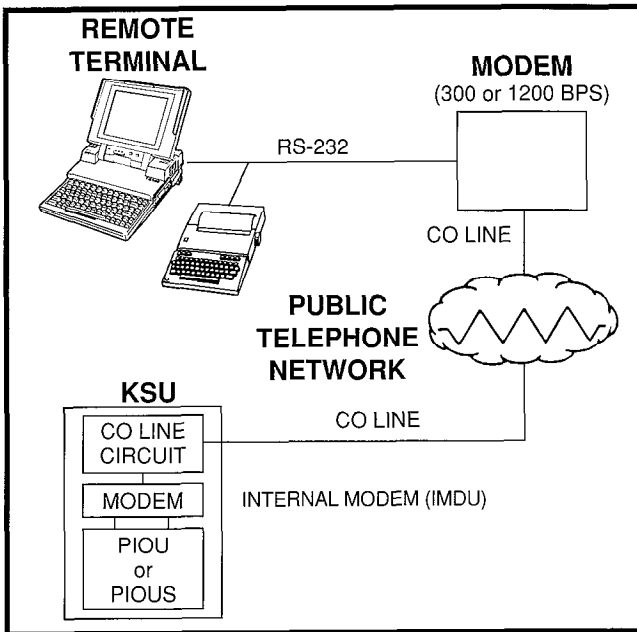


FIGURE 1—PIOUS/IMDU CIRCUIT DIAGRAM

2.02 Remote Administration and Maintenance calls may connect to the IMDU automatically via programmable CO line ringing assignments (**Program 78**), or manually via the standard call transfer feature at intercom number 19. Automatic connection allows remote programming to be accomplished after business hours without on-site assistance via night ringing assignments.

2.03 An external modem may be used and can be connected as detailed in Figure 8-21, Section **200-096-208**. In this case, either a dedicated CO line or a dedicated PSTU port is required for a remote terminal connection.

2.04 Remote Administration and Maintenance allows the following functions to be accomplished remotely:

Program Mode: Provides for complete programming of all STRATA DK programs (including speed dial adds/changes).

Test Mode: Provides for testing of STRATA DK CO lines and stations.

Data Dump Mode: Provides a complete printout of all or individual STRATA DK customer data base programs, including speed dial numbers and LCD messages.

Message Mode: Provides for sending, adding, or changing electronic telephone LCD messages.

Speed Dial Mode: Allows station and system speed dial numbers to be programmed remotely.

NOTE:
 All the functions in the preceding paragraph are also available via a terminal connected directly to the on-site PIOUS PCB or a terminal with a modem connected to a PSTU port (Paragraph 5).

2.05 There are two levels of Remote Administration and Maintenance.

Level 1: Allows access to all programs.

Level 2: Allows access to **Programs 30 ~ 39** and **77 ~ 89**, which pertain only to individual station options such as button assignments, class of service, etc.

2.06 Each Remote Administration and Maintenance level has a different programmable password for customer data base protection. This allows a customer to make certain station moves, adds, and changes in Level 2; while protecting the critical system assignments in Level 1 (refer to **Program 00**).

3 HARDWARE REQUIREMENTS

3.01 The STRATA DK KSU must be equipped with a PIOUS PCB and either an IMDU (subassembly) modem or a modem external to the KSU.

4 SET-UP

4.00 General

4.01 This section assumes that the system has been properly installed per the appropriate section in this manual.

4.02 The following items must be completed on-site for Remote Administration and Maintenance to be operational.

4.10 Hardware Verification

4.11 Verify the PIOUS/IMDU or external modem is installed per instructions in the appropriate installation section of this manual (refer to Sections **200-096-206** and **200-096-208**).

4.20 Programming

4.21 If an IMDU is used, enable the IMDU in **Program 77-1**.

4.22 If Remote Administration and Maintenance calls are to connect to the IMDU automatically, assign the designated CO lines to ring the IMDU intercom number (19) in **Program 78** as required (use standard STRATA DK programming procedures).

4.23 Program the security codes for Levels 1 and 2 as in the Programming Procedures, Section **200-096-300**. Reference **Program 00**.

NOTE:

*The security codes are initialized as "0000".
These codes may also be changed via a local or remote terminal.*

4.30 On-site Testing

4.31 From any working station, test the functioning of the IMDU.

- 1) Press the **INT** button.
 - Receive intercom dial tone.
- 2) Dial **19**.
 - Receive modem tone from the IMDU after a 2-second delay.
- 3) Press the **SPKR** button to release.
- 4) Make an incoming call over each CO line that is programmed to ring the IMDU (station 19).
 - Receive modem tone from the IMDU after a 2-second delay with each call.

NOTE:

This test checks basic programming and IMDU operation, and should be completed before continuing with Remote Administration and Maintenance installation.

- 5) If a terminal is to be utilized on-site, refer to Paragraph 5. For off-site programming refer to Paragraph 6.

5 LOCAL TERMINAL

5.00 Requirements

5.01 The KSU must have a PIOUS(S) PCB installed (refer to Sections **200-096-208** and **200-096-209** for wiring information).

5.02 The local terminal must have an EIA RS-232 interface, communicate in ASCII code at 300 or 1200 bps, have a standard typewriter-type keyboard, and display data via a CRT display or printer. A personal computer capable of emulating the described terminal may also be used (see Figure 2 and Paragraph 15).

5.03 Operating the terminals, local or remote, is identical. The only difference is the physical connection and the method used to establish initial communications.

5.10 Set-up

5.11 Refer to Figure 2 and verify that the local terminal is connected and set-up as follows:

- 1) Connect the RS-232 cable to the terminal connector and the PIOUS(S) TTY connector.

NOTE:

If a personal computer is being used, connect the cable to the serial "COM" port.

- 2) Set the terminal baud rate to match the PIOUS(S) setting (PIOU[S], SW2).
- 3) Set the terminal for "Full Duplex" operation.
- 4) Set the keyboard for "Caps Lock" on.
- 5) Set the terminal parameters to:
 - Word length: 7 bits
 - Stop bits: 1
 - Parity: Even

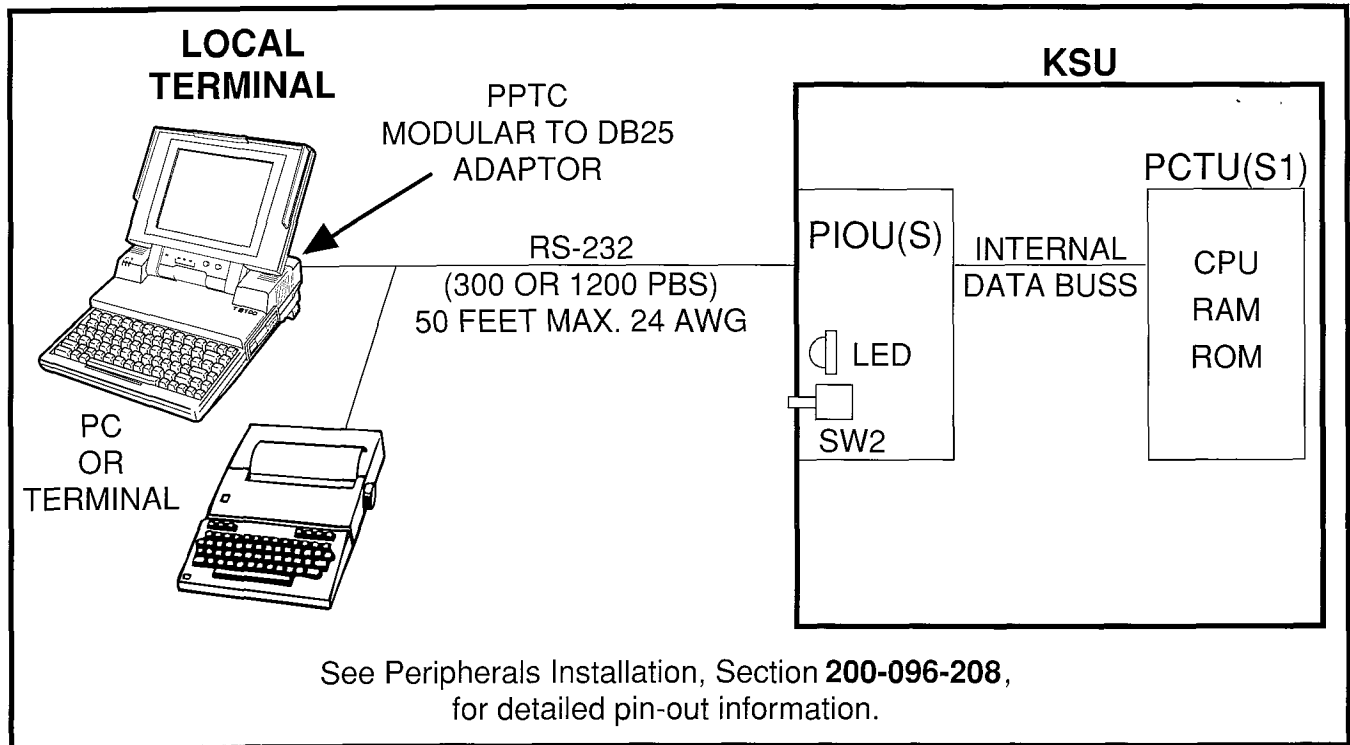


FIGURE 2—LOCAL TERMINAL CONNECTION

5.20 Local Operation

5.21 Use the procedure below to establish communications between the local terminal and the PIOU(S) so that programming may be accomplished via the terminal.

NOTE:

Hereafter, whenever the term **CR** is used, it means the return or enter key, depending on the keyboard being used. **SPACE** means the space bar. An empty square indicates one of several characters will appear in that location (either on the terminal's screen or in a print-out).

- 1) Set-up the terminal as described in Paragraph 5.10.
- 2) Set the terminal to on-line.
- 3) Set "Caps Lock" on (upper case).
- 4) Press **CR** key.
 - The system responds, and the terminal displays:
 - * DKTS VERSION 1.0 or DK CONNECT (R2)
 - > CODE

- 5) Type the 4-digit security code, and press **CR**.
 - The system responds, and the terminal displays:
 - OK
 - MODE

NOTE:

The security code can be entered any time the CODE prompt appears.

- 6) To continue, go to Paragraph 7.

6 REMOTE TERMINAL SITE

6.00 Requirements

6.01 Terminal: The terminal must interface with an asynchronous modem, communicate in ASCII code at 300 or 1200 bps, have a standard typewriter-type keyboard, and display data via a CRT display or printer. A personal computer capable of emulating the described terminal may also be used (see Figure 1 and Paragraph 15).

6.02 Modem: The modem must be full-duplex asynchronous, operate at 300 or 1200 bps and have an RS-232 interface to connect with a termi-

nal or PC (as described in Paragraph 5). It must interface with the public telephone network and be compatible with Bell 103 or 212 modem specifications.

6.10 Set-up

6.11 Refer to Figure 1 and verify that the remote terminal is connected and set-up as follows:

- 1) Connect the terminal and modem together with the RS-232 cable.

