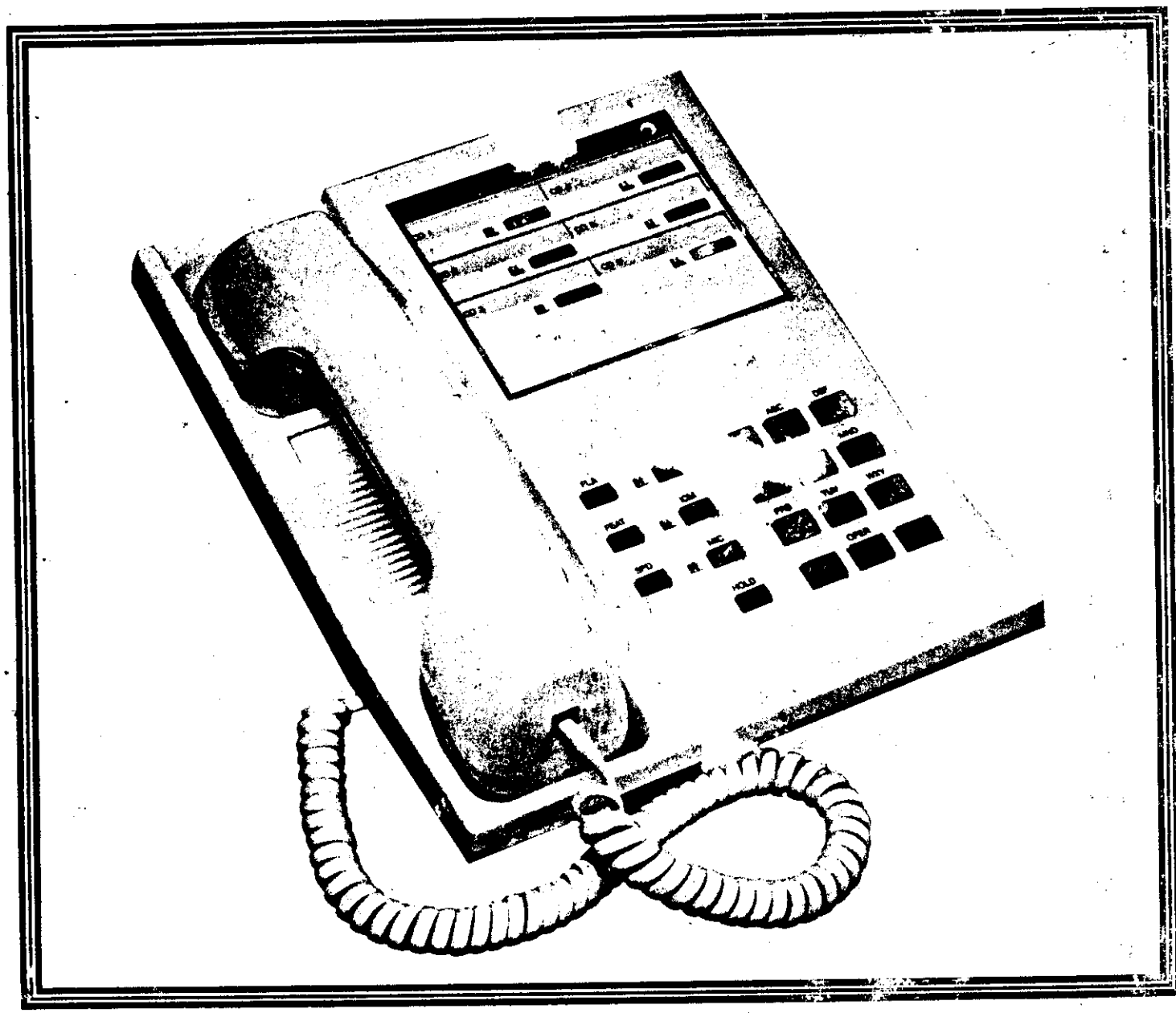
POETS™

ELECTRONIC KEY TELEPHONE SYSTEM

INSTALLATION AND MAINTENANCE MANUAL



WALKER

Telecommunications Corporation

INSTRUCTION, OPERATION, AND SERVICE MANUAL FOR THE POETS ™ ELECTRONIC KEY TELEPHONE SYSTEM

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AFTER HOURS
EMERGENCY # (516) 351-7627
FOR THE POETS ™

APRIL 1989

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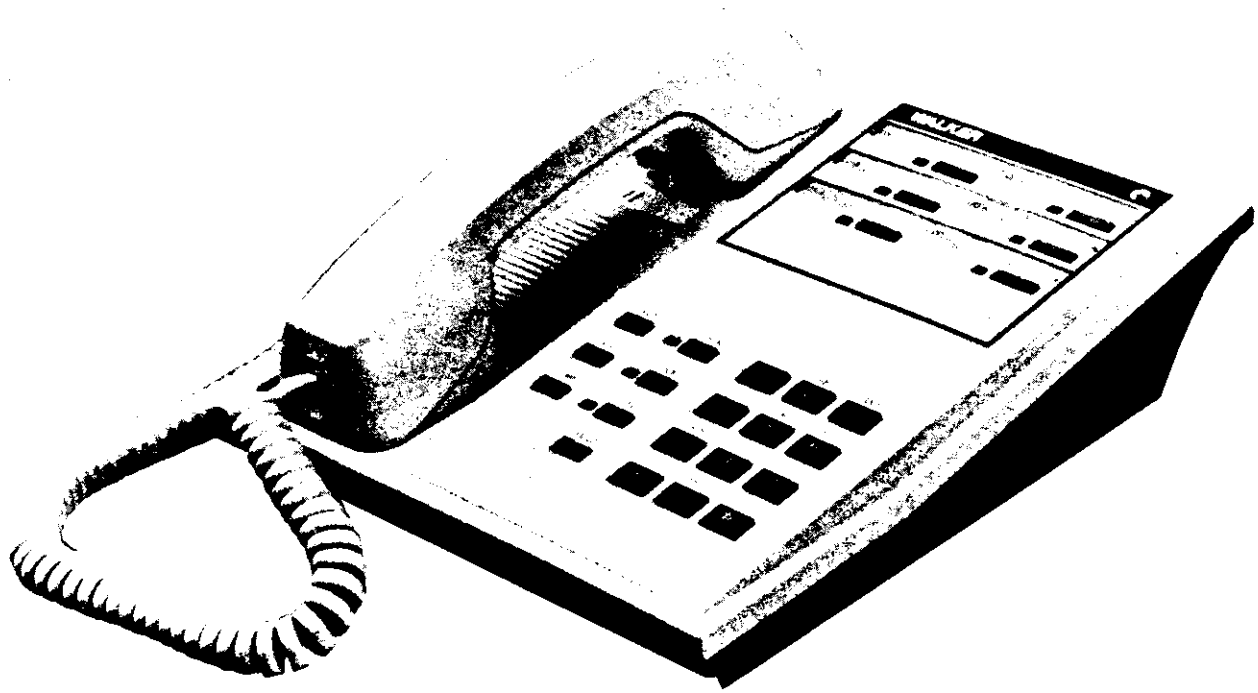


L I S T O F T A B L E S

W A R R A N T Y

For twenty-four (24) months from the date of original installation, Walker Telecommunications Corp. (WTC) warrants that the Material will be free from defects in material and workmanship, and WTC's liability is limited solely to the repair or replacement, at WTC's option, of such defective parts which are:

(i) returned, shipping and handling charges prepaid, to the warehouse designated by WTC, properly packed and in good mechanical condition, together with a statement describing the defect; and

(ii) proven to be defective upon WTC's inspection.

The cost of labor to inspect and remove defective parts shall be borne by the installing or servicing party.

The above Warranty does not apply to Materials used outside of the Territory or to parts normally consumed in operation.

SECTION 1
INTRODUCTION

GENERAL

This manual contains installation, operation, programming and servicing instructions for the POETS^{tm} (from this point on, POETS^{tm} will be referred to as "POETS") Electronic Key Telephone System.

POETS is a stored program microprocessor controlled space division switching system that can be installed on Rotary or Dual Tone Multi Frequency "DTMF" dialing lines, or a combination of the two. POETS has many features, most of which are program controlled. The system is delivered with a permanent factory program that may be modified at the time of installation to suit customer requirements. Program changes are performed from the station connected to port 1 of the BSU (Extension 10).

The POETS Basic Service Unit "BSU" is equipped with printed wiring boards to support a maximum of six Central Office "CO" lines, 12 stations, and two intercom "ICM" paths. (See figure 1-1)

In addition, two optional Line Expansion Service Units "LEUs" may be added to expand the POETS to 30 CO lines, 60 stations, and 10 intercom paths. Each LEU is capable of supporting 12 CO lines, 24 stations, and four intercom paths. Adding the first LEU allows the POETS to grow to 18 CO lines, 36 stations and six intercom paths. Adding the second LEU allows the POETS to grow to 30 CO lines, 60 stations, and 10 intercom paths. (See figure 1-2)

The POETS supports 6 CO button, 18 CO button and 30 CO button and 18 CO button executive telephones. Each telephone, except the executive telephone, can be equipped with an optional speakerphone

module. The executive telephone is equipped with a speakerphone as standard equipment.

The BSU can support a maximum of one set of Direct Station Select "DSS" consoles (one for the first group of 30 stations and one for the second group of 30 stations). Each LEU can support 2 sets of DSS consoles in the same configuration as the BSU. Total sets of DSS consoles are five. (A maximum of ten DSS/BLF units)

IMPORTANT PRELIMINARY CONSIDERATIONS

The following paragraphs describe equipment and regulations regarding the Federal Communications Commission "FCC" and local telephone company that must be considered before installation:

FCC REQUIREMENTS

The FCC has established rules which permit the Electronic Key Telephone System to be connected directly to the telephone network. The jack for connection is provided by the telephone company.

TELEPHONE COMPANY IDENTIFICATION

Before installing the device to the telephone network, the telephone company must be provided with the following:

- Your customer's telephone number;
- The FCC registration number - BAQ9IT-15578-KF-E;
- The ringer equivalance number - 1.0B; and
- The USOC jack required - RJ11C (one per CO trunk)

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the 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 protections 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.

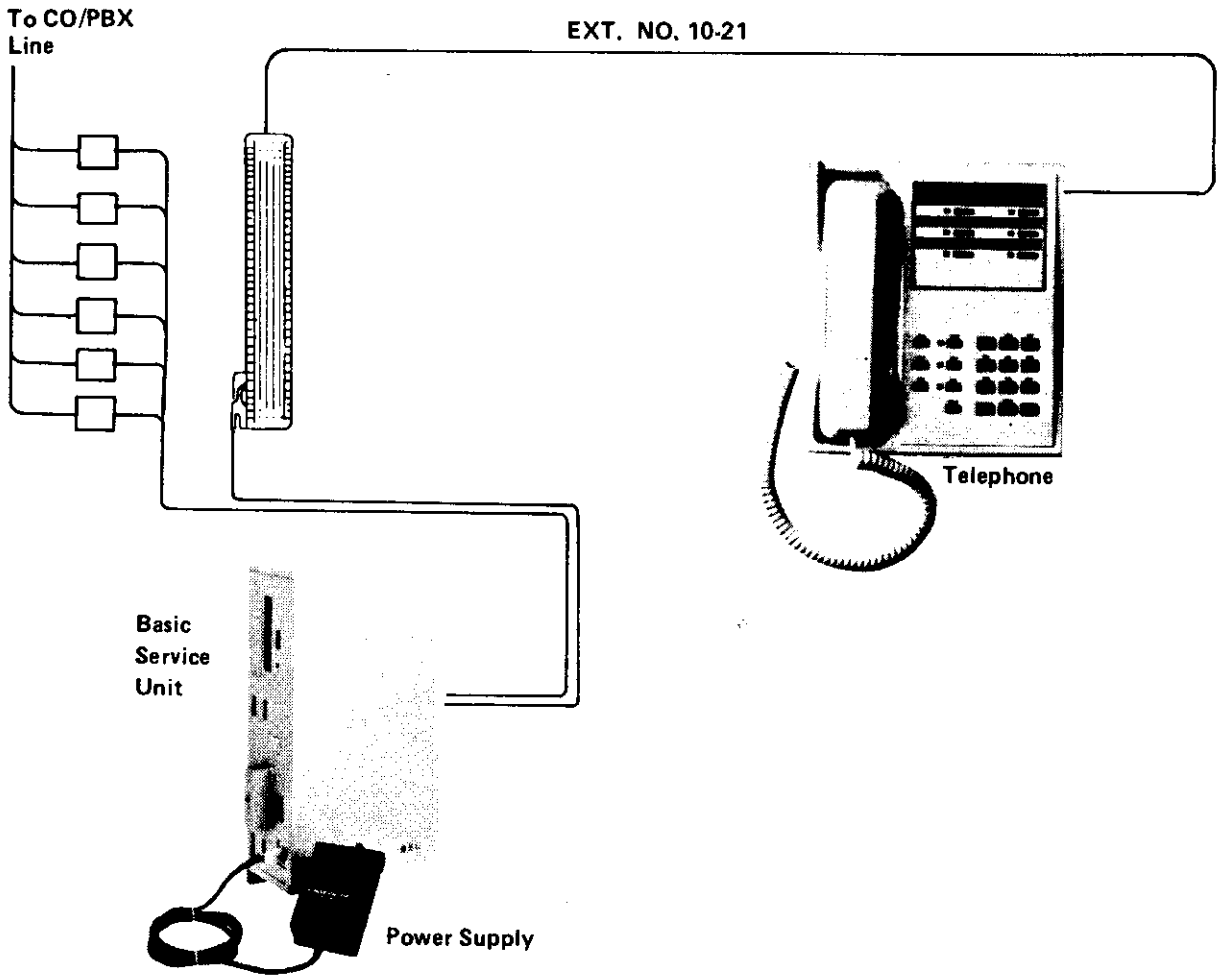


Figure 1-1. POETS Electronic Key Telephone System (BSU).

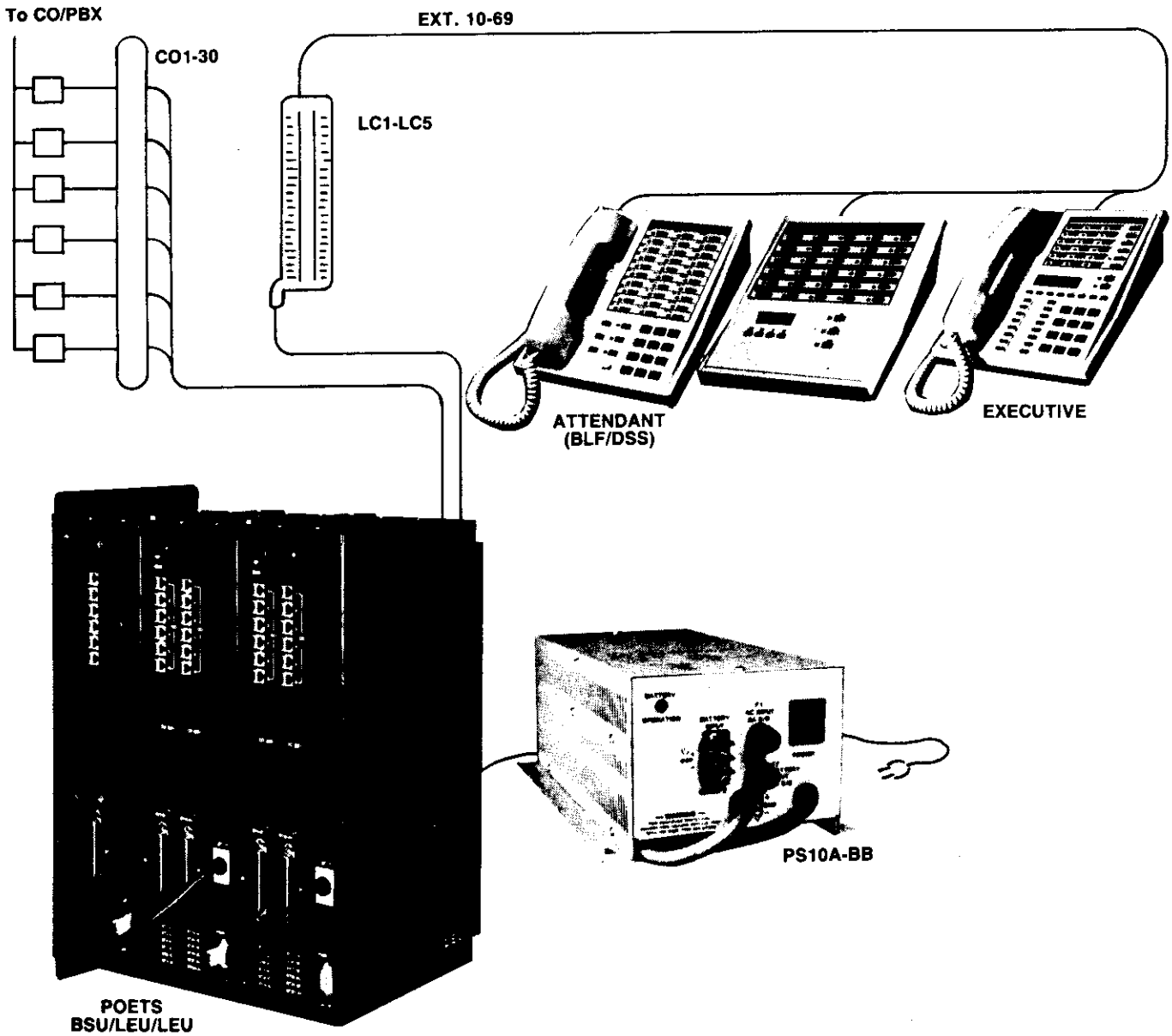


Figure 1-2. POETS Electronic Key Telephone System. (BSU/LEU/LEU)

If POETS develops a malfunction, it could damage the telephone network. The system must be disconnected until the source of the problem can be determined and the necessary repair made.

NOTE: If the malfunction causing interference is not corrected, the telephone company may temporarily disconnect service. The telephone company can change its technical operations and procedures. If these changes affect the compatability or use of the device, the telephone company must provide adequate notice of the changes.

SERVICE REQUIREMENTS

On-site trouble shooting may be performed by the installing company (refer to page 2-63 for Trouble Shooting Guide) with corrective action being limited to replacement of printed circuit boards, power supplies, cable, or telephone only. For all integral repairs required to the above-mentioned parts, these parts must be returned to the manufacturer for service.

ENVIRONMENTAL SPECIFICATIONS

This section defines environmental considerations for POETS.

1. Temperature

   Continuous operating temperature: 32°-104°F (0°-40°C)

   Storage Temperature: 0°-150°F (-17.9°-65°C)

2. Relative Humidity

   Continuous operating relative humidity: 10%-90% (non-condensating)

3. Heat Dissipation

   6 x 12 (only): 31 BTUs Max
   30 x 60: 133 BTUs Max
   PS2A Power Supply: 41 BTUs Max @ Rated Power
   PS10ABB Power Supply: 355 BTUs Max @ Rated Power

TELEPHONE DIMENSIONS

The telephone is 8.12 inches (199.1 mm) wide by 8.75 inches (214 mm) long by 2.58 inches (65.5 mm) high when the handset is not in the cradle. (All telephones and the DSS console have the same dimensions.)

TECHNICAL SPECIFICATIONS

See Table 1-1 which defines technical and operational parameters for the POETS System.

SYSTEM SPECIFICATIONS

See Table 1-2 which defines the system specifications.

BSU AND LEU DIMENSIONS AND SPECIFICATIONS

Length: 18.5 inches

Width: 9.5 inches

Depth: 4.75 inches

See Table 1-3 which defines the BSU specifications.

See Table 1-4 which defines the LEU specifications.

Table 1-1

TECHNICAL SPECIFICATIONS

Type of Equipment:	POETS Electronic Key Telephone Systems
Control:	Stored Program, Microprocessor Control
Switching:	Space Division
Transmission:	Analog

Electrical Characteristics

Input Power:	117 VAC, 60Hz ± 10%
Output Power:	24 VDC ± 10%

Central Office Interface Characteristics

AC Impedance at CO Interface:	600 ohms
DC Resistance at CO Interface:	300 ohms

Basic Service Unit must be within 25 feet of CO interface.

Connection and Cable Requirements

Telephone Company Connections:	FCC approved RJ-11C (USOC) connectors, provided by the Telephone Company 1 per CO trunk
Connection Blocks:	Standard type 66 M1-50
Cable Requirements:	One 25-pair minimum per (STU) station line card (from STU to 66 M1-50) One 2-pair (Quad J-K or equivalent) from the 66 M1-50 to each station One 2-pair flat ribbon cable per CO line
Telephone Station Connections: (including DSS/BLF)	Type 625 modular jack (2 pair)
Maximum Station Cable Length*: (No. 24 AWG x 2 pair)	6-button telephone = 2000 ft 18-button telephone = 1500 ft 30-button telephone = 1000 ft DSS/BLF = 1000 ft Executive = 1000 ft

*NOTE: Maximum Station Cable Length may vary depending on environmental conditions.

Table 1-2

SYSTEM SPECIFICATIONS

Specifications		Descriptions
Max. CO/PBX Lines	30	for tone and/or outpulsing 6 circuits per one (COU) CO card.
Max. Intercom Links	10	2 ICM paths are standard with the BSU. 4 additional ICM paths are provided with each LEU for a total of 10 ICM paths.
Max. Station Codes	60	12 stations codes per (STU) station card. 5 (STU) station cards per system totalling 60 station codes (8 Executive telephones per STU total 40).
Max. DSS/BLF Console	5-pair	2 DSS/BLF ports per station (STU) card. 5 sets of 2 DSS consoles each. Each console supports 30 stations connected to port #2 and #3 of each STU for sequential access to approx. 60 stations (depending upon the number of DSS/BLFs in the system). DSS Consoles reduce station capacity on a one-for-one basis. They also reduce Executive station capacity on a one-for-one basis.
Executive Telephone	40	8 per STU (first 8 ports of each STU only).
Control	Decentralized Microprocessor Common Control from BSU	
Switching	Space Division	C-MOS Analog

Table 1-3

BSU SPECIFICATIONS

Specifications		Descriptions
Max. CO/PBX Lines	6	for tone and/or outpulsing, 6 circuits per 1 (COU) CO card.
Max. Intercom Links	2	2 ICM paths are standard with the BSU.
Max. Station Codes	12	12 stations per 1 card - 8 stations may be Executive telephones.
Max. DSS/BLF Consoles	1 pair	reduces station capacity on one-for-one basis. Each DSS/BLF provides access to 30 stations. Each DSS/BLF will reduce executive station capacity on a one-for-one basis. DSS/BLF connects to port #2 (port #3 may also be used for systems with stations in excess of 30).
Max. Executive Telephones	8	first 8 ports of (STU) station card.

Table 1-4

LEU SPECIFICATIONS

Specifications		Descriptions
Max. CO/PBX Lines	12	for tone and/or outpulsing 6 circuits per (COU) CO card.
Max. Intercom Links	4	2 ICM paths are standard with the BSU. 4 additional ICM paths are provided with each LEU for a total of 10 ICM paths.
Max. Station Code	24	12 station codes per (STU) station card. 5 (STU) station cards per system, totalling 60 station codes. (8 Executive telephones per STU total 40).
Max. DSS/BLF Consoles	2-pair per ESU	2 DSS/BLF ports are standard with the BSU (port #2 and port #3). 2 additional DSS/BLF ports are provided with each station card (port #2 and port #3 of the STU). 5 STU station cards per system totalling 5 sets of 2 DSS consoles each. Each console supports 30 stations. One console may be connected to port #2 and another to port #3 of each STU for sequential access to approx. 60 stations (depending on how many DSS/BLFs are used in the system).
Executive Telephone	16	8 per STU (first 8 ports of each STU)

POETS CONFIGURATOR

The information provided in Table 1-5 is designed to assist you in configuring a system. Upon initial inspection, and before installation, compare your inventory with the table below in order to determine the necessary electronics for this installation.

Table 1-5
POETS CONFIGURATOR

CO Lines	COU	BSU	LEU	EMC
6	1	1	0	0
12	2	1	1	0
18	3	1	1	0
24	4	1	2	1-2nd LEU
30	5	1	2	1-2nd LEU
Stations	**STU**	**BSU**	**LEU**	**EMC**
12	1	1	0	0
24	2	1	1	0
36	3	1	1	0
48	4	1	2	1-1st LEU
60	5	1	2	1-1st LEU

NOTES:

- PS2A is required for a 6 x 12.
- The PS2A must be replaced with a PS10A-BB for systems with one or more LEUs or when battery-backed system operation is required.
- Each LEU is shipped from the factory equipped with one ECU circuit.

SECTION 2

INSTALLATION

GENERAL

This section provides installation instructions for the POETS Electronic Key Telephone System. The contents of this section are arranged in the recommended order of installation.

UNPACKING

Remove all equipment from the cartons as follows:

1. Carefully open all cartons. (It is highly recommended that you affix a grounding strap to your wrist or arm before unpacking electronic circuit cards.)
2. Remove packing material and shipping receipts.
3. Check equipment for damage:
   a. Inspect circuit cards for cracks and/or damage.
   b. Inspect housings and cabinets for any damage which may have been incurred during shipping.
   c. Inspect station terminals for external damage.

CAUTION--All circuit cards are static sensitive. Before handling any circuit card, perform one of the following two precautions:

- Discharge the static electricity from your body by touching metal that is earth grounded.
- Attach a grounding strap (wire) to your wrist which is secured to an earth ground such as a cold water pipe.

LOCATION SELECTION

Consider the following when selecting a location for POETS:

1. Availability of a 117 VAC, 60-Hz single-phase dedicated power outlet capable of safely delivering 12 Amps. (An isolated outlet is recommended.)
2. It is also highly recommended that a high quality surge protector be used on the power line to protect the system against damage from lightning surges on the power line. In addition, precautions should be taken in accordance with local practices.
3. The location of the Central Office/Private Branch Exchange "CO/PBX" line terminations must be within 25 feet of the Central Office interface. The system uses a single two-pair cable per CO line for connecting to the telephone company lines. These cables plug into FCC approved RJ-11C (USOC code) connectors provided by the telephone company, and the modular jacks at the BSU.
4. Ventilation and temperature: the equipment is designed to operate within 32°-104°F (0°-40°C).
5. The basic service unit must not be placed near a strong magnetic field such as a heavy motor or generator, copying machine, high power cable, etc.
6. The system must not be placed in an environment where a high concentration of radio frequency energy is present, due to the possibility of interference with the equipment.

7. The equipment must not be exposed to hazards such as flammable materials, caustic fluids, possible flooding, etc.

8. Provide adequate lighting and space for operation and maintenance.

EQUIPMENT ARRANGEMENT

See Table 2-1 which describes the equipment arrangement for the POETS system.

Table 2-1

EQUIPMENT ARRANGEMENT

UNIT DESIGNATION	DESCRIPTION	MAXIMUM QUANTITY	BASIC OR OPTIONAL
POETS BSU	Basic Service Unit	1	Basic
POETS LEU	Line Expansion Unit	2	As Required "A/R"
POETS 6-TEL	6 CO Key Telephone	60	Basic A/R
POETS 18-TEL	18 CO Key Telephone	60	A/R
POETS 30-TEL	30 CO Key Telephone	60	A/R
POETS EXEC	18 CO Executive Key Telephone	40	A/R
POETS DSS/BLF	30 Button Direct Station Select/Busy Lamp Field	5 sets of 2 each	A/R
STU	12 Circuit Station Line Card	5	Basic A/R
COU	6 Circuit CO/PBX Line Card for DTMF or Dialpulse Dialing	5	Basic A/R
PS2A	24 Volt Power Supply	1	Basic
PS10A-BB	24 Volt Power Supply with Battery Back-up Switch Circuit	1	Option*

*Required for LEU or Battery-Backed system power. It is necessary to use only the PS10A-BB (omit PS2A) for systems equipped with LEU.

BASIC SERVICE UNIT MOUNTING

The BSU is designed for wall mounting and may not be floor mounted. Figure 2-1 shows the mounting hole spacing dimensions for wall mounting the key service unit. Use appropriate fasteners that can safely sustain the weight of a fully loaded (with two LEU's piggybacked) 40 pound unit.

CAUTION:

1. Ensure that the BSU cabinet is connected to a good earth ground, and that the LEUs are grounded (wired) to the BSU using the appropriate grounding screws. The LEUs must be grounded to the BSU; otherwise a problem may occur due to varying ground potentials.
2. Make sure to leave adequate room (12") on <u>each</u> side of BSU from any obstruction for ease of removing PC boards and interface.

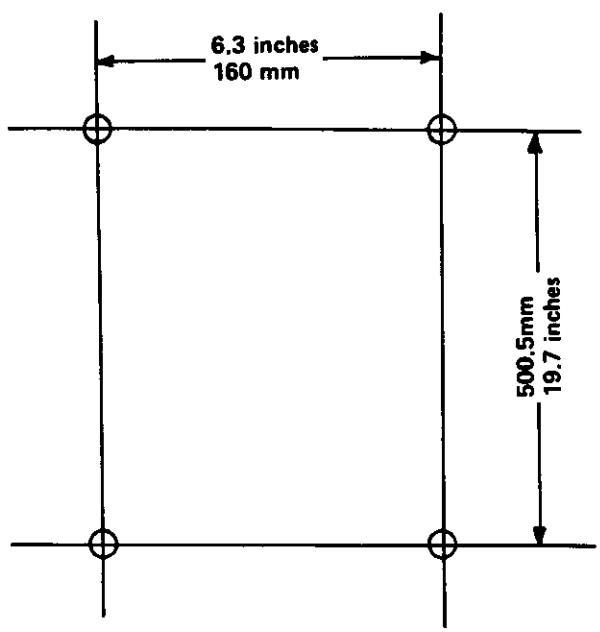


Figure 2-1. BSU Mounting Holes

GROUNDING THE SYSTEM

The BSU and power supply must be properly grounded to an earth ground. A screw on the left side of BSU must be connected to a good earth ground such as a metallic cold-water pipe using AWG 14 or larger. Do not use the ground (green) wire of the AC cord for BSU earth ground. A screw on the left side of the LEU should be bridged to the BSU grounding screw with a jumper wire. If two LEUs are required, a second jumper should be used between the LEUs to completely ground all three cabinets as shown below. In addition, star washers are provided with the LEU mounting screws to insure grounding continuity between cabinets.

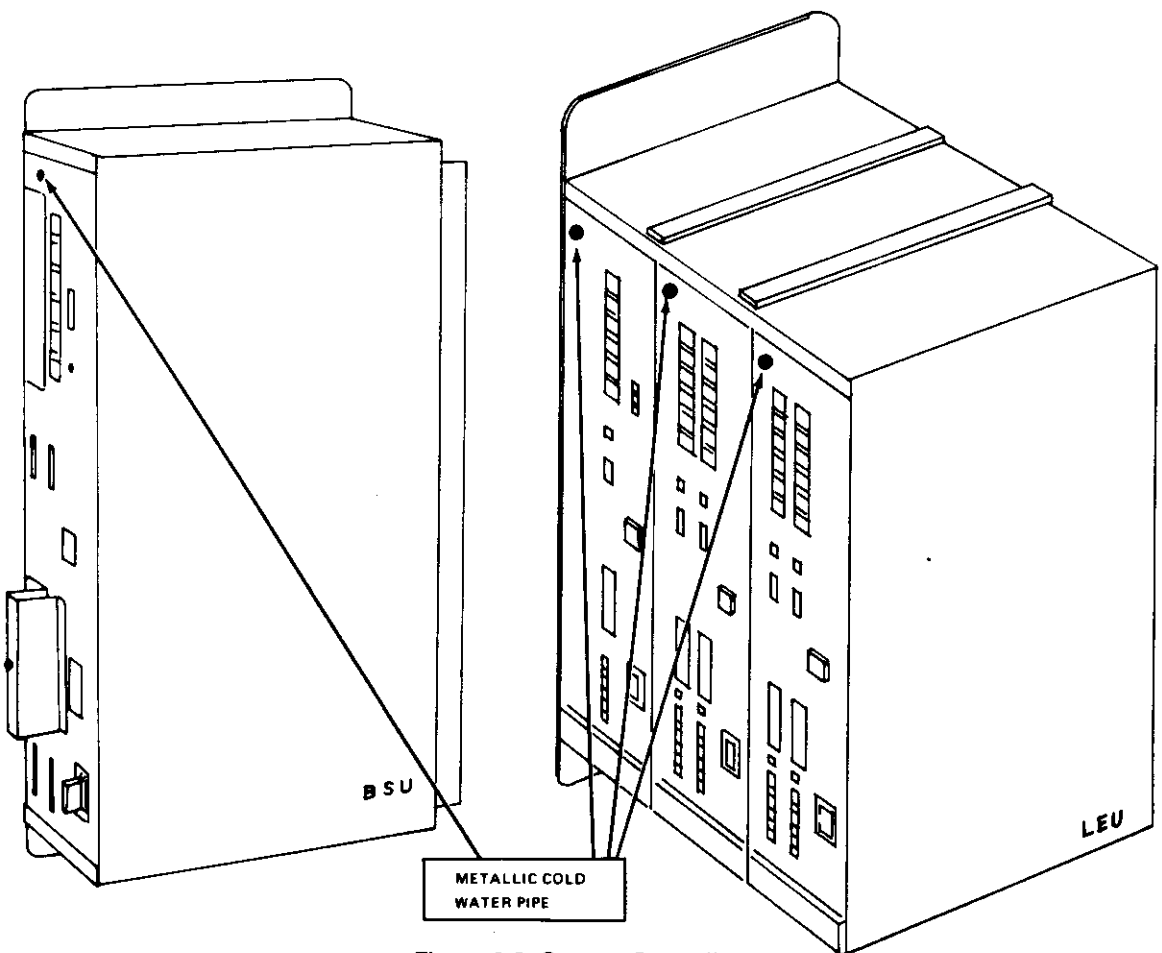


Figure 2-2. System Grounding.

LINE EXPANSION UNIT (LEU) MOUNTING

The LEUs are designed for piggyback mounting and may not be individually located or floor mounted. Figure 2-3 shows the mounting arrangement. Use the bolts provided as fasteners in the designated locations so as to insure secure mounting when the system is fully loaded (weight approximately 40 lbs). Four bolts are provided with each LEU (taped to the power cord). The two cylindrical studs are to be used at the top end of the LEU and the two remaining screws (standard phillips) on the bottom side.

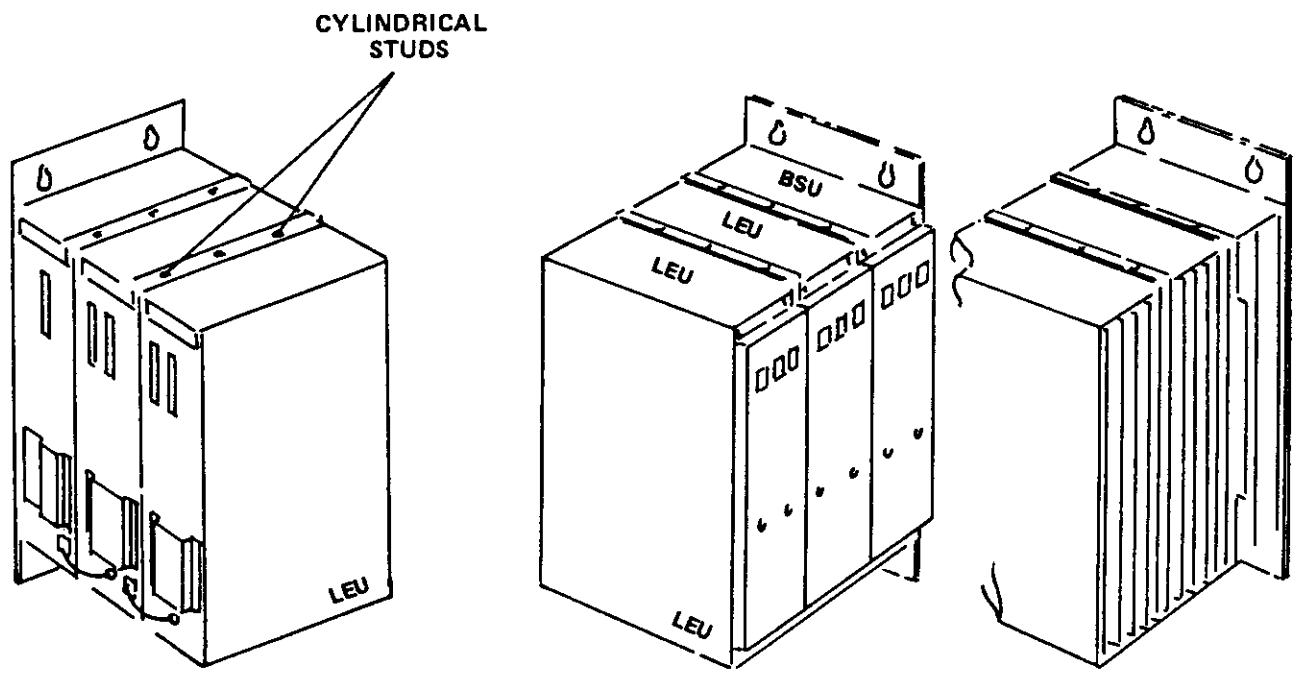


Figure 2-3. LEU Mounting Arrangement.

CABLE INSTALLATION

Table 2-2 lists the cables required to install POETS. The cables are interconnected as shown in Figure 2-4 for a BSU and Figure 2-5 for BSU plus LEU. One 25-pair cable is connected between the BSU/LEU connecting blocks and the BSU/LEU 25-pair connectors. The male connector of this cable mates with the female connectors of the BSU/LEU. The BSU/LEU 25-pair connectors are located on the left side of each BSU and LEU (1 per STU card). The other end of these cables have individual wires which are terminated at the station blocks (66M1-50). Up to six two-pair modular cables are connected between the BSU and CO/PBX interface. Up to 12 two-pair modular cables are connected between each LEU and the CO/PBX interface. Figure 2-6 shows the BSU connector locations, and Figure 2-7 shows the BSU/LEU connector locations.

Table 2-2

CABLE REQUIREMENTS

Quantity	Cable Type	From	To
Per number of COs (30 maximum)	2-Pair modular (25 ft maximum)	CO/PBX (RJ 11C) 6 per COU	BSU/LEU connectors (COU)
Per number of STU (5 maximum)	25-Pair A25B or equivalent	Connecting Block 66M1-50 1 per STU	BSU/LEU connectors (STU)
Per number of stations (60 maximum)	2-Pair per telephone station	Connecting Block 66M1-50	Telephone stations type 625A modular jacks

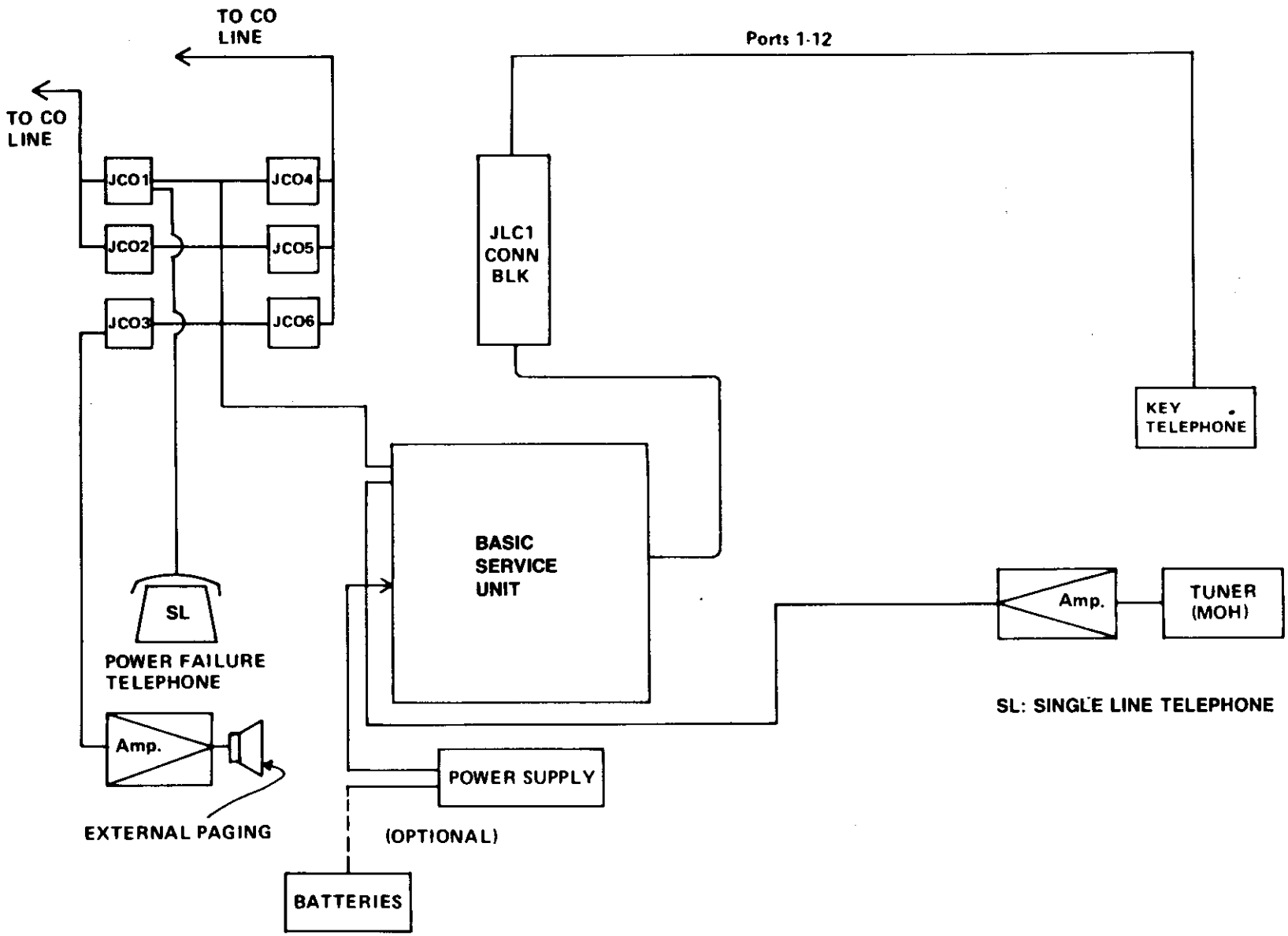


Figure 2-4. POETS BSU Interconnection Diagram.

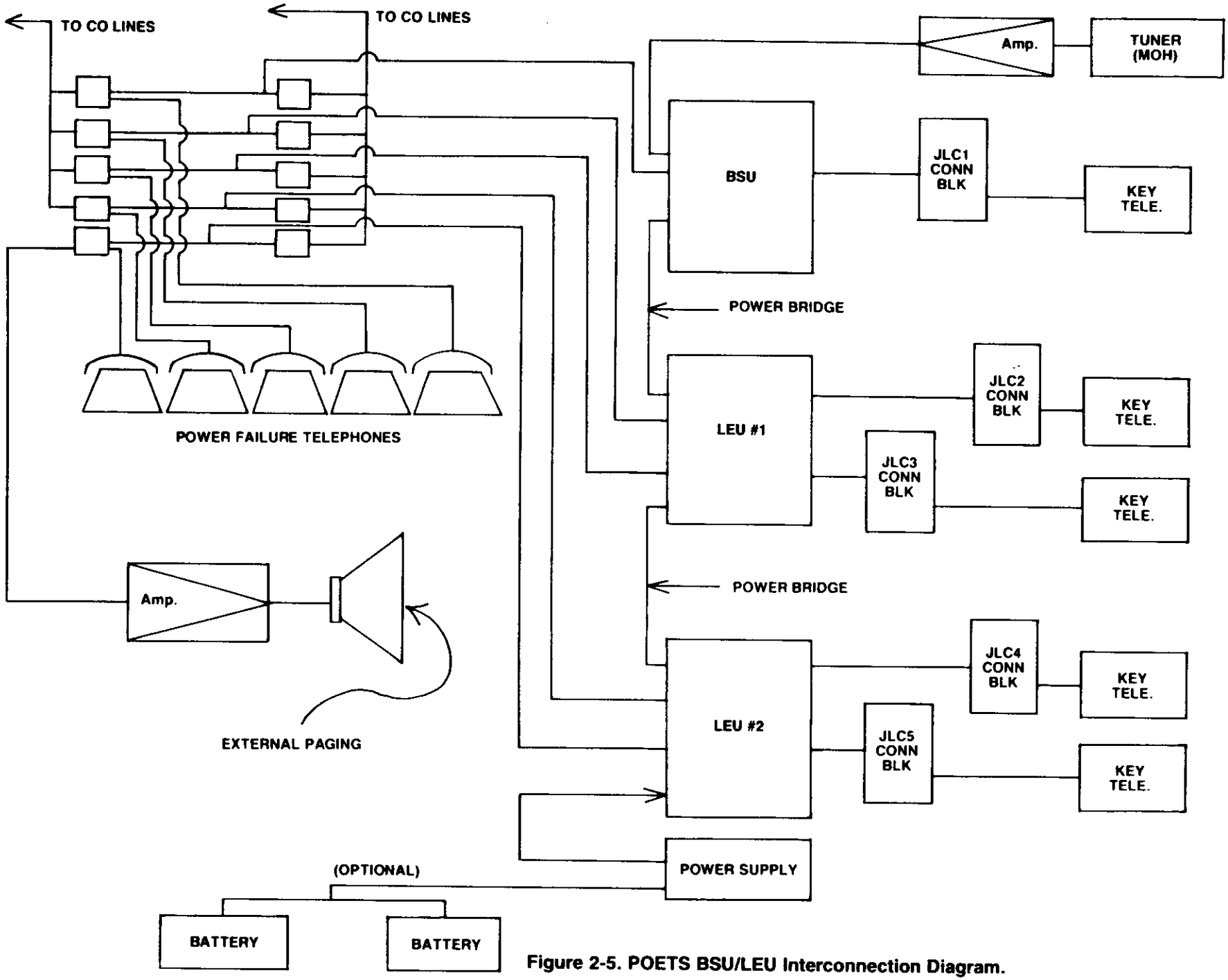


Figure 2-5. POETS BSU/LEU Interconnection Diagram.

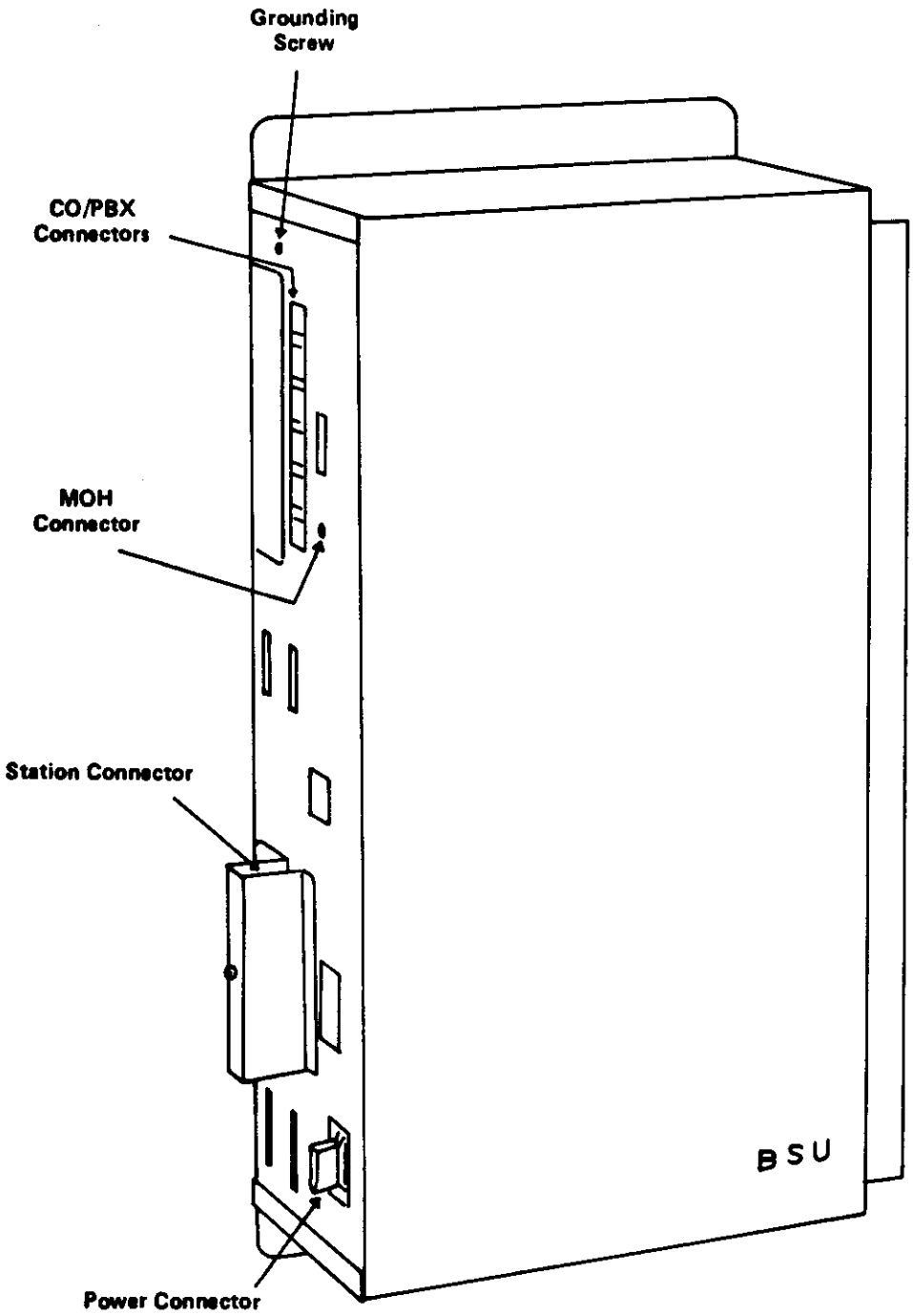


Figure 2-6. BSU Layout and Connector Location.

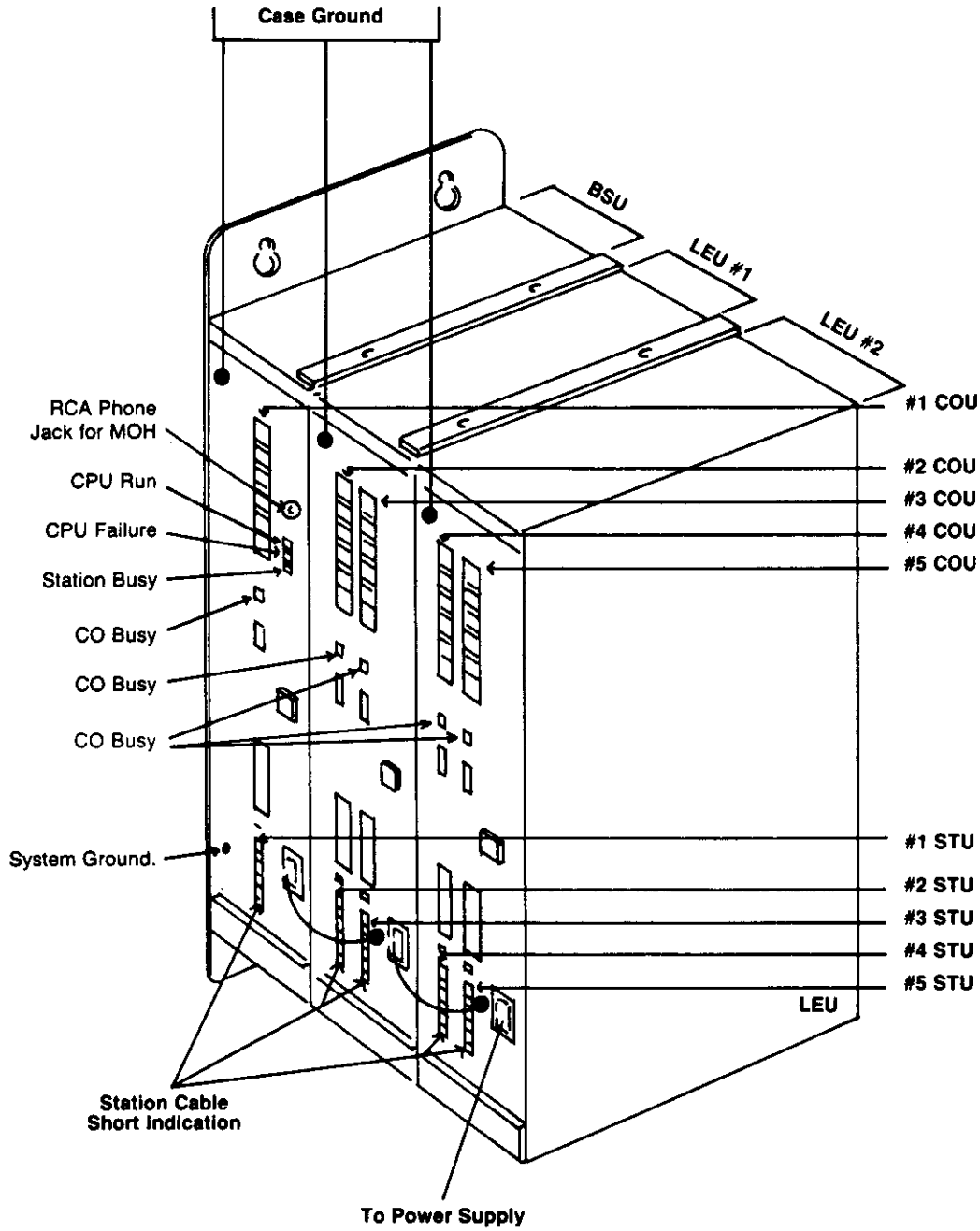


Figure 2-7. BSU/LEU/LEU Layout and Connector Location.

CONNECTING BLOCKS

Standard type 66M1-50 connecting blocks provide the tie points between each BSU and LEU and the station equipment (Figure 2-8 and 2-9). Standard type RJ-11C modular connectors provide the tie points between the BSU/LEU and the CO interface (See Figure 2-8 and 2-9).

CABLING BETWEEN THE LC CONNECTING BLOCKS AND THE BSU/LEUs

The 25-pair cable mates with the associated connectors on the side of each BSU and LEU. The other end of the cable has individual wires which are connected to each connecting block. One cable and one connecting block are required for each 50 pin connector. Table 2-3 lists all cabling connectings between the LC connecting blocks and each BSU/LEU. Figure 2-10 illustrates station line connections.

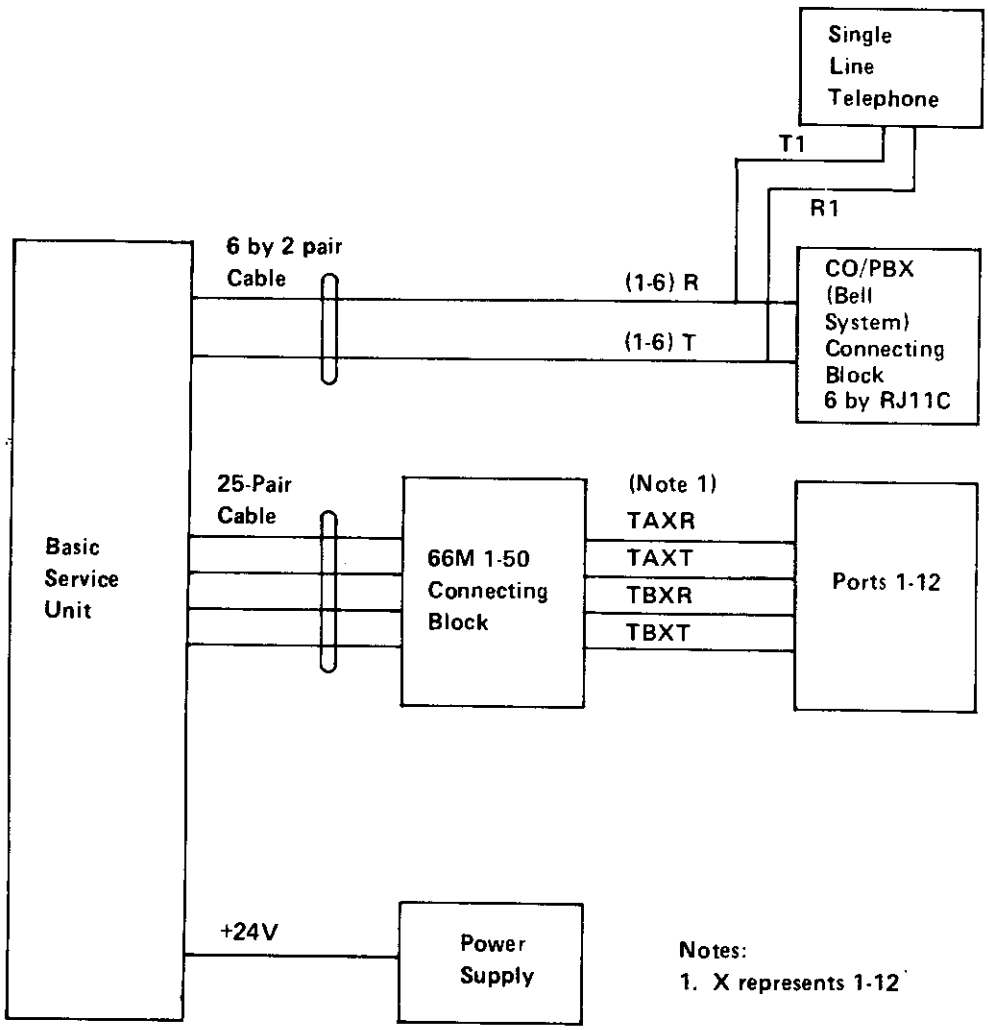


Figure 2-8. Cable Connections from Connecting Block to Equipment (BSU).

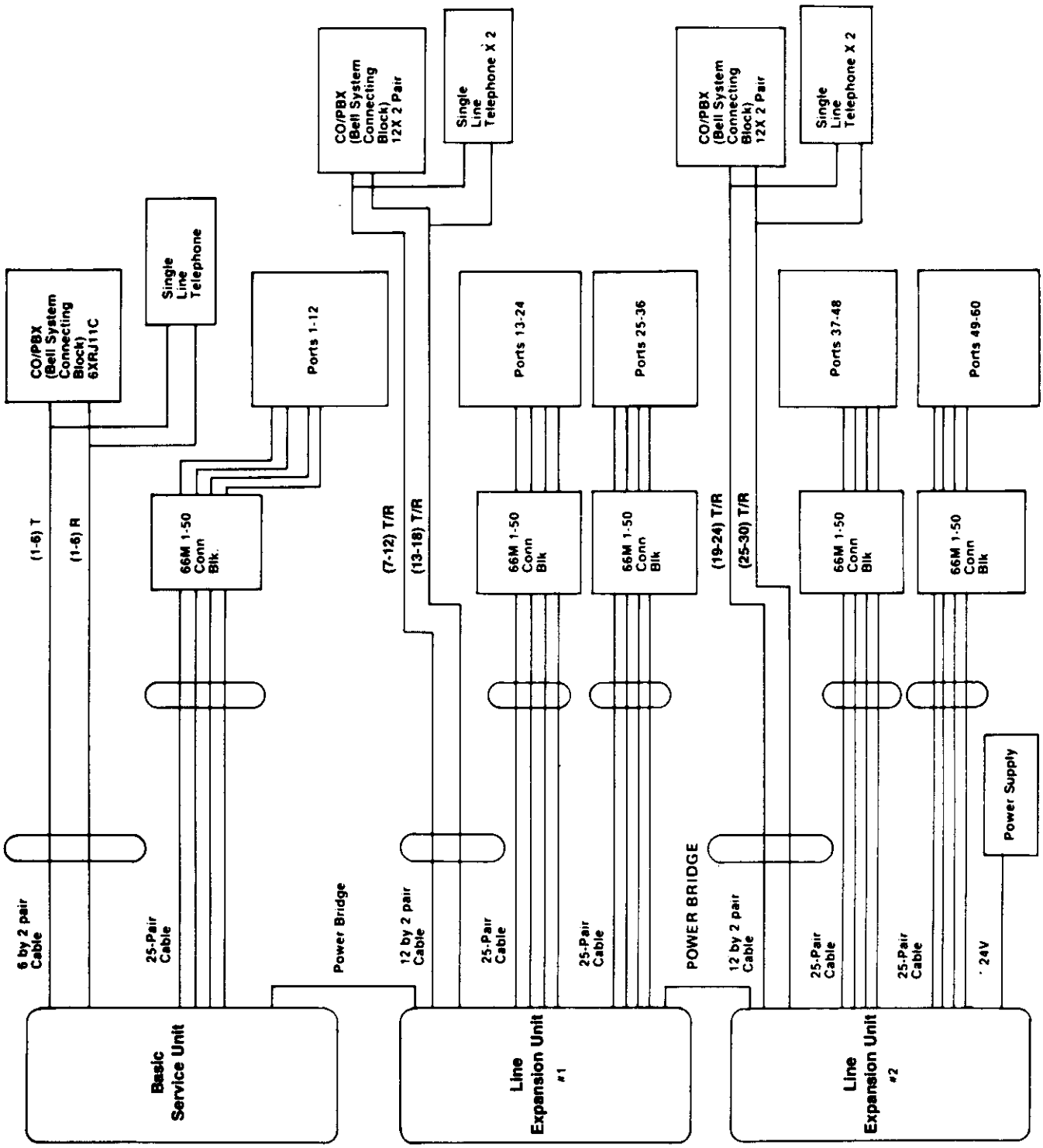


Figure 2-9. Cable Connections From Connecting Block to Equipment. (LEU)

TABLE 2-3 STATION BLOCK CONNECTIONS

STU #1

PORT NUMBER	TELE-PHONE EXT. NUMBER	LEAD DESIG.	JACK J1 CONN PIN NO.	B25B CONN CABLE COLOR	CONN BLK ROW NO.	P-6, 18 OR 30 TEL ANY PORT	EXEC TELS PORT 1-8	DSS CONSOLES PORT 2&3
1		VT1	26	W-BL	1			
		VR1	1	BL-W	2			
	(10)	DTA1	27	W-O	3			
		DTB1	2	O-W	4			
2		VT2	28	W-G	5			
	DSS #1 (11)	VR2	3	G-W	6			BLF FOR STA. 10-39
		DTA2	29	W-BR	7			
		DTB2	4	BR-W	8			
3		VT3	30	W-S	9			
	DSS #2 (12)	VR3	5	S-W	10			BLF FOR STA. 40-69
		DTA3	31	R-BL	11			
		DTB3	6	BL-R	12			
4		VT4	32	R-O	13			
		VR4	7	O-R	14			
	(13)	DTA4	33	R-G	15			
		DTB4	8	G-R	16			
5		VT5	34	R-BR	17			
		VR5	9	BR-R	18			
	(14)	DTA5	35	R-S	19			
		DTB5	10	S-R	20			
6		VT6	36	BK-BL	21			
		VR6	11	BL-BK	22			
	(15)	DTA6	37	BK-O	23			
		DTB6	12	O-BK	24			
7		VT7	38	BK-G	25			
		VR7	13	G-BK	26			
	(16)	DTA7	39	BK-BR	27			
		DTB7	14	BR-BK	28			
8		VT8	40	BK-S	29			
		VR8	15	S-BK	30			
	(17)	DTA8	41	Y-BL	31			
		DTB8	16	BL-Y	32			
9		VT9	42	Y-O	33			
		VR9	17	O-Y	34			
	(18)	DTA9	43	Y-G	35			
		DTB9	18	G-Y	36			
10		VT10	44	Y-BR	37			
		VR10	19	BR-Y	38			
	(19)	DTA10	45	Y-S	39			
		DTB10	20	S-Y	40			
11		VT11	46	V-BL	41			
		VR11	21	BL-V	42			
	(20)	DTA11	47	V-O	43			
		DTB11	22	O-V	44			
12		VT12	48	V-G	45			
		VR12	23	G-V	46			
	(21)	DTA12	49	V-BR	47			
		DTB12	24	BR-V	48			
SPARE			50	V-S	49			
			25	S-V	50			

TABLE 2-3 STATION BLOCK CONNECTIONS (CON'T)

STU #2

PORT NUMBER	TELE-PHONE EXT. NUMBER	LEAD DESIG.	JACK J1 CONN PIN NO.	B25B CONN CABLE COLOR	CONN BLK ROW NO.	P-6, 18 OR 30 TEL ANY PORT	EXEC TELS PORT 1-8	DSS CONSOLES PORT 2&3
13	(22)	VT1	26	W-BL	1			
		VR1	1	BL-W	2			
		DTA1	27	W-O	3			
		DTB1	2	O-W	4			
14	DSS #3 (23)	VT2	28	W-G	5			BLF FOR STA. 10-39
		VR2	3	G-W	6			
		DTA2	29	W-BR	7			
		DTB2	4	BR-W	8			
15	DSS #4 (24)	VT3	30	W-S	9			BLF FOR STA. 40-69
		VR3	5	S-W	10			
		DTA3	31	R-BL	11			
		DTB3	6	BL-R	12			
16	(25)	VT4	32	R-O	13			
		VR4	7	O-R	14			
		DTA4	33	R-G	15			
		DTB4	8	G-R	16			
17	(26)	VT5	34	R-BR	17			
		VR5	9	BR-R	18			
		DTA5	35	R-S	19			
		DTB5	10	S-R	20			
18	(27)	VT6	36	BK-BL	21			
		VR6	11	BL-BK	22			
		DTA6	37	BK-O	23			
		DTB6	12	O-BK	24			
19	(28)	VT7	38	BK-G	25			
		VR7	13	G-BK	26			
		DTA7	39	BK-BR	27			
		DTB7	14	BR-BK	28			
20	(29)	VT8	40	BK-S	29			
		VR8	15	S-BK	30			
		DTA8	41	Y-BL	31			
		DTB8	16	BL-Y	32			
21	(30)	VT9	42	Y-O	33			
		VR9	17	O-Y	34			
		DTA9	43	Y-G	35			
		DTB9	18	G-Y	36			
22	(31)	VT10	44	Y-BR	37			
		VR10	19	BR-Y	38			
		DTA10	45	Y-S	39			
		DTB10	20	S-Y	40			
23	(32)	VT11	46	V-BL	41			
		VR11	21	BL-V	42			
		DTA11	47	V-O	43			
		DTB11	22	O-V	44			
24	(33)	VT12	48	V-G	45			
		VR12	23	G-V	46			
		DTA12	49	V-BR	47			
		DTB12	24	BR-V	48			
SPARE			50	V-S	49			
			25	S-V	50			

TABLE 2-3 STATION BLOCK CONNECTIONS (CON'T)

STU #3

PORT NUMBER	TELE-PHONE EXT. NUMBER	LEAD DESIG.	JACK J1 CONN PIN NO.	B25B CONN CABLE COLOR	CONN BLK ROW NO.	P-6, 18 OR 30 TEL ANY PORT	EXEC TELS PORT 1-8	DSS CONSOLES PORT 2&3
25		VT1	26	W-BL	1			
		VR1	1	BL-W	2			
	(34)	DTA1	27	W-O	3			
		DTB1	2	O-W	4			
26		VT2	28	W-G	5			BLF FOR STA. 10-39
	DSS #5 (35)	VR2	3	G-W	6			
		DTA2	29	W-BR	7			
		DTB2	4	BR-W	8			
27		VT3	30	W-S	9			BLF FOR STA. 40-69
	DSS #6 (36)	VR3	5	S-W	10			
		DTA3	31	R-BL	11			
		DTB3	6	BL-R	12			
28		VT4	32	R-O	13			
		VR4	7	O-R	14			
	(37)	DTA4	33	R-G	15			
		DTB4	8	G-R	16			
29		VT5	34	R-BR	17			
		VR5	9	BR-R	18			
	(38)	DTA5	35	R-S	19			
		DTB5	10	S-R	20			
30		VT6	36	BK-BL	21			
		VR6	11	BL-BK	22			
	(39)	DTA6	37	BK-O	23			
		DTB6	12	O-BK	24			
31		VT7	38	BK-G	25			
		VR7	13	G-BK	26			
	(40)	DTA7	39	BK-BR	27			
		DTB7	14	BR-BK	28			
32		VT8	40	BK-S	29			
		VR8	15	S-BK	30			
	(41)	DTA8	41	Y-BL	31			
		DTB8	16	BL-Y	32			
33		VT9	42	Y-O	33			
		VR9	17	O-Y	34			
	(42)	DTA9	43	Y-G	35			
		DTB9	18	G-Y	36			
34		VT10	44	Y-BR	37			
		VR10	19	BR-Y	38			
	(43)	DTA10	45	Y-S	39			
		DTB10	20	S-Y	40			
35		VT11	46	V-BL	41			
		VR11	21	BL-V	42			
	(44)	DTA11	47	V-O	43			
		DTB11	22	O-V	44			
36		VT12	48	V-G	45			
		VR12	23	G-V	46			
	(45)	DTA12	49	V-BR	47			
		DTB12	24	BR-V	48			
SPARE			50	V-S	49			
			25	S-V	50			

TABLE 2-3 STATION BLOCK CONNECTIONS (CON'T)

STU #4

PORT NUMBER	TELE-PHONE EXT. NUMBER	LEAD DESIG.	JACK J1 CONN PIN NO.	B25B CONN CABLE COLOR	CONN BLK FOW NO.	P-6, 18 OR 30 TEL ANY PORT	EXEC TELS PORT 1-8	DSS CONSOLES PORT 2&3
37		VT1	26	W-BL	1			
		VR1	1	BL-W	2			
	(46)	DTA1	27	W-O	3			
		DTB1	2	O-W	4			
38		VT2	28	W-G	5			BLF FOR STA. 10-39
	DSS #7 (47)	VR2	3	G-W	6			
		DTA2	29	W-BR	7			
		DTB2	4	BR-W	8			
39		VT3	30	W-S	9			BLF FOR STA. 40-69
	DSS #8 (48)	VR3	5	S-W	10			
		DTA3	31	R-BL	11			
		DTB3	6	BL-R	12			
40		VT4	32	R-O	13			
		VR4	7	O-R	14			
	(49)	DTA4	33	R-G	15			
		DTB4	8	G-R	16			
41		VT5	34	R-BR	17			
		VR5	9	BR-R	18			
	(50)	DTA5	35	R-S	19			
		DTB5	10	S-R	20			
42		VT6	36	BK-BL	21			
		VR6	11	BL-BK	22			
	(51)	DTA6	37	BK-O	23			
		DTB6	12	O-BK	24			
43		VT7	38	BK-G	25			
		VR7	13	G-BK	26			
	(52)	DTA7	39	BK-BR	27			
		DTB7	14	BR-BK	28			
44		VT8	40	BK-S	29			
		VR8	15	S-BK	30			
	(53)	DTA8	41	Y-BL	31			
		DTB8	16	BL-Y	32			
45		VT9	42	Y-O	33			
		VR9	17	O-Y	34			
	(54)	DTA9	43	Y-G	35			
		DTB9	18	G-Y	36			
46		VT10	44	Y-BR	37			
		VR10	19	BR-Y	38			
	(55)	DTA10	45	Y-S	39			
		DTB10	20	S-Y	40			
47		VT11	46	V-BL	41			
		VR11	21	BL-V	42			
	(56)	DTA11	47	V-O	43			
		DTB11	22	O-V	44			
48		VT12	48	V-G	45			
		VR12	23	G-V	46			
	(57)	DTA12	49	V-BR	47			
		DTB12	24	BR-V	48			
SPARE			50	V-S	49			
			25	S-V	50			

TABLE 2-3 STATION BLOCK CONNECTIONS (CON'T)

STU #5

PORT NUMBER	TELE-PHONE EXT. NUMBER	LEAD DESIG.	JACK J1 CONN PIN NO.	B25B CONN CABLE COLOR	CONN BLK ROW NO.	P-6, 18 OR 30 TEL ANY PORT	EXEC TELS PORT 1-8	DSS CONSOLES PORT 2&3
49		VT1	26	W-BL	1			
		VR1	1	BL-W	2			
		DTA1	27	W-O	3			
	(58)	DTB1	2	O-W	4			
50		VT2	28	W-G	5			
	DSS #9 (59)	VR2	3	G-W	6			BLF FOR STA. 10-39
		DTA2	29	W-BR	7			
		DTB2	4	BR-W	8			
51		VT3	30	W-S	9			
	DSS #10 (60)	VR3	5	S-W	10			BLF FOR STA. 40-69
		DTA3	31	R-BL	11			
		DTB3	6	BL-R	12			
52		VT4	32	R-O	13			
		VR4	7	O-R	14			
		DTA4	33	R-G	15			
	(61)	DTB4	8	G-R	16			
53		VT5	34	R-BR	17			
		VR5	9	BR-R	18			
		DTA5	35	R-S	19			
	(62)	DTB5	10	S-R	20			
54		VT6	36	BK-BL	21			
		VR6	11	BL-BK	22			
		DTA6	37	BK-O	23			
	(63)	DTB6	12	O-BK	24			
55		VT7	38	BK-G	25			
		VR7	13	G-BK	26			
		DTA7	39	BK-BR	27			
	(64)	DTB7	14	BR-BK	28			
56		VT8	40	BK-S	29			
		VR8	15	S-BK	30			
		DTA8	41	Y-BL	31			
	(65)	DTB8	16	BL-Y	32			
57		VT9	42	Y-O	33			
		VR9	17	O-Y	34			
		DTA9	43	Y-G	35			
	(66)	DTB9	18	G-Y	36			
58		VT10	44	Y-BR	37			
		VR10	19	BR-Y	38			
		DTA10	45	Y-S	39			
	(67)	DTB10	20	S-Y	40			
59		VT11	46	V-BL	41			
		VR11	21	BL-V	42			
		DTA11	47	V-O	43			
	(68)	DTB11	22	O-V	44			
60		VT12	48	V-G	45			
		VR12	23	G-V	46			
		DTA12	49	V-BR	47			
	(69)	DTB12	24	BR-V	48			
SPARE			50	V-S	49			
			25	S-V	50			

STATION AND MODULAR JACK CONNECTIONS

A two-pair cable is required between the connecting block and the type 625A modular jack of each telephone station port. A modular line cord is connected between the type 625A modular jack and the telephone set. Figure 2-10 illustrates the station line connections. Table 2-4 lists the station modular jack connections.

Table 2-4

STATION MODULAR JACK CONNECTIONS

Modular Jack Color	Two-Pair Cable Color	Connecting Block Terminal Designation
Bk (Black)	Black	DTA 2-12
R (Red)	Red	VR 1-12
G (Green)	Green	VT 1-12
Y (Yellow)	Yellow	DTB 1-12

CABLING BETWEEN THE CO CONNECTING BLOCKS AND THE BSU

Up to six two-pair modular cables are required for connection to the telephone company provided connector(s) RJ-11C jack(s) in accordance with FCC rules, part 68. Figure 2-11 illustrates the CO/PBX line connections, and Table 2-5 lists all cabling connections between the BSU/LEUs and the CO/PBX interface.

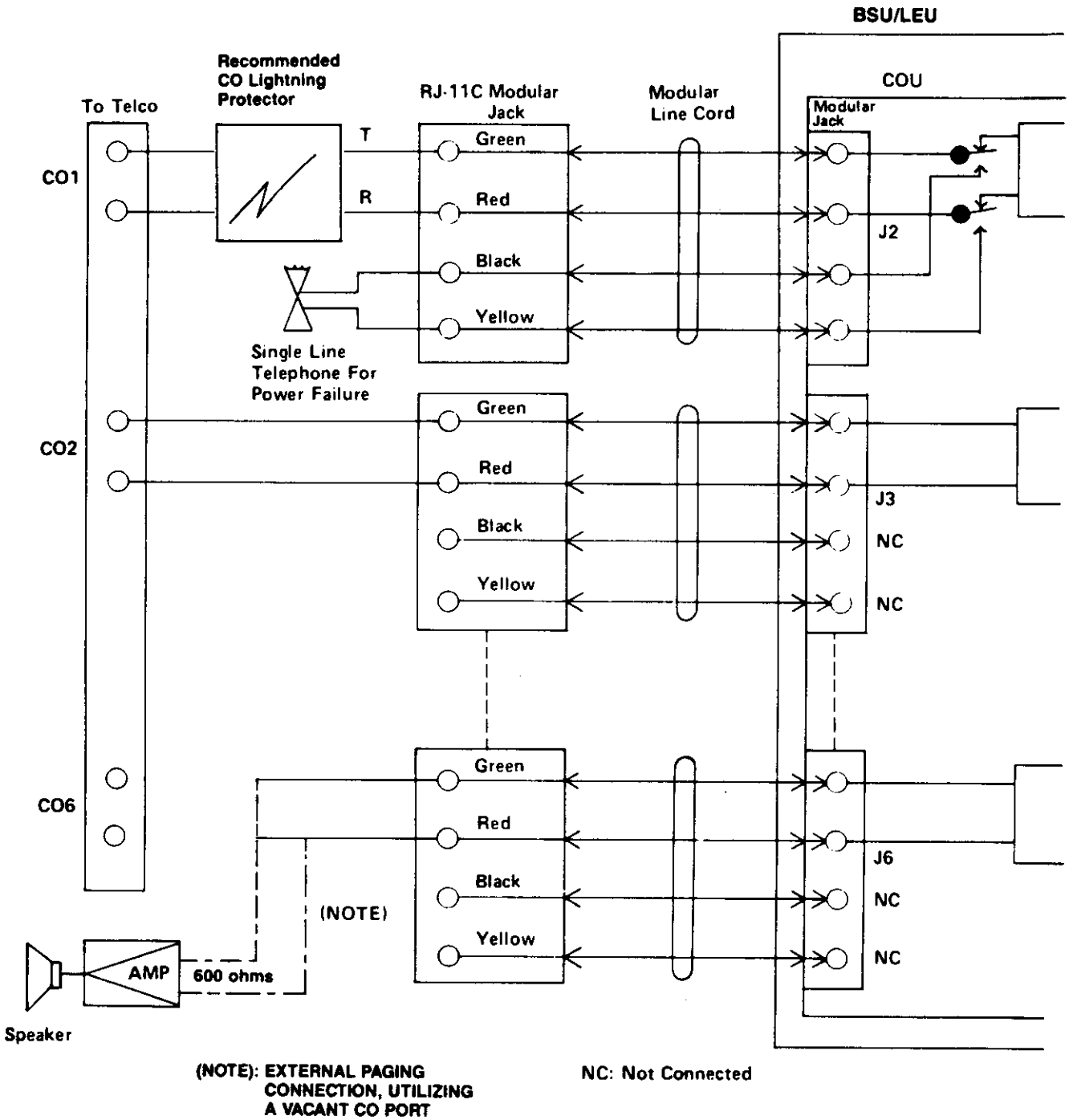


Figure 2-11. CO/PBX Line Connections.

TABLE 2-5
CONNECTIONS FOR CO/PBX LINE

BSU				TRUNK NO.	LEAD DESIG.	MODULAR LINE CORD
POWER FAILURE TRUNK	1PF	YELLOW	COU #1	1	1T	GREEN
	2PF	BLACK			1R	RED
				2	2T	GREEN
					2R	RED
				3	3T	GREEN
					3R	RED
				4	4T	GREEN
					4R	RED
				5	5T	GREEN
					5R	RED
				6	6T	GREEN
LEU #1					6R	RED
POWER FAILURE TRUNK	1PF	YELLOW	COU #2	7	7T	GREEN
	2PF	BLACK			7R	RED
				8	8T	GREEN
					8R	RED
				9	9T	GREEN
					9R	RED
				10	10T	GREEN
					10R	RED
				11	11T	GREEN
					11R	RED
				12	12T	GREEN
					12R	RED
POWER FAILURE TRUNK	1PF	YELLOW	COU #3	13	13T	GREEN
	2PF	BLACK			13R	RED
				14	14T	GREEN
					14R	RED
				15	15T	GREEN
					15R	RED
				16	16T	GREEN
					16R	RED
				17	17T	GREEN
					17R	RED
				18	18T	GREEN
LEU #2					18R	RED
POWER FAILURE TRUNK	1PF	YELLOW	COU #4	19	19T	GREEN
	2PF	BLACK			19R	RED
				20	20T	GREEN
					20R	RED
				21	21T	GREEN
					21R	RED
				22	22T	GREEN
					22R	RED
				23	23T	GREEN
					23R	RED
				24	24T	GREEN
					24R	RED

TABLE 2-5
CONNECTORS FOR CO/PBX LINE (cont.)