NOTE:

If a personal computer is being used, connect the cable to the serial "COM" port.

- 2) Connect the modem line input to a CO/PBX line for access to the public telephone network.
- 3) Set the terminal and modem baud rate to match the P10U(S) setting.
- 4) Set the terminal and modem for "Full Duplex" operation.
- 5) Set the terminal parameters to:
Word length: 7 bits
Stop bits: 1
Parity: Even

6.20 Remote Operation

6.21 Automatic connection via ringing assignments: To establish communication between the remote terminal and the IMDU, call the number of the system CO line assigned to ring the IMDU via the remote terminal/modem set-up:

- 1) Observe the following:
 - When the CO line rings-in, it will connect to the IMDU and the IMDU will respond by returning modem tone to the remote modem.
 - The remote modem will return modem tone to the IMDU and communication will be established.
 - When communication is established, the terminal will display: CONNECTED or COMMUNICATIONS (see Note).

- 2) To continue, enter the security code per Paragraph 6.30.

6.23 Manual connection via call transfer:

- 1) Using a telephone (at the remote location) that can switch to the terminal/modem, dial the number of a system CO line.
- 2) When the call is answered, request that it be transferred to station 19 (the IMDU).
- 3) After the call is transferred and communication is established with the IMDU, switch the call from the telephone to the terminal/modem.
- 4) Observe the following:
 - When the CO line is transferred, it will connect to the IMDU.
 - The IMDU and the remote modem will respond to each other with modem tone and communication is established.
 - When communication is established, the terminal will display: CONNECTED or COMMUNICATIONS (see Note).

NOTES:

1. *If the connection is not completed or communication is unsuccessful, the remote terminal will display: NO CARRIER.*
2. *If this is the case, check that the equipment is installed per Paragraph 5.10 or 6.10 of this section and try again.*

6.30 Operation

6.31 Once communication is established between the remote terminal and the IMDU, follow the steps below to enter the security code and receive the MODE prompt.

NOTE:

*Hereafter, whenever the term **CR** is used, it means the return or enter key, depending on the keyboard being used. **SPACE** means the space bar. An empty square indicates one of several characters will appear in that location (either on the terminal's screen or in a print-out).*

- 1) Set the keyboard for "Caps Lock" on.

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- 2) Press the **CR** key.
- The system responds, and the terminal displays:
 DKTS VERSION 1.0 (DK CONNECT) R2
 >CODE

** The software version number is identified in Program 00.*

- 3) Enter the 4-digit security code and press the **CR** key.
- The system responds, and the terminal displays:
 OK
 MODE

7 MODE SELECTION

7.00 Selecting a Mode

7.01 To enter an operating mode, establish communication with the terminal, enter the security code, and press the **CR** key to receive the MODE prompt.

NOTE:

Refer to Paragraphs 5.10 or 6.10 to accomplish the above.

- 1) Set the keyboard for "Caps Lock" on (the mode name must be entered in capital letters).
- 2) At the MODE prompt, enter the desired mode name (Table RM-B).
- 3) Press the **CR** key.
- 4) Verify the correct prompt return (Table RM-B).

TABLE RM-B—PROGRAMMING PROMPTS		
Mode Function	Mode Name	Prompt Return
Program	PROG	P
Data Dump	DUMP	D
Test	TEST	T
LCD Messages	MESG	(NONE)
Speed Dial No.	REPT	R

8 PROGRAM MODE

8.00 General

8.01 Data governing overall system operation and feature execution for the systems are stored in read-only memory (ROM) and cannot be altered in the field. However, the data controlling operation of the various options, both system and station, are stored in random-access memory (RAM) and can easily be changed according to individual installation requirements.

8.02 All options are controlled by selections made in the System Record Sheet. An initialization process is provided for verifying predetermined system assignments. The installer can then proceed with any necessary changes.

8.03 Internal battery power is provided to prevent loss of system data memory in the event of a power failure.

8.10 System Record Sheets

8.11 Before system data can be programmed, the System Record Sheets which contain the customer data base must be available (see Programming, Section 200-096-305).

8.20 Program Types

8.21 There are three types of programs:

Type 1: All Type 1 programs use the same procedure; however, each key/LED has a different meaning, depending on the program number. The status of these data is reviewed, changed, and stored in system memory using Type 1 program procedures.

Type 2: All Type 2 programs follow the same entry procedure; however, they require port number and key/LED entries. Each key/LED has a different meaning, depending on the program number.

Type 3: In this type program, the information shown in the System Record Sheet indicates the data to be stored in system memory. Each program has a different meaning, and the data is reviewed, changed or stored in memory using an individual procedure for each program.

8.30 Multiple Station (Range) Programming

8.31 Some programs select options for individual stations (where □ □ represents the port number being programmed). To save time, it is possible to program all ports or a range of ports simultaneously.

8.32 Multiple station programming is accomplished by substituting a range of ports (□ □ * □ □) for the port number part (□ □) of the program.

Example, all ports: **00 * 95**

8.33 When the multiple station range is entered, the terminal displays existing data as follows:

Y or N: Data is the same for all ports in the dialed group. Y = key/LEDs "ON"; N = key/LEDs "OFF".

U: Key/LED is "ON" for at least one, but not all ports in that group.

8.40 Programming Procedures

- 1) Refer to a completed System Record Sheet.
- 2) Place the terminal into the program mode per Paragraph 7.
- 3) Program procedures are categorized and given in the order below. Use these procedures to store System Record Sheet data in working memory.
 - a) Initialization procedures:

These procedures must be completed whenever a PCTU or PCTUS1 PCB is first installed.

- b) Type 1 programs:
10-1, 10-2, 10-3, 15, 16, 42-0, 77-1, 77-2.
- c) Type 2 programs:
 Station Class of Service;
17, 20, 30, 31, 35, 40, 41, 43, 79, 81 ~ 89.
- d) Type 3 programs:
 - Initialization; **90, 92**
 - General; **00, 03, 04, 05, 12, 13, 21, 22, 28, 29, 32, 33, 34, 36, 37, 38, 39, 42-1 ~ 8, 44, 60, 69, 70, 78, 80, 93.**
 - Toll Restriction; **45 ~ 48.**
 - Least Cost Routing; **50 ~ 56.**

9 DATA DUMP MODE

9.00 General

9.01 This mode allows three types of data to be displayed or output to a printer: STRATA DK Programs (Customer Data Base), Speed Dialing Numbers (Station/System), and LCD Messages (Station/System).

9.02 The three procedures for the Data Dump mode are called: Program Dump, Speed Dialing Dump, and LCD Messages Dump.

9.03 Program Dump: While in the dump mode, enter "PRG" and up to three characters and press **CR**. The three alphanumeric characters represent a program group or a particular program, i.e., ALL, **03, 04, 10, 39**, etc. For a printout example, see Figure 3.

		CO LINE NUMBERS										
		40	33	32	25	24	17	16	9	8	1	
81	00	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	← 1:SELECT(LED ON)
81	01	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
81	02	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
81	03	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
81	04	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
81	05	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
81	06	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	← CO LINE 01