LEU #2				TRUNK NO.	LEAD DESIG.	MODULAR LINE CORD
POWER FAILURE TRUNK	1PF	YELLOW	COU #5	25	25T	GREEN
	2PF	BLACK			25R	RED
				26	26T	GREEN
					26R	RED
				27	27T	GREEN
					27R	RED
				28	28T	GREEN
					28R	RED
				29	29T	GREEN
					29R	RED
				30	30T	GREEN
					30R	RED

TELEPHONE INSTALLATION

To install the telephone, or DSS console (see page 2-16 for port assignment), connect the four-conductor line cord provided with the telephone or DSS between the instrument and the modular jack, as shown in Figure 2-12 (each DSS will utilize a station port 2 or 3). If speakerphone is required, see Appendix B for installation instructions. If wall mount is required, see Appendix C.

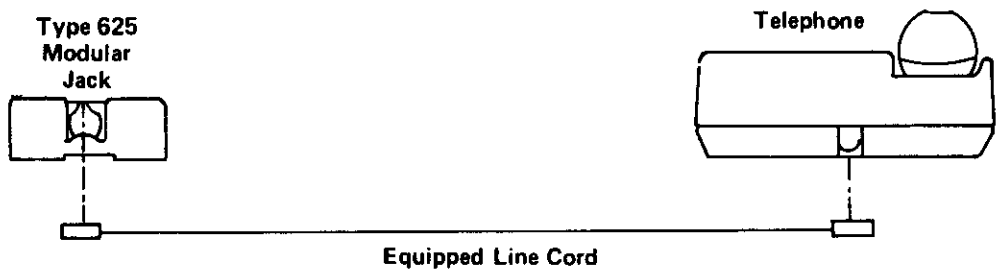


Figure 2-12. Station Connection.

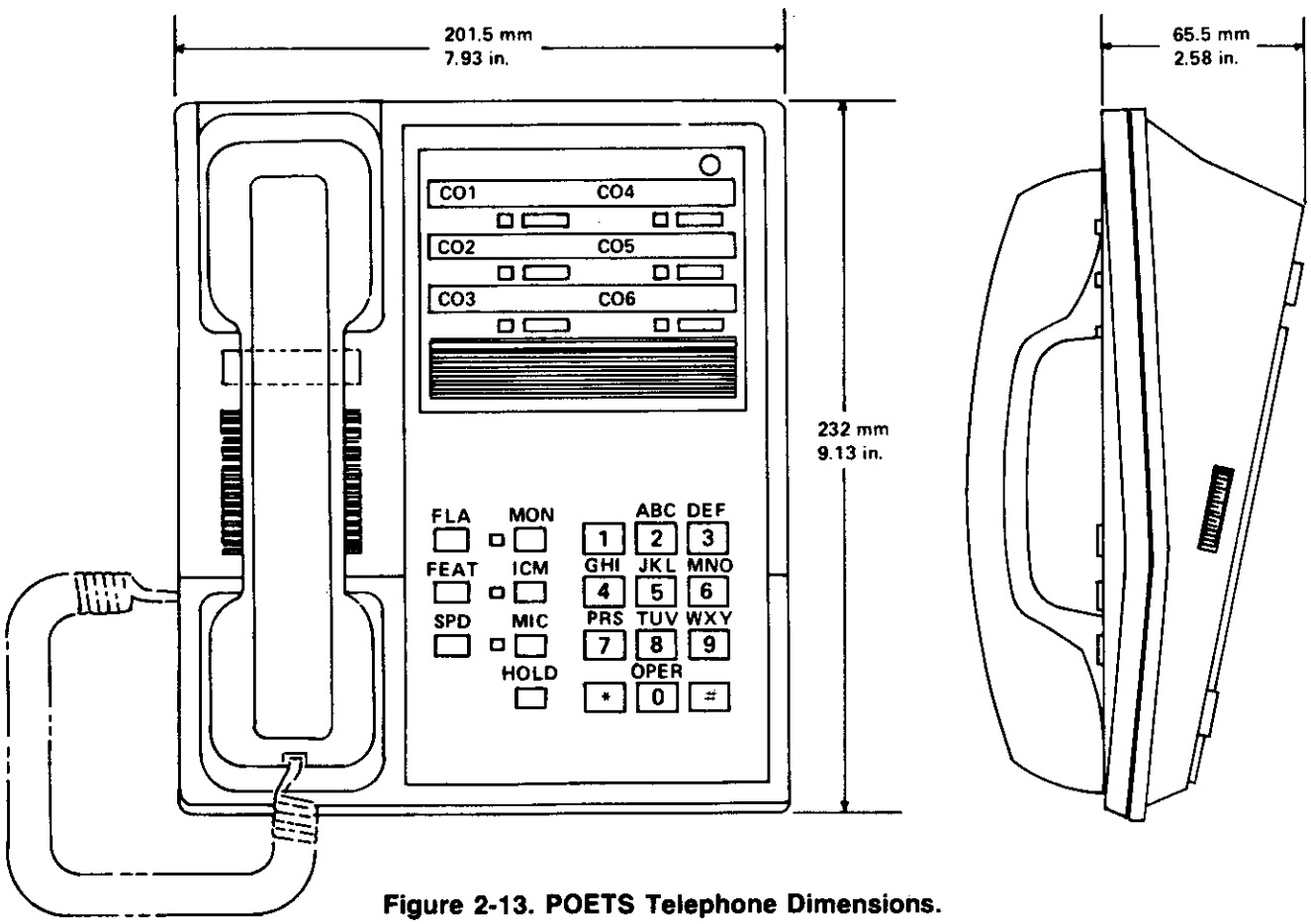


Figure 2-13. POETS Telephone Dimensions.

POWER SUPPLY CONNECTIONS

As the power supply is equipped with a connector-ended cable, this cable must be connected to the three-conductor connector provided on the BSU. The three-conductor power connector is located on the left side of the BSU. The power supply connects directly to the BSU connector. (A PS2A may be used except when Battery Backed System operation is required, or when an LEU is added.) See Figure 2-14 for power connection required for LEU operation--PS10A-BB must be used in this case.

BATTERY BACKED SYSTEM OPERATION

This type of power backup allows full system operation. The power supply has two terminals, one positive (+) and one negative (-). These terminals are the connections for the batteries to be terminated on. The system requires two 12 VDC, 40 amp-hour wet cell or two 40 amp-hour gel cell type batteries (in series) positive from the first battery to the negative of the second battery. Now take the positive from the first battery and connect to the power supply positive terminal and wire negative from the second battery to the negative terminal of power supply. At this point, you will have 24 VDC that will provide approximately four hours of system operation if A/C power is lost. A PS10A-BB power supply must be used for this type operation. See Figure 2-15.

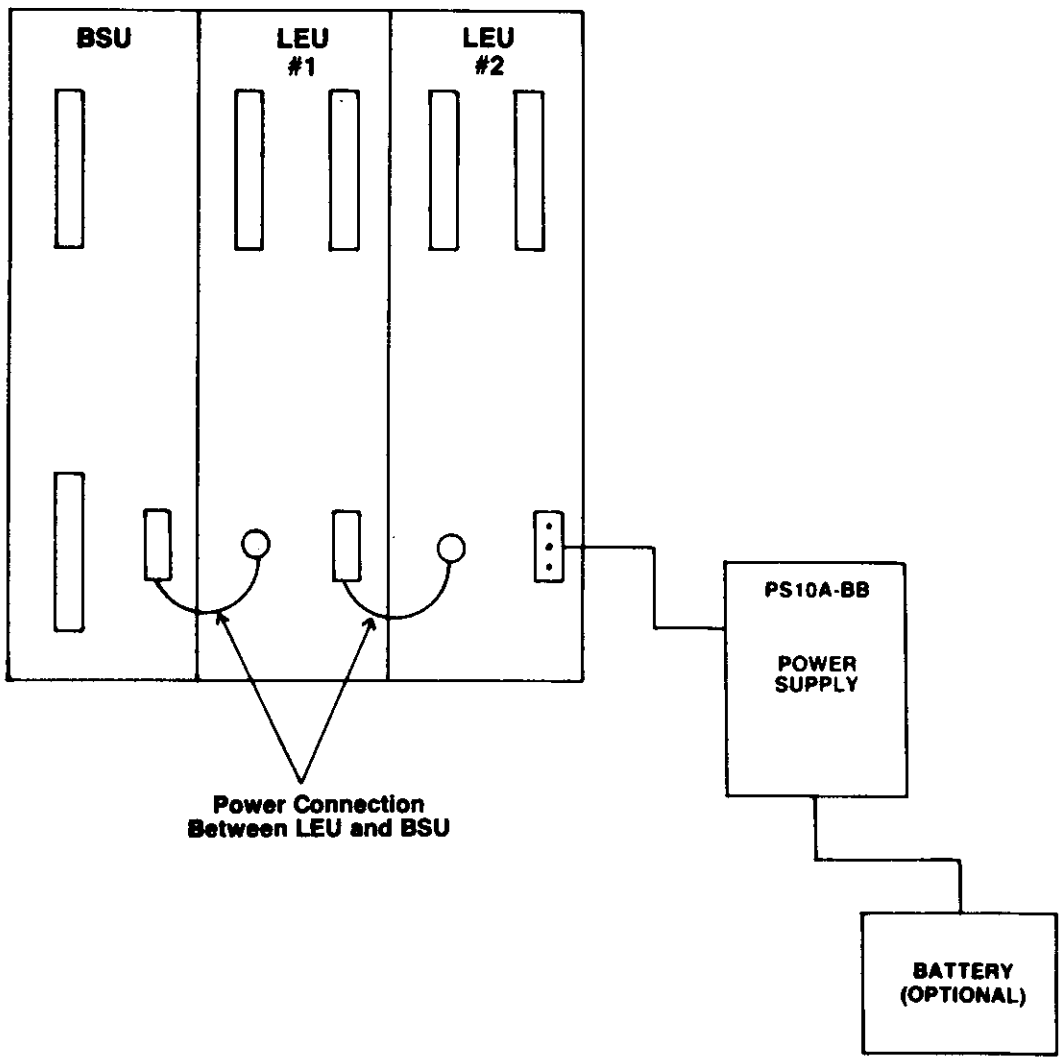


Figure 2-14. Power Supply Connections.

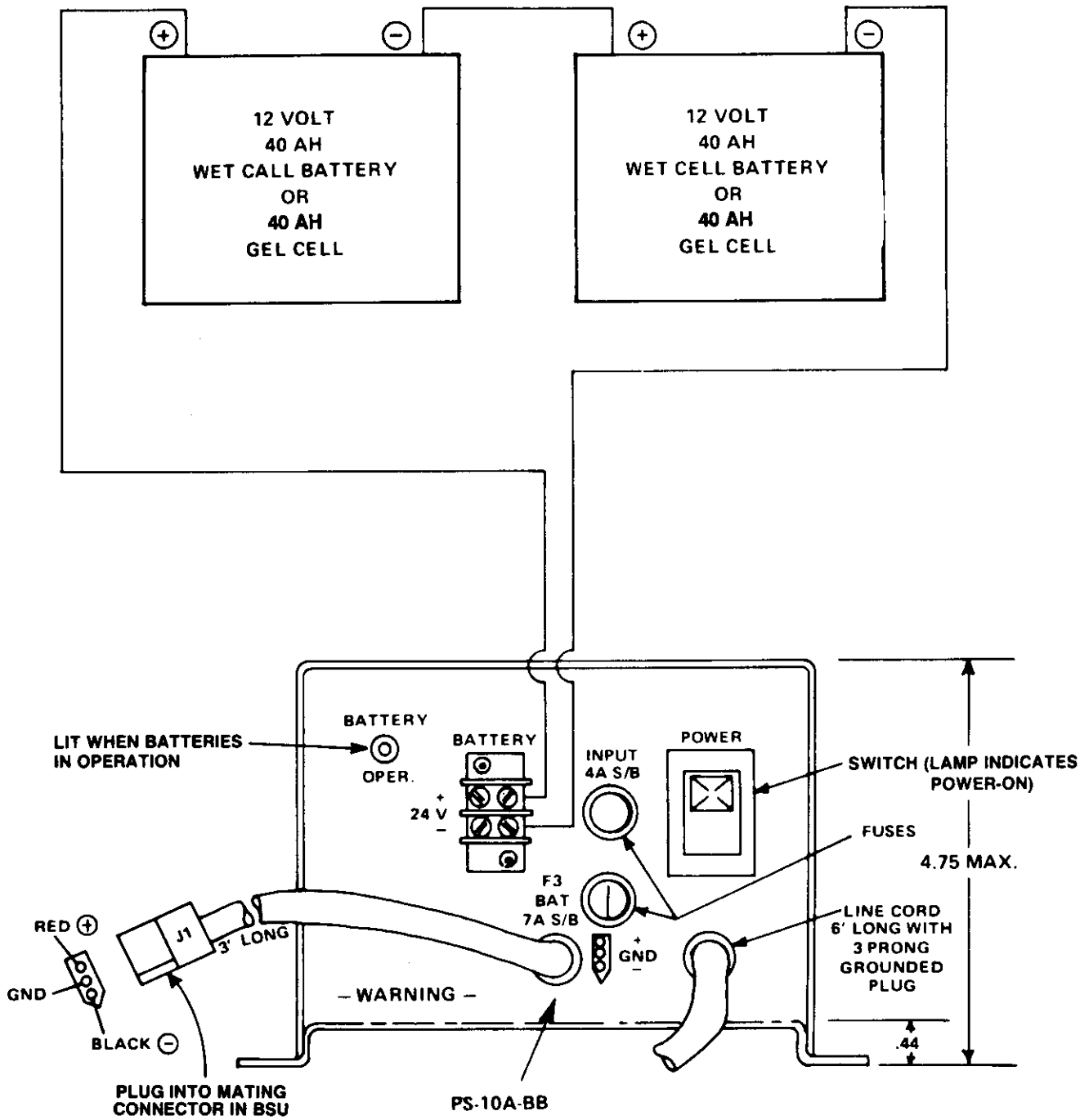


Figure 2-15. Wiring For Battery Back-Up Utilizing PS-10A-BB Power Supply.

POWER FAILURE CONNECTIONS

The first line of the COU is equipped for power failure connection to a standard single line telephone. In the event of a power failure, Tip and Ring of the first line of each COU will automatically be transferred from the inside conductors of the RJ-11C to the outside conductors for connection to a single line telephone. To provide power failure connection to a single-line instrument, connect a type 267A parallel adaptor to the line 1 RJ-11C jack, as shown in Figure 2-16. Remove the cover of the standard single-line telephone and connect the black and yellow wires to the same connections as the red and green wires, as shown in Figure 2-17. Reassemble the single-line telephone. Connect the modular cord from the single-line telephone to one side of the parallel adaptor, and connect the line one modular cord from the COU card to the other side of the parallel adaptor, as shown in Figure 2-16.

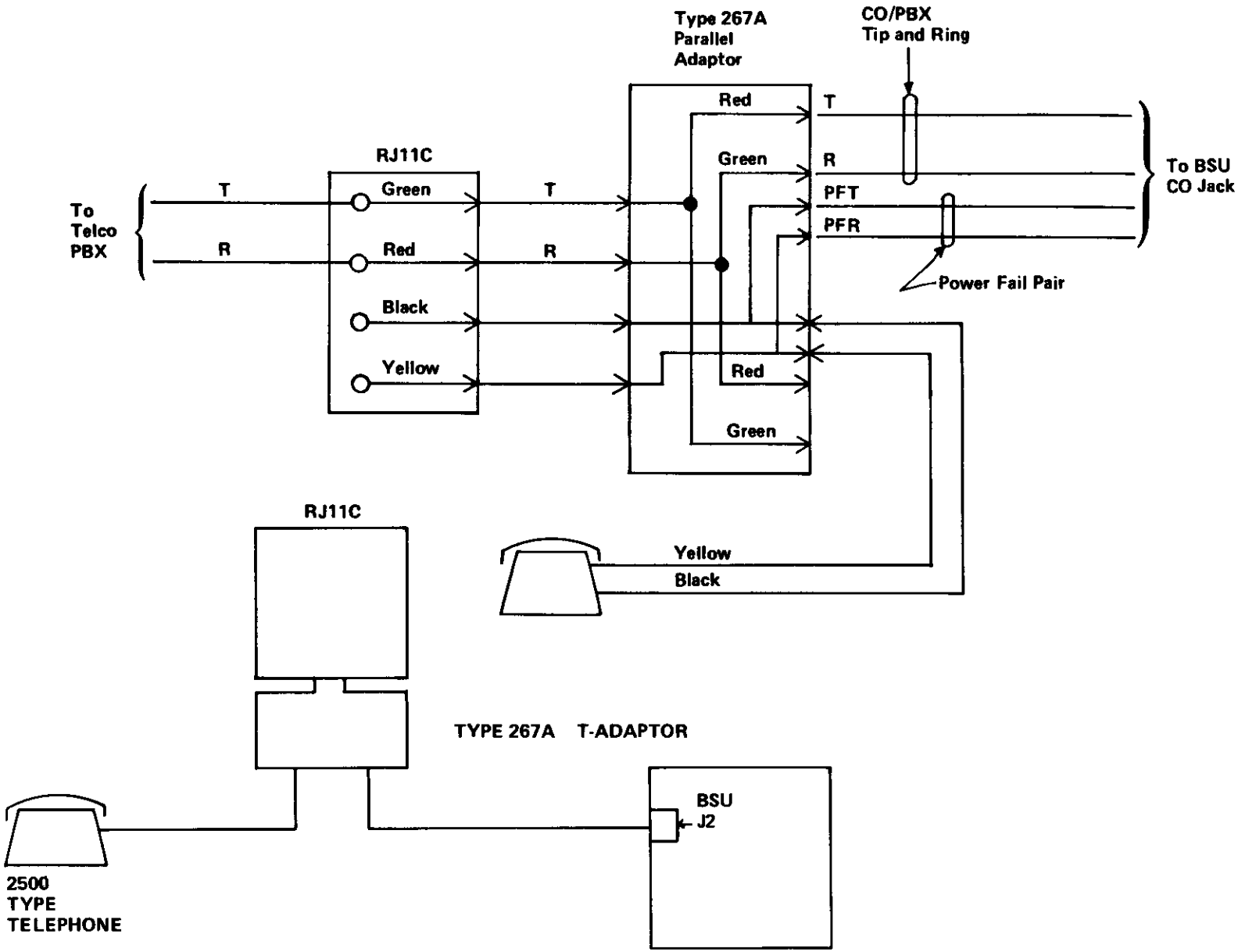


Figure 2-16. CO Line Wiring For Power Failure.

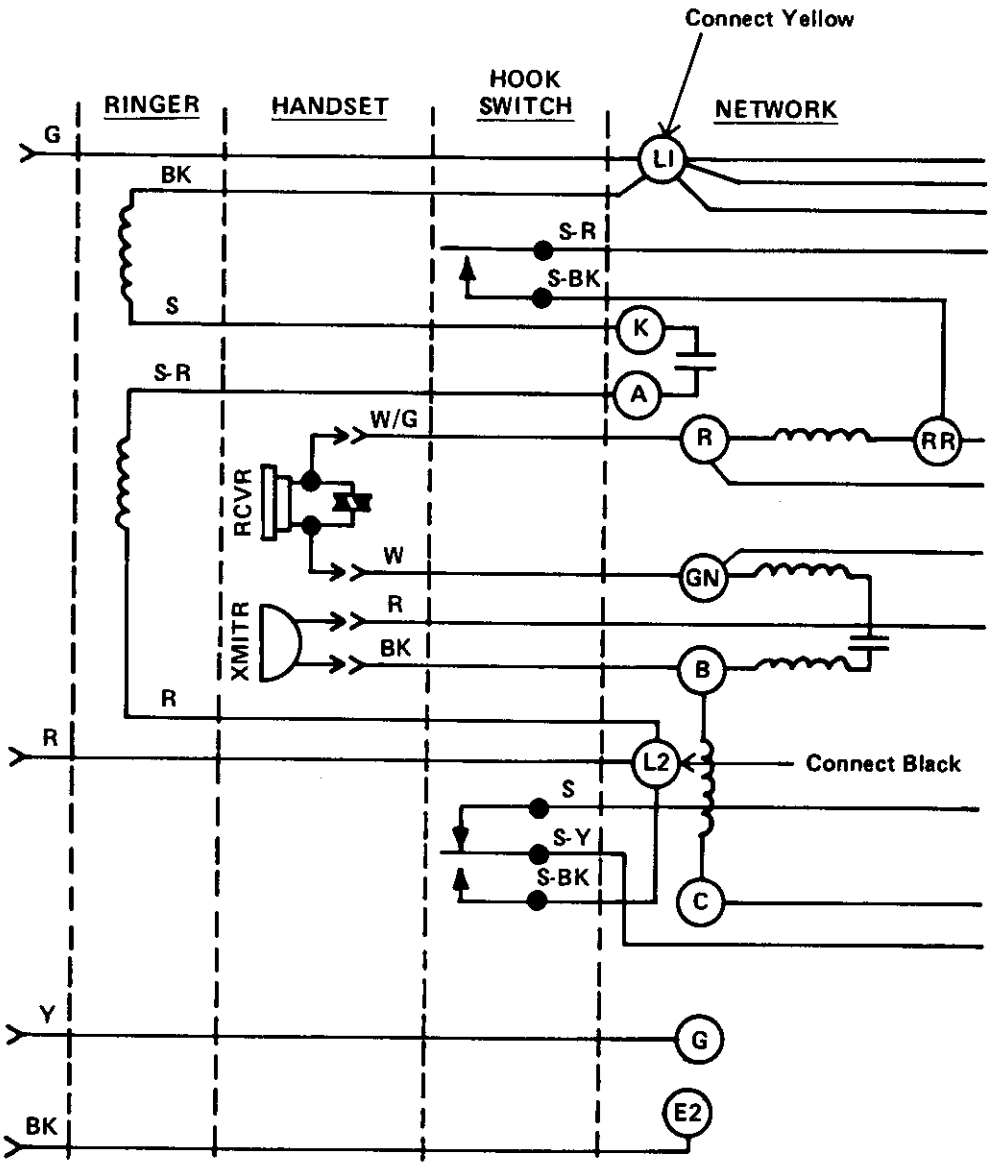


Figure 2-17. Typical 2500 Telephone Wiring Diagram.

MUSIC-ON-HOLD CONNECTIONS

The CPU card is equipped with Music-On-Hold interface circuitry. When Music-on-Hold is required, connect the RCA jack marked MOH on the BSU to the customer provided music source output terminals. One-pair shielded cable is recommended for connections. The recommended output for the MOH source is 8 ohms, amplified (2-5 watts). When a radio is used as a music source, the radio must be located at a minimum of ten feet from the main service unit, since radio receivers generate radio frequencies which may cause interference to the system.

NOTE: Consult Walker Technical Service Department for additional information concerning other possible music sources and amplifiers.

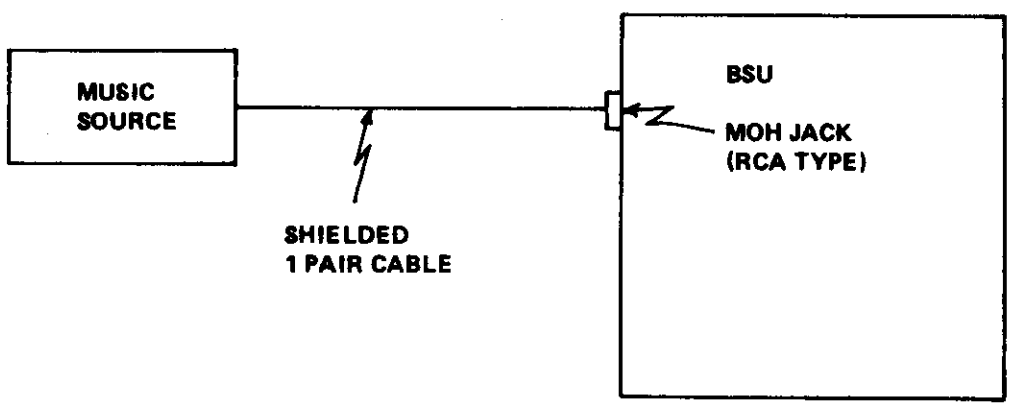


Figure 2-18. Music-On-Hold Connections.

EXTERNAL PAGING CONNECTIONS

A spare port is required for external paging. When external paging is required, connect the paging equipment (600 ohm interface) to the modular jack associated with the spare CO output. There is no "ON/OFF" control for external paging amplifiers. The input to the paging amplifier may be controlled via the CO line key associated with the paging port. One-pair shielded cable is recommended for paging amplifier connections.

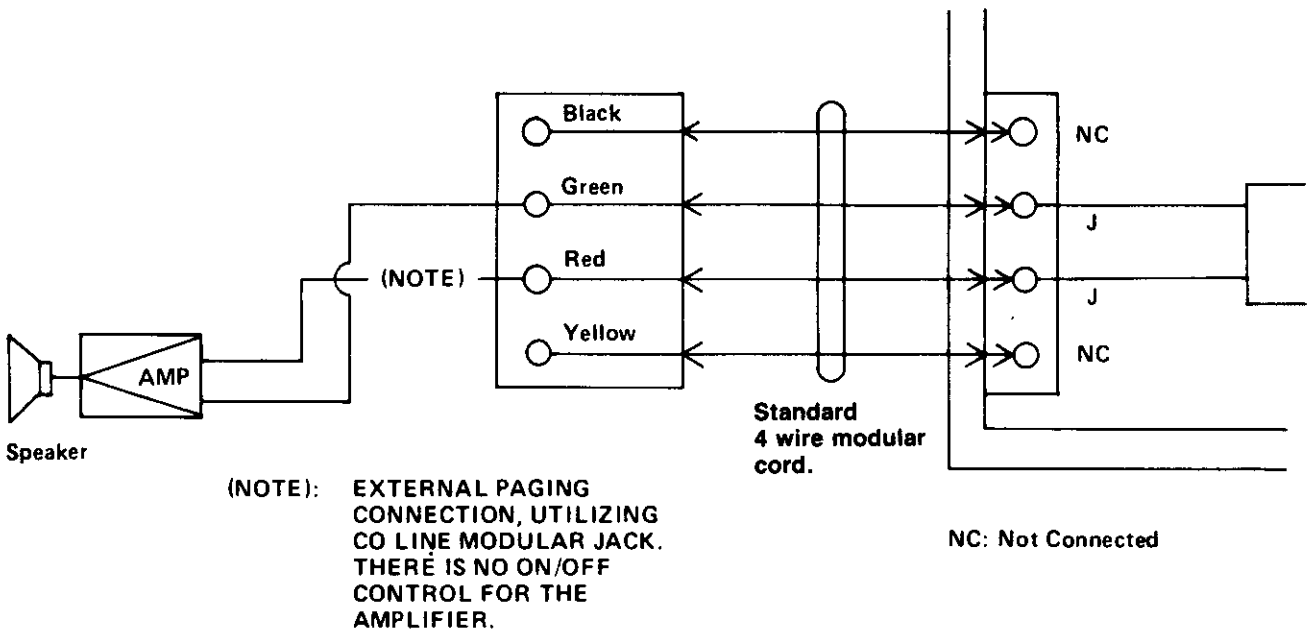


Figure 2-19. External Page Connections.

CIRCUIT CARD INSTALLATION BSU

The following paragraphs provide a brief description and installation instructions for each basic and optional circuit card for connection to the BSU. The Central Processing Unit "CPU" card has DIP switches which may be set before the card is installed. The options and associated switch settings are described on the following pages. The circuit cards are listed below and Figure 2-20 indicates the location of the cards in the basic service unit.

CIRCUIT CARDS FOR BSU

CPU-	Central Processing Unit
COU-	Central Office Unit (6 CO lines Max.)
STU-	Station Unit (Line Card for 12 Stations)
SMU*-	Station Message Detail Recording Unit
	*(optional/1 per system)

CAUTIONS:

1. REMOVE ALL POWER BEFORE INSTALLING THE CIRCUIT CARDS.
2. ALL CIRCUIT CARDS ARE STATIC SENSITIVE. Before handling any circuit card, perform one of the following two precautions:
   - o Discharge the static electricity from your body by touching a metal that is earth grounded.
   - o Attach a wire from an earth grounded metal to your wrist which is secured by tape or a clip.

3. WHEN INSTALLING THE CIRCUIT CARDS, CHECK THAT THE CARDS ARE PROPERLY POSITIONED IN THE CARD FILE TRACKS. Ensure that all cables are properly connected before fully inserting the cards into the cabinet. Inserting a card that is not positioned correctly or connected correctly will damage the card. See Figure 2-21 for proper card positioning.

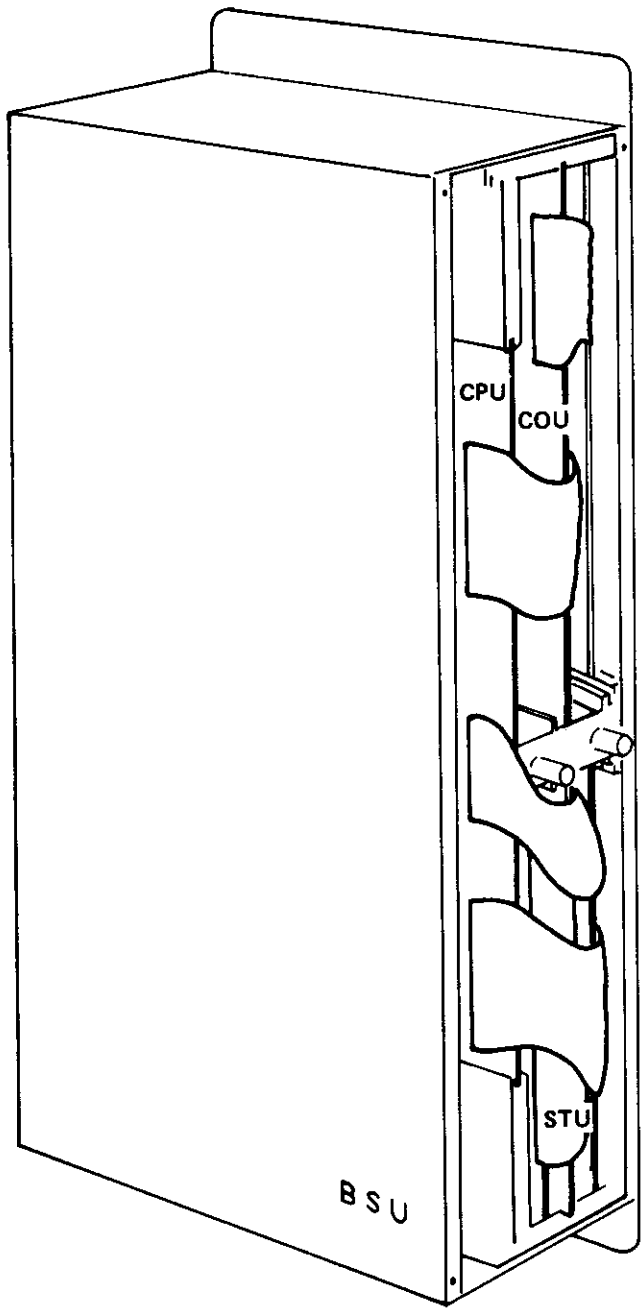


Figure 2-20. POETS Basic Service Unit Internal Construction.

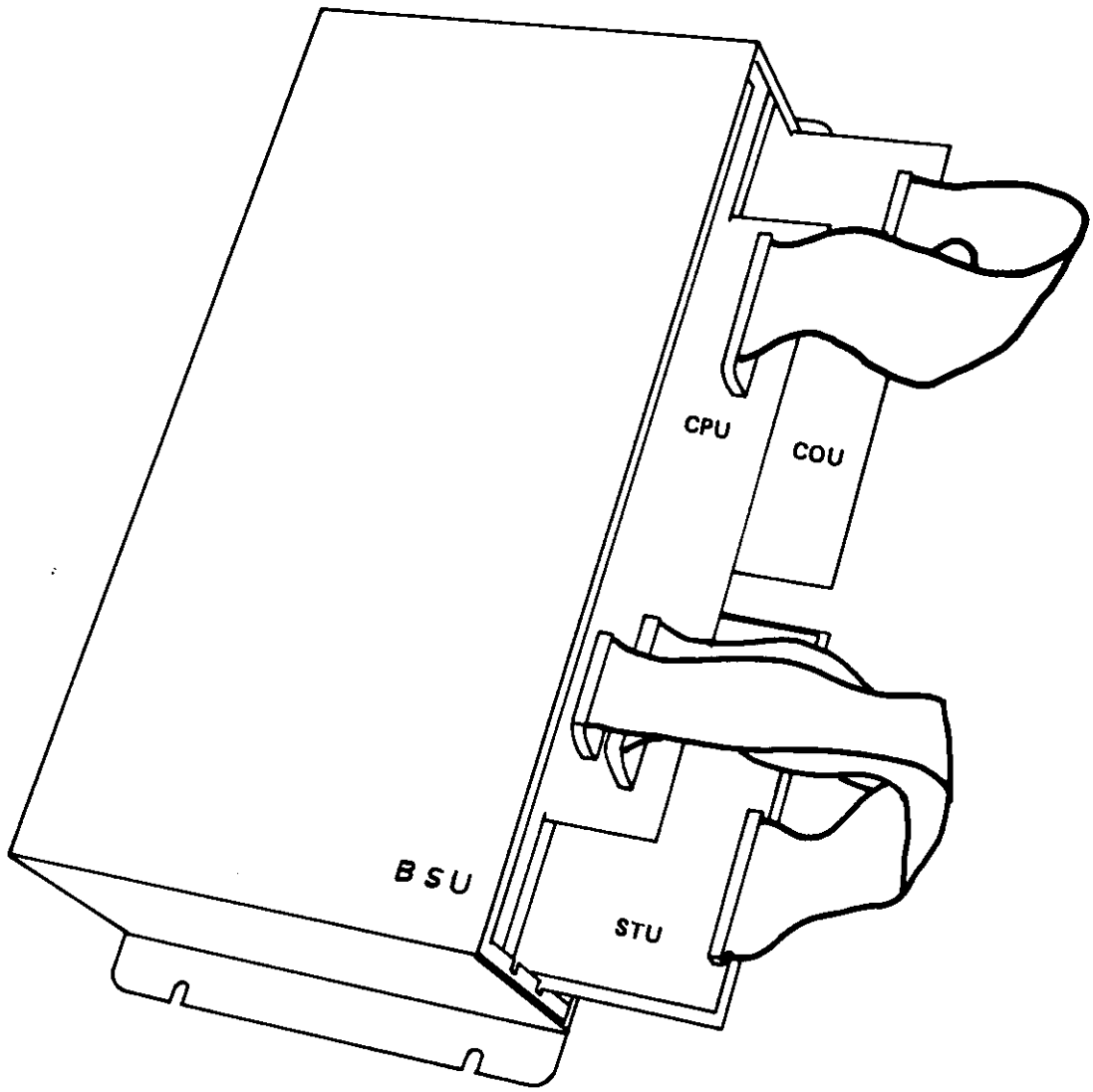


Figure 2-21. Circuit Card Positioning (BSU).

CPU CARD

This circuit card is the central processing and control unit. One CPU Card (See Figure 2-23) is required in any system regardless of its configuration. The primary function of the CPU card is to supervise and maintain control of the system. The CPU accomplishes this by processing and communicating stored data, or stored programs, which it accesses from Eprom.

The main data base contains the system's operational and factory data, which is used for basic system operations. The main data base is permanently stored in integrated circuits (Eprom Chips) located on a 2x5 inch printed circuit board which is retrofitted (mounted) face down in a piggyback fashion onto the main CPU's circuit board. The factory data must be transferred (loaded) into the CPU main memory (RAM) upon power-up and before normal operation of the system can take place. This transfer or Initial Program Load "IPL" is performed upon initial power-up with the use of a 4 Bit Switch "SW1" located on the CPU board. ("SW3" for LEU #1 and "SW4" for LEU #2).

A customer data base is determined by the end user when modifications are made to the factory (default) data. Subsequently, the customer data may be a combination of unmodified factory (default) data and customer data, and is stored in Random Access Memory (RAM).

Upon initialization "Booting up the System" (by way of SW1-see Table 2-6 which outlines the Switch SW1 Functions), the factory data base is loaded into system Random Memory (RAM) located on the main CPU board and the ECU boards. If the system is not initialized properly (see Initialization Flow Chart), erratic operation will

occur. Once the factory data base is loaded into system RAM, then modification (programming) of the customer data base may take place.

The secondary function of the CPU is to provide common audibles (tone signals) to the integral parts of the system (except DTMF), and to serve as a voice and data communications network to the various intercom paths, internal paging links, ECUs, STUs, COUs, and SMU. Some of the integral parts of the main CPU are described as follows:

1. CPU

   8 bit microprocessor and control logic.

2. Random Access Memory

   Used for storing operational software and customer or factory data bases.

3. DIP Switches

   SW1 Bits 1-4--Used for system initialization and speed dial (system and station except for Executive stored speed dial) clearing. Also controls system use of factory data or both customer and factory data by allowing or disallowing customer programming mode.