↑ CO LINE 36

└ STATION PORT NUMBER

└ PROGRAM NUMBER

FIGURE 3—DATA DUMP PRINTOUT EXAMPLE

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```

>MODE DUMP
D MSG SYS

SYS M60 OUT TO LUNCH
SYS M61 IN A MEETING
SYS M62 CALL
SYS M63 BACK AT
SYS M64 RETURN ON
SYS M65
SYS M66
SYS M67
SYS M68
SYS M69
D
  
```

FIGURE 4—SAMPLE PRINTOUT OF SYSTEM MESSAGES

NOTE:

Programs are output only in the groups indicated. To print out or review a program not included above, use Program Mode procedures.

9.04 Speed Dialing Dump: While in the dump mode, enter "REP" and two or three characters and press **CR**. The characters represent the speed

dialing codes for either an individual station, **ALL** (all stations and system data) **SYS** (system data only).

9.05 LCD Messages Dump: While in the dump mode, enter "MSG" and two or three characters and press **CR**. The characters represent stored messages for either an individual station, **ALL** (all stations and system data) or **SYS** (system data only). For a printout example, see Figure 4.

9.06 Tables provide a quick reference to the step-by-step procedures to output the appropriate data.

10 TEST MODE

10.00 General

10.01 The remote test mode can be used to test STRATA DK stations and CO line circuits from an off-site location.

10.02 This testing function is accomplished by accessing stations from the remote terminal, and activating various buttons on the electronic telephone to make telephone calls, set function buttons, change the system time and date, etc. (see Figure 5).

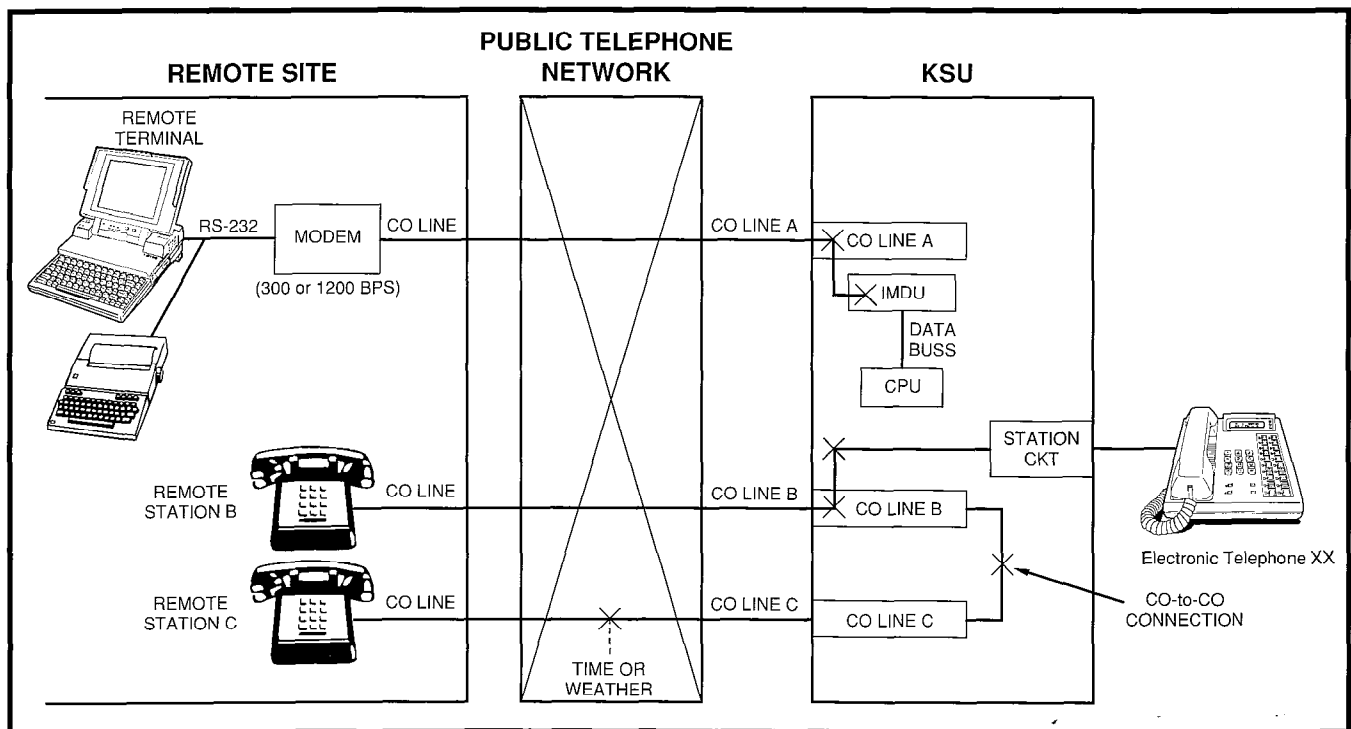


FIGURE 5—TEST MODE FUNCTION DIAGRAM

IMPORTANT!

Any electronic telephone button can be activated from the remote terminal at any time while in the Test Mode (even while the end user is using the electronic telephone). Therefore, caution must be used to prevent service interruption or interference. The Test Mode provides status tests to check whether or not a station or CO line is in use. The status checks should always be made before performing other tests.

10.10 CO Line Testing

10.11 To test CO line transmission, two or three CO lines must be available at the remote site (see Figure 5).

10.12 CO line testing is accomplished by using all of the following three methods:

- 1) Call station B at the remote site via the STRATA system and then place the line on hold (transmission is checked at the remote site via MOH).
- 2) Establish a talk path between the two remote stations (B & C) via a CO-to-CO connection through STRATA.
- 3) Establish a talk path between a remote station and the time or weather service via a CO-to-CO connection through STRATA.

10.13 The procedures in the tables provide examples of the types of tests and functions that can be accomplished with the Test Mode. These procedures do not cover all the possible tests that can be performed remotely; however, by using the principles given, other tests are possible.

11 MESSAGE MODE

11.00 General

11.01 This mode allows a local or remote terminal to set Called and Calling Station LCD messages for station users. The messages may be system or station type and are stored in their respective memory locations when set.

11.10 Remote Called Station Message Mode

11.11 Allows the terminal to set a Called Station Message for an originating station with the destination of the message being a station or group of stations.

11.12 When the message is set, the MW/FLLED(s) on the destination station(s) flash.

11.13 When a destination station calls the originating station, the message is displayed on the destination station's LCD.

Mode 94: To edit and/or review a Called Station Message before setting it, use this mode. It will print out the existing message and allow additions to it (such as a time or a date) before it is set. (The message cannot be changed with this mode—just added to.)

Mode 96: To add or change a Called Station Message before setting it, use this mode. It does not display the existing message, but allows a completely new message to be entered before it is set.

11.20 Remote Calling Station Message Mode

11.21 Allows the terminal to set a Calling Station Message for a station. The message will be set on the station's LCD and is automatically displayed on other stations' LCDs whenever they call that station.

Mode 95: To edit and/or review a Calling Station Message before setting it, use this mode. It will display the existing message and allow additions to it (such as a time or a date) before it is set. (The message cannot be changed with this mode—just added to.)

Mode 97: To add or change a Calling Station Message before setting it, use this mode. It does not display the existing message, but allows a completely new message to be entered before it is set.

11.22 Use the procedures in the tables to set messages via Modes 94/96 and 95/97.

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12 SPEED DIAL MODE

12.00 General

12.01 The Speed Dial Mode can be used to add or change speed dial numbers to any of the system speed dial memory locations (60 ~ 99) and to any station speed dial memory locations (10 ~ 49).

12.02 Chain speed dial numbers can also be programmed using the Speed Dial Mode. See the Electronic Telephone User Guide for more information regarding chain speed dialing operation.

12.03 To program speed dial numbers, enter the REPT mode per Paragraph 7 of this section. Then use the Speed Dial Mode Procedure at the end of this section.

13 MODE EXIT

13.01 Exit the current mode per Paragraph 13.02 and select the desired mode via Paragraph 7.

13.02 To exit the PROG, DUMP, TEST or SPEED DIAL mode:

- At the P, D, T or R prompt, enter **QUITCR** and observe:
 >MODE

13.03 To exit the MMSG mode:

- At anytime while in the message mode, enter: **m c c** and observe:
 >MODE

NOTE:

To exit the Message Mode, the terminal keyboard must be in lower case.

14 DISCONTINUE OPERATION

14.00 Local Terminal

14.01 Exit current operating mode via Paragraph 13 and observe that the MODE prompt is displayed on the terminal.

14.10 Remote Terminal

14.11 Exit current operating mode via Paragraph 13 and observe that the MODE prompt is displayed on the terminal.

14.12 To discontinue remote operation:

- 1) Take the terminal off-line.
- 2) Verify that the modem drops the line.

15 EQUIPMENT COMPATIBILITY

15.01 Below is a list of equipment that is known to be compatible with STRATA DK Remote Administration and Maintenance. This list does not show all of the equipment that will work, only the equipment that has been proven compatible in the field or lab.

15.02 As additional equipment is proven compatible, it will be added to an up-dated list.

TERMINALS	MODEMS	COMPUTERS	SOFTWARE
Texas Instruments Silent 700	Hayes: Smartmodem 1200	Toshiba: T3100/20, T1100, & T1000	Crosstalk or equivalent
Panasonic KXD-4920	Universal Data Systems: Model 103J LP		
	U.S. Robotics: Password		

**TABLE RM-C
PROGRAM 90
INITIALIZING PROGRAMS 00 ~ 97**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt enter P R O G CR .	>MODE PROG
2	Enter Program Number 90 Press CR .	P 90 P90
3	To Initialize All Programs Enter 0 0 * 9 7 <i>NOTE: Single programs can be initialized by entering a single program number plus #. Group numbers are separated by an *.</i>	P90 00-97
4	Enter key number 0 1 .	P90 00-97 01 N
5	Change 01 key to "ON" by entering Y .	P90 00-97 01 N Y
6	Press SPACE .	P90 00-97 01 N Y 02 N
7	Change 02 key to "ON" by entering Y .	P90 00-97 01 N Y 02 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, then CR will not respond. To retry, press DELETE CR.</i>	P90 00-97 01 N 02 N Y P90
9	Exit Program 90: Press # # CR .	P90 # P
10	Enter Program 77: Press 7 7 CR .	P77
11	Press 1 1 4 then: Y CR .	P77 1 14 N P77 1 14 N Y P77
12	To Exit this Program: Press # # CR .	

IMPORTANT NOTE:

If all programs are initialized, the "IMDU enabled" has also been turned off in Program 99-1, LED 14. If using the IMDU for remote programming, go into Program 77-1 and turn key/LED 14 on as shown in steps 9, 10, and 11. If this is not completed, remote programming must be reactivated locally from the programming electronic telephone.

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TABLE RM-D
PROGRAM 92
STATION SPEED DIAL, SPEED DIAL MEMO, VM ID CODES INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 1 .	P92 P92 1
4	Enter key number: 0 1 .	P92 P92 1 01 N
5	Change key 01 to "ON" by entering Y .	P92 P92 1 01 N Y
6	Press SPACE two times.	P92 P92 1 01 N Y 02 N 03 N
7	Change key 03 to "ON" by entering Y .	P92 P92 1 01 N Y 02 N 03 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR.</i>	P92 P92 1 01 N Y 02 N 03 N Y P92
9	Clear system speed dial using the procedure on the next page.	

TABLE RM-E
PROGRAM 92 (continued)
SYSTEM SPEED DIAL, SPEED DIAL MEMO INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 2 .	P92 P92 2
4	Enter key number 0 1 .	P92 P92 2 01 N
5	Change 01 key to "ON" by entering Y .	P92 P92 2 01 N Y
6	Press SPACE three times.	P92 P92 2 01 N Y 02 N 03 N 04 N
7	Change key 04 to "ON" by entering Y .	P92 P92 2 01 N Y 02 N 03 N 04 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR.</i>	P92 P92 2 01 N Y 02 N 03 N 04 N Y P92
9	Clear LCD message memory, using the procedure on the next page.	

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TABLE RM-F
PROGRAM 92 (continued)
LCD CHARACTER MESSAGE MEMORY INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 3 .	P92 P92 3
4	Enter key number 0 2 .	P92 P92 3 02 N
5	Change 02 key to "ON" by entering Y .	P92 P92 3 02 N Y
6	Press SPACE .	P92 P92 3 02 N Y 03 N
7	Change key 03 to "ON" by entering Y .	P92 P92 3 02 N Y 03 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR.</i>	P92 P92 3 02 N Y 03 N Y P92
9	Clear the timed reminders using the procedure on the next page.	

TABLE RM-G
PROGRAM 92 (continued)
TIMED REMINDERS INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 4 .	P92 P92 4
4	Enter key number 02 .	P92 P92 4 02 N
5	Change key 02 to "ON" by entering Y .	P92 P92 4 02 N Y
6	Press SPACE two times.	P92 P92 4 02 N Y 03 N 04 N
7	Change key 04 to "ON" by entering Y .	P92 P92 4 02 N Y 03 N 04 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR .</i>	P92 P92 4 02 N Y 03 N 04 N Y P92
9	To exit this program, press ## CR .	

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TABLE RM-G1
PROGRAM 92 (continued)
DIGITAL TELEPHONE VOLUME LEVEL INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 5 .	P92 5
4	Enter 01 ; change key 01 to "ON" by entering Y .	P92 5 01 N Y
5	Press SPACE four times.	P92 5 01 N Y 02 N 03 N 04 N 05 N
6	Change key 05 to "ON" by entering Y . <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR.</i>	P92 5 01 N Y 02 N 03 N 04 N 05 N Y
7	Press CR . Initialization complete.	P92 5 01 N Y 02 N 03 N 04 N 05 N P92
8	To exit this program, press ## CR .	

TABLE RM-G2
PROGRAM 92 (continued)
CALL FORWARD BACKUP RAM INITIALIZATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 92 Press CR .	P 92 P92
3	Enter 9 .	P92 P92 9
4	Enter key number 03 .	P92 P92 9 03 N
5	Change key 03 to "ON" by entering Y .	P92 P92 9 03 N Y
6	Press SPACE .	P92 P92 9 03 N Y 04 N
7	Change key 04 to "ON" by entering Y .	P92 P92 9 03 N Y 04 N Y