   Example: SW1 - On CPU Card

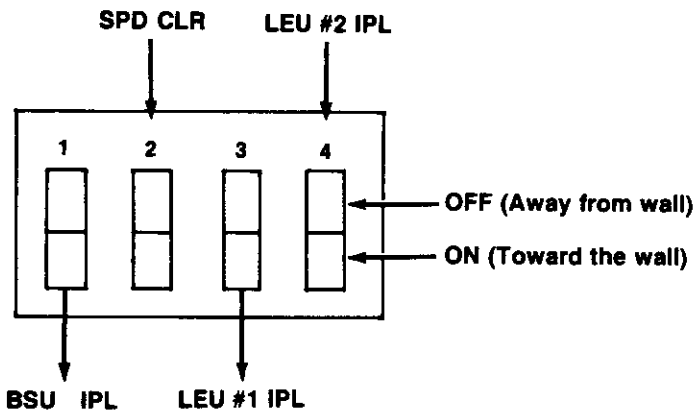


Table 2-6

SWITCH SW1 FUNCTIONS

SELECTOR #	Switch SW1 State: OFF	ON
1	CPU run by Customer program entered	CPU run by Factory program (Initial BSU program load)
1+2	System/Station and Station/System SPD Banks program	All BSU System and Station SPD banks clear
3	LEU #1 Run by Customer data	LEU #1 Run by Factory Data (Initial LEU #1 program load)
4	LEU #2 Run by Customer Data	LEU #2 Run by Factory Data (Initial LEU #2 program load)
2+3	LEU #1 Station/Station SPD Banks Program	LEU #1 Run by Factory Data and LEU #1 Station/Station SPD banks clear
2+4	LEU #2 Station/Station SPD Banks program	LEU #2 Run by Factory Data and LEU #2 Station/Station SPD banks clear

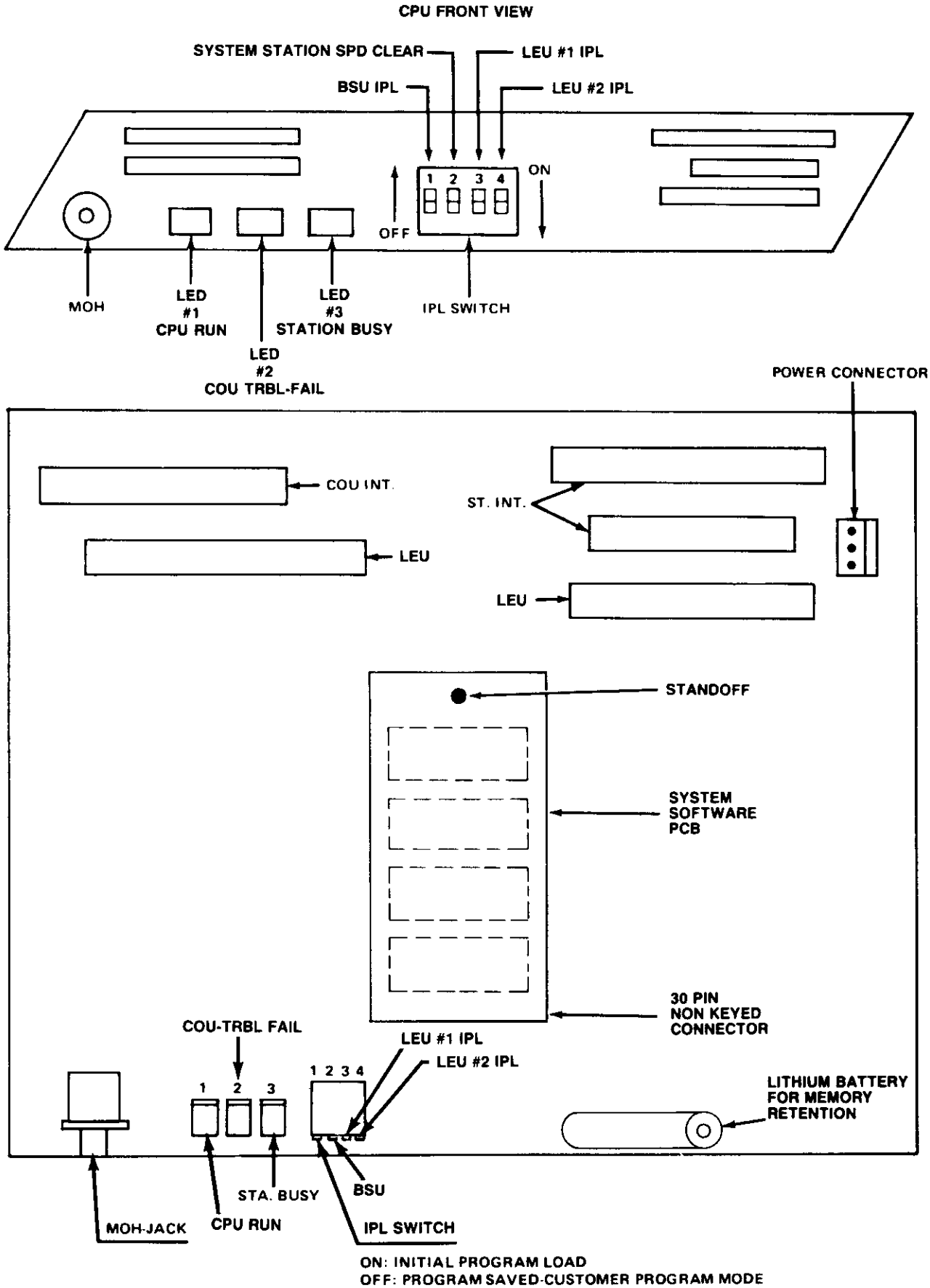
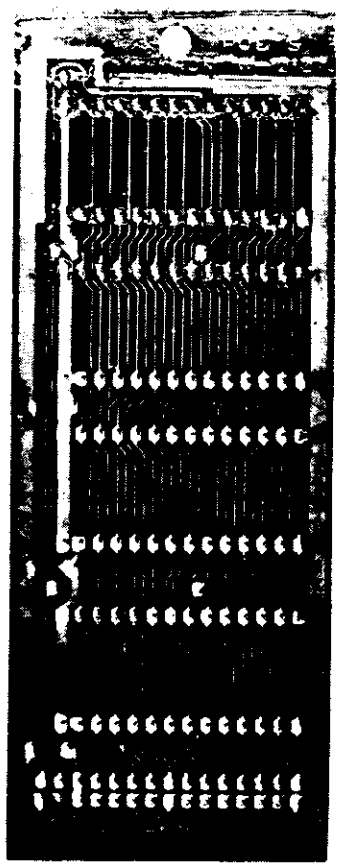
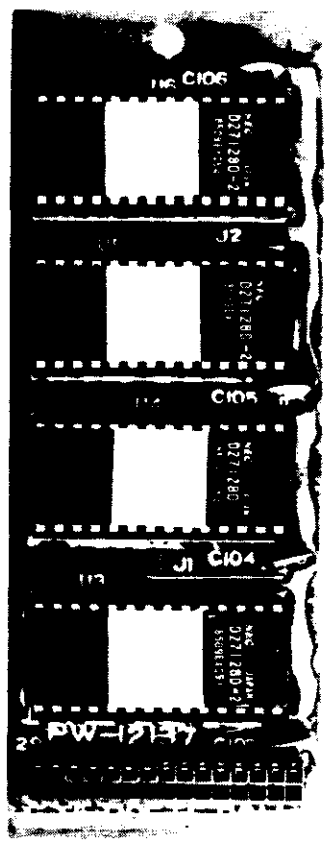


Figure 2-22. POETS CPU Card.

4. Operational Software Circuit Card - (Eprom)

This card mounts face down on the CPU card in a piggybacked fashion. It connects via a 40 pin non-keyed dual in-line connector and a plastic standoff pushdown plug. This card provides operational software and factory data base in the form of read only memory to be loaded into system memory upon initialization.





5. Connectors (Interfaces)

CNA--60 pin connector for connection to CN0 of #1 ECU Board or SMU

CNB--40 pin connector for connection to CN1 of #1 ECU Board

CNC--50 pin connector for connection to J1 of #1 STU Board

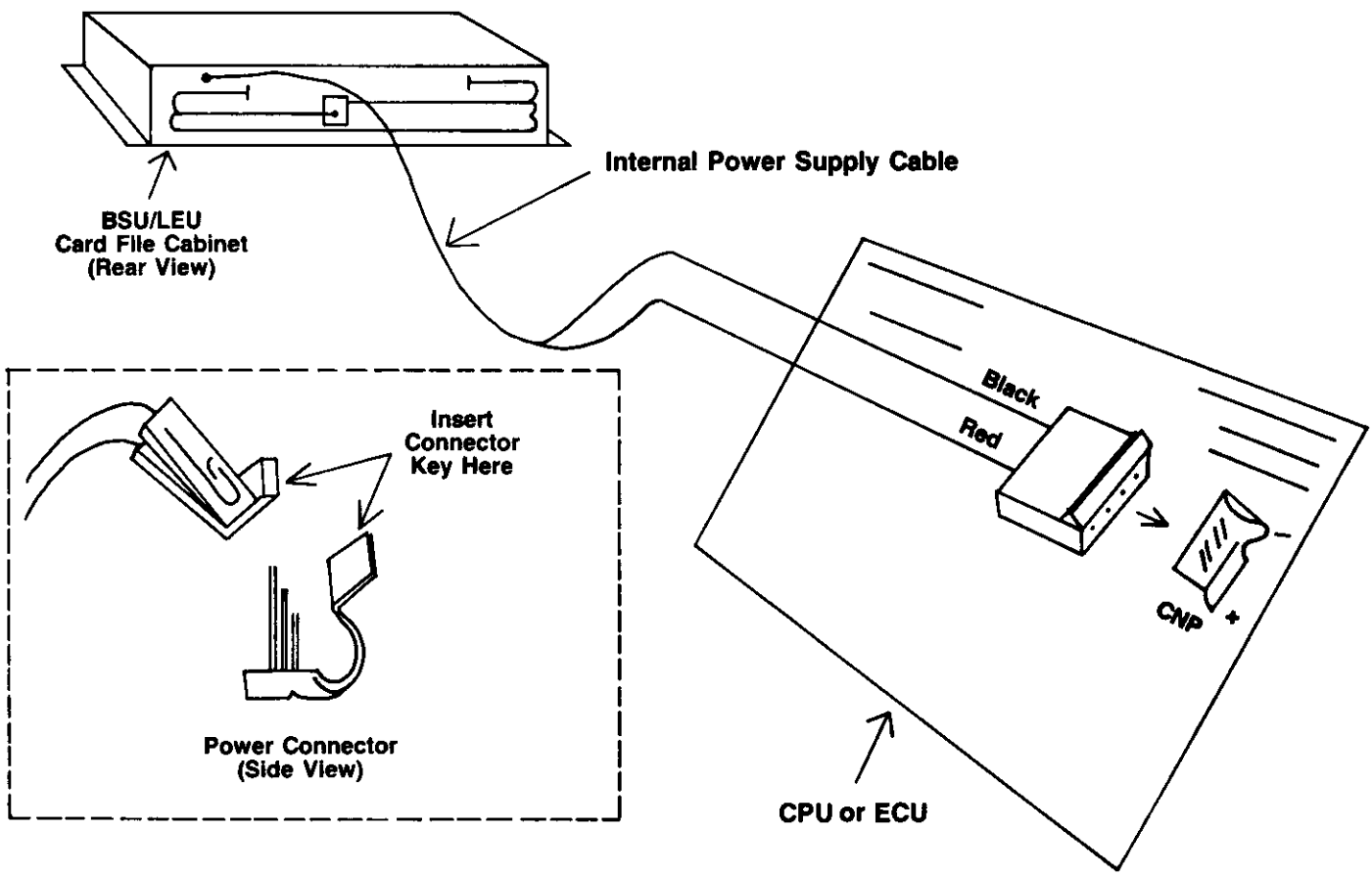
CND--34 pin connector for connection to J2 of #1 STU Board

CNE--50 pin connector for connection to J1 of #1 COU Board

6. Power Interface

Connects power jack from inside BSU cabinet to main power convertor located on P.C. board.

Figure 2-23 Internal Power Interface



7. MOH Jack

Female RCA type jack which interfaces once CPU is mounted into BSU card file to music on hold amplified source (radio, etc.)

8. Light Emitting Diodes (LEDs)

There are three LEDs associated with the CPU as follows:

- o #1 LED-CPU Run Indicator: Lights steady to show CPU normal operation. Will flash upon system reset or power failure.
- o #2 LED-COU Fault Indicator: Will flash to indicate COU trouble due to software programming errors, or malfunctioning COU computer.
- o #3 LED--Lights solid to indicate station in use. Flashes to indicate STU trouble due to software programming errors or STU computer failure.

9. Battery

A 3-volt lithium battery is supplied for maintaining CPU random memory during storage and/or power failure. The battery will provide power to the CPU memory continuously for up to one year. Under normal system operation the lithium battery will last approximately 5 years.

COU CARD

The COU card provides control for six CO lines. All modular jacks (USOC code RJ-11C) and connections for six CO/PBX interfaces are found on the COU Card. The first of six CO/PBX jacks is a power failure port which facilitates the use of the outside pair of conductors for direct connection to the CO/PBX line in the case of a power failure. This card can be programmed by system option for either dial pulse output signalling and/or DTMF output signalling (it is factory programmed for DTMF). An associated LED indicates a busy condition on any one of the CO/PBX lines on the COU card. See Figure 2-24. The BSU comes equipped with one COU. (There are no COUs provided with the LEU).

STU CARD

The STU card provides control for up to 12 stations. A 25-pair female amphenol connector is provided for station interfaces. The BSU comes equipped with one STU. (There are no STU cards provided with the LEU.) See Figure 2-25.

LEDs ST 1-2 -- ST 11-12

These LEDs are provided on the STU card and indicate a short circuit condition on the power and transmission path for each key telephone. One LED incorporates two stations for trouble indicating either one or both stations associated with each LED as shown on Table 2-7. If an LED is lit, a short is present and must be found and corrected. (It is highly recommended that both stations associated with the trouble LED be disconnected immediately.)

After the short has been cleared, both stations associated with the trouble LED must be disconnected to extinguish the LED. There is no need to replace fuses since positive temperature coefficiant varistors "PTCs" are used for faster response time and higher reliability.

Table 2-7

STATION LINE SHORT-CIRCUIT

LED Lamp	Short-Circuited Station
ST 1-2	Station 1, 2
ST 3-4	Station 3, 4
ST 5-6	Station 5, 6
ST 7-8	Station 7, 8
ST 9-10	Station 9, 10
ST 11-12	Station 11, 12

STATION MESSAGE UNIT (SMU)

This is an optional Station Message Detail Recording "SMDR" card. It will provide an output, to a serial printer call accounting system, of complete call records for both incoming and outgoing calls.

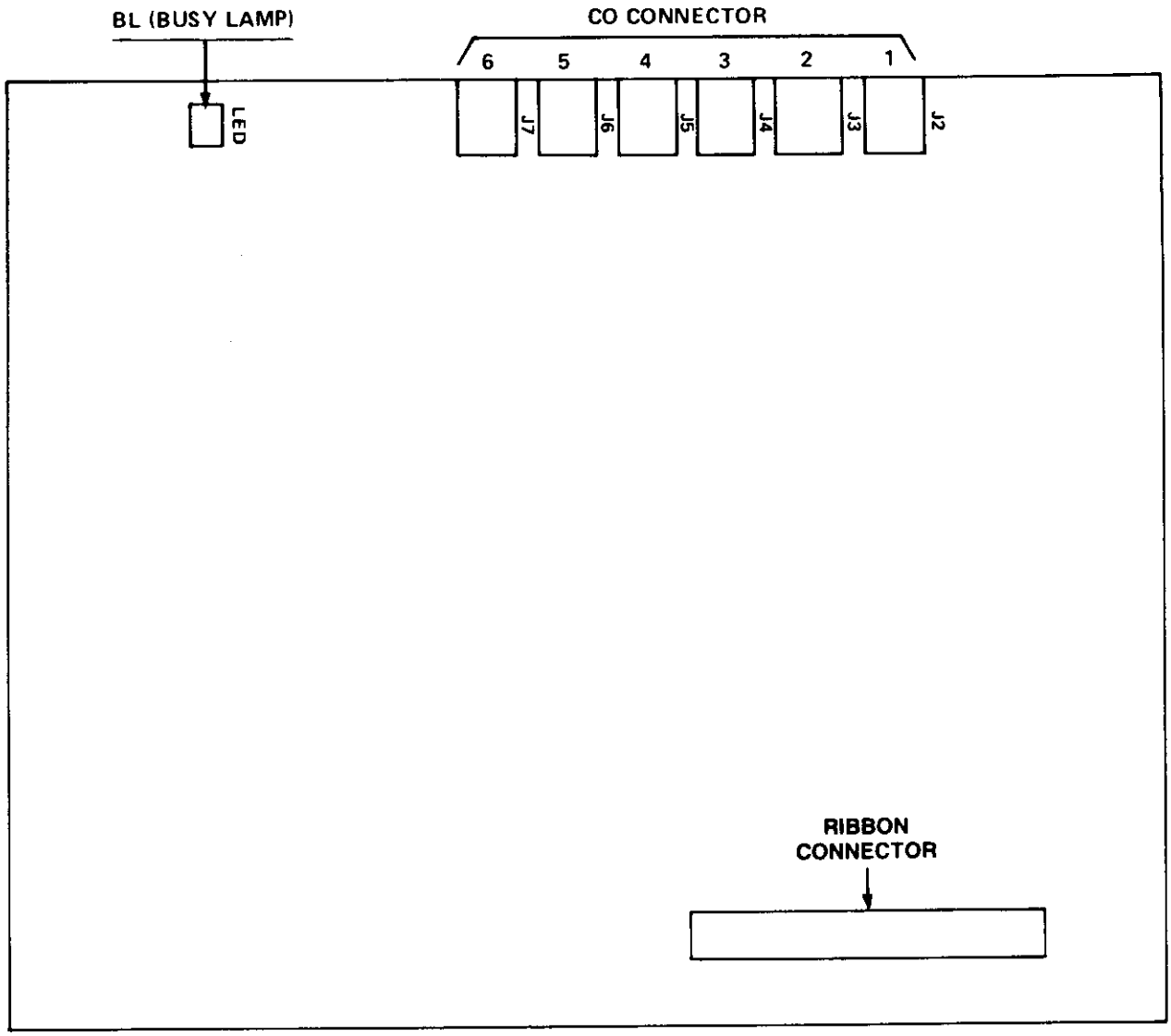


Figure 2-24. POETS COU Card.

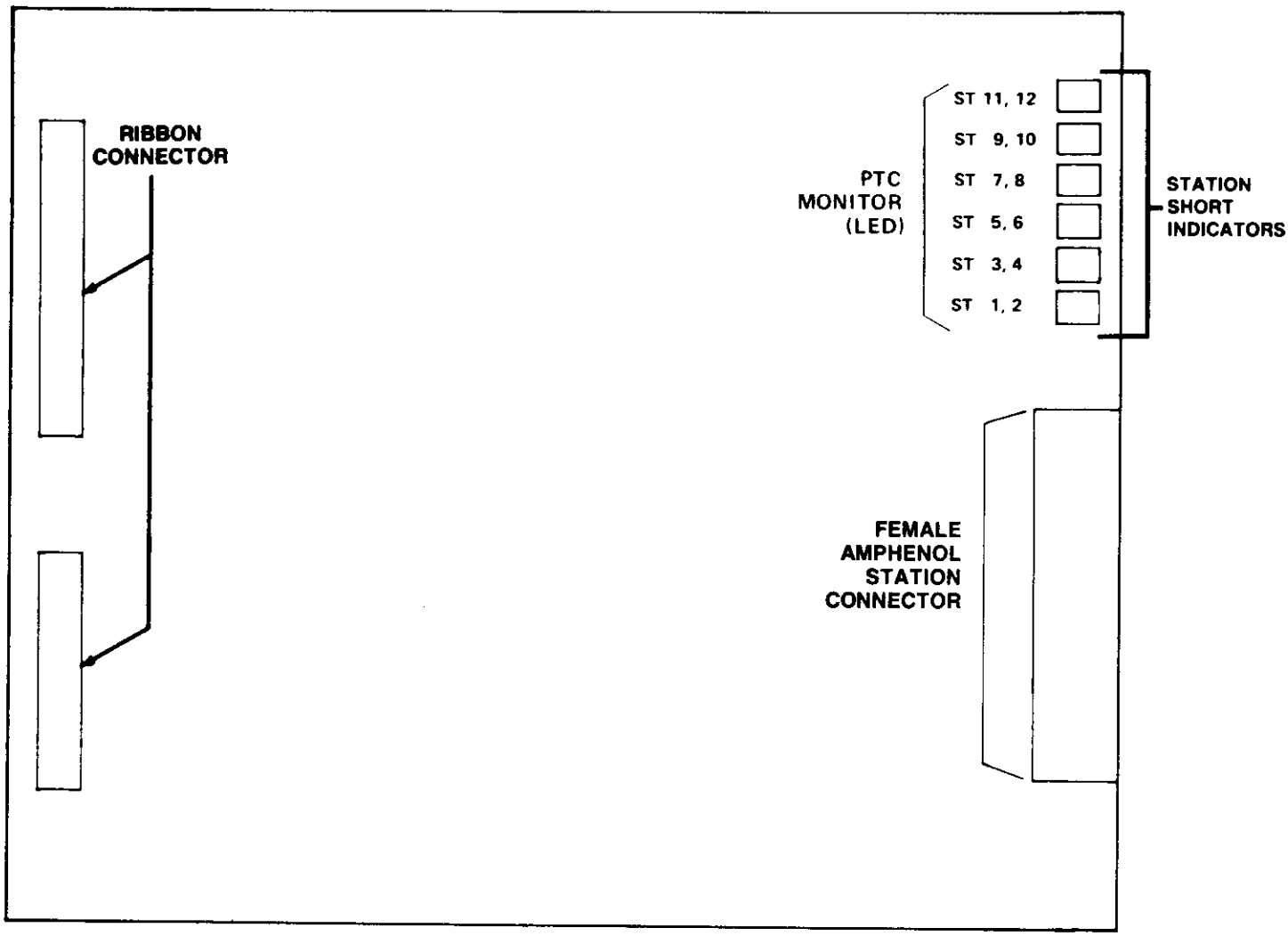


Figure 2-25. POETS STU Card.

CIRCUIT CARD INSTALLATION (LEU)

The following paragraphs provide a description of the installation instructions for the basic and optional cards in the LEU and how they interface with the BSU. The LEU cabinet is a card file type cabinet with an internal/external power supply interface. The circuit cards associated with the LEU are to be inserted in the appropriate place as indicated on the LEU card file cracks. The circuit cards are interfaced with ribbon cables. (The ribbon cables are preferred, and more dependable replacement for a main distribution frame "MDF".) Table 2-8 lists the circuit cards in the LEU and the cable designations and interface. Figure 2-26 illustrates the internal construction of the LEU. Figure 2-27 shows the positioning of the cards. Figure 2-28 shows the proper cable connections between each LEU and the BSU.

CAUTIONS:

1. REMOVE ALL POWER BEFORE INSTALLING THE CIRCUIT CARDS.
2. ALL CIRCUIT CARDS ARE STATIC SENSITIVE. Before handling any circuit card, perform one of the following two precautions:
   - o Discharge the static electricity from your body by touching a metal that is earth grounded.
   - o Affix a grounding strap (wire) from an earth grounded metal to your wrist.

3. WHEN INSTALLING THE CIRCUIT CARDS, CHECK THAT THE CARDS ARE PROPERLY POSITIONED IN THE CARD FILE TRACKS. Ensure that all cables are properly connected before fully inserting the cards into the cabinet. Inserting a card that is not positioned or connected correctly will damage the card. Secure all cards with the card file sliding bracket. See Figure 2-24 for proper card positioning.

Table 2-8*
LIST OF CABLE DESIGNATIONS AND INTERFACE

Circuit Card	Card File	Connector Designation (From)	Connector Designation (To)	Interface to Circuit (Card Designation)	Cabinet (Card File)
CPU	BSU	CNA	CN0	ECU #1	LEU #1
		CNB	CN1	ECU #1	LEU #1
		CNC	J1	STU #1	BSU
		CND	J2	STU #1	BSU
		CNE	J1	COU #1	BSU
STU #1		J1	CNC	CPU	BSU
		J2	CND	CPU	BSU
COU #1		J1	CNE	CPU	BSU
ECU #1	LEU #1	CN0	CNA	CPU	BSU
		CN1	CNB	CPU	BSU
		CN2	CN0	ECU #2	LEU #2
		CN3	CN1	ECU #2	LEU #2
		CN4	J1	STU #3	LEU #1
		CN5	J2	STU #3	LEU #1
		CN6	J1	STU #2	LEU #1
		CN7	J2	STU #2	LEU #1
		CN8	J1	COU #3	LEU #1
		CN9	J1	COU #2	LEU #1
		CN10	CN11	ECU #2	LEU #2
		CN11	CN10	ECU #2	LEU #2
EMC #1	LEU #1	N/A	CN12	ECU #1	LEU #1
		N/A	CN13	ECU #1	LEU #1
STU #2	LEU #1	J1	CN6	ECU #1	LEU #1
		J2	CN7	ECU #1	LEU #1
COU #2	LEU #1	J1	CN9	ECU #1	LEU #1
STU #3	LEU #1	J1	CN4	ECU #1	LEU #1
		J2	CN5	ECU #1	LEU #1
COU #3	LEU #1	J1	CN8	ECU #1	LEU #1

*Also see Figure 2-28

Table 2-8* (continued)

LIST OF CABLE DESIGNATIONS AND INTERFACE

ECU #2	LEU #2	CN0	CN2	ECU #1	LEU #1
		CN1	CN3	ECU #1	LEU #1
		CN2	Empty		
		CN3	Empty		
		CN4	J1	STU #5	LEU #2
		CN5	J2	STU #5	LEU #2
		CN6	J1	STU #4	LEU #2
		CN7	J2	STU #4	LEU #2
		CN8	J1	COU #5	LEU #2
		CN9	J1	COU #4	LEU #2
		CN10	CN11	ECU #1	LEU #1
		CN11	CN10	ECU #1	LEU #1
EMU #2	LEU #2	XXX	CN12	ECU #2	LEU #2
		XXX	CN13	ECU #2	LEU #2
STU #4	LEU #2	J1	CN6	ECU #2	LEU #2
		J2	CN7	ECU #2	LEU #2
STU #5	LEU #2	J1	CN4	ECU #2	LEU #2
		J2	CN5	ECU #2	LEU #2
COU #4	LEU #2	J1	CN9	ECU #2	LEU #2
COU #5	LEU #2	J1	CN8	ECU #2	LEU #2

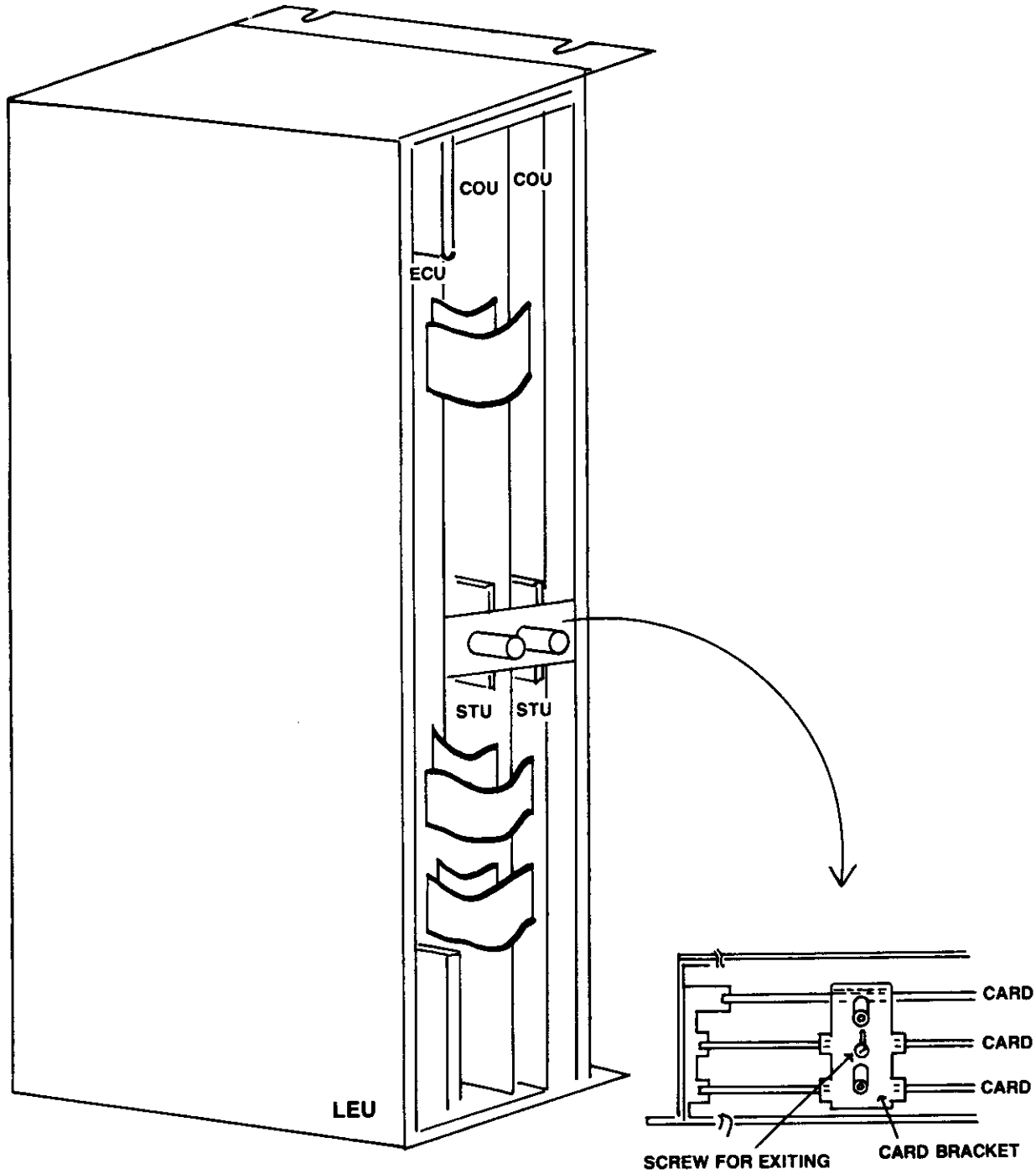


Figure 2-26. LEU Internal Construction.

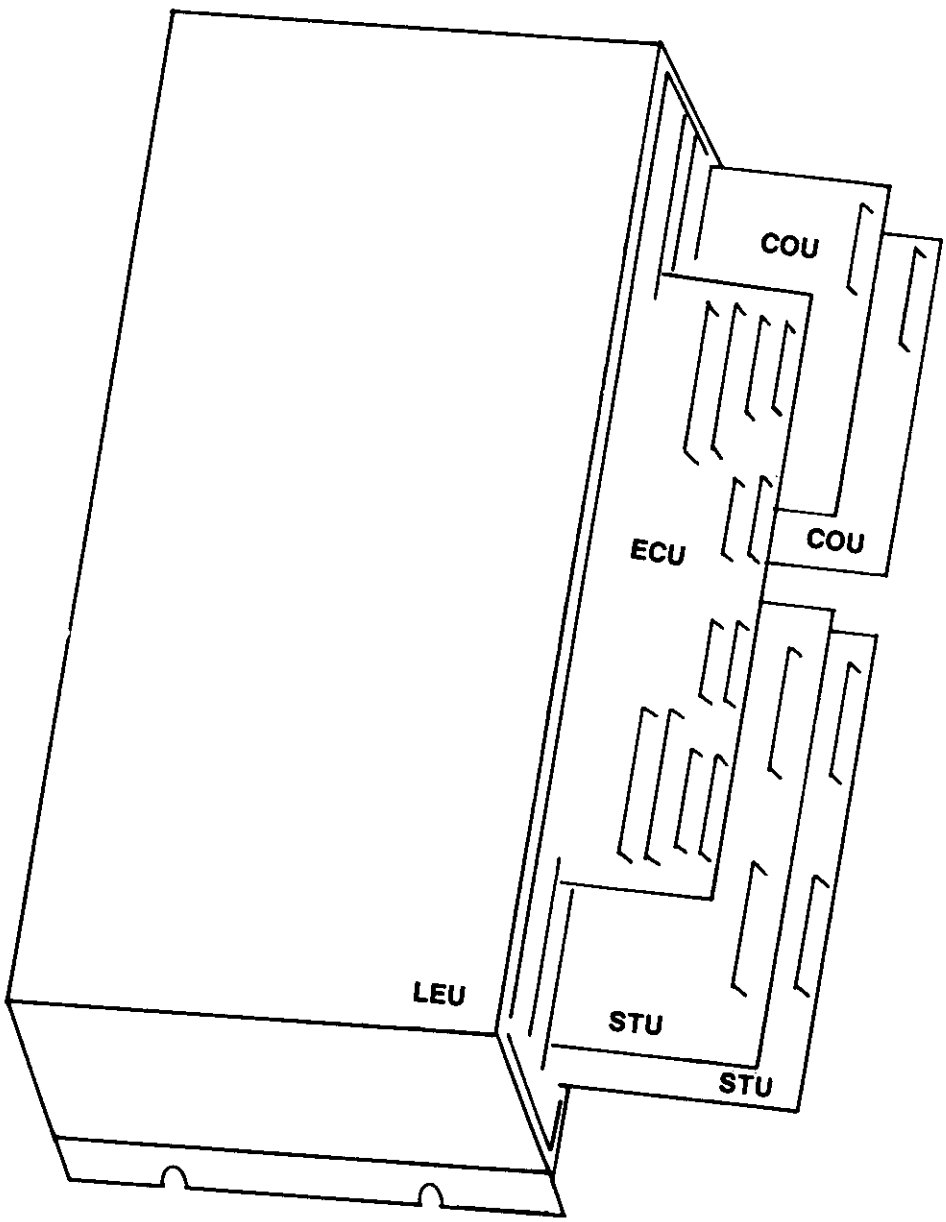


Figure 2-27. Circuit Card Positioning. (LEU)

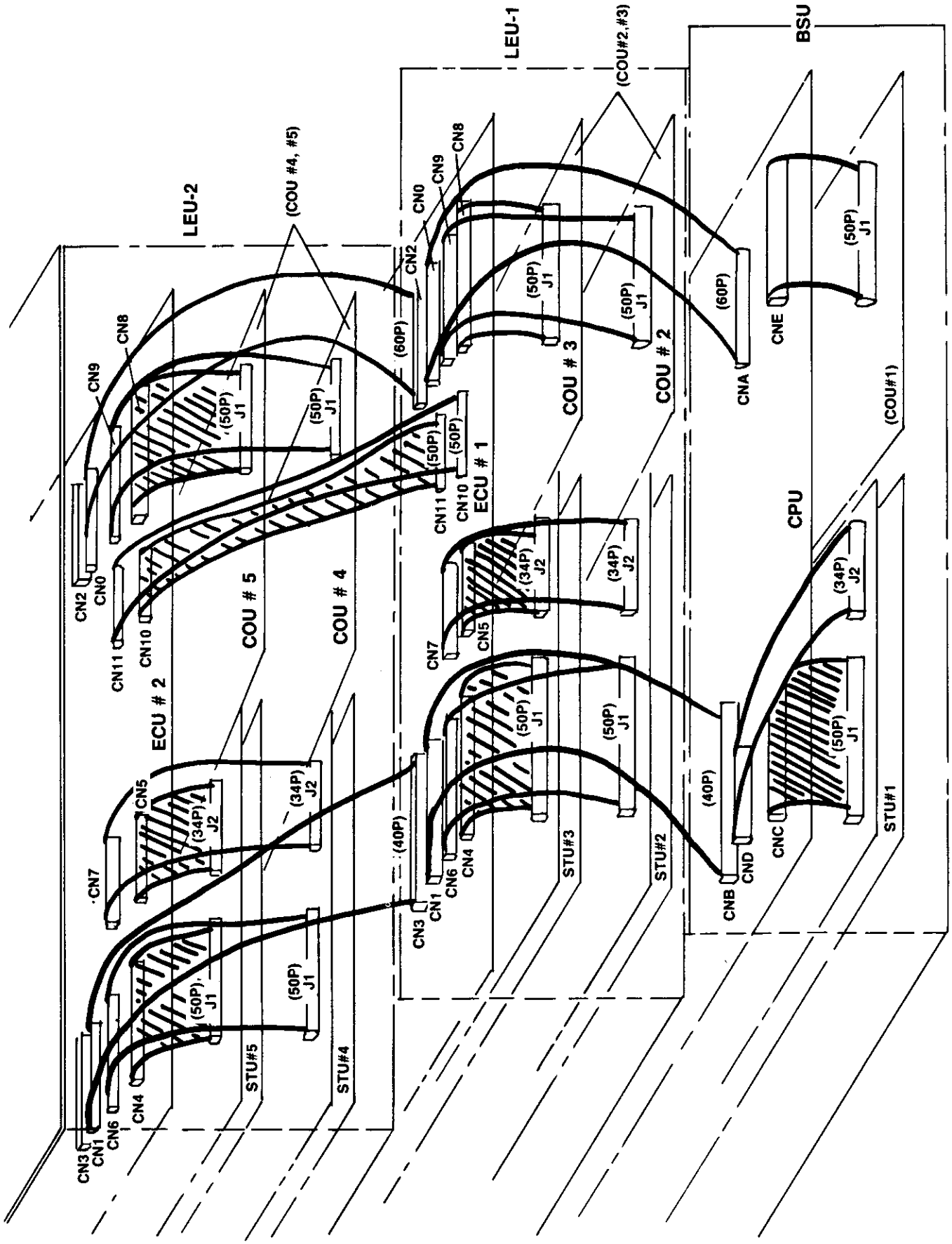


Figure 2-28. Cabling Between the LEU/LEU and BSU.

EXPANSION CONTROL UNIT (ECU)

This card is the decentralizing control unit for the LEU. Its primary function is to communicate with the CPU card in the BSU as it maintains control of the COU cards and STU cards in the LEU. It also provides expansion matrices for station additions. Figure 2-29 shows the basic construction of the ECU. It will be necessary to interface the power cable provided inside the LEU with the power connector on the ECU card while installing the ECU into the card file. Note the standoffs provided on the ECU card. These standoffs will be used for interface with the EMU described in the following paragraph. Table 2-8 lists the cable interfaces for installation of the ECU.

EXPANSION MATRIX UNIT (EMU)

The EMU provides additional crosspoint matrices which are only necessary when additional CO lines and/or additional stations are utilized in a system. In the case where four or more STUs are present in the system, one EMU is required to be installed in the #1 LEU. In the case where four or more COUs are present in the system, one EMU is required to be installed in the #2 LEU. Table 2-8 lists the cable interfaces for the EMU. Figure 2-30 shows the layout of the EMU. The EMU is to be installed in a piggyback configuration onto the ECU. (See Figure 2-31 utilizing the snap-on type standoffs provided on the ECU.)

COU CARD

See Figure 2-24. Each LEU can be equipped with up to two COU cards. Refer to Table 2-8 for cable interfacing designations.

STU CARD

See Figure 2-25. Each LEU can be equipped with up to two STU cards. Refer to Table 2-8 for cable interfacing designations.

*Three cables are provided with each LEU. When installing one LEU, a spare 50 pin cable and connectors will remain unused. Save this cable as it will be required when expanding with LEU #2 takes place.

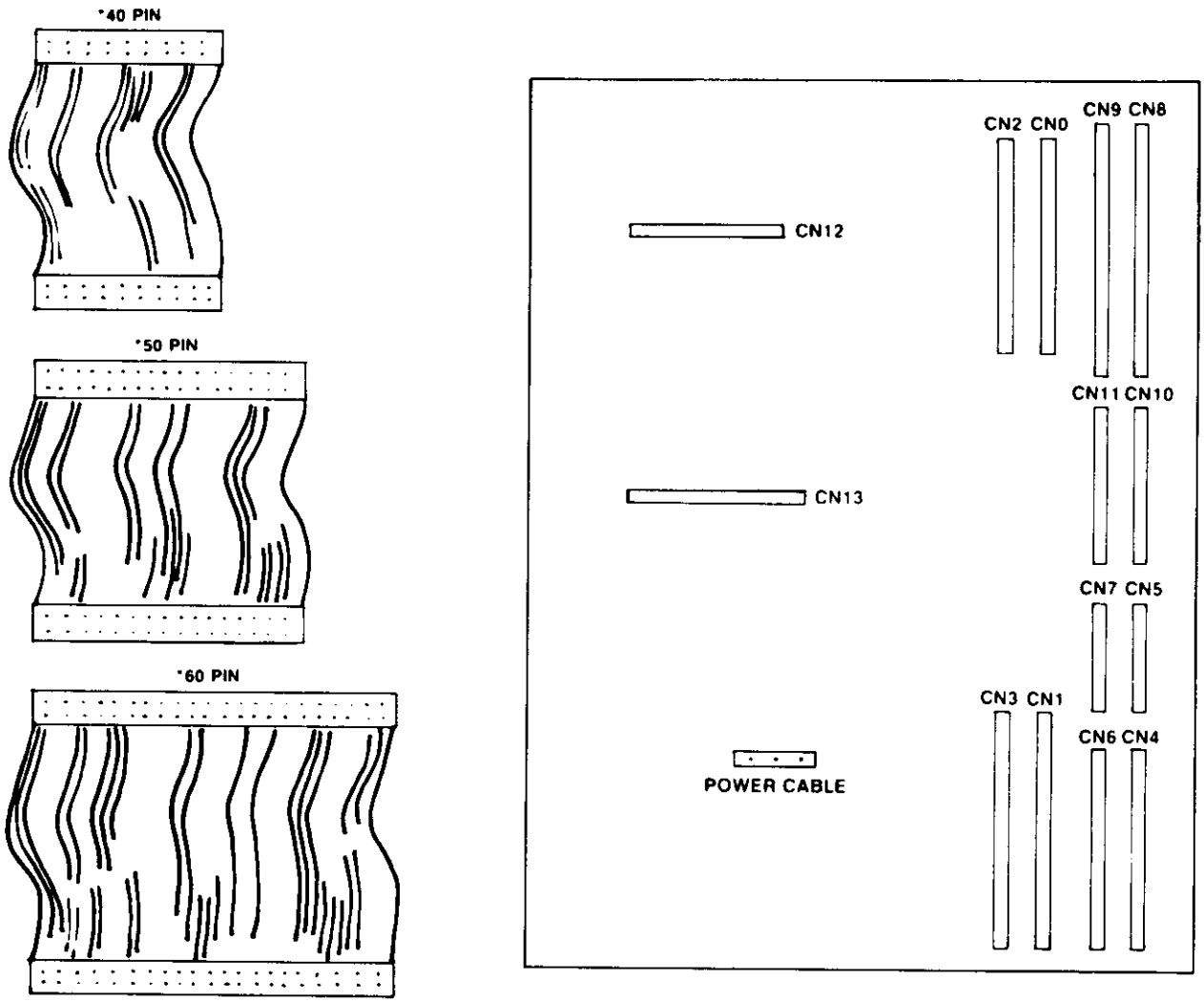


Figure 2-29. Expansion Control Unit.

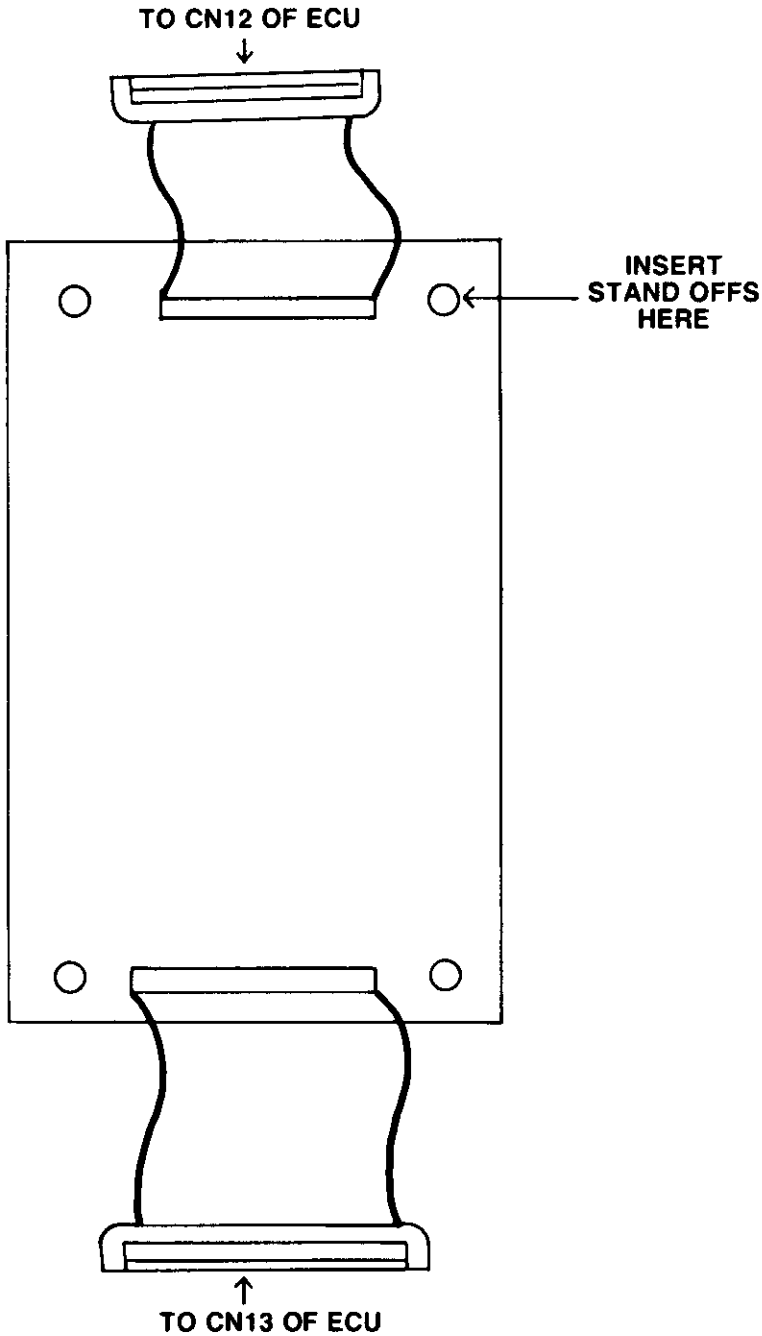


Figure 2-30. Expansion Matrix Unit.

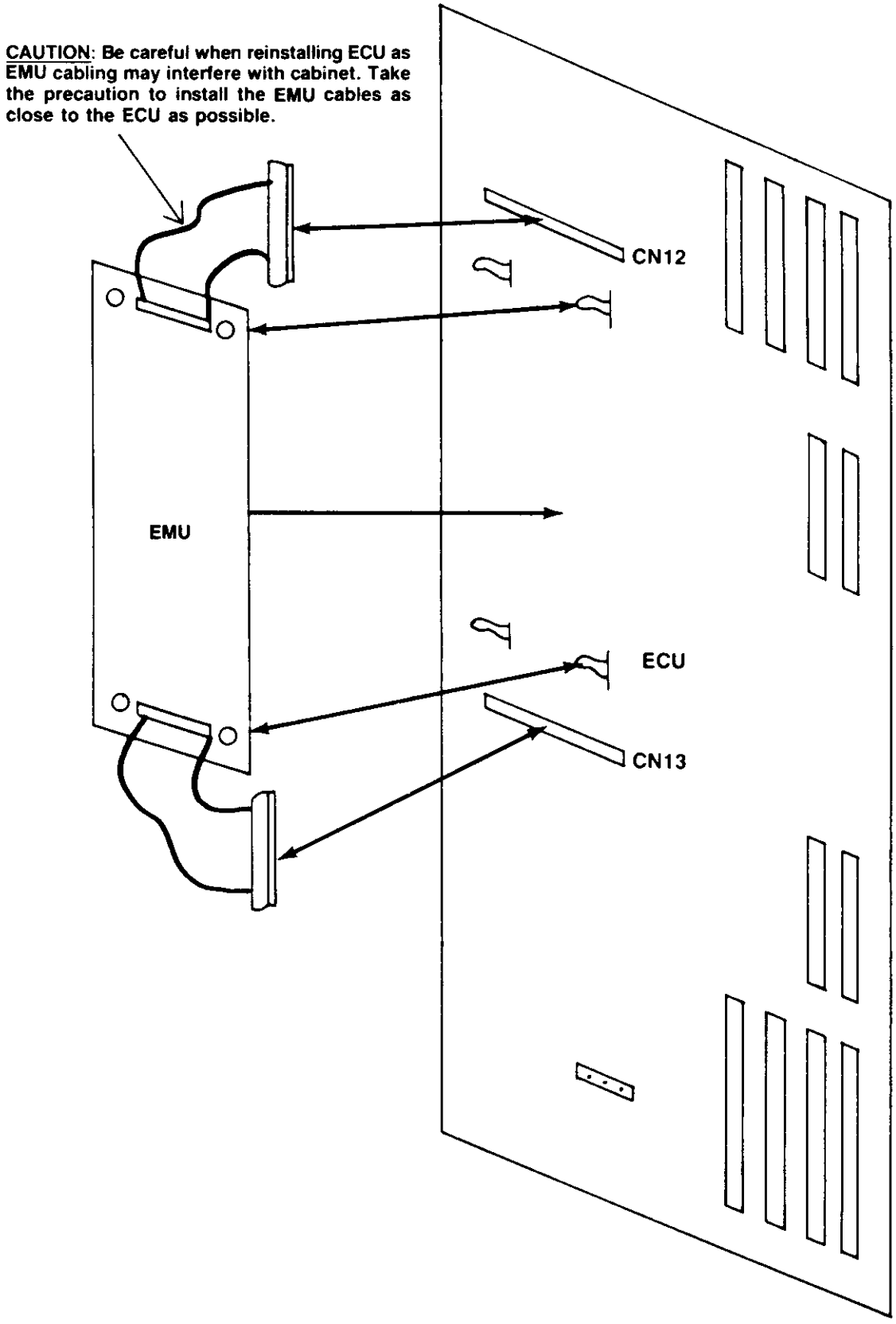


Figure 2-31. Installation of the EMU.

TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Possible Solution
1. Erratic operation	1. System not initialized properly	1. Re-initialize in accordance with installation manual
2. DSS operation same as if 30 button telephone (DSS buttons)operate as CO line keys or DSS LEDs erratic	1. DSS connected to wrong port i.e. can only be connected to port #2 and #3 of each STU	1. Re-connect DSS to port #2 & 3
3. CPU run light/COU busy light flashing together. Station in continuous reset condition	1. Defective power supply i.e. incorrect voltage or fluctuating voltage	1. Connect line monitor to AC input to verify clean input
	2. Low AC voltage	2. Measure DC output voltage of power supply
		3. Verify input voltage to power supply
4. CPU run light off, steady	1. Operational software (E-Proms U3-U6) not installed properly	1. Check installation of Eproms and PC board
	2. Bad DC/DC converter	2. Change CPU card to verify defective parts
	3. Damaged CPU card	3. Same as #2
	4. Plugged in with power on	4. Same as #2

Symptom	Possible Cause	Possible Solution
4. CPU run light off, steady (cont'd)	5. Ribbon cables have a short or installed incorrectly	5. Same as #2
	6. Power connector on CPU board is backwards	6. Re-connect internal power interface
	7. Power supply not connected to ESU #1, ESU #2, or internal power interface not connected to ECU	7. Re-confirm proper connect of all power interfaces
5. COU failure/TRBL light steady or flashing	1. COU malfunction	1. Swap-out for verfication of malfunction
	2. COU communication error between CPU and COU	2. Same as #1
	3. System initialization required	3. Re-initialize system in accordance with installation manual
6. Lost Data--system assumed operation on factory data for specific programming originally thought to be programmed by the user	1. Programming on-line while stations are in use (off-hook) requires you to re-enter data. See "Programming Tips". There is no indication on DSS when customer data is not expected, only multiple beep-tones when pressing (#).	1. Review data for ring assignment program #22 & #23

Symptom	Possible Cause	Possible Solution
7. System Reset (frequently/infrequently)	1. Improper system	1. Re-initialize
	2. Power fluctuation initialization	2. Install Isolation transformer or power regulator. Relocate to dedicated power source
	3. Defective power supply	3. Replace power supply
	4. AC line noise	4. AC line filter
	5. Power surges	5. Surge protector
	6. Lightning	6. Same as #4
	7. Electrical or mechanical interference	7. Consult Walker technical service department
	8. Radio frequency interference	8. Install RFI filter
	9. System ground	9. Check star washer and ground
8. Erratic operation-system reset/stations randomly accessing CO lines	1. Corrupted data in system RAM (Random Accessed Memory) due to system not initialized or initialized improperly	1. Re-initialize system
	2. Soft data due to defective software	2 Replace software
	3. Defective CPU RAM or ECU RAM/Defective CPU battery or ECU battery	3. Consult Walker technical service department

Symptom	Possible Cause	Possible Solution
9. 1KHZ (1000 cycle) continuous tone and all LEDs lit steadily on telephone station terminal (for E-6, E-18 & E-30)	1. Key short (out of box failure)	1. Consult Walker technical service department for return and repair procedure
	2. Key depressed simultaneously while connecting the station line cord	2. Reset station by unplugging and replugging line cord
	3. Faulty station electronics	3. Swap out station to confirm
10. Cyclic repetition of station diagnostic sequence (resetting) LEDs sequencing, two beep tones after each cycle. LCD on Execs not functioning properly i.e. all 88888888 displayed	1. Key short (out of box failure)	1. Consult Walker technical service department for return and repair procedure
	2. Keys depressed simultaneously while connecting the station line cord	2. Reset station by plugging and replugging line cord
	3. Proper initialization procedure not followed	3. Refer to installation manual for proper initialization
	4. ECU cabling to CPU improper or STU plugged in with power ON	4. Refer to installation manual for proper cabling procedure
	5. Bad STU hardware	5. Swap-out STU with spare to verify this, then return to Walker for repair

Symptom	Possible Cause	Possible Solution
10. (cont'd)	6. Mis-communication between STU and CPU (possibly due to defective STU processor)	6. Same as #5
	7. Low DC Voltage at power input to KSU (from power supply)	7. Measure output voltage (DC) of power supply-voltage s/b approximately 29 volts unloaded
11. Station completes diagnostics and LEDs remain steady after two beep tones	1. Data pair reversed polarity	1. Correct data pair polarity
	2. STU lock up because of communication errors. STU unable to rectify problem internally	2. Swap-out STU with spare to verify this, then consult Walker for advice on return and/or repair
12. Executive station has no function	1. Data pair reversed polarity	1. Correct data pair polarity
	2. Data pair open (no connection)	2. Reconnect data pair
13. E-6 Tel, E-18 Tel, E-30 Tel, Exec and DSS are nonfunctioning	1. Data pair short circuit	1. Eliminate shorting cable and/or interface

Symptom	Possible Cause	Possible Solution
14. No voice communication	1. Tip and Ring short.	1. Check for short location. Eliminate shorting cable and/or interface
	2. EMU not installed or installed incorrectly	2. Consult installation manual for correct installation and proper location of EMU cards
15. Station non-functional station trouble LED lights steady	1. DTA to Tip or Ring short	1. Locate Short 2. Eliminate short from cabling and/or interface
16. Same as #7	1. DTB to Tip or Ring short	1. Same as #7 2. Same as #7
17. One way communication to calling station from called station-low receive level	1. Tip or Ring disconnect at called station	1. Check cable for continuity
	2. Cable capacitance problem	2. Consult Walker technical service department
	3. Bad transmitter or defective receiver or STU	3. Swap-out faulty (suspected) part to verify defective operation
18. When powering up, station does not go through diagnostics	1. Station micro-processor bad	1. Swap-out station to confirm this malfunction, then consult Walker technical service for return/repair

Symptom	Possible Cause	Possible Solution
19. Station busy light on	1. Steady-a station is busy	1. This is normal
	2. FLASHING-"STU TRBL", "Communication Error", "STU CPU Failure", "STU Hardware Failure", "Station or Terminal Communication Malfunction","No STU Communication between CPU"	2. Check STU cabling, then change STU to verify malfunctioning part
20. Station TRBL light on	1. Cable short circuit	1. Verify proper cable connect
	2. Cross Connection	2. Check for cable continuity
		3. Two stations must be unplugged to reset LED
21. BLF/Station CO LED's on steady	1. Damaged ECU card	1. Replace ECU
	2. ECU cabling incorrect	2. Check ECU cabling for verification with installation manual
	3. System not re-initialized upon adding ESU	3. Re-initialize system in accordance with installation manual
		4. Swap-out ECU to verify part is malfunctioning

Symptom	Possible Cause	Possible Solution
22. Improper or no access to COs	1. Line Key disabled	1. Re-program Line Key
	2. No COU card interfaced (In this case, busy tone heard)	2. Connect COU card
	3. COU incorrectly connected to ECU	3. Re-connect COU according to installation manual cabling diagram
	4. No EMU Card installed in ESU #2 (In this case, busy tone heard)	4. Install EMU in ESU #2
23. Misdialing	1. Defective dial oscillator i.e. COU basis	1. Replace COU
	2. Defective dialpad	2. Replace station terminal
	3. DTMF tone burst duration too short	3. Consult Walker technical staff for service information
24. No transmission on ICM card or one way transmission	1. No EMU	1. Add EMU card to proper ECU
	2. EMU plugged into incorrect ECU board	2. Unplug EMU and replug into proper ECU board
25. No LCD display (DSS/BLF)	1. Display control button off	1. Depress DISP CONT

Symptom	Possible Cause	Possible Solution
26. No ring at attendant station	1. NA button on	1. Depress NA button
	2. CO not programmed to ring	2. Re-program ring assignment
	3. NA Mode activated by primary station (message light will be lit)	3. Go off-hook & depress "0"
27. Phantom Ringing	1. Station queued on and forgotten	1. Pick up hand set and make connection, then hang up
	2. High off-hook voltage on trunks and voltage supervised lines	2. Consult Walker technical staff for advice on how to verify this with local operating company
	3. Ring timeout program for too long a period of time	3. Shorten Ring-timeout period-consult programming manual
	4. RFI-Radio Frequency Interference	4. Consult Walker technical staff for information on FCC requirements
	5. Electro Magnetic Interference due to electric motors, etc.	5. Consult Walker technical staff for solution
	6. Peripheral equipment interfaced with trunks causing induced noise and false ringing due to surges (i.e. call diverters, call sequencers, call routers, speed dialers, etc.)	6. Consult Walker technical staff for information on equipment compatability

Symptom	Possible Cause	Possible Solution
28. Cannot activate MSG waiting function	1. No station connected to port-MSG LED extinguished	1. Connect station terminal
	2. When activating MSG, must depress station DSS within 5 seconds of MSG button	2. Depress MSG and try again
	3. Each MSG button associated with own DSS only. i.e. must use 2 MSG buttons for 60 stations-not true of NA and CBU	3. Depress correct MSG associated with that DSS only
29. Erratic ringing	1. Primary station accidentally put in night mode (even when DSS used)	1. Go off-hook on Ext #10, then dial "0"
	2. Programming performed with stations in use without using proper procedure	2. Review and correct programmed data/Re-enter program data
	3. Step by step Central Offices	3. Consult Walker technical service department
30. Executive Telephone LCD "0000" (Access to first 6 CO's only)	1. Executive	1. Executive must be connected to Port 1 through 8 only of each STU

Symptom	Possible Cause	Possible Solution
31. No Music-On-Hold or music sounds garbled	1. No music amplification or too much or too little	1. Music source must be amplified 2 to 4 WATS. No more, no less. Replace music source or amplify it.
32. No external paging when connected to spare CO position	1. No amplifier	1. Amplify circuit
	2. Bad amplifier	2. Replace amplifier for verification
	3. Using wrong pair of wires	3. Connect amplifier to Red and Green of modular jacks
33. All CO's not ringing at CBU station	1. Programming error	1. Make sure all CO's are programmed to ring at the primary station of that DSS
34. When in a tenant situation a primary station puts the system into NA, system will not change ring assignment	1. Programming error	1. Make sure the tenant putting system into NA has those CO's programmed to ring at their station and no other primary station

Symptom	Possible Cause	Possible Solution
35. When adding an LEU system resets when trying to program	1. Did not initialize the LEU	1. Initialize the LEU cabinet
36. When adding an STU to system all phones on that STU do not work	1. Compatibility of STU cards	1. Consult Walker field support for assistance
37. When attempting to get into program mode you get error tones	1. Dip switches set improperly on CPU card	1. All switches must be put away from the wall on the CPU card (the off position)

SECTION 3

FEATURE DESCRIPTION AND OPERATION

SYSTEM INITIALIZATION

When installation is completed, the system must be initialized before operation. POETS is delivered with a permanent factory program, which is stored in a read only memory "ROM" in the form of a retrofittable circuit board which is mounted on the main CPU board. When the system is initialized, the contents of the ROM are transferred to a random access memory "RAM", which controls the operation of the system. The contents of the RAM can be modified as indicated in Section 4, "Programming". Any part of the RAM may be modified without causing a change in the remaining factory provided data. However, even after the contents of the RAM are modified, the original permanent factory program can be reinserted in place of the modified program by performing the following initialization procedure. (See Figure 3-1-System Initialization Flow Chart.) If the system is not initialized properly, erratic operation will result, possibly causing the system to reset and/or crash.

METHOD OF VALIDATING PROGRAM AND DEFAULT (FACTORY CONFIGURATION)

Upon power-up, the system CPU checks the status of the Initial Program Load "IPL" switch--SW1 Selectors #1, 3 and 4 (See Figure 3-1--Initialization Chart). If the IPL selectors are not set to the "ON" position, the system will assume the configuration dictated by the RAM (customer data or random data). If the IPL switches are set to the "ON" position, then the system will assume a basic

configuration as follows:

a. Auto H-Flash Timing = 3 seconds

b. Ring Timeout = 8 seconds

c. Dial Pulse Break Ratio = 60%

d. Intercom Priority = Voice

e. 1st Depression of Hold = System Hold

f. Dial Pulse Speed = 10 pps

g. Hold Recall = No Timeout (No Hold Recall)

h. CO Type Dial = DTMF

i. Trunk Group Assignment = All COs to trunk group #1

j. Station Class of Service = COS #1 (all Stations) No restrictions on dialing

k. Forbidden Speaker Page = "0" = Allowed to receive internal page

l. Default Day Ring Assignment = Station #10, 21, 22, 34, 46, and 58 ring on all 30 CO lines

m. Night Answer = Station #10 and 21 ring on all 30 CO lines

n. Toll Restriction Type Designator on all Trunk Groups = #13 (non restricted)

o. CO Line Assignment to Station = Squared Operation = all line keys have CO's appearing on them (e.g.: line key 1 is CO1, line key 2 is CO2....)

CO Line Keys (non squared) operation -- (Any CO line may be assigned to any line key.) All telephones have access to all lines appearing at the telephone.

Initial system power-up must be done with the IPL switch in the "on" position. When adding parts such as LEU and EMU, the IPL procedure must be performed for the LEU (SW1 bits 3 and 4) and if custom programming is required, the system must be programmed. If the system is not initialized, additions will not be recognized correctly by the main CPU.

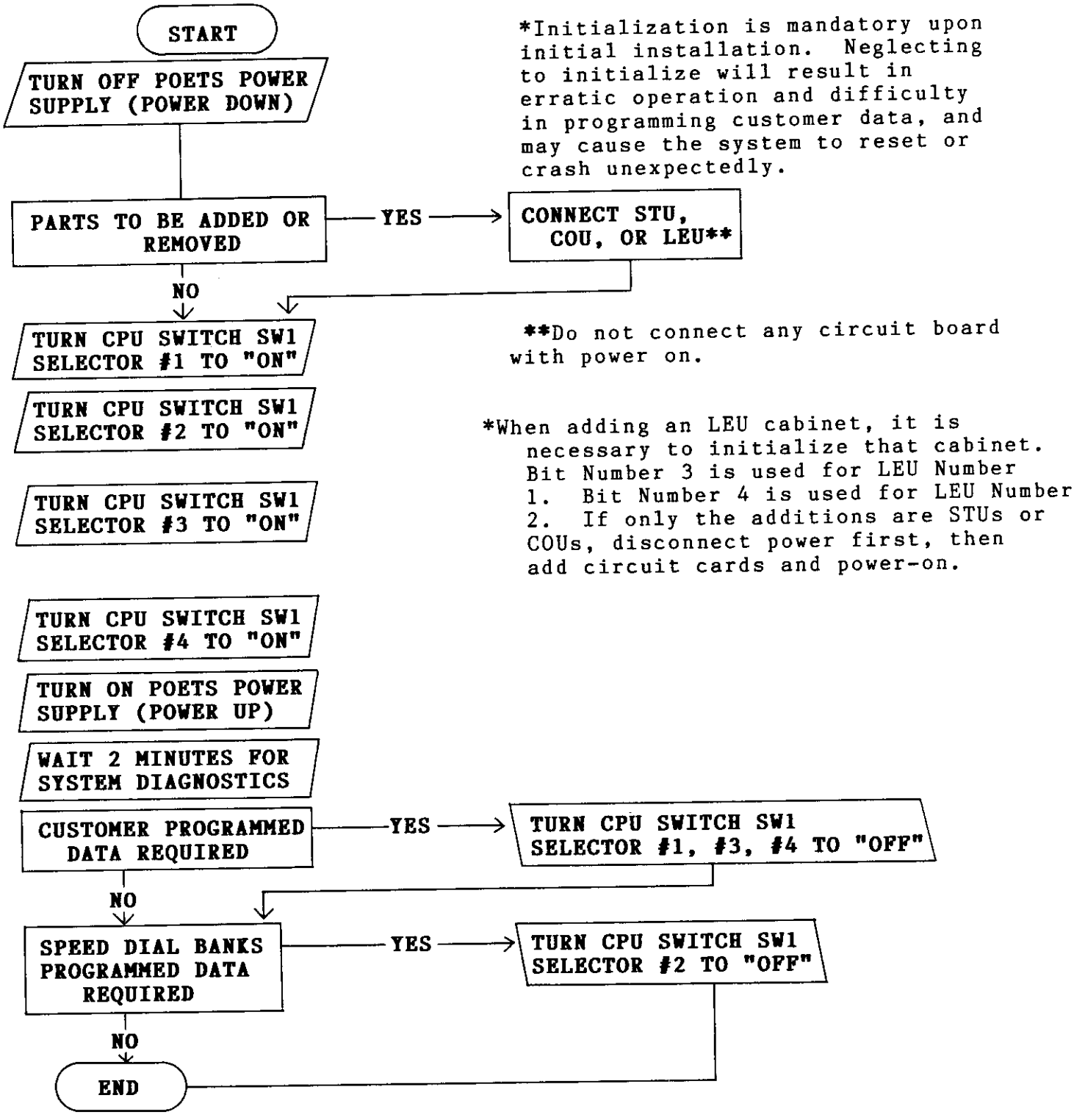


Figure 3-1. System Initialization Flow Chart.

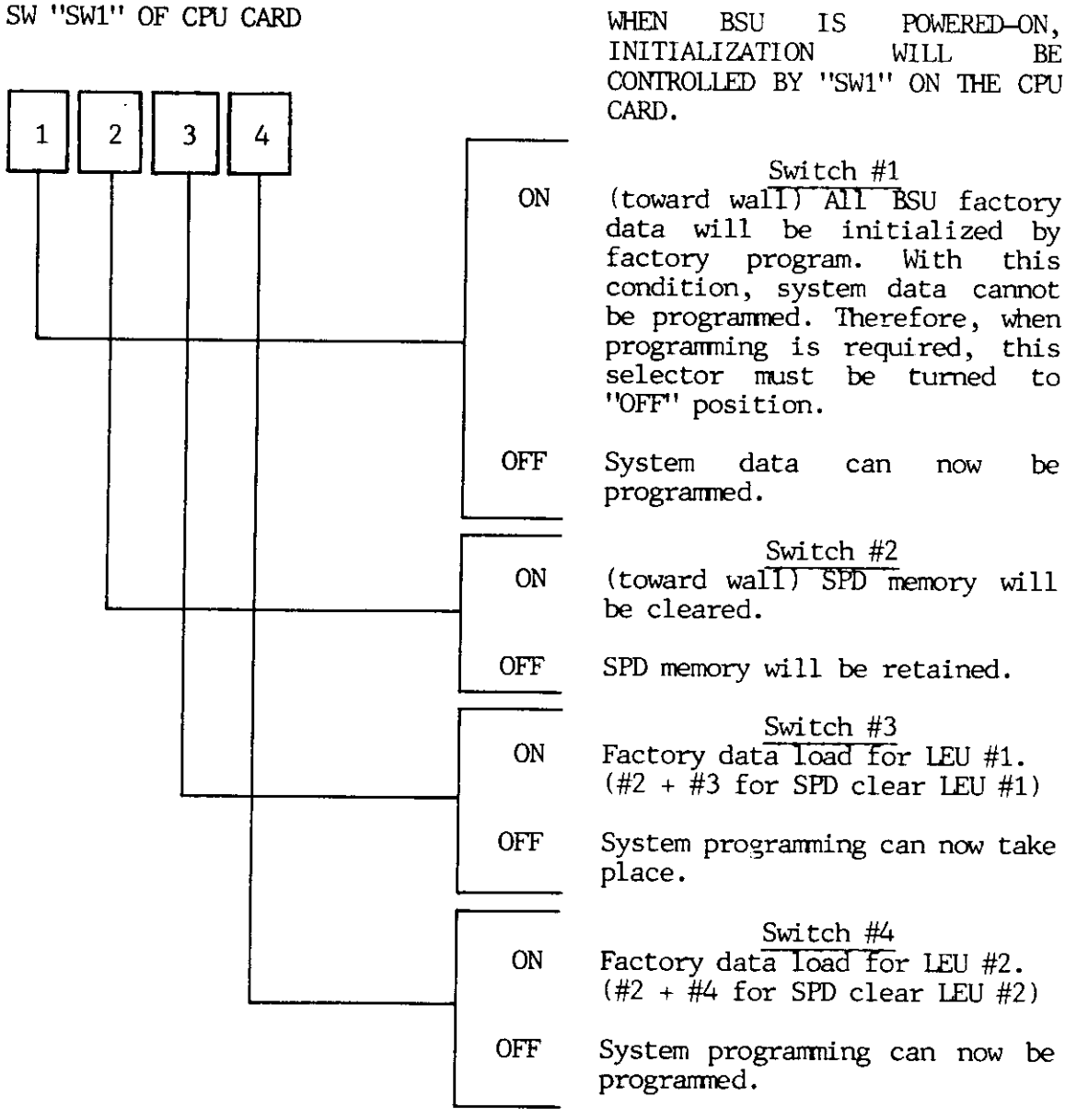


Figure 3-2. Initialization Chart.

ON-LINE PROGRAMMING FOR SYSTEM DATA

In the case where programming operation is performed while the system is call processing:

- Call processing before system data is changed will be performed upon old system data.
- Call processing after system data is changed will be performed upon new system data.

FEATURES OPERATION

The Operating Procedures for 60 Features and their capabilities are described in the following pages.

Notes:

1. Systems are supplied with a digital key pad. The following operating procedures use the term "dial" to indicate dialing a number or entering the number by pressing the digital keys.
2. An idle CO line is a line whose indicator is not lit.

The Features and their associated page numbers are:

AUTOMATIC HOLD OF CO CALL

This feature allows any station user to automatically place a CO call on hold by pressing the ICM line button while on a CO line.

AUTOMATIC PRIVACY OF CO/PBX CALL

This feature protects the busy station from an accidental or intentional interruption of a telephone call. The station user is completely assured of privacy on all types of outside calls. This feature is especially useful in a shared tenant environment.

AUTOMATIC PRIVACY OF INTERCOM CALL

This feature protects the busy station from accidental or intentional interruption of an intercom call. The station user on an intercom call is completely guaranteed of the privacy of the call.

AUTOMATIC TIMED RECALL OF HELD CALL (FIRST RECALL)

A held call which has remained unanswered for a specific time is automatically recalled to the initiating station. The unanswered or recall time period can be set at 30 second intervals from 30 seconds to 9.5 minutes. The system may also be programmed to eliminate (no) recall entirely.

BUILT-IN SPEAKERPHONE (OPTIONAL)

A "built-in" speakerphone is available as an optional printed circuit board and can be installed in 6, 18, and 30 button sets (Executive phones are factory equipped with speakerphone) to allow fully switched handsfree operation and two-way communication on CO Lines.

CALL BACKUP

The Call Backup feature allows an attendant to activate all CO incoming (ringing) calls at a specified backup station. Since there are five possible attendant positions available in the system, programming for five call backup stations is provided.

To activate the Call Backup feature, depress the CBU button located on the DSS/BLF. Any or all attendants may activate a backup station (assigned by system programming) to answer calls in their absence. An LED associated with the CBU button will light indicating that incoming calls assigned to ring at the DSS/BLF will also ring at the backup station. The DSS station will continue to receive ringing or call waiting signals.

CALL FORWARDING

This feature allows a station user to forward (divert) ICM calls to any of 60 stations by the following procedure:

To forward incoming ICM calls to another station, press the MON button, then press (#) and dial "1" on the dialpad. Dial the station number you wish to have your calls forwarded to. The Executive stations will display "CF" on the LCD. The message lamp will flash to indicate call forwarding has been initiated. Press MON button to

activate the call forward. To cancel the forwarding, press MON and dial (#) then "0" on the dialpad and press the MON button. The call forwarded station is also indicated by a flashing LED on the DSS/BLF at the forwarded station's location.

CALL SPLIT

A station user may choose to answer a station camp-on (call waiting tone in the speaker) while on a CO call. Putting the CO on hold automatically connects the user to the camped-on station. If the originating ICM station is transferring a call, the CO call will automatically be connected after the new caller has announced the call and returns the handset to the cradle (the previously held call will remain on hold). For example:

To split from a CO call to a camped-on call, press HOLD to place the CO call on hold and be automatically connected to the originating station. After the new caller has spoken with you, they may hang up, thus you are connected to the transferred outside caller while the original call remains on "HOLD". The previously held call will remain on hold. To reconnect the previously held call, press the CO button associated with the held call.

CO LINE KEYS

Any station user may originate or receive a call to or from the CO by pressing the line button associated with the CO line. The line button may be pressed before or after the handset is lifted. If the CO button is depressed before picking up the handset, the CO line will automatically be seized and the station will be in the monitor mode.

CONFERENCING--EXTERNAL

To establish a conference call with two COs and one station, first establish a CO call, then press HOLD to place the first CO on hold. Select an idle CO and place your second call. In order to connect the COs in a conference, you must press the FEAT button and then the HOLD button and a three-way conference call will be established.

To release either CO from the conference at any time, press the button associated with the CO to be released.

To establish a conference call with one CO and two stations, first establish an outside call, then press the ICM to automatically place the CO on hold and connect to ICM dialtone. Dial the EXT code (two digits). When the called station answers, instruct the user of your intention to conference. (The called station must lift the handset.) Press the FEAT button and then the HOLD button, and a three-way conference is now established. If you wish to release the conference, press the CO button and the CO will be released.

CONFERENCING--INTERNAL

To establish a conference call with three internal stations, first initiate an ICM call. Then press "FEAT" + "HOLD" to put the called station on hold temporarily. Press the ICM key and dial the second station ICM number. Finally, press FEAT and then HOLD and a three-way internal conference will be established. All stations must lift the handset in order for conference to operate.

DIAL CALL PICKUP

To use the dial call pickup function to access a call, press the (*) key, then dial the two-digit station number of the station where the call is on exclusive hold, unscreened transfer ringing or incoming CO ringing. In order to access the call, the CO line must appear on the station that is attempting to initiate the call pickup. (This is also the preferred method to answer an unscreened transfer.)

DIRECT STATION SELECT/BUSY LAMP FIELD

This feature allows one button direct selection of ICM and transferred calls to any of 60 stations. The use of a DSS/BLF for access to 30 stations is available. Two DSS/BLFs (pair) will facilitate access to all 60 stations. There are five pairs of DSS/BLFs allowed in the system. Port #2 and Port #3 on each station card (STU) will each support a 30 station DSS. Two DSS/BLFs are required in sequence for 60 stations.

DO-NOT-DISTURB

By engaging this procedure, any call (including paging, intercom calls, and DSS calls) directed from another station will receive a busy back from the DND station. All off-hook ringing signals (including camp-on) and request to split will be heard at the DSS station.

To engage DND, press MON button. The station will automatically be put in DND. To take the station out of the DND mode, press MON.

ENHANCED TOLL RESTRICTION

An enhanced toll restriction package is provided which incorporates 19 types of toll restrictions, 16 classes of service, two 4-digit/40 entry semi-restrict allow tables, and two 4-digit/40 entry semi-restrict disallow tables. Toll restrictions are configured on a trunk group class of service, per-station basis, 5-digit, 7-digit, 8-digit forced OCC, 1, 1411, 411, non-restrict, and outgoing restrictions are also provided.

EXECUTIVE SPEED DIALING

Executive telephones are provided with 16 auto soft keys which allow the user one touch dialing on outgoing CO calls and Direct Station Select for ICM calls. After a station user selects a CO, pressing the Auto button will automatically dial out a stored CO number. When a station user chooses to place an ICM call, the Auto keys automatically revert to Direct Station Selection (DSS). A total of 27 EXEC station speed banks are also provided for dial-up speed dialing. These banks are 20 digits and their two digit codes are 10-36. There are also 16 available system speed call banks (00-15) and 16 station speed call banks (16-31). There is a total of 75 station banks and 16 DSS buttons.

EXTERNAL PAGE ACCESS

Spare CO line appearances may be used for direct connection to external paging equipment with an input impedance of 600 ohms. Paging equipment is directly accessed by the same procedure as is used to directly access CO Lines.

EXTERNAL PAGE ACCESS (cont'd)

To access external paging equipment, press a CO key corresponding to the spare CO line to which the external paging equipment is connected. The paging equipment is directly connected to the CO port, and thereby connected to the station user through the CO switching matrix.

FLEXIBLE STATION RINGING ASSIGNMENT

This feature allows any station, including the primary station, to receive incoming ringing assignments. CO ringing is assignable on a per line, per station basis, with a maximum of six stations per CO line. (See System Programming, Program 27.)

FORBIDDEN INTERNAL ALL OR ZONE PAGE

By system option, a station may be programmed to accept or not accept an internal page through the station speaker. (See System Program #25.)

FORBIDDEN OFF-HOOK SIGNALLING

Off-hook signalling for incoming CO calls may be allowed or disallowed on a per station basis.

To disallow off-hook signalling at a station, lift handset, press the "*" key, then dial "04" on the dialpad.

To allow off-hook signalling at a station, lift handset, press the "*" key, then dial "05" on the dialpad.

FORBIDDEN SPEAKER PAGE (Disallow ICM Voice Call)

An incoming ICM call may be controlled to ring at all times as an alternative to the voice (HF answerback) announced call (which is programmed on a system wide basis for either voice or tone at all stations).

To disallow voice call at a station, lift handset, press the (*) button, then dial 03 on the dialpad.

To allow voice call at a station, lift handset, press the (*) button, then dial 02 on the dialpad.

NOTE: This procedure does not affect internal paging which is allowed or disallowed on a per station basis by system programming (see Program #25).

INTERCOM CALL

To call another station, lift the handset and press the ICM button. Listen for ICM dial tone, then dial the two-digit station number. When a splash tone is heard, the calling station may make an announcement and the called station may respond hands free. (The calling station must lift the handset to place an ICM call.) The called station may lift the handset to initiate handset conversation, or use the on-hook handsfree answerback feature. If the calling station dials any additional digit after the station number, the hands free operation is disabled and tone signals are sent to the called answerback station. To respond to this type of intercom call, the called station must lift the handset to speak.

A station user on an outside line can receive an intercom call but cannot respond hands free. Instead, the user will receive an intercom call-waiting tone through the station speaker. The user

INTERCOM CALL (cont'd)

may split to the intercom call by depressing the Hold button. The called station is then automatically connected to the calling party.

A station user not wishing to respond hands free on an intercom call may turn off the microphone (the microphone off is indicated by the microphone LED "ON" or lighted). To disallow a voice call, see Forbidden Speaker Page.

INTERCOM CALL FORWARDING

This feature allows a station user to re-route an incoming ICM call to any desired station. A distinctive LED flash rate (approximately 100 flashes per minute) on the DSS indicates that the station is in the "call forwarding" mode.

A station can be put into the Call Forward mode by going off-hook and depressing (#), "1" then the ICM code associated with the forwarded-to station. C.O. calls transferred to a station in call forward mode will be forwarded providing the C.O. Line is assigned to the forwarded-to station.

INTERCOM HOLD

To place an intercom on hold, press the HOLD button. The called station must lift handset in order for Hold to operate. To go back to party on hold, press ICM.

INTERNAL PAGING

Any station user may make a paging announcement to all idle stations simultaneously (via a dedicated paging path to the speakers built into the telephone) by lifting the handset and dialing the proper code number.

INTERNAL PAGING (cont'd)

All Page--To page all stations simultaneously, lift handset and dial "80". This initiates one-way internal paging to all idle stations allowed to receive an internal speaker page.

Zone Page--To page one of five fixed zones, lift handset and dial "81-85". The second number dialed (1-5) indicates which zone is being paged. Zones are set up by station port assignment:

DIAL	ZONE	STATION NUMBERS
80	All	STA - 10 to STA - 69
81	1	STA - 10 to STA - 21
82	2	STA - 22 to STA - 33
83	3	STA - 34 to STA - 45
84	4	STA - 46 to STA - 57
85	5	STA - 58 to STA - 69

Meet-me Answer--To answer a page, pick up the handset, press the (*) button, then dial "8". You will then be automatically connected to the paging path.