8	Press CR . Initialization complete. <i>NOTE: If program data is not entered correctly, CR will not respond. To retry, press DELETE CR .</i>	P92 P92 9 03 N Y 04 N Y P92
9	To exit this program, press ##CR .	

IMPORTANT NOTE:

This program clears call forward memory for all stations, but does not reset the call forward indication on the station (call forward LCD information and/or call forward button/LED). To clear station call forward indications, system power must be turned OFF for five seconds, then ON. Fixed call forward is not cleared by this program.

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TABLE RM-H
TYPE 1 PROGRAM PROCEDURE EXAMPLE

(PROGRAMS: 10-1, 10-2, 10-3, 15-0, 15-1, 16, 42-0, 77-1, 77-2)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number Refer to the record sheet and enter the desired program number. Example: Program 10-1 , enter 1 0 , press CR .	P 10 P10
3	Enter Program Code or Digit(s) Per Record Sheet 1 or other digit required. <i>NOTE: Most programs do not require a second digit.</i>	P10 1
4	Enter Key/LED Number Enter the desired key/LED number. Example: Key/LED 01, enter 0 1 .	P10 1 01 N (see note)
5	To Change Key/LED Status Refer to the System Record Sheet and change the key/LED status, if required (Y or N). Example: Enter Y .	P10 1 01 N Y
6	To Advance to Next Key/LED Press SPACE . Repeat step 5 if necessary.	P10 1 01 Y 02 N
7	To Review Key/LED Status Change Enter CR . Re-enter steps 3 and 4. <i>NOTE: This step is optional and not required to save data.</i>	P10 1 01 Y- Key LED "ON" Key LED Number Program Code Program Number
8	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press ## , then press CR . C) Continue returning to step 2 until all Type 1 programs are completed.	P10 P10 ## P
9	To Exit the Program Mode Press ##CR .	> MODE
10	To Enter Another Mode Press DUMPCR (data dump) TESTCR (test) MESGCR (LCD messages) REPTCR (speed dial)	D T (no prompt) R

NOTE:

Y = key/LED "ON", N = key/LED "OFF"

**TABLE RM-I
TYPE 2 PROGRAM PROCEDURE EXAMPLE**

(PROGRAMS: 17, 20, 30, 31, 35, 40, 41, 43, 79, 81 ~ 89)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number Refer to the record sheet and enter the desired program number. Example: Program 30 , enter 3 0 , press CR .	P 30
3	Enter Port Number □□ or Port Range □□*□□ Refer to the System Record Sheet and enter the desired port number(s). Example: 0 4 .	P30 P30 04
4	Press # key.	P30 04#
5	Enter the Desired Key/LED Number Example: Key/LED 01, enter: 0 1 .	P30 04# 01 N (Note)
6	To Change Key/LED Status Refer to the System Record Sheet and change the key/LED status, if required (Y or N). Example: Enter Y .	P30 04# 01 N Y
7	To Advance to Next Key/LED Press SPACE (repeat step 6 if necessary).	
8	To Review Key/LED Status Change Press CR . Re-enter steps 3, 4, and 5.	P30 04# 01 Y- LED "ON" Key LED Number Port Number Program Number
9	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # , then press CR . C) Continue returning to step 2 until all Type 2 programs are completed.	P10 P10 ## P
10	To Exit the Program Mode Press # # CR .	>MODE
11	To Enter Another Mode, Press DUMPCR (data dump) TESTCR (test) MESGCR (LCD messages) REPTCR (speed dial)	D T (no prompt) R

NOTE:

Y = key/LED(s) "ON", N = key/LED(s) "OFF"; U = key/LED(s) "ON" some parts and "OFF" other parts.

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TABLE RM-J
 PROGRAM 00
 SOFTWARE CHECK/REMOTE MAINTENANCE—SECURITY CODE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter PROGCR .	>MODE PROG P
2	Enter Program Number 00 Press CR .	P 00 P00
3	To Check Software Version Enter Action Code 0. System will display the version of software that is in the PCTU(S). Press CR .	P00 0 Version = D <input type="text"/> <input type="text"/> P00 PCTU type <input type="text"/> Software version <input type="text"/>
4	To Change Level 1 Security Code Enter Action Code 1. The system will display the present level 1, 4-digit code. Refer to the System Record Sheet and change if required. Press CR .	P00 1 0000 P00
5	To Change Level 2 Security Code Enter Action Code 2. The system will display the present level 2, 4-digit code. Refer to the System Record Sheet and change if required. Press CR .	P00 2 0000 P00
6	To Exit This Program Press ## CR .	P00 ## P

**TABLE RM-K
PROGRAM 03
FLEXIBLE PCB SLOT ASSIGNMENTS**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 03 Press CR .	P 03 P03
3	Enter the Slot Number Refer to the System Record Sheet and enter the desired slot number. Example: Slot number 00, enter 0 0 .	P03 P03 00 91
4	Enter the PCB Code Number Refer to the System Record Sheet and enter the desired PCB code number. Example: PCB code 92, enter 9 2 .	P03 P03 00 91 92
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 03 data is entered. C) To exit this program, press # # , press CR .	P03 P03 00 91 92 P03 ## P
6	Turn system power "OFF" for 5 seconds and then turn power "ON" to store data in working memory (see Notes).	Remote maintenance is disconnected.

IMPORTANT NOTES:

1. This program must be completed with on-site assistance (after installing PCBs) because the system must be powered down momentarily after PCB code entry.
2. Even though PCB codes display as being changed, they are not entered into working memory until the system DC power is cycled OFF and ON.
3. If PCB codes are not entered into working memory by cycling DC power, PCB options will not function.
4. Only **Program 03** requires the system power to be turned OFF and ON to store data into working memory.

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TABLE RM-L
PROGRAM 04
PORT/STATION NUMBER ASSIGNMENT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt enter P R O G CR .	>MODE PROG P
2	Enter Program Number 04 Press CR .	P 04 P04
3	Enter the Port Number Refer to the System Record Sheet and enter the desired port number. Example: Port number 01, enter 0 1 .	P04 P04 01
4	Press # key. System displays present station number. Refer to the System Record Sheet and enter the desired station number. Example: Station number 206, enter 2 0 6 .	P04 P04 01# 201 206
5	To Exit Program/Store Data A) To store data; press CR . B) Continue returning to step 3 until all Program 04 data is entered. C) To exit this program, press # # CR .	P04 P04 ## P

NOTE:

A blank is displayed by "N".

TABLE RM-M
PROGRAM 05
FLEXIBLE ACCESS CODE NUMBERING

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG
2	Enter Program Number 05 Press CR .	P 05 P05
3	Enter Access Code number that you wish to change (0 ~ 9) Example: 4 (if it was not previously changed, the system will print another 4. If it has been previously changed, the system will print the number to which it was changed).	P05 4 4
4	Change the number if required (one or two digits) Example: Change to 6, press CR .	P05 4 4 6
5	Continue returning to step 3 until all required access codes have been changed.	
6	To Exit this Program Press # # CR .	P

NOTE:

Program 10, use Type 1 procedure.

**TABLE RM-N
PROGRAM 12
SYSTEM ASSIGNMENTS – BASIC TIMING**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 12 Press CR .	P 12 P12
3	Check the record sheet and enter the program code that is required. As an example, feature 3, enter 3 . The present selection will be displayed.	P12 3 1
4	Refer to the record sheet and change if required. As an example, change it to 2. Enter 2 .	P12 3 1 2
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 12 data is entered. C) To exit this program, press # # CR .	P12 P12 # # P

**TABLE RM-O
PROGRAM 13
DEFINING THE MESSAGE CENTER**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 13 Press CR .	P 13 P13
3	Enter the number 1 . The present port number will be displayed.	P13 P13 1 NN
4	Refer to the record sheet and enter the required port number. Example: Port 00, enter 0 0 CR .	P13 1 NN 00 P13
5	To Exit this Program Press # # CR .	P13 ## P

NOTES:

1. A blank is displayed by "N".
2. **Programs 15, 16**, use Type 1 procedure.
Program 17, use Type 2 procedure.

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TABLE RM-01
PROGRAM 21
MODEM POOLING

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 21 Press CR .	P 21 P21
3	Refer to the System Record Sheet, and enter the required port number for the PDIU-DS. Example: port 04; Enter: 0 4 .	P21 04
4	Press # . The system will display the presently selected PSTU port number.	P21 04 # NN
5	Refer to the System Record Sheet, and enter the required PSTU port number. Example: port 06; Enter: 0 6 .	P21 04 # NN 06
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 21 data is entered. C) To exit this program, press # # CR .	P21 04 # NN 06 P21 # # P

TABLE RM-02
PROGRAM 22
DATA STATION HUNTING (DATA CALL ONLY)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 22 Press CR .	P 22 P22
3	Refer to the record sheet and enter the required port number. Example: Port 03, enter 0 3 .	P22 03
4	Enter # . The present data will be displayed.	P22 03# NN
5	Refer to the record sheet and enter the port number that will be the hunt point. Example: Port 00, enter 0 0 .	P22 03# NN 00
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 22 data is entered. C) To exit this program, press # # CR .	P22 03# NN 00 P22 ## P

TABLE RM-P
PROGRAM 28
DSS CONSOLE/ATTENDANT ELECTRONIC TELEPHONE ASSIGNMENTS

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 28 Press CR .	P 28 P28
3	Refer to the System Record Sheet and enter the required DSS console number (1 ~ 4). The system will display the electronic telephone to which the DSS console is assigned. Example: DSS console number 1 is assigned to electronic telephone number 1. Refer to the System Record Sheet and change if required. Example: Assign DSS console 1 to electronic telephone 2. Enter: 2 .	P28 1 1 2
4	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P28 1 1 2 P28 # # P

NOTES:

This program also applies to digital DSS consoles and digital telephones.

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TABLE RM-Q
PROGRAM 29
DSS CONSOLE BUTTON ASSIGNMENTS

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number Press 29 CR .	P 29 P 29
3	Enter Console Number and Keystrip Group Number Press <input type="text"/> <input type="text"/> <div style="margin-left: 40px;"> Key Group Number (1 ~ 3) Console Number (1 ~ 4) </div>	P29 <input type="text"/> <input type="text"/>
4	Enter the 2-digit Key Number to be Programmed (01 ~ 20): <input type="text"/> <input type="text"/> (current feature code displays <input type="text"/> <input type="text"/> <input type="text"/> after key entry).	P29 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <div style="margin-left: 100px;"> Key* code </div>
5	Enter New (2- or 3-digit) Feature Code Press <input type="text"/> <input type="text"/> or <input type="text"/> <input type="text"/> <input type="text"/> <div style="margin-left: 40px;"> 3-digit code 2-digit code </div>	P29 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <div style="margin-left: 20px;"> Console Key No. Old code New code Key group </div>
6	Press SPACE to go to next key. or Press CR to store data.	P29
7	Continue with step 3 until all Program 29 data is entered.	
8	To Exit this Program Press ## CR .	

NOTE:
Program 30, 31; use Type 2 procedure.

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TABLE RM-R
PROGRAM 32