LED INDICATORS

All lamp indicators on the face of the telephones are long lasting, light-emitting diodes, and provide system feature distinctive indications. (See System Distinctive Signalling.)

LINE KEYS

Any station user may originate or receive a call to or from the CO or ICM path by pressing the line key associated with the CO or ICM line. The line key may be pressed before or after the handset is lifted. If the CO button is depressed before picking up the handset, the CO line will automatically be seized and the station will be in the monitor mode.

MANUAL EXCLUSIVE OR NON-EXCLUSIVE HOLD OF CO/PBX AND ICM CALL

Any station can place either an incoming or an outgoing CO call on hold by pressing the HOLD key. Depending on system programming, either one or two pushes of the HOLD button will allow for system or exclusive hold. (Factory program is one push for system hold.)

MESSAGE WAITING

All telephones are equipped with a message lamp, except the P-EXEC telephone, which may be activated by the attendant at any time to indicate that there is a message waiting at the attendant console. The message LED will flash at a rate of approxiamtely 60 indications per minute.

To activate the message waiting feature, depress the MSG key on the DSS/BLF and the DSS key associated with the Message Waiting Station. The Executive telephones will display "CALL OP" on the LCD. The station receiving the message waiting indication (indicated by a flashing message light at the top of the station) calls the operator (attendant) by going off-hook and dialing "0" (or ext. 10, 22, 34, 46, 58). At this point, the LCD on the DSS/BLF will display the number of the station calling. To cancel the message waiting, the attendant presses the message key and the DSS button associated with the message waiting. MSG can be activated from all (5) DSS/ Attendant locations.

MICROPHONE MUTE

The station user may disable the built in answer back microphone by pressing the MIC key. The station will then receive an ICM voice announcement, but the user must lift the handset or turn on the microphone to reply. The microphone LED will light to indicate that the microphone has been muted (off).

MULTI-LINK/SINGLE-BUTTON INTERCOM

A single ICM key is provided on all station instruments to allow access to all stations via multiple intercom links. Any station may call another station by pressing the ICM key and dialing a two-digit code (i.e. 10-69). (On all telephones, the handset must be lifted by the calling party to speak.)

MUSIC-ON-HOLD INTERFACE

The system provides terminals (RCA type jack) for connection to an 8 ohm (amplified) external music source, allowing an outside party placed on hold by any station user to hear music.

NIGHT ANSWER

This feature allows a flexible night ringing mode which can be programmed to distribute incoming ring signals to any station. Each CO/PBX line can be assigned a maximum of two night answer stations.

To activate the Night Answer Feature, press the NA button on the DSS/BLF. The associated LED will light, and incoming calls will be diverted to ring at the stations programmed for night ringing (by system program option). The night answer mode may be initiated by the DSS NA control or by the #10 extension. In the case where a DSS/BLF is not configured in the system, night ringing may be

NIGHT ANSWER (cont'd)

activated from the Port #1 (ICM #10) station by going off-hook and pressing "0" on the dialpad. The message lamp will be lit to indicate "NA" mode. To deactivate the night answer, go off-hook and press "0". The message lamp will be extinguished. In the case where more than one primary DSS is used in the system, consult Walker Technical Field Support for configuration.

NON-LOCKING BUTTONS

All buttons on the face are non-locking with long life LED lamps.

NON-SQUARED OPERATION

This feature allows flexible CO/PBX line key assignment. Any CO/PBX line may be assigned to appear and operate at any station on any CO button and in any order.

OFF-HOOK CO RINGING

Each ring assigned station has off-hook ringing. This is accomplished by a call waiting tone received through the station speaker.

If the station is assigned for incoming CO calls and is off-hook, then the station will receive a call waiting tone to indicate an incoming CO call, if the station is not in forbidden off-hook ringing mode. The LED associated with the incoming call will flash at the normal rate.

OFF-HOOK SIGNALLING

This feature allows a called station, when off-hook, to receive an audible signal through the station speaker indicating a waiting CO or ICM call.

OFF PREMISE EXTENSION (OPX) (Available with OPX hardware option)

Standard 2500 type telephones may be connected to the system as an OPX by the use of optional hardware. These single-line instruments may initiate and receive CO calls and ICM calls.

ON-HOOK DIALING

By pressing any CO line button, a station user automatically enters the monitor condition and accesses a CO dial tone. A CO number can then be dialed with the handset on-hook.

To preselect a line for a CO or ICM call, press either a CO key or the ICM key, depending on whether a CO or an ICM call is being made. When the key is pressed, the station is automatically connected to the CO or ICM line.

If the optional speakerphone board is installed in the station, performing the hands free dialing function allows two-way conversation without lifting the handset. The MIC/ON button can be used for transmit muting. When the "MIC" LED is on, the microphone is muted. (Walker Telecommunications Corp. recommends lifting the handset to speak on ICM calls.)

ON-HOOK MONITOR

A station user can monitor a call in progress by pressing the monitor button and placing the handset on-hook. To engage the monitor function, press the MON button and place the handset in the cradle. The monitor function enables listening to the called station through the built-in speaker. To speak to the called station, the handset must be lifted. If the station user lifts the handset while the MON button is engaged, the monitor speaker is turned off automatically.

ON-HOOK MONITOR (cont'd)

Note that if the station is equipped with a speakerphone, the microphone is active unless the MIC LED is lit.

OUTSIDE CALL

To place an outside call, lift the handset and press an idle CO line button. When the dial tone is heard, dial the desired outside number.

To answer an incoming call, lift the handset and press the flashing outside CO line button. The LED associated with the incoming call will flash at a rate of 60 indications per minute.

To transfer a call while on an outside line, press the ICM button to automatically place the call on hold. Listen for ICM dial tone, then dial the desired station number. When the called station answers, announce the call. You may wait for the called party to answer by picking up the handset, or you may hang up. The called station will automatically be connected to the outside line if the called station answers the calling station by going off-hook (screened transfer) before the calling station hangs up. If the calling station goes on-hook before the called station lifts the handset (unscreened transfer) the called station may access the transferred call by dialing (*) and its own ICM (EXT) Code (i.e. 10-69) or, the called station may directly select the call by depressing the associated CO line key. The LED associated with a transferred call flashes at a rate of 100 indications per minute. The called station will automatically be connected to the outside line if the called station goes off-hook with the handset before the

OUTSIDE CALL (cont'd)

calling party goes off-hook.

PAUSE AND WAIT

A one second pause may be programmed into a station or system speed dial bank by pressing the FLA key while programming a speed bank. To increase the duration of the pause, program multiple pauses (each pause = one digit in length). A wait may also be programmed into speed banks by depressing HOLD while programming the speed bank. The wait may be released during speed dialing by depressing (#). (More than one pause can be programmed into the speed call location. However, each pause reduces speedcall digits by one.)

POOLED LINE ACCESS (P-KEY) OPERATION

This feature allows a station user to have access to any trunk within a particular trunk group which is assigned to a P-Key (CO buttons #6, 18) by depressing the P-Key. The station user may perform any function associated with CO/PBX type calls including transferring, queuing, conferencing, call split, hold, etc.) providing the trunk is assigned to the station. Trunks are accessed in the order of the highest numbered to the lowest numbered, next available outgoing trunk assigned to the P-Key trunk group. Consequently, the lowest numbered trunks remain available for incoming calls.

To place an outside call, lift the handset and press the P-Key (CO buttons #6 or #18). (Only one P-Key per telephone may be assigned.) Alternatively, you may perform this function on-hook by

POOLED LINE ACCESS (P-KEY) OPERATION (cont'd)

preselecting the CO (P-Key). If all trunks are busy within the P-Key trunk group, a busy tone will be heard. (There is no visual indication of a busy P-Key trunk group.) You may then choose to queue onto the trunk group by following the "Trunk Group Queuing" procedure. Outgoing trunks are automatically accessed in order of the highest numbered trunk to the lowest numbered trunk, leaving lowest order trunks available for incoming calls.

To answer an incoming call ring assigned to the P-Key, lift the handset and press the P-Key. You will automatically be connected with the incoming CO. (The P-Key LED will flash at the incoming CO rate--approximately 60 flashes per minute--and the station will ring.) If your station is equipped with a speakerphone, you may perform this function while on-hook by pressing the P-Key.

To transfer a CO call assigned to a P-Key, refer to Outside Call transfer procedure. If a call has been transferred under a P-Key, the called station may put the call on hold and regain access to the held call by direct selection of the P-Key. Call may not be "stacked" for future or sequential access under the P-Key.

POWER FAILURE TRANSFER

The first trunk on each COU card has been designed as a power failure line. This line provides for direct connection to 500/2500 type telephone if a power failure condition exists (see Section 2 "Installation").

PROGRAMMABLE PBX RECALL/HOOK FLASH

This feature allows you the option of programming the "Flash" key on a system basis for any timing required. This becomes necessary when working in conjunction with CO/PBX and Centrex lines which may require a specific hook-flash timing.

PBX Recall/Hook Flash is activated by the station user by depressing the FLA key. In a stand-alone key system, this button is used to re-access the dial tone on the CO line button controlled by the user station. Behind a PBX, this button will automatically provide hook switch flash timing, regardless of the amount of time the FLASH button is depressed.

Hook Flash timing is factory programmed for three seconds and may be programmed (Program #16) by system option for several different timing options at the time of installation. 700 ms to 1 second is typically used where modern central office equipment and/or PBX equipment is used.

REMOTE CALL PICKUP

The station user may pick up a call on exclusive hold, a transferred call or an incoming call to the user's phone from another phone by pressing the (*) button and dialing the proper ICM number.

SAVE LAST NUMBER REDIAL

Any station user may save the last CO number dialed by depressing the FEAT button and the (*) button on the pushbutton dialpad before going on hook. The number can be redialed when the station user re-accesses the CO line and presses the SPD button and the (*) button on the push button dialpad. The "Save Last Number Dialed"

SAVE LAST NUMBER REDIAL (cont'd)

may be moved to a station speed dial location for permanent storage by the "Station Speed Dial" programming procedure. This must be done before saving any future dialed numbers or before any future speed call numbers are stored.

To permanently store a saved number, press the FEAT button, followed by the SPD button, the two-digit location code, the SPD button, and the MON button.

SCREEN TRANSFER CO CALLS

If there is voice contact between a station transferring a CO call and the station receiving the call (must be handset to handset), the call is automatically transferred without having to press the CO line key (the CO line key must appear at the receiving station). A call may be transferred by depressing the "ICM" key and dialing the two digit station code or by depressing the DSS key associated with the called station. The call will then be put on exclusive hold until the called station accepts the call. If the called station does not wish to accept the call, the calling station may retrieve the call by depressing the associated CO key. If the CO has been released to the called station, dialing "*" and the called station's two digit ICM code will retrieve the call.

SECOND RECALL OF HELD CALL

If the initiating station does not answer a recall of a held call, after a period of twice the hold recall timeout, a second recall tone will go to all primary stations (as well as to the initiating station). If there is a DSS/BLF available in the system,

SECOND RECALL OF HELD CALL (cont'd)

the LCD will display (flash) the CO and originating Station number. If there is more than one CO on second Hold Recall, the CO and Station number will appear in sequential order on the DSS/LCD. In the transition from the first Hold Recall period to the second Hold Recall period, a CO originally on exclusive hold or transfer hold at a station will automatically be put on system hold.

SPEAKERPHONE

All telephones in the system have hands free answerback capability. An optional speakerphone module is available for speakerphone capability on outside calls. The Executive telephone comes factory equipped with full speakerphone capability.

SPECIAL SPEED BANKS

System and Station "Special Speed Banks" are provided for OCC access. In the case where a station is assigned one of the following types of dial restrictions, access to "Special Speed Banks" is allowed in order to force usage of OCC's and to override dial restrictions.

1 - SR7	4 - SR10	7 - NR
2 - SR8	5 - SR11	8 - OCC8
3 - SR9	6 - SR12	9 - OCC7

Once a station user has accessed a "System Special Speed Bank" (14 or 15/system), depending on the restriction type, he or she may be allowed to continue dialing any number of digits, or chain dial "Station Special Speed Banks" or any other speed banks according to the following specifications:

1 - User must use "System Special Speed Banks" first (before dialing any other digits).

SPECIAL SPEED BANKS (cont'd)

2 - Restriction types SR7 - SR12 restrict outward dialing and allow access to "System Special Speed Banks", providing the programmed digits in the "System Special Speed Banks" appear in the allow (or disallow) tables. Once access to "System Special Speed Banks" has been completed, dialing thereafter will be allowed (or disallowed) by table.

3 - Any "Special" bank may be repeated at least once during one call.

4 - Restriction types OCC7 and OCC8 allow non-restricted dialing once a "System Special Speed Bank" has been accessed.

SPEED DIALING - STATION

All individual station users may store up to 14 frequently called numbers of up to 20 digits each, and 2 special banks of 20 digits each. Each stored CO telephone number is identified by a two-digit code. If the system is used behind a PBX, a wait or a one second pause may be stored between the PBX access code number and the CO telephone number. The wait state must be manually released from the dial pad. The station user may piggyback two speed-dial telephone numbers over the same CO line for convenient use of authorized common carrier codes. Two additional speed dial banks are reserved for seven digit OCC access.

SPEED DIALING - STATION (cont'd)

To program a station speed call number, press the FEAT key followed by the SPD key. (The MON light will come on.) Then dial the two-digit storage location code (16-31) and dial the phone number (up to 20 digits, including pauses and waits). (Pause = one digit, Wait = one digit). Finally, press the SPD and MON keys. Location 30 and 31 are provided for Station OCC access codes and are twenty digits in length. (See Special Speed Banks.)

To program a pause, press the FLASH button. The duration of the pause is one second. To extend the overall pause time, program multiple pauses.

To program a wait, press the HOLD button. For dialpulse systems, an automatic switch to DTMF occurs upon release of the wait. To release wait, push the (#) on the dialpad. An automatic switch back to dialpulse will occur by going back on-hook.

To dial out (the stored number), press an idle CO line button followed by the SPD button and the two-digit storage location code.

SPEED DIALING - SYSTEM

This feature also allows any station user to access up to a total of 16 system speed dial numbers of up to 20 digits in each number, which include two special banks of twenty digits in length. The station user may piggyback system and individual station speed dial numbers.

To program system speed dial location 00-13, follow the procedure for station speed call programming by using the port 1 station (ICM 10). Any station allowed by class of service may access

SPEED DIALING - SYSTEM (cont'd)

system speed dial by the same procedure as station speed dialing. Location 14 and 15 are provided for System OCC access codes and are 20 digits in length. (See Special Speed Banks.)

SQUARE OPERATION

The system is factory programmed for square operation. Upon power-up, and original initialization of the system, every CO line appears in the same location on every station. For example, CO line 1 appears on the first line key of every station.

STATION CAMP-ON

A calling station, upon placing an intercom call to a station that is off-hook, will receive a busy tone and may camp onto the busy station. To camp onto a station which is busy on a CO call, press ICM and dial the station number by the normal procedure. A busytone will be returned. Press (#) on the dialpad to activate the camp-on function. The busytone will then be removed if the camp-on is accepted. The called station will then hear the camp-on tone through the station speaker, and may answer the camp-on by the "Call Split" procedure. Going to the on-hook condition by the calling station cancels the camp-on function.

STATION DISTINCTIVE SIGNALLING

Differences in LED appearance, flash rates, and audible signals allow the station user to distinguish between incoming CO, intercom, call-waiting or call-announce calls. See Table 3-1 which describes the Station Signalling characteristics.

STATION QUEUING

This feature allows a station to queue onto another station which is busy on a CO line or ICM call. Once the dialed station resumes an idle condition, the calling station receives a ring tone. The calling station then lifts the handset and is automatically connected to the called station.

To queue onto a station, dial a station on ICM by the normal procedure. If the called station is busy, a busytone will be returned. Press "*" and go on-hook (the busytone will be removed if the queue is accepted). When the busy station becomes idle, the queuing station will receive a ringback tone. Lift the handset and without taking any other action, a warning tone will be heard after which you may begin speaking.

TONE-PULSE SWITCHABLE DIALING

The system is programmable on a system basis per CO line to outpulse DTMF or dialpulse. The default mode is DTMF. When the system is in the "dialpulse" mode, it reverts to DTMF on a per line basis by dialing the (#) button on the dialpad. The line remains in the DTMF mode until the station connected to the CO line either goes into an idle state or reseizes another CO line.

To switch a CO line which is programmed for dialpulse to DTMF, press the (#) button. The (#) may be used to switch to DTMF for computer access, OCC access or any service requiring DTMF signalling. The CO line reverts back to dialpulse when the station goes on-hook.

TRUNK GROUP QUEUING

This feature allows a station user to queue onto a trunk group if all trunks in that group are busy. As soon as a trunk becomes available, the queued on station will receive a ringing tone at which time the user may lift the handset or press the MON key to be connected to the available trunk.

To queue onto a trunk group, press any busy CO button associated with the trunk group to be queued onto (indicated by a solid CO LED). Then listen for the busytone and press (*) on the dialpad. If the queue is allowed, the busytone will be removed. You may then go on-hook. The first idle trunk will be indicated by a flashing LED (60 flashes per minute) and the station will receive a special ringing signal. If your station becomes busy, you will not receive a queue signal when the trunks becomes available. To answer the queue, lift the handset or press the MON. You will then receive a dialtone. The queue will timeout and be removed within ten seconds.

UNSCREEN TRANSFER CO CALLS

If there is no voice contact between a station transferring a CO call and the station receiving the call, the receiving station is alerted to the call by a ring and a distinctive lamp indication on a key telephone, after the calling station goes on-hook. To answer the transferred call you can dial "*" and your two-digit ICM number or directly select the CO that has been transferred. On a single-line telephone, the call is automatically transferred to the receiving station. A handsfree answerback is not considered voice contact and is therefore an unscreened transfer. (Note that the transferred CO line must appear at the receiving station.)

TELEPHONE OPERATING CONTROLS

All telephone operating controls, with the exception of the Hook-Switch and volume control, are constructed of a very durable and flexible conductive material. Unlike mechanical type controls, the POETS telephone operating controls have no moving parts; therefore defects due to mechanical failures are non-existent. In addition, the controls have been proven to have a useable operating life of more than ten million cycles (ten million depressions). The controls also feature noiseless switching (unlike mechanical switches).

The below listed figures are provided as an accurate illustration and description of the POETS telephone operating controls:

Figure 3-3 -- 6-Button Electronic Key Telephone
Figure 3-4 -- 18-Button Electronic Key Telephone
Figure 3-5 -- 30-Button Electronic Key Telephone
Figure 3-6 -- Executive Station Electronic Key Telephone
Figure 3-7 -- Direct Station Select/Busy Lamp Field

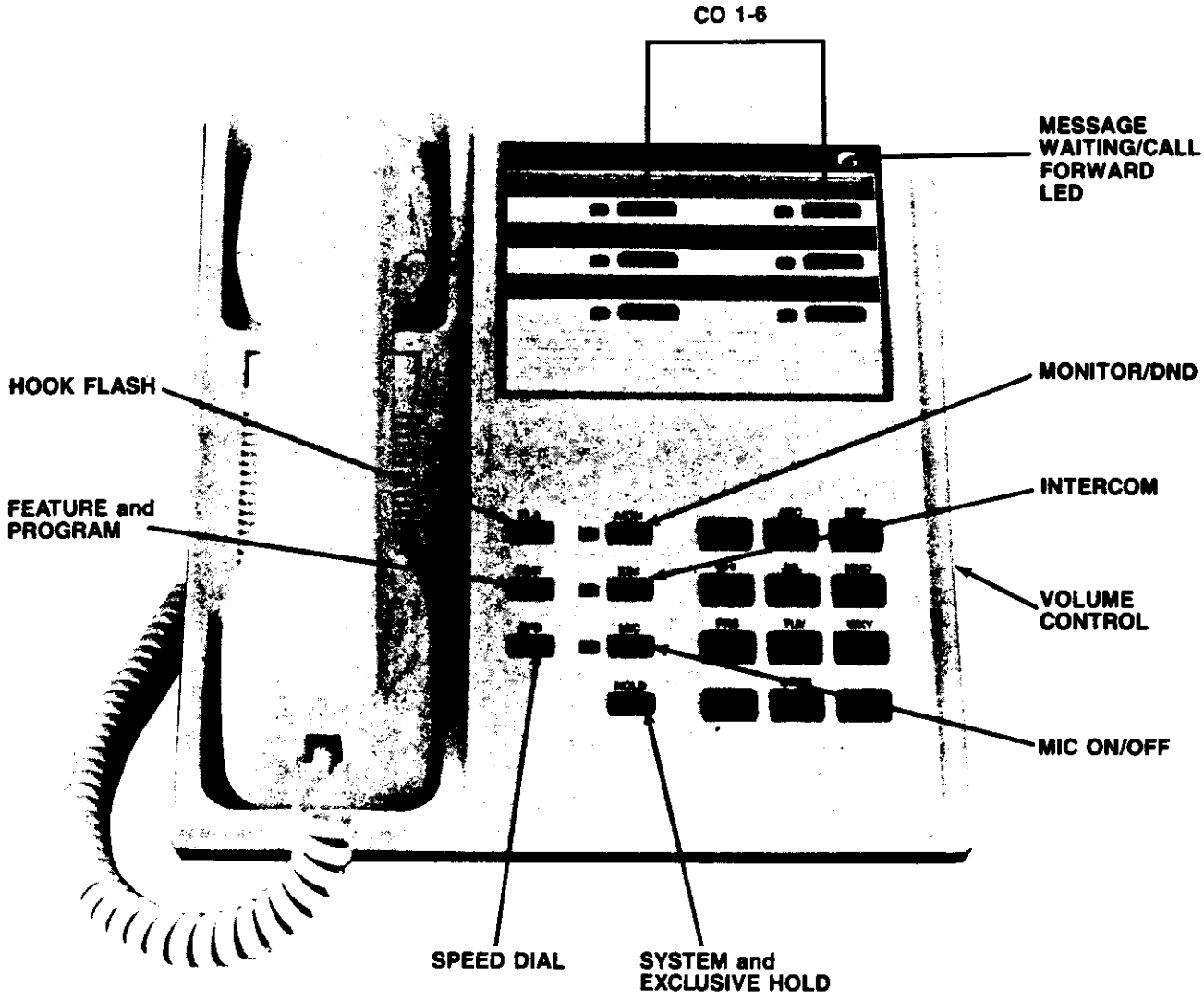


Figure 3-3. 6 Button Electronic Key Telephone.

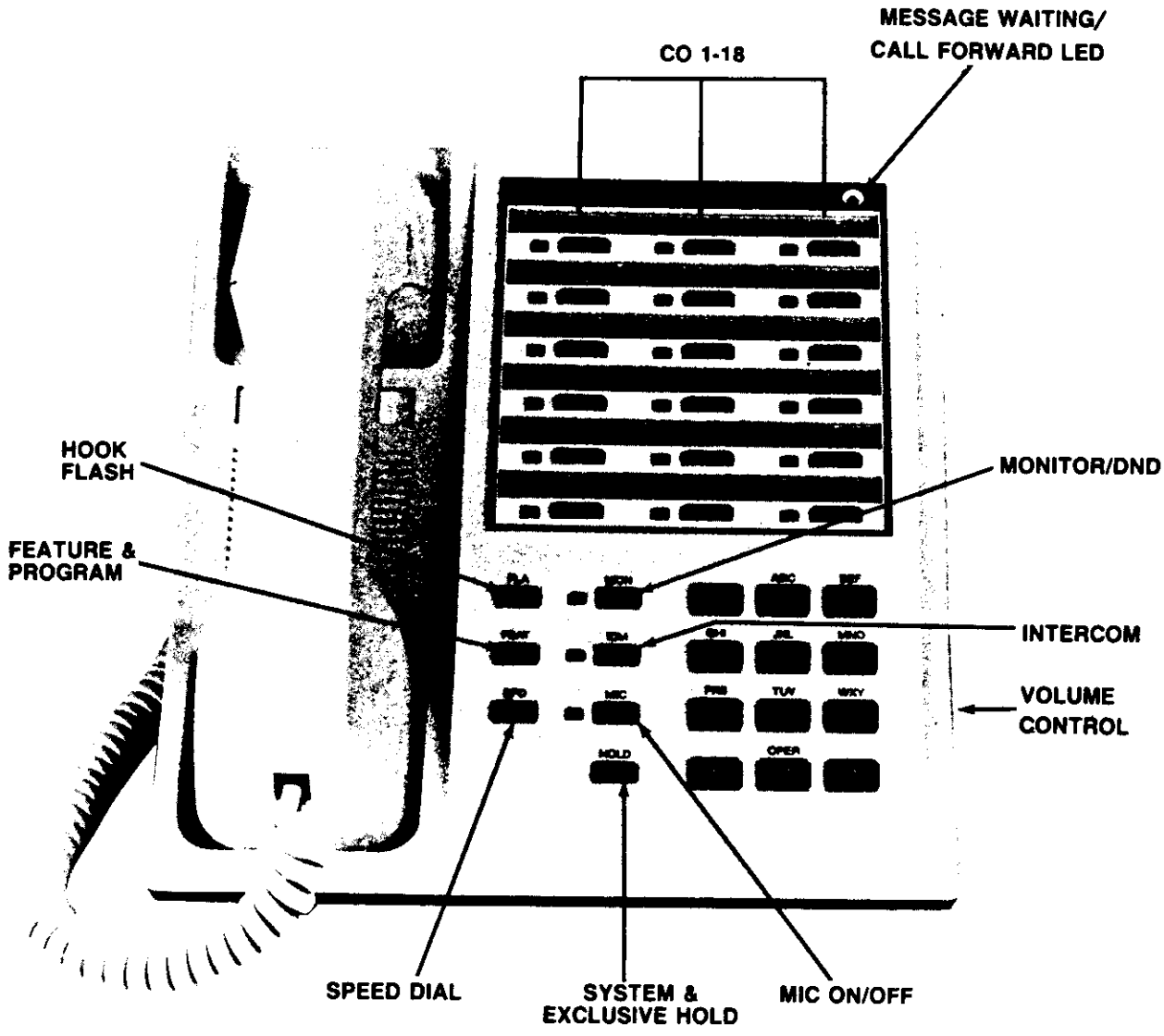


Figure 3-4. 18-Button Electronic Key Telephone.

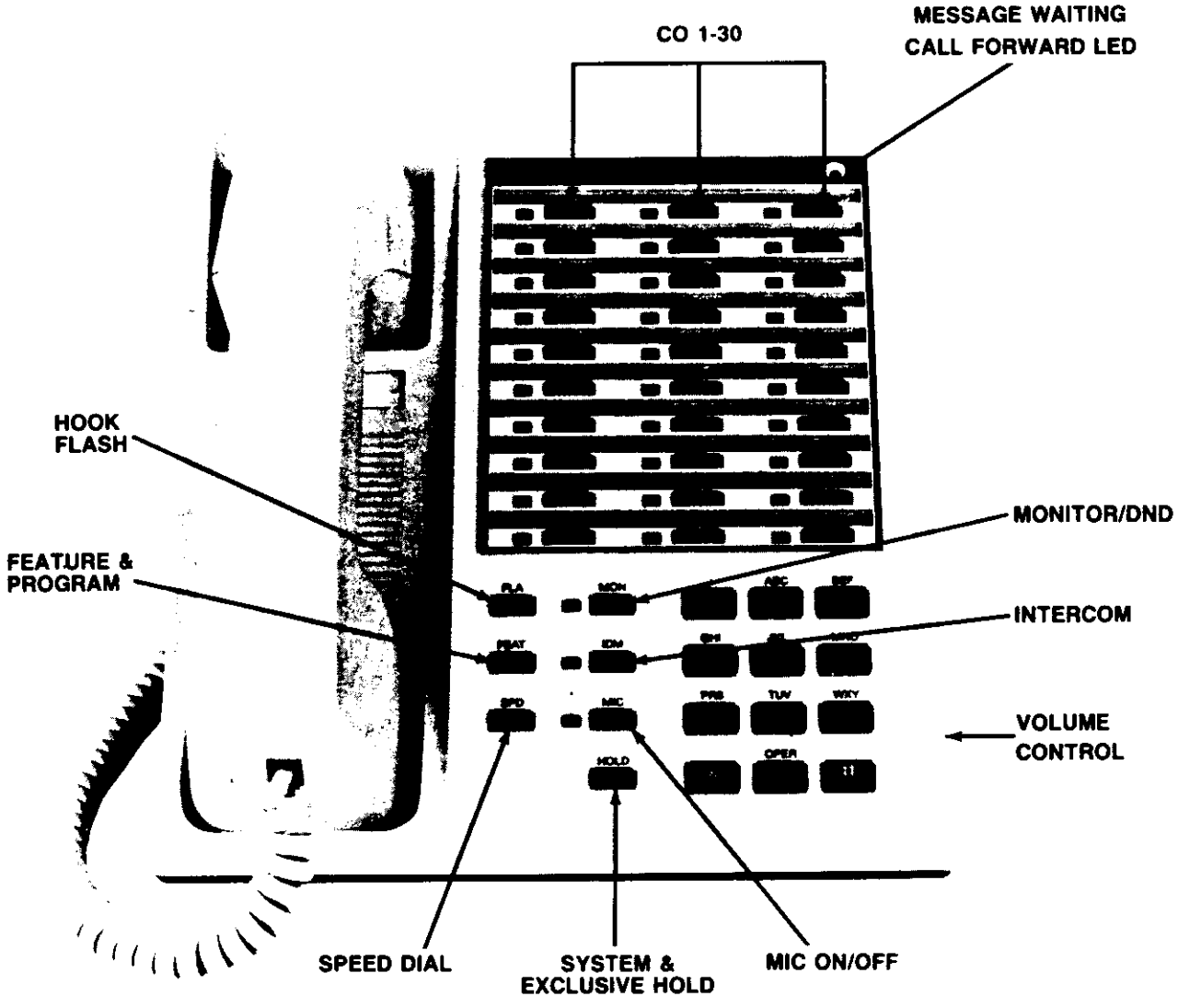


Figure 3-5. 30-Button Electronic Key Telephone.

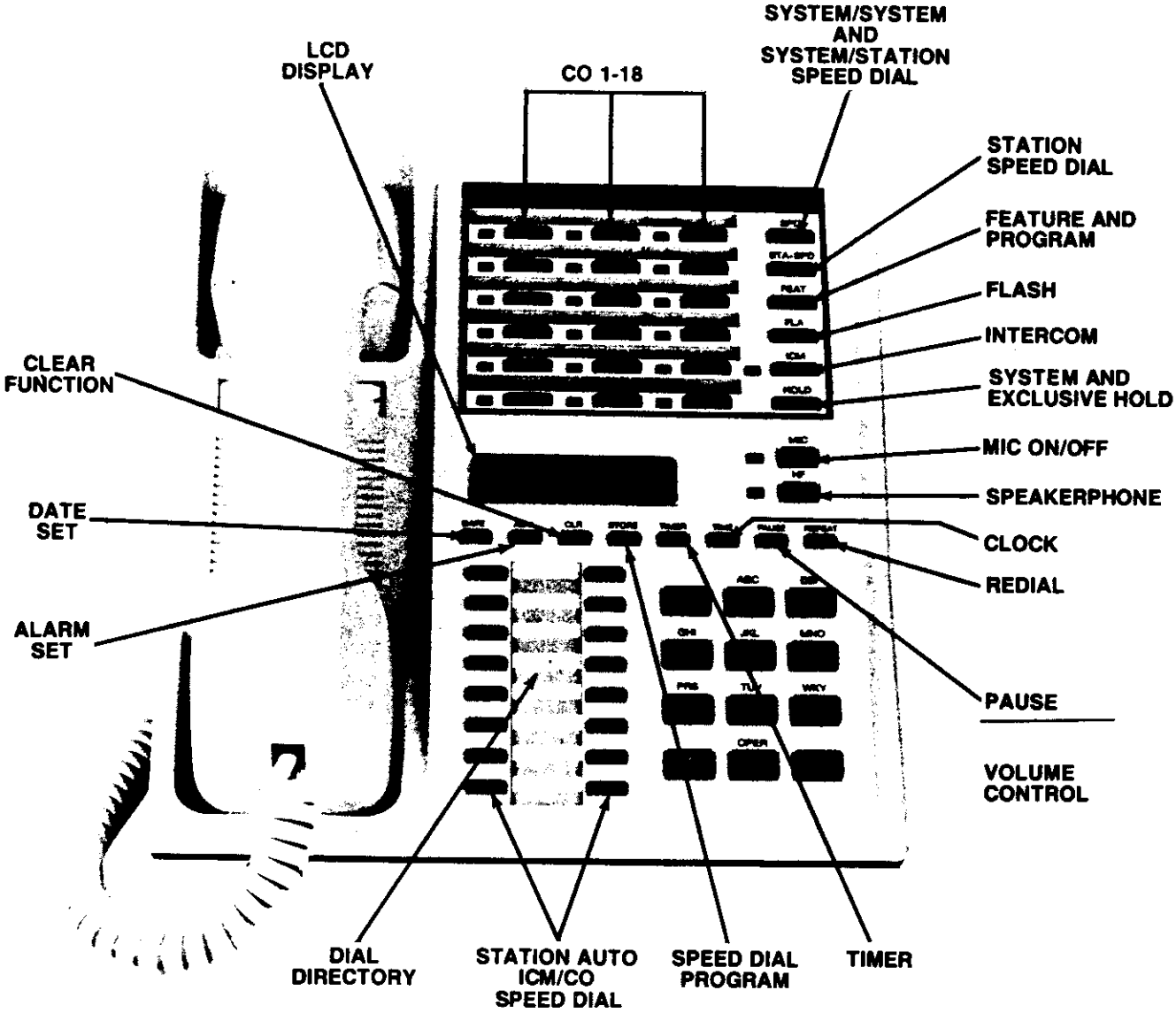


Figure 3-6. Executive Station Electronic Key Telephone.

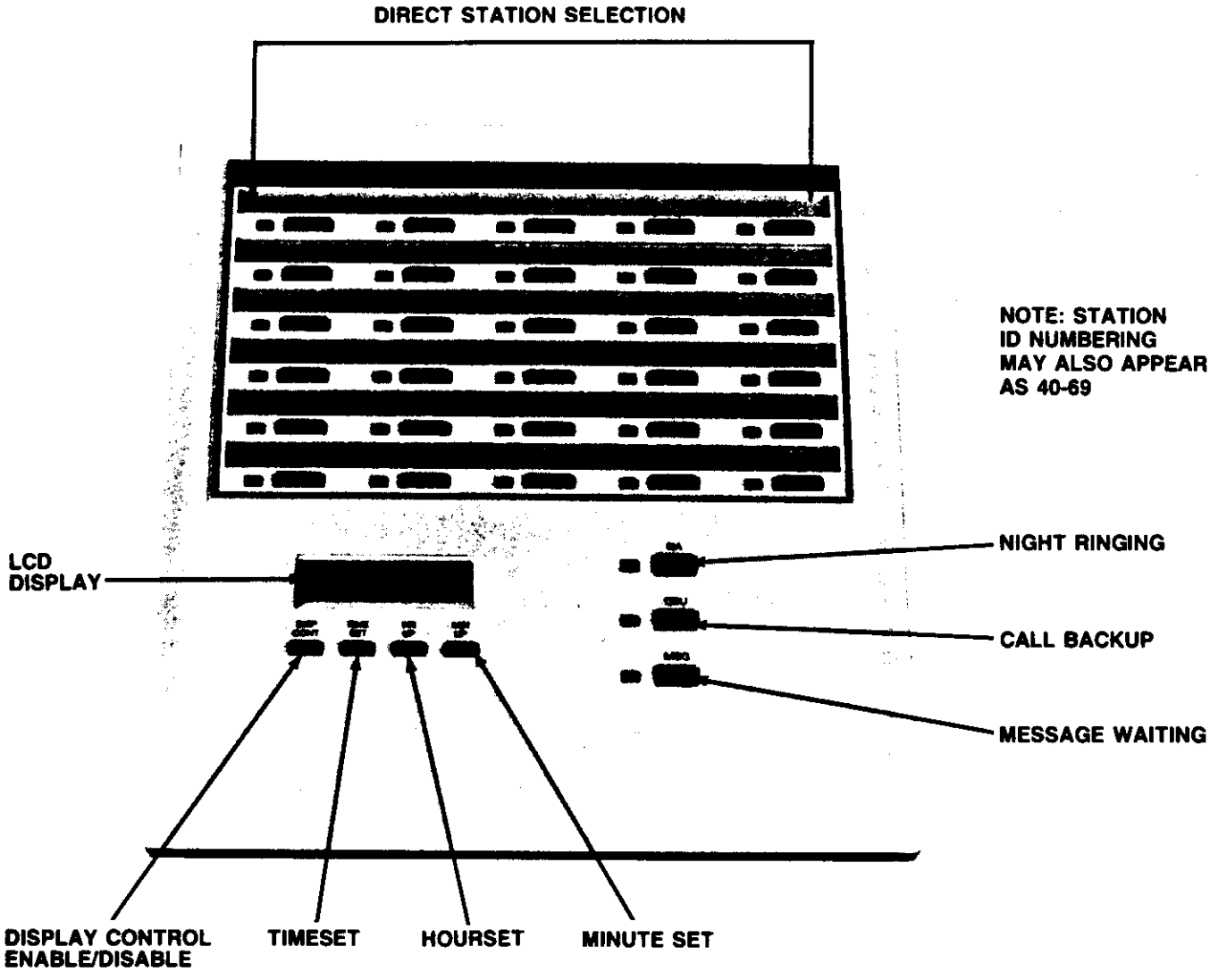


Figure 3-7. Direct Station Select/Busy Lamp Field.

SECTION 4

SYSTEM PROGRAMMING

GENERAL

This section describes the permanent factory program and contains programming information using the primary station (Ext. #10).

PERMANENT FACTORY PROGRAMMING

POETS is delivered with a permanent factory program (See Table 4-1 Factory Program Data), stored in a read only memory (ROM). This program must be loaded when first powering the system up or when adding an LEU to insure proper system operation. When the system is initialized, the contents of the ROM are transferred to a random access memory (RAM), which controls the operation of POETS. This RAM can be modified according to customer requirements by using the port 1 station. Modifying the program data will not erase already existing factory data. However, even after the contents of the RAM are modified, the original permanent factory program can be reinserted in place of the modified program by performing the initialization procedure as indicated in Figure 4-1, "System Initialization Flow Chart". The permanent factory program that resides in the ROM is described in programming operations and lists the program numbers, title, and factory program description.