AUTOMATIC PREFERENCE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter the Program Number 32 Press CR .	P 32 P32
3	Refer to the record sheet and enter the required port number. Example: Port 01, enter 0 1 .	P32 01
4	Enter # . The present status for this port will be displayed.	P32 01# 100
5	Refer to the record sheet and enter the required ringing code. Example: Code 0, enter 0 .	P32 01 # 100 0
6	Refer to the record sheet and enter the required automatic off-hook code. Example: Code 11, enter 1 1 .	P32 01# 100 011
7	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 32 data is entered. C) To exit this program, press # # CR .	P32 01# 100 011 P32 ## P

TABLE RM-S
PROGRAM 33
STATION HUNTING

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 33 Press CR .	P 33 P33
3	Refer to the record sheet and enter the required port number. Example: Port 03, enter 0 3 .	P33 03
4	Enter # . The present data will be displayed.	P33 03# NN
5	Refer to the record sheet and enter the port number that will be the hunt point. Example: Port 00, enter 0 0 .	P33 03# NN 00
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 33 data is entered. C) To exit this program, press # # CR .	P33 03# NN 00 P33 ## P

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**TABLE RM-T
PROGRAM 34
HOLD RECALL TIMING**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 34 Press CR .	P 34 P34
3	Refer to the record sheet and enter the required port number. Example: Port 05, enter 0 5 .	P34 05
4	Press # . The present data will be displayed.	P34 05# 032
5	Refer to the record sheet and enter the required timing. Example: 160 seconds, enter 1 6 0 .	P34 05# 032 160
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 34 data has been entered. C) To exit this program, press # # CR .	P34 05# 032 160 P34 ## P

NOTE:

Program 35, use Type 2 procedure.

**TABLE RM-U
PROGRAM 36
FIXED CALL FORWARD**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 36 Press CR .	P 36 P36
3	Refer to the System Record Sheet and enter the port number for the station that will have a Fixed Call Forward key. Example: Port 00, enter 0 0 .	P36 00
4	Press # . The present data will be displayed.	P36 00# NN
5	Refer to the System Record Sheet and enter the port to be forwarded to when the Fixed Call Forward key is pressed. Example: Port 04, enter 0 4 .	P36 00# NN 04
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 36 data is entered. C) To exit this program, press # # CR .	P36 00# NN 04 P36 ## P

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TABLE RM-V
PROGRAM 37
RING TRANSFER (CAMP-ON) RECALL TIME

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter the Program Number 37 Press CR .	P 37 P37
3	Refer to the System Record Sheet and enter the required port number. Example: Port 01, enter 0 1 .	P37 01
4	Press # . System will display the present ring transfer recall time.	P37 01# 064
5	Refer to the System Record Sheet and enter the required ring transfer timeout. Example: 70 seconds. Enter 0 7 0 .	P37 01# 064 070
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 37 data is entered. C) To exit this program, press # # CR .	P37 01# 064 070 P37 ## P

TABLE RM-W
PROGRAM 38
ELECTRONIC TELEPHONE BUTTONSTRIP TYPE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter the Program Number 38 Press CR .	P 38 P38
3	Refer to the System Record Sheet and enter the required port number. Example: Port 00, enter 0 0 .	P38 00
4	Press # . The system will display the present electronic telephone code.	P38 00# 31
5	Refer to the System Record Sheet and enter the required electronic telephone code number. Example: Code 21, enter 2 1 .	P38 00# 31 21
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 38 data is entered. C) To exit this program, press # # CR .	P38 00# 31 21 P38 ## P

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TABLE RM-X
PROGRAM 39
FLEXIBLE BUTTON ASSIGNMENT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter the Program Number 39 Press CR .	P 39 P39
3	Refer to the System Record Sheet and enter the required port number. Example: Port 00, enter 0 0 .	P39 00
4	Press # .	P39 00 #
5	Refer to the System Record Sheet and enter the key number. Example: Key 01, enter 0 1 . The system will display the feature code presently assigned to this key.	P39 00# 01 00
6	Refer to the System Record Sheet and enter the required feature code (2 or 3 digits). Example: Code 01, enter 0 1 .	P39 00# 01 00 01
7	To select next key number, press SPACE . Continue returning to step 6 until all port 00 features are programmed.	P39 00# 01 00 01 02 02
8	Press CR to store data.	P39
9	A) Continue returning to step 3 until all Program 39 data has been entered. B) To exit this program and store data, press # # CR .	P39 00# 01 00 01 02 02 P39 # # P

NOTES:

1. **Programs 40, 41**; use Type 2 procedure.
2. **Program 42-0**; use Type 1 procedure.

**TABLE RM-Y
PROGRAM 42-1 ~ 8
PBX ACCESS CODE**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 42 Press CR .	P 42 P42
3	Refer to the System Record Sheet and enter the required PBX group number (1 ~ 8). System will display present PBX access code.	P42 1 NN
4	Refer to the System Record Sheet and enter the required access code. N = Space # = Don't care Example: 9, enter 9 N .	P42 1 NN 9N
5	To Exit Program/Store Data A) To store data press CR . B) Return to step 3 to continue in this program. C) To exit this program, press ## CR .	P42 1 NN 9N P42 ## P

NOTES:

1. **Programs 45 ~ 48, Toll Restriction Procedures, begin after Program 93.**
2. **Programs 50 ~ 56, LCR Procedures, begin after Program 48.**

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TABLE RM-Z
PROGRAM 60
SMDR OUTPUT/ACCOUNT CODE DIGIT LENGTH

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 60 Press CR .	P 60 P60
3	Allow SMDR printout on incoming and outgoing calls. Enter: Action code 3. System will print out "1" if incoming and outgoing calls will be printed on SMDR. A "0" will be printed out if only outgoing calls will be printed. Refer to the System Record Sheet and change (to 1 or 0), if required, and press CR .	P60 3 1 P60
4A	Set Account Code Digit Length Enter: Action code 4. The system will display the number of digits allowed in the account code. The default is 06. Refer to the System Record Sheet and enter the required number of digits (04 ~ 15).	P60 4 06
4B	SMDR Toll Calls Only Enter: Action code 5. The system will display the presently selected feature (0 ~ 5). The default is 0. Refer to the System Record Sheet and enter the required feature code.	P60 5 0
4C	Enter DISA ID Code Enter: Action code 6. System will display last entered ID code number. Default = Blank.	P60 6 NNNN
5	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P60 6 NNNN P60 ## P

NOTE:
Programs 77-1 & 77-2, use Type 1 procedure.

**TABLE RM-Z1
PROGRAM 69
VERIFIABLE ACCOUNT CODE ENTRY**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 69 Press CR .	P 69 P69
3	Refer to the System Record Sheet, and enter the required code number (000 ~ 299). Example: code number 001; Enter: 0 0 1 . The system will display the present account code number assigned to 001. <i>Note:</i> <i>The number of digits will be as defined in Program 60-4.</i>	P69 001 NNNNNN
4	Refer to the System Record Sheets, and enter the required account code number. Example: number 987654; Enter: 9 8 7 6 5 4 .	P69 001 NNNNNN 987654
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 69 data is entered. C) To exit this program, press # # CR .	P69 001 NNNNNN 987654 P69 ## P

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TABLE RM-Z2
 PROGRAM 70
 VERIFY ACCOUNT CODE/TOLL RESTRICTION ASSIGNMENT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 70 Press CR .	P 70 P70
3	Refer to the System Record Sheet, and enter the required code number (000 ~ 299). Example: code number 002; Enter: 0 0 2 . The system will display the present digit Restrict (Y) and Toll Restriction Status (Z) for entered code number.	P70 002 00
4	Refer to the System Record Sheet, and enter the required digit Restrict and Toll Restriction data. Example: digit Restrict (1) and Toll Restriction (3); Enter: 1 3 .	P70 002 00 13
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all Program 70 data is entered. C) To exit this program, press ## CR .	P70 002 00 13 P70 ## P

**TABLE RM-AA
PROGRAM 78
CO LINE SPECIAL RINGING ASSIGNMENTS-DISA/IMDU/NIGHT RINGING OVER EXTERNAL PAGE**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 78 Press CR .	P 78 P78
3	Refer to the System Record Sheet and enter the feature number for the feature to be programmed. Example: Feature code 1, enter 1 .	P78 1
4	Refer to the System Record Sheet and enter the code number for the area of the feature being programmed. Example: Code 3, enter 3 .	P78 13
5	Refer to the System Record Sheet and enter the CO line keys that will be associated with this feature. Example: CO key 01, enter 0 1 . The system will designate whether the CO key/LED is on/off. Refer to the System Record Sheet and change if required. Press SPACE to display next CO key/LED.	P78 13 01 N 02 N Y
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P78 13 01 N 02 N Y P78 ## P

NOTE:
Program 79 uses Type 2 procedure.

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TABLE RM-AB
PROGRAM 80
ELECTRONIC TELEPHONE RINGING TONES

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode. At the >MODE prompt enter P R O G CR .	>MODE PROG P
2	Enter Program Number 80 Press CR .	P 80 P80
3	Refer to the System Record Sheet and enter the required port number. Example: Port 01, enter 01 .	P80 01
4	Press # key. The system will display 1 or 2 corresponding to tone 1 or tone 2.	P80 01# 1
5	Refer to the System Record Sheet and change if required. Example: Tone 2, enter 2 .	P80 01# 1 2
6	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P80 01# 1 2 P80 ## P

NOTE:
Programs 81 ~ 89 use Type 2 procedure.

TABLE RM-AC
PROGRAM 93
CO LINE IDENTIFICATION

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 93 Press CR .	P 93 P93
3	Enter Action Code 1 Refer to the System Record Sheet and enter the appropriate CO line number. Example: CO line 2, enter 0 2 . The system will display previously entered identification characters (up to 16 characters).	P93 1 02 <input type="text"/> <input type="text"/> (up to 16) └─ Current I.D.
4	Refer to the System Record Sheet and change identification if required: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (16 characters maximum). Example: OVERSEAS.	P93 1 02 <input type="text"/> <input type="text"/> (up to 16) OVERSEAS
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P93 1 02 <input type="text"/> <input type="text"/> (up to 16) OVERSEAS P93 ## P

NOTE:

Use **SPACE** to clear characters.

TABLE RM-AD
PROGRAM 45-1
TOLL RESTRICTION DIAL PLAN

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 45 Press CR .	P 45 P45
3	Enter the number 1. The system will display the present dial plan code number (1 ~ 5).	P45 1 1
4	Refer to the record sheet and enter the required code number. Example: Code 2, enter 2 .	P45 1 1 2
5	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P45 1 1 2 P45 # # P

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TABLE RM-AD1
 PROGRAM 44 (A OR B)
 TOLL RESTRICTION TRAVELING CLASS OVERRIDE CODE ENTRY

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G C R .	>MODE PROG P
2	Enter Program Number 44 (Do not enter A or B) Press C R .	P 44 P44
3	Refer to the System Record Sheet and enter the required Toll Restriction Class number (1 ~ 4). Example: Class 1; Enter: 1 . The system will display the present override code assigned to that class number.	P44 1 NNNN
4	Refer to the System Record Sheet and enter the required override code number. Example: 3456; Enter 3 4 5 6 .	P44 1 NNNN 3456
5	To Exit Program/Store Data A) To store data, press C R . B) Continue returning to step 3 until all Program 44 data is entered. C) To exit this program, press # # C R .	P44 1 NNNN 3456 P44 ## P

**TABLE RM-AE
PROGRAM 45-2
TOLL RESTRICTION DISABLE**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 45 Press CR .	P 45 P45
3	Enter the number 2 .	P45 2
4	Refer to the record sheet and enter the required CO line number. Example: CO line 01, enter 0 1 . The system will display N or Y to define if the LED is on or off.	P45 2 01 N
5	Refer to the System Record Sheet and change the CO line status as required (Y or N). Press SPACE to step to next CO line number.	P45 2 01 N Y 02 N
6	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P45 2 01 N Y 02 N P45 ## P

**TABLE RM-AF
PROGRAM 45-3 ~ 6
EQUAL ACCESS, SPECIAL COMMON CARRIER NUMBERS and AUTHORIZATION CODE DIGIT LENGTH**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 45 Press CR .	P 45 P45
3	Refer to the record sheet and enter the item number (3 ~ 6). Example: Item 3, enter 3 . The system will display the present equal access number or EA1 Code.	P45 3 NNNNN
4	Refer to the System Record Sheet and enter the required number. Example: 12345, enter 1 2 3 4 5 CR .	P45 3 NNNNN 12345 P45
5	Enter code number 4. The system will display present authorization code digit length. Refer to the System Record Sheet and enter the required authorization code number digit length. Example: 12, enter: 1 2 CR .	P45 4 00 12 P45
6	To exit this program, press # # CR .	P45 ## P

NOTE:
Items 5 and 6 are entered the same way as 3 and 4, respectively.

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TABLE RM-AG
PROGRAM 45-8 ~ 9
TOLL RESTRICTION OVERRIDE CODE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter the Program Number 45 Press CR .	P 45 P45
3	Refer to the System Record Sheet and enter 8 or 9 for the desired code number. The system will display the present override code number.	P45 8 NNNN
4	Refer to the record sheet and enter a new number if required. Example: 1234. Enter: 1 2 3 4 .	P45 8 NNNN 1234
5	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P45 8 NNNN 1234 P45 ## P

TABLE RM-AH
PROGRAM 46-2 ~ 4
TOLL RESTRICTION ALLOWED/DENIED AREA CODES ASSIGNED BY CLASS

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 46 Press CR .	P 46 P46
3	Enter class number (1 ~ 4).	P46 <input type="checkbox"/> └─ Class Number
4	Enter 2 , 3 , or 4 SPACE • 2 — to add codes to memory (allow). • 3 — to delete codes from memory (deny). • 4 SPACE — to display codes in memory (allowed codes).	P46 <input type="checkbox"/> <input type="checkbox"/> └─ 2, 3 or 4 ALLOW? or DENY?
5	Refer to the System Record Sheet and enter the area code or area code group. Single <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> . Group <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> * <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> . Press SPACE to enter more codes.	P46 X Y ALLOW <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> or DENY
6	Press SPACE to temporarily store data. Press CR when completed.	P46
7	Continue returning to step 3 until all data input is completed for this program.	
8	To Exit this Program Press # # CR .	P46 # # , P

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TABLE RM-AI
PROGRAM 46-6 ~ 8
TOLL RESTRICTION ALLOWED/DENIED OFFICE CODES ASSIGNED BY CLASS

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 46 Press CR .	P 46 P46
3	Enter class number (1 ~ 4).	P46 <input type="text"/> └─ Class Number
4	Enter 6 , 7 , or 8 SPACE <ul style="list-style-type: none"> • 6 — to add codes to memory (allowed). • 7 — to delete codes from memory (deny). • 8 SPACE — to display codes in memory (allowed codes). 	P46 <input type="text"/> <input type="text"/> └─ 6, 7, or 8
5	Refer to the System Record Sheet and enter the office code or office code group. Single <input type="text"/> <input type="text"/> <input type="text"/> . Group <input type="text"/> <input type="text"/> * <input type="text"/> <input type="text"/> . Press SPACE to enter more codes.	P46 X Y ALLOW <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> or DENY
6	Press SPACE to temporarily store data. Press CR when completed.	P46
7	Continue returning to step 3 until all data input is completed for this program.	
8	To Exit this Program Press # # CR .	P46 # # P

**TABLE RM-AJ
PROGRAM 46-10 ~ 40
TOLL RESTRICTION CLASS PARAMETERS**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 46 Press CR .	P 46 P46
3	Refer to the System Record Sheet and enter the toll restriction class number (1 ~ 4). Then enter the number 0 . Example: Class 1, enter 1 0 .	P46 10
4	Refer to the System Record Sheet and enter the required key/LED number. Example: Key number 11, enter 1 1 . The system will display the status of the key/LED.	P46 10 11 TABLE 1 N
5	Refer to the System Record Sheet and change if required (Y or N). To access next key number, press SPACE .	P46 10 11 TABLE 1 N Y 12 TABLE 2 N
6	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press ## CR .	P46 10 11 TABLE 1 N Y 12 TABLE 2 N P46 ## P

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TABLE RM-AK
PROGRAM 47
TOLL RESTRICTION EXCEPTION OFFICE CODES ASSIGNED BY AREA CODE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 47 Press CR .	P 47 P47
3	Enter exception table (1 ~ 8) and press 1 .	P47 Y 1 AREA CODE NNN
4	Refer to the System Record Sheet and enter the required area code and press CR . Example: AC 714, enter 714 CR .	P47 Y 1 AREA CODE NNN 714 P47
5a	To Add Exception Office Codes to Table <ul style="list-style-type: none"> • Enter exception table (1 ~ 8) and press 2. • Enter exception codes <input type="text"/><input type="text"/><input type="text"/> or <input type="text"/><input type="text"/><input type="text"/>*<input type="text"/><input type="text"/>. • Press SPACE to add more codes. • Press SPACE CR to store codes. 	P47 <input type="text"/> 2 Except Except <input type="text"/> <input type="text"/> <input type="text"/>
5b	To Delete Exception Office Codes from Table <ul style="list-style-type: none"> • Enter exception table (1 ~ 8) and press 3. • Enter exception codes <input type="text"/><input type="text"/><input type="text"/> or <input type="text"/><input type="text"/><input type="text"/>*<input type="text"/><input type="text"/>. • Press SPACE to delete more codes. • Press SPACE CR to store codes. 	P47 <input type="text"/> 3 Delete Delete <input type="text"/> <input type="text"/> <input type="text"/>
5c	To Display Exception Office Codes in Table <ul style="list-style-type: none"> • Enter exception table (1 ~ 8) and press 4 SPACE. • Press SPACE to display more codes. • Press CR to exit display. 	P47 <input type="text"/> 4 Except <input type="text"/> <input type="text"/> <input type="text"/>
6	To Exit Program/Store Data: ## CR	P47 Y 2 Except <input type="text"/> <input type="text"/> <input type="text"/> P47 # # P

**TABLE RM-AL
PROGRAM 48
STATION TOLL RESTRICTION CLASSIFICATION**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 48 Press CR .	P 48 P48
3	Refer to the System Record Sheet and enter the required port number. Example: Port 00, enter 0 0 .	P48 0 0
4	Press # key. The system will display the present data as a 2-digit code: The first digit designates digit free or digit restrict. The second digit is the station restriction code. Refer to the System Record Sheet and change if required.	P48 0 0 # 13
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data is recorded for this program. C) To exit this program, press # # CR .	P48 0 0 # 13 P48 # # P

**TABLE RM-AM
PROGRAM 50-1
LCR PARAMETERS**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50. Press CR .	P 50 P50
3	Enter 1 . Refer to the System Record Sheet and enter the required key/LED number. Example: Key 01, enter 0 1 .	P50 1 01 N
4	Refer to the System Record Sheet and change key/LED status, if required. Press SPACE to move to next key/LED.	P50 1 01 N 02 N
5	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P50 1 01 N 02 N P50 # # P

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TABLE RM-AN
PROGRAM 50-2
LCR HOME AREA CODE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50 Press CR .	P 50 P50
3	Enter the number 2 . The system will display the last area code programmed. Refer to the System Record Sheet and change if required.	P50 2 NNN
4	To Exit Program/Store Data A) To store data, press CR . B) To exit this program, press ## CR .	P50 2 NNN P50 # # P

TABLE RM-AO
PROGRAM 50-31 ~ 35
LCR SPECIAL CODES

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50 Press CR .	P 50 P50
3	Refer to the System Record Sheet and enter 31 ~ 35 as required. Example: 31, enter 3 1 . System will display previously programmed number. Refer to the System Record Sheet and change if required.	P50 31 NNNN
4	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data for this program has been entered. C) To exit this program, press ## CR .	P50 31 NNNN P50 # # P

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**TABLE RM-AP
PROGRAM 50-4
LCR LDI PLAN NUMBER**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50 Press CR .	P 50 P50
3	Enter the number 4 The system will display the present LDI route number. Refer to the System Record Sheet and change if required.	P50 4 1
4	Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P50 4 1 P50 # # P

**TABLE RM-AQ
PROGRAM 50-5
LCR LOCAL CALL PLAN NUMBER**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50 Press CR .	P 50 P50
3	Enter the number 5 The system will display the present local route plan number. Refer to the System Record Sheet and change if required. Example: 2, enter 2 .	P50 5 1 2
4	Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P50 5 1 2 P50 # # P

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TABLE RM-AR
PROGRAM 50-6
LCR DIAL ZERO TIMEOUT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 50 Press CR .	P 50 P50
3	Enter the number 6 The system will display the present dial zero timeout. Refer to the System Record Sheet and change if required. Example: 10, enter 1 0 .	P50 6 06 10
4	Exit Program/Store Data A) To store data, press CR . B) To exit this program, press # # CR .	P50 6 06 10 P50 # # P

TABLE RM-AS
PROGRAM 51
LCR AREA CODES

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 51 Press CR .	P 51 P51
3	Refer to the System Record Sheet and enter the required route plan number (1 ~ 8). Example: Route plan 1, enter 1 .	P51 1
4	Enter 2 , 3 , or 4 SPACE <ul style="list-style-type: none"> 2 — To add area codes to table. 3 — To delete area codes from table. 4 SPACE — to display area codes in table, continue to press SPACE to display more codes. Press CR to exit display. 	P51 <input type="text"/> <input type="text"/> — 2, 3 or 4 <input type="text"/> Plan No. P51 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ← CODES