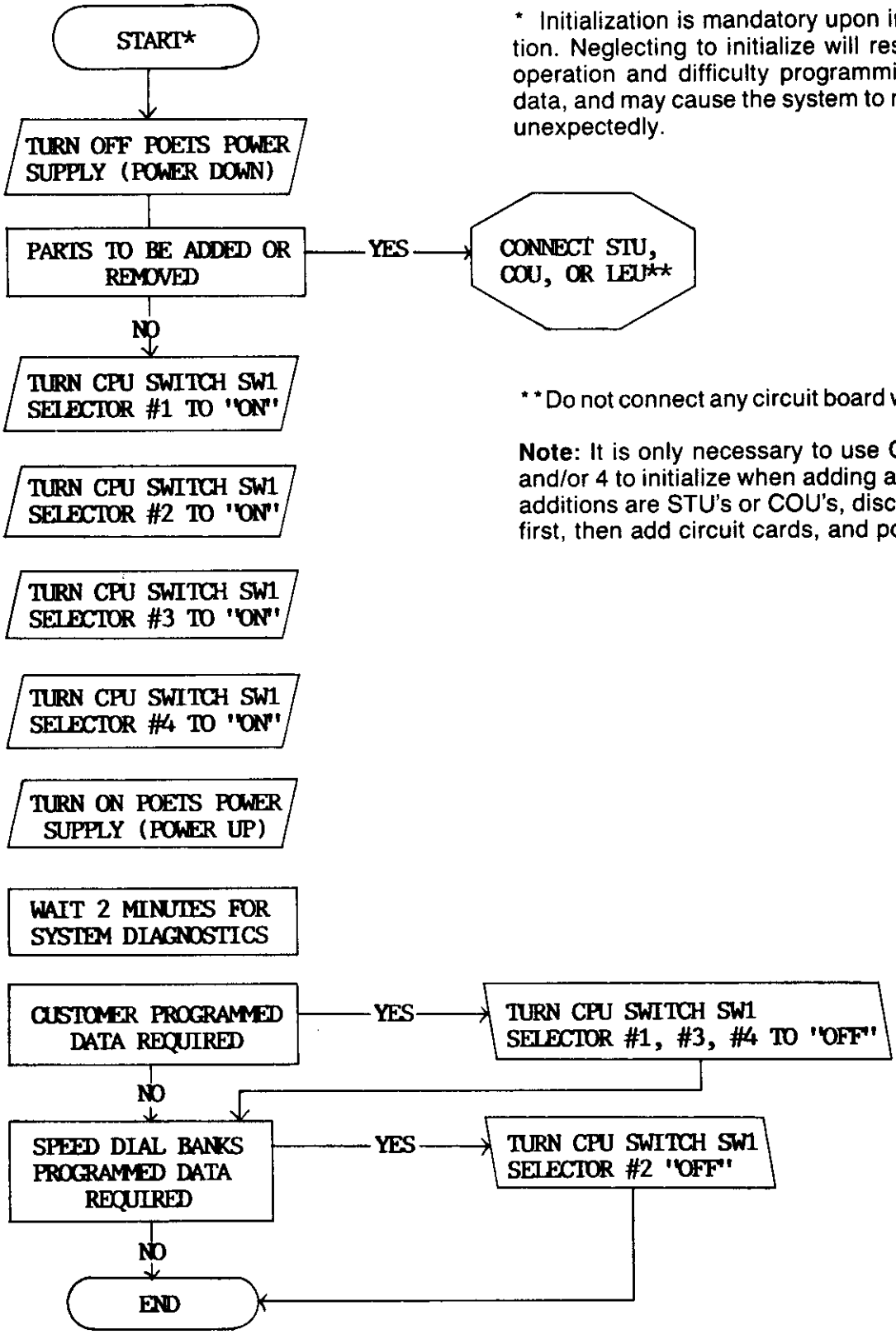
NOTE: IT IS IMPORTANT TO FOLLOW THE PROPER INITIALIZATION PROCEDURE WHEN INSTALLING POETS OR WHEN ADDING AN LEU.

TABLE 4-1

FACTORY (DEFAULT) PROGRAM DATA

				Program No.
1.	Allow/Disallow Tables	=	Tables are empty	10-13
2.	Intercom Priority	=	Voice	14
3.	1st Depression of Hold	=	System Hold	15
4.	Auto H-Flash Timing	=	3 Seconds	16
5.	Ring Timeout	=	8 Seconds	17
6.	Dial Pulse Break Ratio	=	60%	18
7.	Dial Pulse Speed	=	10 pps	19
8.	Hold Recall	=	No Timeout (No Hold Recall)	20
9.	CO Type Dial	=	DTMF	21
10.	Trunk Group Assignment	=	All COs to #1 Group	22
11.	Station Class of Service	=	COS #01 (All Station)	23
12.	Call Backup Unit	=	No Call Backups Assigned	24
13.	Forbidden Speaker Page	=	"0" Allowed to be Paged	25

14.	Ring Assignment	=	Station #10, 21, 22, 34, 46, 58	27
15.	Night Answer	=	Station #10, 21	28
16.	Trunk Group Class of Service	=	Non-Restricted "13" on All Groups and All COs	29
17.	CO Line Assignment to Station CO Line Keys (non-squared) Operation	=	Squared Operation	30



* Initialization is mandatory upon initial installation. Neglecting to initialize will result in erratic operation and difficulty programming customer data, and may cause the system to reset or crash unexpectedly.

** Do not connect any circuit board with power on.

Note: It is only necessary to use CR Selector 3 and/or 4 to initialize when adding an LEU. If only additions are STU's or COU's, disconnect power first, then add circuit cards, and power-on.

Figure 4-1
SYSTEM INITIALIZATION FLOW CHART

SYSTEM PROGRAM ENTRY

All system programming is performed from the port 1 station. If a DSS/BLF is available in the system, programmed data will be displayed on the DSS/BLF's liquid crystal. WTC strongly recommends using a DSS console for programming. Programming is performed by using the "FEAT" and the dialpad only, while in the "Monitor" mode. All other buttons are inactive during the programming function. Error entry is indicated by a split-warning tone of four beeps. Valid entry is indicated by a confirmation tone of a single beep. All program modifications can be performed while the system is fully operational. Refer to Appendix A for some useful "Programming Tips."

PROGRAMMING USING THE PORT 1 STATION

The primary station communicates with POETS to enable access to each piece of stored information in the system memory and to modify the memory contents.

To start (enter) the system programming mode, perform the following from the port 1 station (ICM-10):

1. Press MON button;
2. Press the (*) button and dial "0" and "1" on the keypad
3. Press the (#) button and the "FEAT" button twice. (At this point, confirmation tone should be heard.)
4. If busy tone is heard, check factory program SW1 positions 1, 3, and 4. They must be off (away from the wall) to enter programming mode.

At this point in the programming sequence, all other stations remain active. (MON, *, 01, #, FEAT, FEAT)

To terminate (exit) the system programming mode, press the MON button from the port 1 station (ICM 10):

PROGRAMMING HINTS

1. Confirmation tones will be heard after pressing (#) and FEAT buttons when entering programming mode.
2. Multiple warning tones will be heard if:
   a. Invalid entry such as invalid program, illegal value for the program data is entered, etc.
   b. End of a programming sequence such as last key entry for station button assignment, ring assignment, etc.
   c. Station off-hook while attempting to change the station data of that station. (See Programming Tips - Appendix A)
3. On-Line Programming
   a. On-line programming can be performed while the system is in any state except the IPL state (DIP switch 1, 3 or 4 of the CPU "ON" or toward the wall).
   b. When trying to change the program of an off-hook station, a warning tone (multiple beep-like tones) will be heard the first time an attempt is made to enter the data. If it is necessary to enter the data when the station is off-hook, simply re-enter the affected data.
4. The use of "X" as a Program Data Variable:
   a. In many instances, a choice of customer data for use is available by the end user in accordance with a particular program. Therefore, the alphanumeric symbol "X" is

used to denote an unknown digit (variable). A variable (unknown) character will only become known once the data has been decided upon by the end user.

b. Often, multiple variables are required to be programmed. In this case, the character "X" is followed by a number indicating the order in which the data is to be entered by the user. For instance:

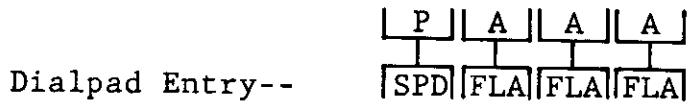
X1,	X2,	X3
First Variable Unknown	Second Variable Unknown	Third Variable Unknown

5. The Purpose of Programs 10-13

a. To allow the user to formulate reference tables for semi-restrictions (outward dialing restrictions).

b. These tables are used by the system to determine what telephone numbers, area codes, and central office exchanges which may be allowed or disallowed from outward dialing at a particular station. Depending on the trunk group class of service (Programs 23 and 29) assigned to a particular station, the system may reference one or two combination of tables for dialing information. Since the system analizes the first four digits dialed (in the semi-restrict mode), it will be necessary to input only four digits (for area, toll and exchange) in each entry (1-40) of a particular table. For customer convenience, wild card digits have been provided for use when the digits 0-9 or 2-9, * and # are to be restricted or allowed in a four digit sequence. For

example, all phone numbers beginning with the digits 2-9 with subsequent digits 0-9 may be entered as follows:



Dialpad Entry-- -- Data Displayed

6. Quick Reference to Program Keys

(MON, *, 01, #, FEAT, FEAT): At start will get you into the program mode (DSS display should go blank).

(*, X1, X2): Will get you into a program where X1, X2 is the two digit program number.

(#): Hitting the # key will step you through a program as well as store the data.

(#, FEAT, FEAT): Will exit you from the program you are presently in.

(MON): Will exit the program mode.

7. Program 23 (Class of Service Configuration)

   a. The purpose of this program is to allow the user to formulate classes of service for dialing restrictions. Since in most applications specific COs (trunks) are assigned to particular departments or tenants, trunk (CO) groups may be formed (see Program 22 to simplify class of service (dial restriction) assignments).

b. There are 16 available classes of service provided which may be custom designed by the user (on a trunk group basis) for later assignment (see Program 23 on a per station basis).

c. When trunks (COs) have been assigned to trunk groups, (see Program 22) dial restrictions (01-19) may be assigned to each trunk group (1-9) in a particular class of service (01-16) by use of the "Trunk Group Class of Service Restrictions" (Table 4-3).

8. Table 4-12 has been provided as a quick reference to primary Customer programmed data. Once the worksheets (tables) are completed by the programmer the fold-out can be used to "eye-ball" current system data.

PROGRAM ENTRY CHARTS

The program charts on the following pages describe the procedure for modifying the system data. Table 4-2 provides a list of these programs.

Table 4-2

Program Charts

PROGRAM #1 ENTRY TO PROGRAMMING MODE

1. This program allows entry to the programming mode from the port 1 station (Extension 10). In order to program, the system main CPU switch, SW 1 Selector #1, #3 and #4 must be in the off position (away from wall). Selector #2 should also be off if speed dial is to be retained.

2. System programming must be performed from the port 1 station (Extension #10) including System SPD Dial banks (00-13), (14 and 15) are system special banks. Station speed dial banks are 16-29, 30 and 31 are station special banks.

3. The entry code takes the following form and must be entered from the dialpad of ICM #10.

   MON, (*), 01, (#), FEAT, FEAT

   A confirmation tone should be heard upon depressing the (#) button and upon depressing the FEAT button (second time). If a busy tone is heard, check the initialization DIP switches to insure they are in the proper position ("OFF" or away from the wall) and then re-enter the program.

4. Once the system is in the programming mode, any program sequence may be accessed.

5. All programming is on-line and does not affect the operation of the system. However, the port 1 station will remain inactive while in the programming mode.

6. When programming a particular station (other than EXT #10) while it is in use, it may be necessary to enter specific data twice. If error tones are heard during normal programming, refer to Appendix "A" Programming Tips for further details.

PROGRAM #1

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	0				3	
3	1				4	
4	#				5	
5	Feat				6	
6	Feat					End of programming sequence
7						
8						
9						
10						
11						
12						

Figure 4-2. Procedure For Entry To Programming Mode

PROGRAM #3 CLEAR ALL PROGRAM DATA

1. This program step is used to clear the present system data, and replace it with factory (default) data.

2. Caution must be taken since this procedure completely destroys all customer data and reloads factory data.

3. The program sequence takes the following form:

(*), 03, 00, (#), FEAT, FEAT

If "00" is not entered here, the system will not perform the procedure.

NOTE: This program is not a substitute for System Initialization.

PROGRAM #3

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	0	Prog. No.	0		3	
3	3		0 3	Prog. No.	4	
4	0	Clear Code	0		5	To clear all program data
5	0		0 0	Clear Code	6	
6	#				7	
7	Feat				8	End program sequence
8	Feat					Exit program
9						
10						
11						
12						

Figure 4-3. Procedure For Clearing All Program Data.

PROGRAM #4 CLEAR SELECTED PROGRAM DATA

1. This program step is used to clear the data of specific programs. In some instances, factory (default) data is reloaded in place of the customer data. In other instances "00" is inputted in place of factory data. See Note below.

2. Caution must be taken since this procedure completely destroys selected customer data.

3. The Clear Selected Program Data code takes the following form:

(*), 04, [X1 X2] (#), FEAT, FEAT

Program No.
to be cleared

Note:
In some instances this program completely clears the selected program. The selected program must be re-entered after clearing it.

Only the following programs may be completely cleared:

Program (XXX)	Description
30	(All telephones will have 00 assigned to their line keys; No CO access)
All Other Programs	Factory data

PROGRAM #4

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	0	Prog. No.	0		3	
3	4		0 4		4	
4	X1	Prog. No. to be Cleared	X1		5	
5	X2		X1 X2	Prog. No. Cleared	5	Go to 5 to change Prog. No.
					6	Go to 6 to continue sequence
6	#				5	Next Prog. No. to be cleared
					7	Clearing sequence completed
7	Feat				8	
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-4. Procedure For Clearing Selected Program Data.

PROGRAM #10-13

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	X1	Prog. No. (Table No.)	X1		3	X1,X2 Allow 1 - Prog. #10 Allow 2 - Prog. #11 Disallow 1 - Prog. #12 Disallow 2 - Prog. #13
3	X2		X1 X2	TABLE NO.	4	
4	#		X3 X4 X5 X6	FIRST ENTRY LOCATION PRESENT DATA	5	Enter new Data to present Entry Location
					9	Step to next Entry Location
5	X3	Digits to be Allowed or Restricted P = (2-9) A = (0-9)	X3		6	Enter First Digit
6	X4		X3 X4		7	Enter Second Digit
7	X5		X3 X4 X5		8	Enter Third Digit
8	X6		X3 X4 X5 X6	FIRST ENTRY LOCATION NEW DATA	9	Enter Fourth Digit then step to next entry
9	#		X3 X4 X5 X6	NEXT ENTRY PRESENT DATA	1	
					5	Go to next entry
10		All Entries Prog.	X1 X2 F F	PROG. NUMBER END	11	End program Sequence
11	FEAT				12	Exit program
12	FEAT					

Figure 4-5. Procedure for Entering Data Into The Semi-Restrict Allow and Disallow Tables.
NOTE: 1-"P" is entered by pressing "SPD" button
2-"A" is entered by pressing "FLA" button

PROGRAM #14 CHANGE IN PRIORITY OF ICM CALLS

1. This program allows changing ICM call priority system wide from Voice to Tone or Tone to Voice.

2. The program sequence takes the following form:

   (*), 14, [X1,] (#), FEAT, FEAT

   ICM ID

3. The system is factory programmed for Voice priority on all ICM calls (Handsfree Answerback).

   NOTE: Origination of an ICM call must be performed by using the handset (off-hook). Do not use handsfree on ICM.

4. Any 3rd digit may be pressed on the key pad to change an ICM call from Voice to Tone or from Tone to Voice (can only be changed once during a call).

	I.D.	Definition
X1	0	Voice Call
	1	Tone Call

PROGRAM #14

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	4		1 4	Prog. No. I.D.	4	
4	X1	ICM Signalling Priority I.D.	X1	I.D.	5	Ø = Priority is Voice Call 1 = Priority is Tone Call
5	#				6	
6	Feat				7	
7	Feat					End of program sequence
8						
9						
10						
11						
12						

Figure 4-6. Procedure For Changing Priority Of ICM Calls.

PROGRAM #15 DEFINITION OF FIRST DEPRESSION OF THE HOLD BUTTON AS SYSTEM HOLD OR EXCLUSIVE HOLD

1. This program defines the first depression of the HOLD Button as System Hold or Exclusive Hold.

2. The program sequence takes the following form:

(*), 15, X1, (#), FEAT, FEAT

HOLD ID

3. The system is factory programmed for the first depression of the HOLD Button to be System Hold.

	I.D.	Definition
X1	0	E-hold
	1	System-Hold

Example: With factory data, depressing the hold button once would put a call on System Hold. Depressing the hold a second time would put the call on Exclusive Hold (the opposite can be programmed).

PROGRAM #15

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	5		1 5	Prog. No.	4	
4	X1	System/ E-Hold I.D.	X1	I.D.	5	Ø = E-hold with 1st hold depression 1 = System with 1st hold depression
5	#				6	
6	Feat				7	
7	Feat					End of program sequence
8						
9						
10						
11						
12						

Figure 4-7. Procedure For Defining The First Depression Of The Hold Button As System Hold Or Exclusive Hold.

PROGRAM #16 CHANGING HOOK FLASH TIMING

1. This program allows changing the automatic Hook Flash Timing.

2. The program sequence takes the following form:

(*), 16, [X1 X2,] (#), FEAT, FEAT

Hook Flash ID

3. The system is factory programmed for three seconds. In many cases a shorter timing may be used;
i.e. 500-700 milliseconds

NOTE: Timing can be changed from 0.1 sec. to 9.9 sec. in one tenth of a second increments.

Example: *, 16, 10, #, FEAT, FEAT

With this program, entry of "10" flash will be 1 second.

	I.D.	Timing
X1, X2	01	0.1 sec.
	02	0.2 sec.
	⋮	⋮
	30	3.0 sec.
	⋮	⋮
	98	9.8 sec.
	99	9.9 sec.

PROGRAM #16

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	6		1 6	Prog. No.	4	
4	X1	Flash Timing I.D.	X1		5	
5	X2		X1 X2	Timing	6	Go to 6 if timing OK
					5	Go to 5 to change timing
6	#				7	
7	Feat				8	
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-8. Procedure For Changing Hook Flash Timing.

PROGRAM #17 CHANGING RING TIMEOUT TIMING

1. This program allows changing the abandon incoming call ringing timeout period. The purpose of the "Ring Timeout" is to prevent false ring detection; i.e. false ringing.

2. The program sequence takes the following form:

(*), 17, [X1 , X2,] (#), FEAT, FEAT

Ring Timeout ID

3. Since most modern Central Offices have eight second ring cycles (4 seconds on and 4 seconds off), the system is factory programmed for an eight second timeout.

Example: *, 17, 11, #, FEAT, FEAT

With this program entry of "11", the ring will timeout (stop ringing) after 11 seconds.

X1, X2	I.D.	Timeout
	05	5.0 sec.
	08	8.0 sec.
	11	11.0 sec.
	14	14.0 sec.
	17	17.0 sec.
	20	20.0 sec.
	23	23.0 sec.
	26	26.0 sec.

PROGRAM #17

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	7		1 7	Prog. No.	4	
4	X1	Ring Timeout Timing I.D.	X1		5,	
5	X2		X1 X2	Timing	6	Go to 6 if timing is correct
					5	Go to 5 to change timing
6	#				7	
7	Feat				8	
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-9. Procedure For Changing Ring Abandon Timeout Timing

PROGRAM #18 CHANGING DIAL PULSE BREAK RATIO

1. This program allows changing the dial pulse break ratio from 58 percent to 73 percent in one percent increments.

2. The program sequence takes the following form:

   (*), 18, [X1 X2,] (#), FEAT, FEAT

   Break Ratio Value

3. The system is factory programmed for 60 percent break.

	Value	Break Ratio
X1, X2	58	58%
	59	59%
	60	60%
	⋮	⋮
	70	70%
	71	71%
	72	72%

PROGRAM #18

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	8		1 8	Prog. No.	4	
4	X1	Dial Pulse Break Ratio	X1		5	
5	X2		X1 X2	Break ratio	6 5	Go to 6 if % break OK Go to 5 to change % break
6	#				7	
7	Feat				8	
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-10. Procedure For Changing Dial Pulse Break Ratio.

PROGRAM #19 CHANGING DIAL PULSE SPEED

1. This program allows changing the dial pulse speed from 10pps or 20 pps.
2. The program sequence takes the following form:

(*), 19, [X1 X2,] (#), FEAT, FEAT

Pulse Speed Value

3. The system is factory programmed for 10pps.

X1, X2	Value	Speed
	10	10 pps
	20	20 pps

PROGRAM #19

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	1	Prog. No.	1		3	
3	9		1 9	Prog. No.	4	
4	X1	Dial Pulse Speed	X1		5	Speed is 10 or 20 pps.
5	X2		X1 X2	Speed	6 7	Go to 5 to change speed Go to 7 if speed OK
6	#					
7	Feat					
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-11. Procedure For Changing Dial Pulse Speed.

PROGRAM #20 CHANGING HOLD RECALL TIMEOUT

1. This program allows changing of the (first and second) Hold Recall Timeout. The Second Hold Recall Timeout is automatically determined as twice the duration of the (first) Hold Recall Timeout. This recall will be heard at the 5 primary stations (10, 22, 34, 46, 58).

2. The program sequence takes the following form:

   (*), 20, [X1 X2,] (#), FEAT, FEAT

   Hold Recall ID

3. The system is factory programmed for no timeout.

4. A transferred call that is unanswered will be heard at the 5 primary stations after the first hold recall time.

Example: *, 20, 25, #, FEAT, FEAT

Hold Recall ID

With this program entry of "25", hold recall would be 2 min. 30 sec.

NOTE: Second Hold Recall = Two hold recall time periods. The second hold recall tone will be heard at all primary (attendant) stations as well as the station that placed the call on hold.

	I.D.	Timeout
X1, X2	00	No Timeout
	05	30 sec.
	10	1 min.
	15	1.5 min.
	20	2.0 min.
	25	2.5 min.
	30	3.0 min.
	35	3.5 min.
	40	4.0 min.
	45	4.5 min.
	50	5.0 min.
	55	5.5 min.
	60	6.0 min.
	65	6.5 min.
	70	7.0 min.
	75	7.5 min.
	80	8.0 min.
	85	8.5 min.
	90	9.0 min.
	95	9.5 min.

PROGRAM #20

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Prog. No.	2		3	
3	0		2 0	Prog. No. I.D.	4	
4	X1	Hold Recall Timeout I.D.	X1		5	
5	X2		X1 X2	I.D.	4	Go to 4 to change Timeout
					6	Go to 6 to Enter Data
6	#				7	
7	Feat				8	
8	Feat					End of program sequence
9						
10						
11						
12						

Figure 4-12. Procedure For Changing Hold Recall Timeout Period.

PROGRAM #21 SELECTION OF DP OR DTMF PER CO LINE

1. This program allows selection of DP or DTMF signalling on a per CO line basis.

2. The program sequence takes the following form:

(*), 21, [X1 X2,] [X3,] (#), FEAT, FEAT

X1 X2 = CO Line (01-30)

X3 = DP or DTMF

Note: After CO Line number is entered, present signalling status of the CO line will be displayed in the first LCD position.

3. The system is factory programmed for DTMF signalling on all lines.

4. See Table 4-12 (Page 4-68) for programming worksheet.

Example: *, 21, [01,] [1,] #, FEAT, FEAT

01 = CO Line

1 = DP or DTMF

With this program entry of "1", CO Line "1" would be dial pulse.

	I.D.	Definition
X3	0	DTMF
	1	DP

PROGRAM #21

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Prog. No.	2		3	
3	1		2 1	Prog. No.	4	
4	X1	CO No.	X1		5	
5	X2		X1 X2	CO No.	5	Go to 5 to change CO No.
					6	Go to 6 to change I.D.
6	X3	I.D. DP/DTMF	X1 X2 X3	CO No. I.D.	7	Ø = DTMF (Factory Prog.) 1 = DP
7	#		0 0 0 0		5	Go to 5 for next CO No.
					8	Go to 8 to end sequence
8	Feat				9	
9	Feat					End of program sequence
10						
11						
12						

Figure 4-13. Procedure For Selection Of DP OR DTMF Per CO Line.

PROGRAM #22 ASSIGNMENT OF CO LINES TO TRUNK GROUP

1. This program allows assignment of CO lines to trunk groups.

2. Each CO line may be assigned to one of nine trunk groups. The first eight trunk groups may be assigned class of service restrictions.

3. The program sequence takes the following form:

(*), 22, [X1 X2,] [X3,] (#), FEAT, FEAT

CO Line (01-30)

Trunk Group No (1-9)

4. The system is factory programmed for all CO lines to be assigned to trunk group #1.

5. CO Numbers = 01-30 / Trunk Group Numbers = 1-9

6. See Table 4-7 (Page 4-60) for programming worksheet.

Example: *, 22, [01,] [1,] #, [02,] [1,] #, [03,] [2,] #, FEAT, FEAT

[01,]	[1,]		[02,]	[1,]		[03,]	[2,]	
CO Line	TRK GRP NO.	#,	CO Line	TRK GRP NO.	#,	CO Line	TRK GRP NO.	#, FEAT, FEAT

With this program entry CO Lines "01" and "02" are in trunk group number "1", CO Line 03 is in trunk group number "2".

PROGRAM #22

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Program No.	2		3	
3	2		2 2		4	
4	X1	CO No.	X1		5	
5	X2		X1 X2 X3	CO No. / Present Trk. Grp. No.	6	To change Trk. Grp. No.
					7	for next CO No.
6	X3	New Trk. Grp. No.	X1 X2 X3	CO No. / New Trk. Grp. No.	7	To enter (write) new Trk Grp No.
7	#		0 0 0 0		4	To change CO No.
					8	To end sequence
8	Feat				8	End program sequence
9	Feat				9	Exit program —
10						
11						
12						

Figure 4-14. Procedure For Assignment Of CO Lines To Trunk Group.

PROGRAM #23 ASSIGNMENT OF CLASS OF SERVICE PER STATION

1. This program allows assignment of C.O.S. to stations.

2. Each station may be assigned 1 of 16 classes of service. Each station C.O.S. is associated with trunk group C.O.S., and assigns the station access restrictions for eight trunk groups.

3. The program sequence takes the following form:

   (*), 23, |X1 X2,| |X3 X4,| (#), FEAT, FEAT

   X1 X2: Station Number (10-69)
   X3 X4: Station C.O.S. (01-16)

4. The system is factory programmed for all stations to C.O.S. #01.

5. See associated programs 22 and 29.

6. See Table 4-8 (Page 4-61) for C.O.S. assignments by trunk group.

7. See Table 4-10 (Page 4-64) for programming worksheet.

Example: *, 23, |13,| |02| #, FEAT, FEAT

13: Extension Number
02: Station C.O.S.

With this program entry, station "13" will be assigned station class of service "02".

#27
13

PROGRAM #23

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Prog. No.	2		3	
3	3		2 3		4	
4	X1	Station No.	X1		5	
5	X2		X1 X2 X3 X4	Ext. No. / Old C.O.S. No.	6	
6	X3	Station C.O.S. (01-16)	X1 X2 X3		7	
7	X4		X1 X2 X3 X4	Ext. No. / New C.O.S.	5 8	Go to 5 to change Ext. No. or C.O.S. Go to 8 to enter data
8	#		0 0 0 0		5 9	Go to 4 to enter next Ext. No. Go to 9 to end sequence
9	Feat				10	
10	Feat					Exit program
11						
12						

Figure 4-15. Procedure for Assigning C.O.S. Per Station.

PROGRAM #24 ASSIGNMENT OF CALL BACKUP STATION TO DSS CONSOLES

1. This program allows assignment of a call backup station to each DSS console.

2. The program sequence takes the following form:

(*), 24, #, [X1,] [X2 X3,] (#), FEAT, FEAT

X1 = DSS Console (1-5)
X2 X3 = Call Backup

3. Station numbers (10, 22, 34, 46, 58) cannot be assigned as a CBU station.

4. If there is no CBU station, "00" will show on the display.
The system is factory programmed for no call backup stations assigned.

Example: *, 24, [1,] [16,] #, [2,] [00,] #, [3,] [00,] #, FEAT, FEAT

1 = DSS
16 = CBU Station (10-69)
2 = DSS #2
00 = CBU Station (10-69)
3 = DSS #3
00 = CBU Station (10-69)

With this program entry DSS 1 would have station "16" assigned as its CBU. DSS #2 and 3 have no CBU stations assigned.

PROGRAM #24

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	PROG # 24	2		3	
3	4		2 4		4	
4	X1	ATTEND-ANT NO.	X1	ATTENDANT NO.	5	Go to 5 to enter Ext. No.
					7	Go to 7 to enter Data
5	X2	Station No.	X1 X2	ATTENDANT NO.	6	
6	X3		X1 X2 X3	ATTENDANT NO. EXT. NO.	6	Go to 6 to change Ext. No.
					7	Go to 7 to enter Data
7	#		0 0 0 0		5	Go to 5 to enter next Ext. No.
					8	Go to 8 to end sequence
8	FEAT				9	
9	FEAT					End of program sequence
10						
11						
12						

Figure 4-16. Procedure for Assigning Call Backup Station to DSS Consoles.

PROGRAM #25 ALLOWING OR FORBIDDING INTERNAL SPEAKER ALL PAGE AND ZONE PAGE PER STATION

1. This program allows each station to be programmed to allow or forbid internal all-zone and zone-page.

2. The program sequence takes the following form:

(*), 25, [X1 X2,] [X3,] (#), FEAT, FEAT

X1 X2 = Station No. (10-69)

X3 = 0=Allowed, 1=Forbidden

3. The system is factory programmed to allow internal all-page and zone-page at each station.

0 = Internal Page Allowed / 1 = Internal Page Disallowed

Example: *, 25, [13,] [1,] #, FEAT, FEAT

13 = Station Number

1 = Allow or Forbid

With this program entry station "13" would be disallowed internal page.

PROGRAM #25

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Prog. No.	2		3	
3	5		2 5		4	
4	X1	Station No.	X1		5	
5	X2		X1 X2 X3	Ext. No. I.D.	5	Go to 5 to change Ext. No.
					6	Go to 6 to change Internal page
6	X3	Forbidden Internal Page I.D.	X1 X2 X3	Ext. No. I.D.	7	Ø = Internal Page Allowed 1 = Internal Page Forbidden
7	#		0 0 0 0		5	Go to 5 to change Ext. No.
					8	Go to 8 to end sequence
8	Feat				9	
9	Feat					End of program sequence
10						
11						
12						

Figure 4-17. Procedure For Allowing Or Forbidding Internal Speaker Page And Zone Page Per Station.

PROGRAM #27 RING ASSIGNMENT OF STATIONS

1. This program allows each station to be ring assigned to any or all of the CO/PBX lines. However, only six stations may be ring assigned to any one CO/PBX line.

2. The program sequence takes the following form:

(*), 27, [X1 X2,] [X3 X4,] (#), FEAT, FEAT

CO No. (01-30) — Station No. (10-69)

3. All CO lines may be ring assigned to any station, a maximum of six stations may be assigned to ring each CO line.

4. See Table 4-9 (Page 4-62) for Ring Assignment Worksheet.

5. The system is factory programmed for extensions 10, 21, 22, 34, 46, and 58 to ring on all CO lines (01-30).

Example:

*, 27, [01,] [10,] #, 12, #, 13, #, 28, #, 00, #, 00, #, FEAT, FEAT

CO No. (01-30) — Station No. (10-69) — Enter "00" to erase factory data 5th and 6th stations

With this program entry stations 10, 12, 13, and 28 will ring on CO #1.

PROGRAM #27

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*	Prog. No.			2	
2	2		2		3	
3	7		2 7		4	
4	X1	CO No.	X1		5	Enter No. of CO you want to Assign Stations to–
5	X2		X1 X2 X3 X4	CO No. / Present Ring Assigned Station	6	Enter 1st Digit of newly Ring Assign Station*
					7	Enter 2nd Digit of newly Ring Assign Station
6	X5	New Ring Ass. Station	X1 X2 X3		8	Go to 8 to Step to Next Station (1 through 6)
					6	Enter 1st Digit of next Ring Assign Station
7	X6		X1 X2 X3 X4	CO No. / Newly Ring Assign Station	7	Enter 2nd Digit of next Ring Assign Station
					8	FF= Cannot assign any more Station
8	#		X1 X2 X5 X6	CO No. / Next (6 max) Ring Ass. Station	4	Enter No. of next CO you want to Assign Stations to–
9	Feat				9	Go to 9 to end sequence
10	Feat					End of program sequence
11						
12						

Figure 4-18. Ring Assignment Of Station.

*Entering of ØØ will unassign a station

PROGRAM #28 NIGHTTIME ANSWER ASSIGNMENT

1. This program allows each station to be ring assigned to any or all of the CO/PBX lines. However, a maximum of two extension numbers can be assigned to any one CO line.

2. The program sequence takes the following form:

   (*), 28, [X1 X2,] [X3 X4,] (#), FEAT, FEAT

   X1 X2: CO No. (01-30)
   X3 X4: Station No. (10-69)

3. All CO lines may be ring assigned to any station. A maximum of two stations may be assigned to ring each CO line.

4. The system is factory programmed for extensions 10 and 21 to ring on all CO lines.

5. See Table 4-9 (Page 4-62) for programming worksheet.

Example: *, 28, [01,] [10,] #, 18, #, FEAT, FEAT

01: CO No. (01-30)
10: Station No. (10-69)
18: Ext. No. (10-69)

With this program entry, stations 10 and 18 will ring on CO #1.

PROGRAM #28

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*	Prog. No.			2	
2	2		2		3	
3	8		2 8		4	
4	X1	CO No.	X1		5	Enter No. of CO you want to Assign Stations to–
5	X2		X1 X2 X3 X4	CO No. / Present Ring Assign Station	6	Enter 1st Digit of Newly Assign Station*
					7	Enter 2nd Digit of Newly Assign Station
6	X3	New Ring Ass. Station	X1 X2 X3		8	Go to 8 to Step to next Station (1&2)
					6	Enter 1st Digit of 2nd Ring Assign Station
7	X4		X1 X2 X3 X4	CO No. / Newly Ring Assign Station	7	Enter 2nd Digit of 2nd Ring Assign Station
					8	FF= Cannot Assign any more Station
8	#		X1 X2 X5 X6	CO No. / Next (2 max) Ring Assign Station	4	Enter No. of next CO you want to Assign Stations to–
9	Feat				9	Go to 9 to end sequence
10	Feat					End of program sequence
11						
12						

Figure 4-19. Procedure For Assignment Of Night Answer Station.

*Entering of ØØ will unassign a station

PROGRAM #29 TRUNK GROUP CLASS OF SERVICE ASSIGNMENT

1. This program allows C.O.S. configuration on a Trunk Group basis.

2. There can be 16 C.O.S. Each C.O.S. is configured by assignment of one of 19 restriction designators to each of eight trunk groups. (Restrictions may not be assigned to trunk group #9.)

3. The restriction class designator defines the type of restriction to be featured. (See Tables 4-3 and 4-4) (Pages 4-56 and 4-57)

4. There are 19 possible types of restrictions that can be assigned to each trunk group. (See Table 4-4) (Page 4-57)

5. The programming sequence takes the following form:

(*), 29, |X1 X2,| (#), |X3 X4,| (#), |FEAT, FEAT|

C.O.S. (01-16) — Restriction Class designator — Exit Program

6. The system is factory programmed for all trunk groups in all C.O.S. as non restricted (Restriction Class Designator 13).

7. See associated Program Numbers 22 and 23.

8. See Programming Hints--Section 4

Example:

*	29	01	#	01	13	#	02	17	#	FEAT	FEAT
		C.O.S.		TRK GRP	Restriction Designator		TRK GRP	Restriction Designator			

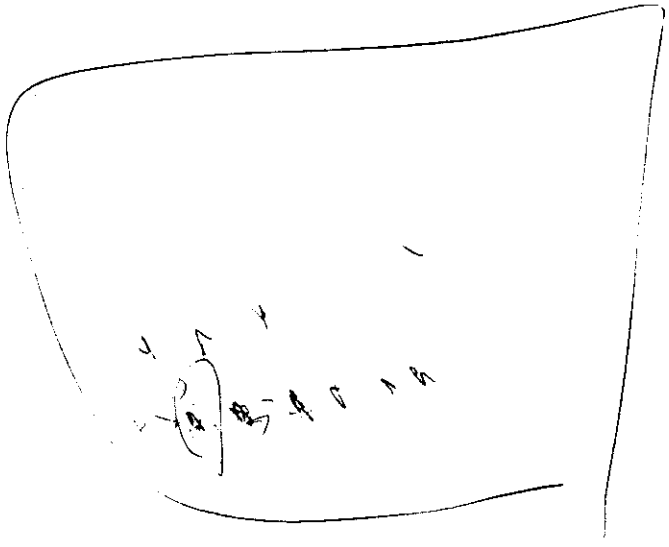
With this program entry Trunk Group "1" in C.O.S. "1" is assigned designator "13", (Non-restricted) Trunk Group "2" is assigned designator "17". (Toll restricted 7-digits.)

PROGRAM 29

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*				2	
2	2	Prog. No.	2		3	
3	9		2 9		4	
4	X1	C.O.S. No (01-16)	X1		5	Enter 1st digit of C.O.S. No.
5	X2		X1 X2	C.O.S. NO.	6	Enter 2nd Digit of C.O.S. No.
6	#	Step	X3 X4	TRK GRP. / RESTRICTION DESIGNATOR	9	Go to 9 if C.O.S. is unchanged
					7	Go to 7 to change Restriction designator
7	X3	*Restriction Designator	X3		8	
8	X4		X3 X4		6	*Step to next TRK GRP
9	#					
10		All TRK Grps Prog.	X1 X2 F F	C.O.S. NO. / ALL TRK. GRPS. PROGRAMMED	4	Enter next C.O.S. (01-16)
					11	Exit program
11	FEAT	Exit Program				
12	FEAT					

Figure 4-20. ASSIGNMENT OF RESTRICTION DESIGNATION TO C.O.S. NO. PER TRUNK GROUP.

*NOTE: 8 TRK GRPS CAN BE ASSIGNED C.O.S.



PROGRAM #30

SEQ. NO.	DIAL PAD	DATA ENTERED	LCD DISPLAY	DISPLAY DEFINITION	NEXT IN SEQ.	NOTE
1	*	Prog. No.			2	
2	3		3		3	
3	0		3 0		4	
4	X1	Station No.	X1		5	
5	X2		X1 X2	EXTENSION NO.	6	
6	#	Step	X3 X4	CO LINE KEY / PRESENT TRK NO.	9	Go to 9 if data is unchanged
					7	*Go to 7 to change TRK No.
7	X3	Trunk No. or P-Key Designation	X3		7	Enter 1st Digit of New TRK No. or 9 for P-Key
					8	Enter 2nd Digit of New TRK No. or P-Key TRK GRP
8	X4		X3 X4	CO LINE KEY / NEW TRK NO. OR P-KEY	9	To program New TRK No. + Step to next line key
					7	To change 1st Digit of New TRK No. or "9"
9	#		X3 X4	NEXT CO LINE KEY / PRESENT TRK NO.	8	To change 2nd Digit of New TRK No. or TRK GRP
					9	To Program and step to next line key
10		All Keys Programmed	X1 X2 F F	EXT. NO. / ALL LINE KEYS PROGRAMMED	4	Enter next Ext. No.
					11	End of program sequence
11	FEAT	End Program				
12	FEAT					

Figure 4-21. ASSIGNMENT OF CO KEYS TO NON-SQUARED CONFIGURATION AND POOLED LINE ACCESS (P-KEY)

*NOTE: ENTER "9" FOR P-KEY DESIGNATION THEN TRK GRP NUMBER TO BE ASSIGNED TO P-KEY.

Table 4-3

TRUNK GROUP CLASS OF SERVICE RESTRICTIONS

		Allowed Table		Disallowed Table		
*** Restriction Class Designator	PGM.10 A1	PGM.11 A2	PGM.12 D1	PGM.13 D2	System Special Speed Banks (14, 15)	
01	1	0	0	0	0**	
02	0	1	0	0	0	
03	1	1	0	0	0	
04	0	0	1	0	0	
05	0	0	0	1	0	
06	0	0	1	1	0	
* 07	1	0	0	0	1	
08	0	1	0	0	1	
09	1	1	0	0	1	
10	0	0	1	0	1	
11	0	0	0	1	1	
12	0	0	1	1	1	
13	N/R	Non-restricted			1	
14	OCC 8	other common carrier 8-digits			1	
15	OCC 7	other common carrier 7-digits			1	
16	T/R 8	toll restrict 8-digits			0	
17	T/R 7	toll restrict 7-digits			0	
18	O/R 5	outgoing restrict 5-digits			0	
19	O/R	outgoing restrict "0"-digits			0	

Note:

* The number "1" is used to indicate "yes" when the program searches a table.

The number "0" is used to indicate table not assigned when the program searches for tables.

** The number "1" is used to indicate dialing from System Special Speed Banks allowed.

The number "0" is used to indicate dialing from System Special Speed Banks not allowed.