5	Enter codes <input type="text"/> <input type="text"/> <input type="text"/> or <input type="text"/> <input type="text"/> <input type="text"/> # <input type="text"/> <input type="text"/> <input type="text"/> and press SPACE after each code entry.	P51 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
6	Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P51 12 212 or <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> P51 # # P

**TABLE RM-AT
PROGRAM 52
LCR OFFICE CODE EXCEPTIONS FOR SPECIFIED AREA CODE**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 52 Press CR .	P 52 P52
3	Define Route Plan Number Refer to the System Record Sheet and enter the exception table number (1 ~ 8). Example: Table 1, enter 1 . Enter Action code 0 . The system will print out the currently defined route plan number. Refer to the System Record Sheet and enter new plan number if required. Example: Change to 3.	P52 10 <input type="text"/> 3 └─ LCR Plan No. └─ Action Code └─ Exception Table No.
4	Define Area Code Number Press CR . Enter exception table number (1 ~ 8) defined in step 3. Enter Action code 1 . The system will print out the currently defined area code number. Refer to the System Record Sheet and enter the new area code number if required. Example: Change to 212, enter 2 1 2 . Press CR .	P52 11 <input type="text"/> <input type="text"/> <input type="text"/> 212 P52 └─ Area Code └─ Action Code └─ Exception Table No.
5	Display Office Codes Enter exception table number defined in step 3. Enter Action code 4 . Press SPACE to display previously selected office codes. Continually press SPACE until all previously selected codes have been displayed, then press CR .	P52 14 <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> └─ Office Codes
6	To Add (2) or Delete (3) Office Codes Press CR . Enter exception table number defined in step 3. Refer to the System Record Sheets and enter 2 to add office codes or 3 to delete office codes. Example: Add office codes 300-325 Enter 2 (or 3) 300 325 CR .	P52 12 300-325 P52
7	To Exit Program/Store Data A) Data was stored when CR was pressed in step 6. B) Continue returning to step 3 until all data is entered for this program. C) To exit this program. Press # # CR .	P52 # # P

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TABLE RM-AU
PROGRAM 53
LCR SCHEDULE ASSIGNMENT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 53 Press CR .	P 53 P53
3	Define Route Plan Number Refer to the System Record Sheet and enter the route plan number (1 ~ 8). Example: Route Plan 1, enter 1 .	P53 1
4	Define Schedule Number Refer to the System Record Sheet and enter the required schedule number (1 ~ 3). Example: Schedule 1, enter 1 .	P53 1 1
5	Enter Code Number 0 The system will display the previously selected time for the route plan number (step 3) and the schedule number (step 4). Refer to the System Record Sheet and change the time if required. Example: Change to 0800. Enter 0 8 0 0 . Press CR and repeat steps 3, 4, and 5 for all plans/schedules. <i>NOTE: Enter time using 24-hour format: HH MM .</i>	P53 1 1 0 0000 0800 P53
6	Priority Class Assignment Enter the route plan number as defined in step 3. Enter the schedule number as defined in step 4. Refer to the System Record Sheet and enter the required station group number (1 ~ 4). Example: Group 1, enter 1 . The system will display the previously entered route definition numbers (reference Program 54). Refer to the System Record Sheet and enter required route definition numbers (1 ~ 4) and press CR . Example: Enter 1 and 2 CR . Continue to repeat steps 3, 4, and 6 until all plans/schedules are entered.	P53 1 1 1 NNNN 12 P53
7	To Exit Program/Store Data A) Data was stored when pressing CR in step 6. B) Continue returning to step 3 until all data is entered for this program. C) To exit this program. Press # # CR .	P53 # # P

**TABLE RM-AV
PROGRAM 54
LCR ROUTE DEFINITION**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 54 Press CR .	P 54 P54
3	Enter Route Plan Number Refer to the System Record Sheet and enter the required route plan number (1 ~ 8). Example: Route plan 1, enter 1 .	P54 1
4	Enter Route Definition Number Refer to the System Record Sheet and enter the required route definition number (1 ~ 4). Example: Enter route definition number 2, enter 2 . The system will display the previously entered CO line group number (1 ~ 8) and the modified digits table number (1 ~ 6). Refer to the System Record Sheet and enter the CO line group and modified digit numbers as required, then press CR . Example: Change the CO line group number to 3 and the modified digits table to 2. Enter: 3 2 CR .	P54 12 11 32 Modified Digit Table No. CO Line Group No. Route Definition No. Plan No.
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P54 12 11 32 P54 ## P

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TABLE RM-AW
PROGRAM 55-0
LCR MODIFIED DIGITS-DELETE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 55 Press CR .	P 55 P55
3	Enter Modified Digits Table Number Refer to the System Record Sheet and enter the modified digits table number (1 ~ 6). Example: Enter modified digits table number 1, enter 1 .	P55 1
4	Enter Code 0 The system will display any previously entered number of digits to be deleted (01 ~ 10). Refer to the System Record Sheet and change number if required. Example: Change to 10, enter: 1 0 .	P55 10 00 10
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press ## CR .	P55 10 00 10 P55 ## P

**TABLE RM-AX
PROGRAM 55-1
LCR MODIFIED DIGITS-ADD**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 55 Press CR .	P 55 P55
3	Enter Modified Digits Table Number Refer to the System Record Sheet and enter the required modified digits table number (1 ~ 6). Example: Enter table number 1, enter 1 .	P55 1
4	Enter Code 1 The system will display any previously entered digits (up to 22). Refer to the System Record Sheet and enter new numbers, if required. Example: Enter 1234P3 . <i>NOTE: Pause codes may also be entered. To enter pauses, press "P" plus the pause number (1 ~ 8).</i> Special Code Input Pause = P1 ~ P8 . Tone = T at beginning of digits to convert. Clear = C as first digit, then CR .	P55 11 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (up to 22 digits) 1 2 3 4 P3
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press ## CR .	P55 11 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1 2 3 4 P3 P55 ## P

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TABLE RM-AY
PROGRAM 55-2
LCR MODIFIED DIGITS-END

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 55 Press CR .	P 55 P55
3	Enter Modified Digits Table Number Refer to the System Record Sheet and enter the required modified digits table number (1 ~ 6). Example: Enter table number 1, enter 1 .	P55 1
4	Enter Code 2 The system will display any previously entered digits (up to 22). Refer to the System Record Sheet and enter new numbers, if required. Example: Enter 1234P3 . <i>NOTE: Pause codes may also be entered. To enter pauses, press "P" plus the pause number (1 ~ 8).</i> Special Code Input Pause = P1 ~ P8 . Tone = T at beginning of digits to convert. Clear = C as first digit, then CR .	P55 12 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (up to 22 digits) 1 2 3 4 P3
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press ## CR .	P55 12 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (up to 22 digits) 1 2 3 4 P3 P55 ## P

TABLE RM-AZ
PROGRAM 56
LCR STATION GROUP ASSIGNMENT

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter Program Mode At the >MODE prompt, enter P R O G CR .	>MODE PROG P
2	Enter Program Number 56 Press CR .	P 56 P56
3	Enter Port Number Refer to the System Record Sheet and enter the required port number, <input type="text"/> <input type="text"/> or <input type="text"/> <input type="text"/> # <input type="text"/> <input type="text"/> . Example: Port 01, enter 0 1 .	P56 01
4	Press # Key (if single port <input type="text"/> <input type="text"/> entry in step 3). The system will display any previously entered group number (1 ~ 4). Refer to the System Record Sheet and change as required. Example: Change to 4, enter 4 .	P56 01# 1 4
5	To Exit Program/Store Data A) To store data, press CR . B) Continue returning to step 3 until all data has been entered for this program. C) To exit this program, press # # CR .	P56 01# 1 4 P56 ## P

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TABLE RM-BA
PROGRAM DATA DUMP

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Data Dump Mode At the >MODE prompt, enter D U M P CR .	>MODE DUMP D
2	To Output Program Data Enter P R G <input type="text"/> <input type="text"/> CR <input type="text"/> <input type="text"/> = Program number or ALL for all programs.	D PROG <input type="text"/> <input type="text"/>
3	To Stop Printout at Any Time Enter DELETE CR .	D
4	To Exit the Dump Mode Enter QUIT CR .	>MODE

TABLE RM-BB
SPEED DIALING DATA DUMP

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Data Dump Mode At the >MODE prompt, enter D U M P CR .	>MODE DUMP D
2	To Output Speed Dialing Data Enter R E P <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> CR ---or--- R E P <input type="text"/> <input type="text"/> CR <input type="text"/> <input type="text"/> = ALL or SYS <input type="text"/> <input type="text"/> = Port number for individual station speed dial.	
3	To Stop Printout at Any Time Enter DELETE CR .	D
4	To Exit the Dump Mode Enter QUIT CR .	

TABLE RM-BC
LCD MESSAGING DATA DUMP

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Data Dump Mode At the >MODE prompt, enter D U M P CR .	>MODE DUMP
2	To Output Message Data Enter M S G □□□ CR ---or--- M S G □□ CR □□□ = A L L or S Y S □□ = Port number of individual station.	D MSG □□□
3	To Stop Printout at Any Time Enter DELETE CR .	D
4	To Exit the Dump Mode Enter QUIT CR .	>MODE

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TABLE RM-BD
MODE 95
REMOTE CALLING STATION MESSAGING (ADD/REVIEW/CHANGE)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Message Mode At the >MODE prompt, enter M E S G CR .	>MODE MESSG
2	To Add Or Review a Calling Station Message Set the terminal keyboard to the lower case (cap lock off) and enter m95 . <i>NOTE:</i> <i>Enter "m" anytime it is desired to start over in this procedure.</i>	m 95
3	Enter X X X (XXX = station number where the message will be set and stored).	m95 XXX
4	Enter p □□ (p = page command and □□ = 2-digit message memory location: 10 ~ 19 personal messages and 60 ~ 99 = system message). <i>NOTES:</i> <i>1. To store system messages permanently, EKT XXX must be the station at port 00.</i> <i>2. After p □□ is entered, the previously stored message is displayed. If there is no stored message, nothing is displayed.</i>	m95 XXX p □□ [M]
5	To Change Previous Message Set the terminal keyboard to upper case and change message (alphanumeric, 32 characters max.).	m95 XXX p □□ [M+]
6	To Set the Message on EKT XXX's LCD Set the terminal keyboard to lower case and enter pm0 .	m95 XXX p □□ [M+] p m 0 └ Zero
7	To Exit the Message Mode At any time, enter m0c (lower case).	m 0 q > MODE

NOTES:

1. To cancel a message set via Mode 95, use Mode 97 procedure.
2. [M] represents the message entered.
3. With **Release 2** software only, remote calling station messaging is not available from electronic telephones, but it is available from ASCII terminals connected to the TTY port or via IMDU on the PIOUS or PIOUS.

TABLE RM-BE
MODE 97
REMOTE CALLING STATION MESSAGING (ADD/CHANGE)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Message Mode At the >MODE prompt, enter M E S G C R .	>MODE M E S G
2	To Add a Message (or change a previously stored message) Set the terminal keyboard to lower case (caps lock off) and enter m 9 7 . <i>NOTE:</i> <i>Enter "m" at anytime it is desired to start over in this procedure.</i>	m 9 7
3	Enter X X X (XXX = station number for which the message will be set and stored).	m97 XXX
4	Enter: p <input type="checkbox"/> <input type="checkbox"/> (p = page command and <input type="checkbox"/> <input type="checkbox"/> = 2-digit message memory location: 10 ~ 19 personal messages and 60 ~ 99 = system messages). <i>NOTE:</i> <i>To store system message change permanently, EKT XXX must be station assigned to port 00.</i>	m97 XXX p <input type="checkbox"/> <input type="checkbox"/>
5	To Add a Message Set the terminal keyboard to upper case and enter message (alphanumeric, 32 characters max.). New message displays as it is entered.	m97 XXX p <input type="checkbox"/> <input type="checkbox"/> [M]
6	To Set the Message on the Electronic Telephone's LCD Set the terminal keyboard to lower case and enter m 0 .	m97 XXX p <input type="checkbox"/> <input type="checkbox"/> [M] p m <u>0</u> Zero
7	To Exit the Message Mode At any time, enter m 0 q (lower case).	m 0 q >MODE

NOTES:

1. To cancel a message set via Mode 95, use Mode 97 with any message number in step 4, use this procedure and skip step 5.
2. [M] represents the message entered.
3. With **Release 2** software only, remote calling station messaging is not available from electronic telephones, but it is available from ASCII terminals connected to the TTY port or via IMDU on the PIOUS or PIOUS.

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TABLE RM-BF
MODE 94
REMOTE CALLED STATION MESSAGING (ADD/REVIEW/CHANGE)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Message Mode At the >MODE prompt, enter M E S G CR .	>MODE MESSG
2	To Add Or Review a Called Station Message Set the terminal keyboard to the lower case (cap lock off) and enter m94 .	m 94
3	Enter X X X (XXX = Destination station number or destination group number [30 = all stations, 31-34 per system, Program 31]).	m94 XXX
4	Enter p Y Y Y (p = page command [lower case] and Y Y Y = originating station number).	m94 XXX p YYY
5	Enter p □ □ (p = page command [lower case] and □ □ = 2-digit message memory location: 10 ~ 19 personal messages and 60 ~ 99 = system messages). After p □ □ is entered, the previously stored message (M) is displayed. (If there is no stored message, nothing is displayed.)	m94 XXX p YYY p □ □ [M]
6	To Change the Message (M+) Set the terminal keyboard to upper case and change message as required (alphanumeric, 32 characters max. for total message).	m94 XXX p YYY p □ □ [M+]
7	To Set Message Set the terminal keyboard to lower case and enter p m 0 . Destination station: MW/FL LED flashes, "CALL YYYYM" is displayed. Origination station: "SENT XXXM" is displayed.	m94 XXX p YYY p □ □ [M+] p m 0 └ Zero
8	To Exit the Message Mode At any time, enter m 0 c (lower case).	m 0 c >MODE

NOTES:

1. Press **m** at any time to start over.
2. [M] represents the message entered.
3. With **Release 2** software only, remote called station messaging is not available from electronic telephones, but it is available from ASCII terminals connected to the TTY port or via IMDU on the PIOUS or PIOUS.

TABLE RM-BG
MODE 96
REMOTE CALLED STATION MESSAGING (ADD/CHANGE)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Message Mode At the >MODE prompt, enter M E S G CR .	>MODE MMSG
2	To Change or Add a New Called Station Message Set the terminal keyboard to the lower case (cap lock off) and enter m 9 6 . <i>NOTE:</i> Enter "m" (lower case) anytime it is desired to start over in this procedure.	m 96
3	Enter X X X (XXX = destination station number or destination station group number – 30 = all EKTs, 31 ~ 34 per system, Program 31).	m96 XXX
4	Enter p Y Y Y (p = page command and YYY = originating station number).	m96 XXX p YYY
5	Enter p □ □ (p = page command and □□ = 2-digit message memory location: 10 ~ 19 personal messages and 60 ~ 99 = system messages).	m96 XXX p YYY p □□
6	To Add the New Message [M] Set the terminal keyboard to upper case and enter message as required (alphanumeric, 32 characters max.). New message displays as it is entered.	m96 XXX p YYY p □□ [M]
7	To Set the Message Set the terminal keyboard to lower case and enter p m 0 . Destination station: MW/FL LED flashes, "CALL YYYM" is displayed on LCD. Origination station: "SENT XXXM" is displayed on LCD.	m96 XXX p YYY p □□ [M] p m 0 └ Zero
8	To Exit the Message Mode At any time, enter m 0 q (lower case).	m 0 q >MODE

NOTES:

- [M] represents the message entered.
- With **Release 2** software only, remote called station messaging is not available from electronic telephones, but it is available from ASCII terminals connected to the TTY port or via IMDU on the PIOUS or PIOUS.

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TABLE RM-BH
STATION/CO LINE STATUS CHECK

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Test Mode At the >MODE prompt, enter T E S T CR .	>MODE TEST
2	To Check Station Line Status Enter S E K T X X X X = port number. Possible status: Idle on-hook, idle off-hook, busy on-hook, busy off-hook. IMPORTANT! <i>To prevent service interference, station line status must be idle on-hook before initiating a test from that station.</i>	T SEKT XX IDLE ON-HOOK T
3	To Check CO Line Status Enter S C O Y Y Y Y = CO line number. Possible status: Idle, busy.	T SCOYY - BUSY T
4	To Exit the Test Mode At the T prompt, enter Q U I T CR .	T QUIT > MODE

TABLE RM-BI
GENERAL STATION ACCESS AND BUTTON ACTIVATION

STEP	ACTION	DISPLAY/PRINTOUT								
1	Enter the Test Mode At the >MODE prompt, enter T E S T CR .	>MODE TEST T								
2	To Activate A Key Enter T K X X K Y Y CR . XX = Port number and YY = key number. <i>NOTE: Key numbers begin at 01.</i>	T TKXX KY T								
3	To Activate A Function Key Enter T K X X F CR F = function key designator <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>SPKR</td><td>S</td></tr> <tr><td>HOLD</td><td>H</td></tr> <tr><td>CONF</td><td>C</td></tr> <tr><td>MIC</td><td>M</td></tr> </table> F = S, H, C, M	SPKR	S	HOLD	H	CONF	C	MIC	M	TTKXX F T
SPKR	S									
HOLD	H									
CONF	C									
MIC	M									
4	To Access A CO Line (via CO Access Code) and Dial Out Enter T K X X K O I A A A <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> CR . AAA = 1, 2, or 3-digit CO line access code and <input type="text"/> = telephone number.	TTKXX K01 AAA <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> T								
5	To Access A CO Line (via CO Line Key) and Dial Out Enter T K X X K Y Y <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> CR . YY = CO line number. Telephone Number	TTKXX KY <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> T								
6	To Exit the Test Mode At T prompt, enter Q U I T CR .									

**TABLE RM-BJ
CO LINE TEST**

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Test Mode At the >MODE prompt, enter T E S T C R .	>MODE TEST
2	To Verify Station/CO Line Status Station line status, enter S E K T X X (X X = station port). CO line status, enter S C O Y Y (Y Y = CO line number).	T SEKT XX IDLE ON-HOOK T T SCO YY IDLE
3	Call Remote Station B (from SEKT XX and CO line YY) Enter T K X X K Y Y □□□□□□ CR . (□ = station B's telephone number) Answer station B. <i>NOTE:</i> <i>If the system is equipped with MOH, go to step 4. If the line must be tested via a CO-to-CO connection, go to step 6.</i>	T TK XX KYY □□□□□□ T
4	A) Press the HOLD key on TK XX (station B on hold). Enter T K X X H C R . B) Listen at station B and check that the transmission from the music source is acceptable. C) Press the SPKR key on TKXX (to release the call). Enter T K X X S C R .	T TKXX H T T TKXX S T
5	Continue returning to step 2 until all CO lines are tested.	
6	To Set Up A CO-to-CO Connection Press the CONF/TRNS key on T K X X . Enter T K X X C C R . <i>NOTES:</i> <i>1. Station B is connected via step 3.</i> <i>2. Verify that Program 15-5 allows CO-to-CO connections.</i> <i>3. The next step must be completed immediately to avoid dial tone timeout.</i>	T TKXX C T
7	Call station C (or local time/weather) via CO line C. Enter: T K X X K Y Y □□□□□□ CR . X X = CO line C's key number and □ = telephone number of station C. Answer station C (or verify time/weather connection) and go to next step.	T TKXX KYY □□□□□□ T
8	Press the CONF/TRNS key on STXX to establish a conference between all parties.	T TKXX C T
9	If you wish to tie the two CO lines together and hang up: Enter T K X X C C R . Enter T K X X S C R .	T TKXX C T TKXX S T
10	Continue returning to step 2 until all CO lines are tested.	
11	To Exit the Test Mode, At the T prompt, enter Q U I T C R .	

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TABLE RM-BK
SYSTEM DATE/DAY/TIME SETTING PROCEDURE

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Test Mode At the >MODE prompt, enter T E S T CR .	>MODE TEST T
2	To Set Date Enter T K 0 0 K 0 1 6 5 1 Y Y M M D D # CR .	T TK00 K01 651YYMMDD# T
3	To Set Time Of Day Enter T K 0 0 K 0 1 6 5 2 H H M M S S # CR .	TTK00 K01 652HHMMSS#
4	To Set Day Of The Week Enter T K 0 0 K 0 1 6 5 3 D # CR . (D = day of week with Sunday = 1 ~ Saturday = 7)	TTK00 K01 653D# T
5	To Exit the Test Mode At T prompt, enter Q U I T CR .	

TABLE RM-BL
SPEED DIAL MODE (CHANGE/REVIEW)

STEP	ACTION	DISPLAY/PRINTOUT
1	Enter the Speed Dial Mode At the >MODE prompt, enter REPT CR .	>MODE REPT
2	Enter the station port number for which the speed dial number will be programmed Press <input type="text"/> <input type="text"/> └── (00 ~ 95) <i>NOTE: If programming system speed dial, enter port number 00 .</i>	R <input type="text"/> <input type="text"/> └── Station Port Number
3	Enter Speed Dial Memory Location to be Programmed Press <input type="text"/> <input type="text"/> (current memory will display) └── 10 ~ 49 Station └── 60 ~ 99 System	R <input type="text"/> <input type="text"/> <input type="text"/> N └── Memory location └── Nothing in memory
4	1) To enter speed dial number (20 digits max) Press <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> └── 20-digit number 2) To enter chain dial number Press A <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> └── 17-digit number └── System speed dial location (90 ~ 99) (Refer to Electronic Telephone User Guide for information regarding chain dialing.) Special Entries: F=Flash; P=1.5 or 3-sec Pause (Prog. 12); L=10-sec Pause; N=Clear Memory.	R <input type="text"/> <input type="text"/> <input type="text"/> N <input type="text"/> <input type="text"/> <input type="text"/> └── New speed dial number
5	To store data, press CR <i>NOTE: If program entry is not correct, CR will not respond. To try again, press DELETE CR .</i>	R
6	To Exit the Speed Dial Mode Press QUIT CR .	>MODE