*** These are the associated program numbers for allowed and disallowed tables.

Table 4-4
ALLOWED DIALING PATTERNS FOR RESTRICTION COS

Restriction Class Designation	Class Type	DIALING PATTERN					
		Outgoing Restriction	1st "0", 411, 1411 Dial Restriction	Restriction By Allow Table	Restriction By Disallow Table	Digits Restricted to 5,7 or 8	Special SPD Bank Access
01	SR01			X			
02	SR02			X			
03	SR03			X			
04	SR04				X		
05	SR05				X		
06	SR06				X		
07	SR07			X			X
08	SR08			X			X
09	SR09			X			X
10	SR10				X		X
11	SR11				X		X
12	SR12				X		X
13	NR						X
14*	OCC8		X			8 Digit	X
15*	OCC7		X			7 Digit	X
16	TR8		X			8 Digit	
17	TR7		X			7 Digit	
18	OR5		X			5 Digit	
19	OR	X				0 Digit	

*These classes of service restrict 7 and 8 digit calls except when special SPD Banks 14, 15 (System) and 30, 31 (System) are accessed prior to dialing long distance. (See Section 3 Features Operation). In this case all restrictions are overridden.

SEMI-RESTRICTED ALLOW AND DISALLOW

	PROG. #10				PROG. #11				PROG. #12				PROG. #13			
Table No. / Entry No.	ALLOW 1				ALLOW 2				DISALLOW 1				DISALLOW 2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	1	2	1	2	5	2	A	P	9	7	6	A	1	2	P	2
2	P	P	P	A	6	A	A	P	1	P	P	P	1	3	P	P
3	P	A	A	P	P	P	P	P	0	P	P	P	P	P	P	P
4	1	8	0	0					P	P	P	P				
5																
6																
7																
8																
9																
10																
11																
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37																
38																
39																
40																

Table 4-5. Example of Entries for Semi-Restricted Allow and Disallow Tables.

SEMI-RESTRICT ALLOW and DISALLOW

PROG. #10 PROG. #11 PROG. #12 PROG. #13

Table No. / Entry No.	ALLOW 1				ALLOW 2				DISALLOW 1				DISALLOW 2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
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37																
38																
39																
40																

Table 4-6. Worksheet for Semi-Restricted Allow and Disallow Tables.

PROGRAM #22

TRUNK	GROUP
CO #	*1-9
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	

***NOTE: 1-8 TRK GRP can have class of service. TRK GRP No. 9 has no class of service.**

Table 4-7. Worksheet for CO Trunk Group Assignment.

PROGRAM #23

Station C.O.S.			
STATION NO.	01-16	STATION NO.	01-16
10		40	
11		41	
12		42	
13		43	
14		44	
15		45	
16		46	
17		47	
18		48	
19		49	
20		50	
21		51	
22		52	
23		53	
24		54	
25		55	
26		56	
27		57	
28		58	
29		59	
30		60	
31		61	
32		62	
33		63	
34		64	
35		65	
36		66	
37		67	
38		68	
39		69	

Table 4-8. Worksheet for Station C.O.S. Assignment.

Program #27
FLEXIBLE STATION RINGING ASSIGNMENT (10-69) STATIONS

CO #	1st	2nd	3rd	4th	5th	6th
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						

Program #28
NIGHT STATION ASSIGNMENT (10-69) STATIONS

CO #	1st	2nd
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		

Table 4-9. Worksheets for Station Ringing Assignment and Night Ringing Assignment.

PROGRAM #29

C.O.S. ON TRUNK GROUP								
C.O.S.	TRUNK GROUP #							
	1	2	3	4	5	6	7	8
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								

Table 4-10. Worksheet for Trunk Group/Station C.O.S. Assignment.

*This chart should be filled out prior to programming C.O.S. program numbers 22, 23 and 29. Each C.O.S. 01-16 will be assigned to one or more stations in program #23.

APPENDIX A

PROGRAMMING TIPS

1. When programming station specific operation-related data such as:

   a. Line Key Assignments, Program #30

   b. Ring Assignments (Day and Night), Programs #27 and #28

   c. P-Key Assignment, Program #30

   When stations are off-hook, it is necessary to enter specific program data twice. The following are examples of hypothetical operation:

   a. Suppose terminal station #25 is off-hook (busy on a CO call)

   b. You are presently programming Day-Ring Assignments and wish to program CO lines 11 through 16 to ring at station #10 and #25.

   c. Enter data "01" for CO line #1. The DSS LCD displays "01/10". This is correct since you wish to have CO line #1 ring at station #10.

   d. Press (#) to step to next ring locations. The DSS LC displays "01/21". If you do not want station 21 to ring, alter this data as follows:

   e. Enter data "25" for next ring assigned station. The DSS LCD displays "01/25".

   f. Enter (#) in order to step to next location. Notice that an error tone (multiple beep-tones) is emitted from the programming station. This error tone is an indication that station #25 is in use. Therefore, the system requires verification that you wish to change the station's present

operation. Notice the DSS display has not changed from "01/25". DO NOT press (#) again. This will only tell the system to pass this ring location and resume default data for this specific assignment.

g. Reenter the data "25" for ring assignment and press (#). Reentering the actual data a second time will tell the system to store this information for use when station #25 becomes idle (on-hook condition) again. At that time, the system will reload the newly stored data into program #27 and assume the new operation for extension #25 with respect to its ring assignment.

2. Review programmed data upon completing programming. Many times information is entered incorrectly onto the dialpad due to human error. In addition, often stations are in use and proper programming procedures are not followed.

3. Always program with a DSS/BLF to verify data being entered.

APPENDIX B

SPEAKERPHONE INSTALLATION

POETS SPM (Speakerphone Module) Installation

A POETS SPM may be installed in the POETS P-6, P-18 and P-30 telephone sets when CO handsfree is required. To install a POETS SPM:

1. Remove the modular line cord from the telephone.
2. Open the telephone by loosening two screws fastened at the base that secures the housing.
3. Place a POETS SPM into the card holder located on the upper middle of the base and plug a connector cable from the SPM into the connector CN40 located at the base as shown in figure below.

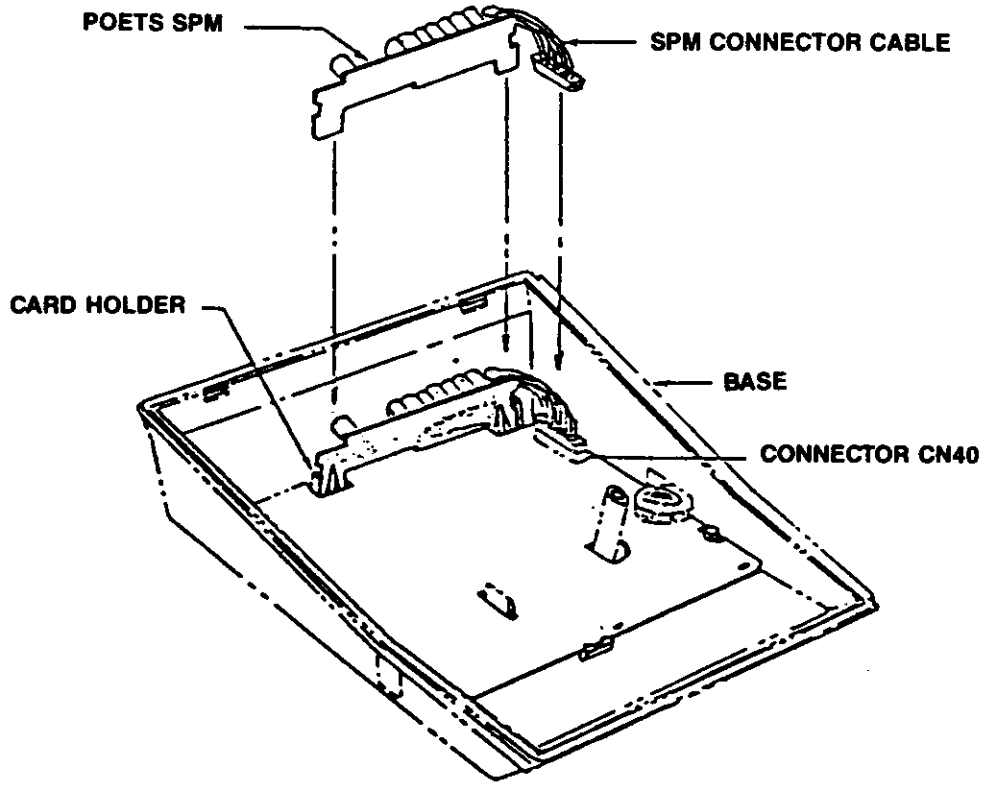

Figure B-1. Speaker Phone Installation.

APPENDIX C
Wall Phone Installation

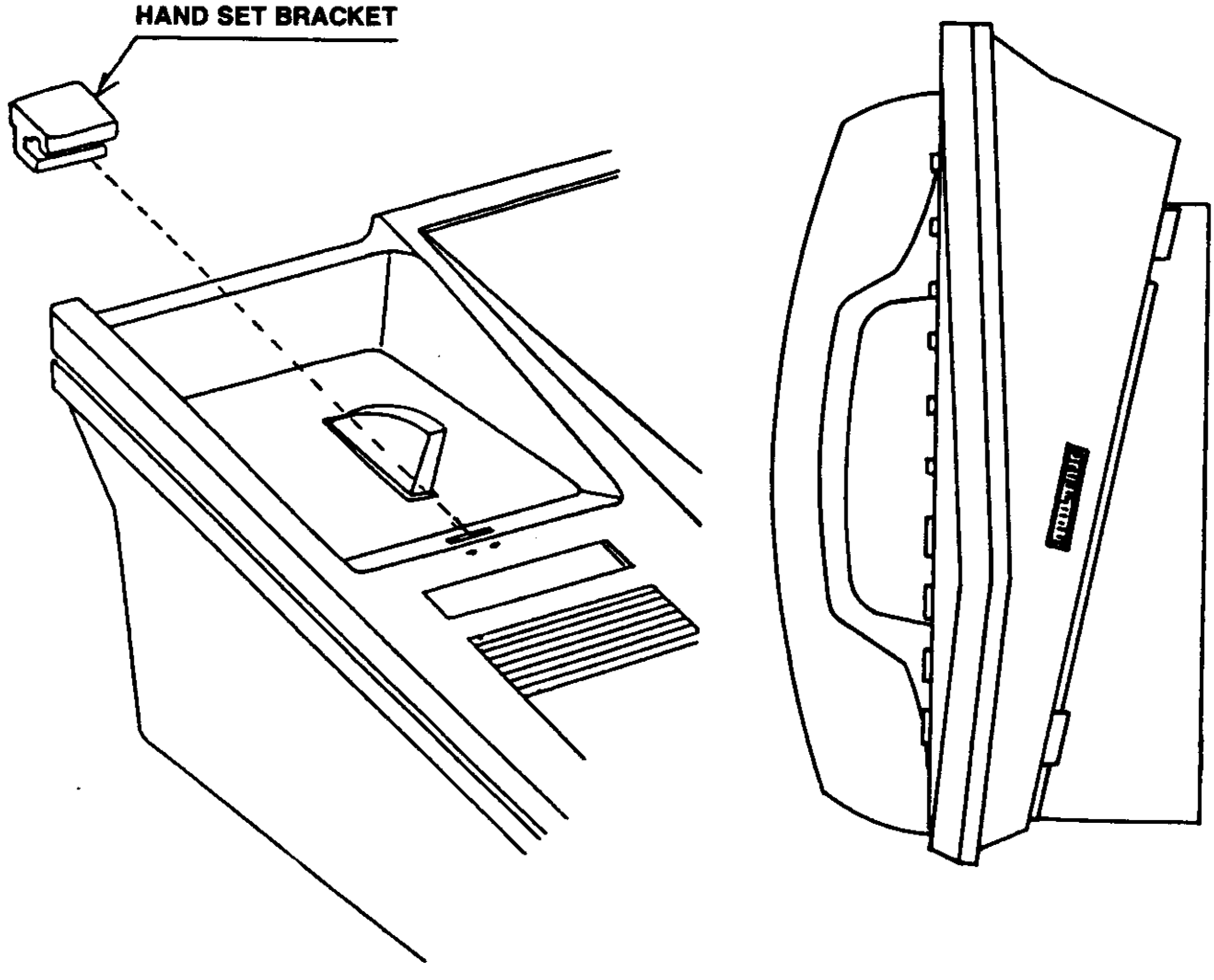

Figure C-1. Wall Phone Installation.

APPENDIX D

GLOSSARY OF TERMS

TERM	DEFINITION
BLF	Busy Lamp Field
BSU	Basic Service Unit
BTU	British Thermal Unit
C-MOS	Capacitive Metal Oxide Semiconductor
CO	Central Office
CONT DISP	Control Display
CO/PBX	Central Office/Private Branch Exchange
COS	Class of Service
COU	Central Office Line Unit
CPU	Central Processing Unit
Cradle	Handset rests in Cradle (On-Hook)
Dialpad	Keypad with digits 0-9 and letters A-Z
Depress	Apply soft pressure with finger
Digital Key Pad	Same as Dialpad
DIP Switch	Dual Inline Package Switch
DP	Rotary Dial Pulse
DSS	Direct Station Select
DTMF	Dual Tone Multi Frequency
ECU	Expansion Control Unit
EMC	Expansion Matrix Card
Enter	Depress appropriate key
Eprom	Electrically Programmable ROM

FCC	Federal Communications Commission
ICM	Intercom
Idle CO	Inactive Central Office Line
IPL	Initial Program Load
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LEU	Line Expansion Unit
Line Key	Central Office Trunk Key
MDF	Main Distribution Frame
MOH	Music On Hold
ms	Millisecond
MSG	Message Key
Ohm	Value for (impedance) resistance to the flow of electrons
PBX	Private Branch Exchange
PTC	Positive Temperature Coefficient Varistor
RAM	Random Access Memory
ROM	Read Only Memory
Semi Restrict	Modified Outgoing Dial Restriction
SPD	Speed Dial
SMU	Station Message Recording Unit
Splash Tone	Alerting Tone
STU	Station Terminal Unit
Tenants	Sharers of Service in the same Key System

POETS™

ELECTRONIC KEY TELEPHONE SYSTEM

PROGRAMMING GUIDE

POETS™
SYSTEM PROGRAMMING

POETS™ is delivered with a permanent factory program, stored in a read only memory (ROM). This program must be loaded when first powering up the system or when adding a LEU, to insure proper system operation.

When the system is initialized, the contents of the ROM are transferred to a random access memory (RAM), which controls the operation of POETS™. This RAM can be modified according to customer requirements by using the port 1 station (Extension No. 10). Modifying the program data will not erase already existing factory data. However, even after the contents of the RAM are modified, the original permanent factory program can be reinserted in place of the modified program by performing the initialization procedure.

IT IS IMPORTANT TO FOLLOW THE PROPER INITIALIZATION PROCEDURE AS OUTLINED IN THE INSTALLATION AND MAINTENANCE MANUAL.

A 3-volt lithium battery is provided on the CPU Card for maintaining CPU memory during storage and/or power failure. The battery will provide power to the CPU memory continuously for up to one year. Under normal system operation the lithium battery will last approximately 5 years.

All system programming is performed from the port 1 station (Extension No. 10). Any of the POETS™ telephone instruments may be used in this position for this procedure. **A DSS/BLF Console should be connected to the port 2 station (Extension No. 11) while programming, to provide a visual display of the programmed data.**

All program modifications can be performed while the system is fully operational. To terminate (exit) the system programming mode, press the MON button on the port 1 station.

PROGRAMMING CROSS REFERENCE
for
POETS™, POETS-PLUS™ & POETS-CTX™

PROGRAM TITLE	POETS™		POETS-PLUS™	POETS-CTX™
	Program No.	Page No.	Program No.	Program No.
Entry to programming mode	01	6	01	01
Clear all program data	03		11	11
Clear Selected Program data	04		12	12
Allow Table *1	10	6	28	Not Available
Allow Table *2	11	7	29	Not Available
Disallow Table *1	12	8	30	Not Available
Disallow Table *2	13	9	31	Not Available
Change in priority of ICM Calls	14	10	13	13
First depression of Hold	15	10	14	14
Changing Hook Flash Timing	16	11	16	16
Changing Ring Timeout Timing	17	11	17	17
Changing Dial Pulse Break Ratio	18	11	20	20
Changing Dial Pulse Speed	19	12	19	19
Changing Hold Recall Time Assignments	*20	12	*15	*15
Selection of DP or DTMF per CO Line	21	12	18	18
Assignment of CO Lines to Trunk Groups	*22	13	*25	*25
Assignment of Class of Service per Station	*23	14	*27	*27
Call Back-up Station Assignment	*24	15	*24	*24
Disallow Int. All Page & Zone Page per Sta.	25	16	21	21
Ring Assignment of Stations	*27	17	*22	*22
Night Answer Ring Assignment	*28	18	*23	*23
Trunk Group Class of Service Assignment	*29	19	*26	*26
Assignment of Function to CO Key per Sta.	*30	20	*32	*32
Unanswered Station Ring Timing	Not Available		37	37
Assign. of CTX Access Codes & Pause Time	Not Available		Not Available	28
Barge-In (Privacy Override of 1A2)	Not Available		Not Available	29
Speed Dial Allow/Disallow	Not Available		55	30
CO Disconnect Timer for Abandoned Calls on Hold	Not Available		Not Available	31
Do-Not-Disturb - Allow/Disallow per Sta.	Not Available		33	33
Primary Sta. Assign. of 2nd Hold Recall	Not Available		34	34
Allow/Disallow Brokerage Serv.(Override)	Not Available		35	35
Assignment of Prime Lines	Not Available		36	36
External Paging Port Assignments	Not Available		38	38
Dial "976" Restriction Control	Not Available		39	39
System Data Dump onto SMDR Printer	Not Available		00	Not Available

* Programs vary in format & features between POETS™, POETS-PLUS™ & POETS-CTX™.

PROGRAMMING HINTS
POETS™ DIALING RESTRICTIONS

There are five types of dialing restrictions available for individual station positions (Station Extension Numbers) on the POETS™ Electronic Key Telephone System.

1. **No restrictions** **(Restriction designator 13)**
2. **Digit matching** **(Restriction designators 01 thru 12)**- system compares the first four digits dialed against tables developed by the installation programmer and allows or disallows the call depending on the restriction designator assigned.
3. **Digit counting** **(Restriction designators 14 thru 18)** - system counts the number of digits dialed and blocks any call that exceeds the digits allowed by the restriction designator. With digit counting, the system blocks a call if the first digit is a "0" and calls to "411" or "1411". Calls to "911" are allowed.
4. **Outgoing restricted** **(Restriction Designator 19)** - system blocks any outgoing call but allows incoming calls.
5. **Plus Special System Speed Dial Override**
   (Restriction Designators No. 07 thru 12) - system compares the first four digits dialed as defined in "Digit matching" and also allows Special System Speed Dial Numbers 14 and 15 to override other restrictions. In a dialing sequence using System Speed Dial Numbers 14 and 15, any digits may be manually dialed following the Speed Dial Number.
   (Restriction Designators No. 14 & 15) - system allows calls as defined in "Digit counting" plus the override capability of Special System Speed Dial Numbers 14 and 15.

Dialing restrictions can be formulated by assigning CO Lines to individual trunk groups, configuring Classes of Service (COS) by assigning restriction designators to each trunk group, configuring Allow and Disallow Tables and then assigning a COS to each station.

Step 1 (Program No. 22) - Assignment of CO Lines to trunk groups.
The system is factory programmed for all CO Lines assigned to trunk group No. 1. Each CO line may be assigned to one of nine trunk groups. Trunk groups 1 - 8 may be assigned class of service restrictions. Trunk group 9 is permanently non-restricted.

Step 2 (Program No. 29) - Trunk Group Class of Service Assignments
This program allows COS configuration on a trunk group basis. There can be 16 COS. Each COS is configured by assignment of one of nineteen restriction designators **(See Table on Page 5)** to each of eight trunk groups. The restriction class designator defines the type of restriction to be applied.

(Continued on Page 5)

Step 3 (Programs No. 10, 11, 12 & 13) - Allow and Disallow Table Configuration.
This program is used to configure semi-restrict, allow and disallow tables for allowing or restricting certain numbers.

Step 4 (Program No. 23) - Assignment of COS to stations
Each station may be assigned one of 16 classes of service. The COS determines the dialing allowed or disallowed at this station.

TRUNK GROUP CLASS OF SERVICE RESTRICTIONS

Designator	Description of Restriction
01	Allows call when first four digits dialed match an entry in Allow Table #1 (PGM. 10).
02	Allows call when first four digits dialed match an entry in Allow Table #2 (PGM. 11).
03	Allows call when first four digits dialed match an entry in Allow Table #1 (PGM. 10) or Allow Table #2 (PGM. 11).
04	Disallows call when first four digits dialed match an entry in Disallow Table #1 (PGM. 12).
05	Disallows call when first four digits dialed match an entry in Disallow Table #2 (PGM. 13).
06	Disallows call when first four digits dialed match an entry in Disallow Table #1 (PGM. 12) or Disallow Table #2 (PGM. 13).
07	Same as 01 and/or System Special Speed Dial Numbers 14 and 15.
08	Same as 02 and/or System Special Speed Dial Numbers 14 and 15.
09	Same as 03 and/or System Special Speed Dial Numbers 14 and 15.
10	Same as 04 and/or System Special Speed Dial Numbers 14 and 15.
11	Same as 05 and/or System Special Speed Dial Numbers 14 and 15.
12	Same as 06 and/or System Special Speed Dial Numbers 14 and 15.
13	(N/R) non-restricted.
14	Allows calls up to eight digits and/or System Special Speed Dial Numbers 14 and 15.
15	Allows calls up to seven digits and/or System Special Speed Dial Numbers 14 and 15.
16	Allows calls up to eight digits.
17	Allows calls up to seven digits.
18	Allows calls up to five digits.
19	Disallows all dialing on CO calls / allows receiving of CO calls.

PROGRAM	STEP	DISPLAY	NOTES
01 Enter Prog. Mode	(1) Press MON	MON lamp will light	
	(2) Dial *01#	Display on DSS Console goes blank	
	(3) Press FEAT FEAT	Station 10 is now in Program Mode	
10 Allow restriction table #1.	(1) Dial *10	Display of 10	Factory programmed for no data (Display of FFFF) in each entry of Allow Table #1.
	(2) Dial #	Display of $X_1X_2X_3X_4$ for 1st Entry	First digit (X_1) of display determines 1st digit to dial for allowing call. Second digit (X_2) determines 2nd digit to dial for allowing call. Third digit (X_3) determines 3rd digit to dial for allowing call. Fourth digit (X_4) determines 4th digit to dial for allowing call.
	(3) Dial # for no change or Dial new $X_1X_2X_3X_4$ Dial #	Display of $X_1X_2X_3X_4$ for 2nd Entry Display of new $X_1X_2X_3X_4$ Display of $X_1X_2X_3X_4$	Up to 40 separate four digit entries may be programmed in Allow Table #1. Each digit of each entry may be assigned: The number 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9. Wild Card Digits "P" or "A". "P" = 2, 3, 4, 5, 6, 7, 8 and 9. "A" = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and #. Press SPD Key to program "P". Press FLA Key to program "A". Press (*) button to clear data in an entry and return display to FFFF.
	(4) Repeat step 3 to assign digits for each of 40 entries of Table as req.	Display of 10FF when all 40 entries have been programmed.	
	(5) Press FEAT FEAT	Display goes blank & Prog. 10 exited	

EXAMPLES FOR PROGRAM 10:

Entry of "1800" allows all calls to Area Code 800.

Entry of "1APA" allows calls within Home Area Code but blocks all other Area Codes. All Area Codes have a "0" or a "1" as the middle digit and the "P" will not allow these digits.

11 Allow restriction table *2.	(1) Dial *11	Display of 11	**Factory programmed for no data (Display of FFFF) in each entry of Allow Table *2.**
	(2) Dial #	Display of $X_1X_2X_3X_4$ for 1st Entry	First digit (X_1) of display determines 1st digit to dial for allowing call. Second digit (X_2) determines 2nd digit to dial for allowing call. Third digit (X_3) determines 3rd digit to dial for allowing call. Fourth digit (X_4) determines 4th digit to dial for allowing call.
	(3) Dial # for no change or Dial new $X_1X_2X_3X_4$ Dial #	Display of $X_1X_2X_3X_4$ for 2nd Entry Display of new $X_1X_2X_3X_4$ Display of $X_1X_2X_3X_4$	Up to 40 separate four digit entries may be programmed in Allow Table *2. Each digit of each entry may be assigned: The number 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9. Wild Card Digits "P" or "A". "P" = 2, 3, 4, 5, 6, 7, 8 and 9. "A" = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and *. Press SPD Key to program "P". Press FLA Key to program "A". Press (*) button to clear data in an entry and return display to FFFF.
	(4) Repeat step 3 to assign digits for each of 40 entries of Table as req.	Display of 11FF when all 40 entries have been programmed.	
	(5) Press FEAT FEAT	Display goes blank & Prog. 11 exited	

12 Disallow restrict table *1.	(1) Dial *12	Display of 12	**Factory programmed for no data (Display of FFFF) in each entry of Disallow Table *1.**
	(2) Dial #	Display of $X_1X_2X_3X_4$ for 1st Entry	First digit (X_1) of display determines 1st digit disallowed when dialing a call. Second digit (X_2) determines 2nd digit disallowed when dialing a call. Third digit (X_3) determines 3rd digit disallowed when dialing a call. Fourth digit (X_4) determines 4th digit disallowed when dialing a call.
	(3) Dial # for no change or Dial new $X_1X_2X_3X_4$ Dial #	Display of $X_1X_2X_3X_4$ for 2nd Entry Display of new $X_1X_2X_3X_4$ Display of $X_1X_2X_3X_4$	Up to 40 separate four digit entries may be programmed in Disallow Table *1. Each digit of each entry may be assigned: The number 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9. Wild Card Digits "P" or "A". "P" = 2, 3, 4, 5, 6, 7, 8 and 9. "A" = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and *. Press SPD Key to program "P". Press FLA Key to program "A". Press (*) button to clear data in an entry and return display to FFFF.
	(4) Repeat step 3 to assign digits for each of 40 entries of Table as req.	Display of 12FF when all 40 entries have been programmed.	
	(5) Press FEAT FEAT	Display goes blank & Prog. 12 exited	

13 Disallow restrict table *2.	(1) Dial *13	Display of 13	**Factory programmed for no data (Display of FFFF) in each entry of Disallow Table *2.**
	(2) Dial #	Display of $X_1X_2X_3X_4$ for 1st Entry	First digit (X_1) of display determines 1st digit disallowed when dialing a call. Second digit (X_2) determines 2nd digit disallowed when dialing a call. Third digit (X_3) determines 3rd digit disallowed when dialing a call. Fourth digit (X_4) determines 4th digit disallowed when dialing a call.
	(3) Dial # for no change or Dial new $X_1X_2X_3X_4$ Dial #	Display of $X_1X_2X_3X_4$ for 2nd Entry Display of new $X_1X_2X_3X_4$ Display of $X_1X_2X_3X_4$	Up to 40 separate four digit entries may be programmed in Disallow Table *2. Each digit of each entry may be assigned: The number 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9. Wild Card Digits "P" or "A". "P" - 2, 3, 4, 5, 6, 7, 8 and 9. "A" - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and *. Press SPD Key to program "P". Press FLA Key to program "A". Press (*) button to clear data in an entry and return display to FFFF.
	(4) Repeat step 3 to assign digits for each of 40 entries of Table as req.	Display of 13FF when all 40 entries have been programmed.	
	(5) Press FEAT FEAT	Display goes blank & Prog. 13 exited	

14 ICM Priority	(1) Dial *14	Display of 140	Third digit (X_3) of display determines priority. (X_3 = 0 for voice or 1 for tone) **Factory program = 0 for voice.**
	(2) Dial # for no change or Dial new X_3 to change Dial #	Display goes blank Display of new X_3 Display goes blank	
	(3) Press FEAT FEAT	Program 14 exited	
15 First depression of Hold.	(1) Dial *15	Display of 151	Third digit (X_3) of display determines assignment. (X_3 = 1 for system or 0 for exclusive) **Factory program = 1 for system Hold.**
	(2) Dial # for no change or Dial new X_3 to change Dial #	Display goes blank Display of new X_3 Display goes blank	
	(3) Press FEAT FEAT	Program 15 exited	

16 Auto Hook-flash timing.	(1) Dial *16	Display of 1630	Third and fourth digits (X_3X_4) determine timing. From 01 = .1 sec. to 99 = 9.9 sec. in .1 second increments. **Factory program = 30 for 3 seconds.**
	(2) Dial # for no change or Dial new X_3X_4 to change Dial #	Display goes blank Display of new X_3X_4 Display goes blank	
	(3) Press FEAT FEAT	Program 16 exited	
17 Ring Timeout	(1) Dial *17	Display of 1708	Third and fourth digits (X_3X_4) determine timeout. From 05 = 5 sec. to 26 = 26.0 sec. in 3 second intervals. **Factory program = 08 for 8 seconds**
	(2) Dial # for no change or Dial new X_3X_4 to change Dial #	Display goes blank Display of new X_3X_4 Display goes blank	
	(3) Press FEAT FEAT	Program 17 exited	
18 DP Break Ratio	(1) Dial *18	Display of 1860	Third & fourth digits (X_3X_4) determine break ratio. From 58 = 58% to 73 = 73% in 1 % increments. **Factory program = 60 for 60%.**
	(2) Dial # for no change or Dial new X_3X_4 to change Dial #	Display goes blank Display of new X_3X_4 Display goes blank	
	(3) Press FEAT FEAT	Program 18 exited	

19 DP speed	(1) Dial *19	Display of 1910	Third & fourth digits (X_3X_4) determine speed (X_3X_4 =10 for 10 pps or 20 for 20 pps) **Factory program = 10 for 10 pps**
	(2) Dial # for no change or Dial new X_3X_4 to change Dial #	Display goes blank Display of new X_3X_4 Display goes blank	
	(3) Press FEAT FEAT	Program 19 exited	
20 Hold Recall Timing.	(1) Dial *20	Display of 20X_3X_4	Third and fourth digits (X_3X_4) determine timing. From 00 = no recall to 95 = 9.5 minutes max. in 30 second increments. (05 = 30 seconds, 10 = 60 seconds, etc.) **Factory program = 00 for no recall.**
	(2) Dial # for no change or Dial new X_3X_4 to change Dial #	Display goes blank Display of new X_3X_4 Display goes blank	
	(3) Press FEAT FEAT	Program 20 exited	
21 DP or DTMF per CO.	(1) Dial *21	Display of 21	**Factory programmed DTMF on all CO's.**
	(2) Dial CO No. (X_1X_2)	Display of X_1X_2 X_3	First & second digits (X_1X_2) indicate CO number. CO's are numbered 01 thru 30. (X_3 = 0 for DTMF or 1 for DP)
	(3) Dial # for no change or Dial new X_3 to change Dial #	Display of 0000 Display of X_1X_2 followed by new X_3 Display of 0000	
	(4) Repeat steps 2 & 3 for each CO.		CO's may be programmed in any order.
	(5) Press FEAT FEAT	Display goes blank & Prog. 21 exited	

22 Trunks to Groups assign.	(1) Dial * 22	Display of 22	**Factory programmed for all CO lines to be assigned to Trunk Group No. 1.**
	(2) Dial CO No. (X_1X_2)	Display of $X_1X_2X_3$	First & second digits (X_1X_2) indicate CO Number. CO's are numbered 01 thru 30. Third digit (X_3) indicates Trunk Group Number. There are 9 Trunk Groups and they are numbered 1 thru 9. Dial restrictions (Program *29) can not be assigned to Group "9".
	(3) Dial # for no change or Dial new X_3 to change Dial #	Display of 0000 Display of X_1X_2 followed by new X_3 Display of 0000	
	(4) Repeat steps 2 & 3 to assign each CO to a Trunk Group.		CO's may be programmed in any order.
	(5) Press FEAT FEAT	Display goes blank & Prog. 25 exited	

23 C.O.S. Assign per station	(1) Dial *23	Display of 23	**Factory programmed for all stations to be assigned to Class of Service No. 01 (non-restricted).**
	(2) Dial Ext. No. (X_1X_2)	Display of $X_1X_2X_3X_4$	First & second digits (X_1X_2) indicate Ext. number. Extensions are numbered 10 thru 69. Third & fourth digits (X_3X_4) indicate COS Number. COS's are numbered 01 thru 16.
	(3) Dial # for no change or Dial new X_3X_4 to change Dial #	Display of 0000 Display of X_1X_2 followed by new X_3X_4 Display of 0000	
	(4) Repeat steps 2 & 3 for each Ext. No. to change.		Ext. No.'s may be programmed in any order.
	(5) Press FEAT FEAT	Display goes blank & Prog. 23 exited	

24 Call Back-up Ext. assign.	(1) Dial *24	Display of 24	**Factory programmed for no Call Back-up positions.**
	(2) Dial Console No. (X_1)	Display of $X_1X_2X_3$	First digit (X_1) indicates Attendant Console number. Console positions are numbered 1 thru 5 (Extensions 10, 22, 34, 46 & 58). Second & third digits (X_2X_3) indicate Ext. number assigned to back-up console.
	(3) Dial # for no change or Dial new X_2X_3 to change Dial #	Display of 0000 Display of X_1 followed by new X_2X_3 Display of 0000	
	(4) Repeat steps 2 & 3 to assign CBU extensions for each Console.		Dial "00" as the X_2X_3 for each back-up position not required. Any Ext. Number, (except other Console positions - Ext. 10, 22, 34, 46, & 58) may be assigned as a back-up extension.
	(5) Press FEAT FEAT	Display goes blank & Prog. 24 exited	

25 Forbidden internal page.	(1) Dial *25	Display of 25	**Factory program - all stations receive page.**
	(2) Dial Ext. No. (X_1X_2)	Display of X_1X_2 X_3	First & second digits (X_1X_2) indicate Ext. No. Extensions are numbered 10 thru 69. (X_3 = 0 for allowed or 1 for disallowed)
	(3) Dial # for no change or Dial new X_3 to change Dial #	Display of 0000 Display of X_1X_2 followed by new X_3 Display of 0000	
	(4) Repeat steps 2 & 3 for each Ext. No. to change		Ext. No.'s may be programmed in any order.
	(5) Press FEAT FEAT	Program 21 exited	

27 Ring Assign Stations - day.	(1) Dial *27	Display of 27	**Factory programmed for each CO to ring at extensions 10, 21, 22, 34, 46, and 58.**
	(2) Dial CO No. (X_1X_2)	Display of $X_1X_2X_3X_4$	First & second digits (X_1X_2) indicate CO number. CO's are numbered 01 thru 30. Third & fourth digits (X_3X_4) indicate 1st extension number where CO X_1X_2 rings.
	(3) Dial # for no change or Dial new X_3X_4 to change Dial #	Display of $X_1X_2X_5X_6$ Display of X_1X_2 followed by new X_3X_4 Display of $X_1X_2X_5X_6$	Third & fourth digits (X_5X_6) indicate 2nd extension number where CO X_1X_2 rings.
	(4) Repeat step 3 to assign each Ext. No. where X_1X_2 rings.	Display of X_1X_2FF when maximum number of Extensions (6) allowed to ring on CO X_1X_2 have been assigned.	Each CO (X_1X_2) may be programmed to ring at a maximum of 6 Extensions. Extensions are numbered 10 thru 69. Dial "00" as the X_3X_4 for any of the 6 Extension positions not required to ring.
	(5) Repeat steps 2 thru 4 for each CO.		CO's may be programmed in any order.
	(6) Press FEAT FEAT	Display goes blank & Prog. 27 exited	

28 Ring Assign Night Answer	(1) Dial *28	Display of 28	**Factory programmed for each CO to ring at extensions 10 and 21.**
	(2) Dial CO No. (X_1X_2)	Display of $X_1X_2X_3X_4$	First & second digits (X_1X_2) indicate CO number. CO's are numbered 01 thru 30. Third & fourth digits (X_3X_4) indicate 1st extension number where CO X_1X_2 rings.
	(3) Dial # for no change or Dial new X_3X_4 to change Dial #	Display of $X_1X_2X_5X_6$ Display of X_1X_2 followed by new X_3X_4 Display of $X_1X_2X_5X_6$	Third & fourth digits (X_5X_6) indicate 2nd extension number where CO X_1X_2 rings.
	(4) Repeat step 3 to assign 2nd Ext. No. where X_1X_2 rings.	Display of X_1X_2FF when maximum number of Extensions (2) allowed to ring on CO X_1X_2 have been assigned.	Each CO (X_1X_2) may be programmed to ring at a maximum of 2 extensions. Dial "00" as the X_3X_4 for either of the 2 night Extension positions not required to ring.
	(5) Repeat steps 2 thru 4 for each CO.		CO's may be programmed in any order.
	(6) Press FEAT FEAT	Display goes blank & Prog. 28 exited	

29 COS Design per Trunk Group	(1) Dial *29	Display of 29	**Factory programmed for all Trunk Groups in all C.O.S. as nonrestricted.**
	(2) Dial COS No. (X_1X_2)	Display of X_1X_2	First & second digits (X_1X_2) indicate COS Number. There are 16 COS's & they are numbered 01 thru 16.
	(3) Dial #	Display of 0113	"01" indicates Trunk Group No. 01 of COS X_1X_2. Only Trunk Groups 1 thru 8 may be restricted. Third & fourth digits (X_3X_4) indicate restriction class designator assigned to Group No. 01 of COS X_1X_2. There are 19 choices for X_3X_4 (See Table on Page 5).
	(4) Dial# for no change or Dial new X_3X_4 to change Dial #	Display of $02X_3X_4$ Display of 01 followed by new X_3X_4 Display of $02X_3X_4$	"02" indicates Trunk Group No. 02 of COS X_1X_2.
	(5) Repeat step 4 to assign restriction designators to all 8 Trunk Groups in COS X_1X_2.	Display of X_1X_2FF when all 8 Groups in COS X_1X_2 have been assigned restriction designators.	
	(6) Repeat steps 2 thru 5 for each COS required. (7) Press FEAT FEAT	Display goes blank & Prog. 29 exited	Classes of Service 01 thru 16 (X_1X_2) may be programmed in any order.

Note: See Pages 4 & 5 for programming hints on Dial Restriction.

30 Assign. to CO Key per station.	(1) Dial *30	Display of 30	**Factory programmed for squared operation. CO numbers "01 thru 30" appear on CO line keys "01 thru 30".** Any CO Line can be assigned to any CO Key.
	(2) Dial Ext. No. (X_1X_2)	Display of X_1X_2	First & second digits (X_1X_2) indicate Ext. No. Extensions are numbered 10 thru 69.
	(3) Dial #	Display of $01X_3X_4$	"01" indicates CO key No.1 on Ext. No. X_1X_2. CO keys are numbered 01 thru 30. If the Extension No. is to be provided with a 6 or 18 CO key instrument, program only those keys available. X_3X_4 indicates CO No.(01 thru 30) assigned to CO key No. 1.
	(4) Dial # for no change or Dial new X_3X_4 Dial #	Display of $02X_3X_4$ Display of 01 followed by new X_3X_4 Display of $02X_3X_4$	"02" indicates CO key No. 2 on Ext. No. X_1X_2. X_3X_4 indicates CO No.(01 thru 30) assigned to CO key No. 2.
	(6) Repeat steps 3 thru 5 to assign functions to all CO keys as req.	Display of X_1X_2FF when 30 CO keys have been programmed.	CO key No. 6 on a 6 CO key instrument and CO key No. 18 on an 18 CO key instrument may be assigned any of the CO lines or can be programmed as a P-Key (Trunk Group). For a P-Key, X3 = 9 and X4 = Trunk Group Number (1 thru 9).
	(7) Repeat steps 2 thru 6 for each Ext. No.		
	(8) Press FEAT FEAT	Display goes blank & Prog. 30 exited	