INSTALLATION AND MAINTENANCE INFORMATION FOR THE COMDIAL Executech MODEL 1432B KSU

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CHAPTER 1
INTRODUCTION

MANUAL SCOPE

This publication contains installation, programming, and maintenance information for the Model 1432 KSU electronic key system and associated electronic key telephone stations.

NOTE: This manual is applicable for model 14328 KSU Rev F and later.

This key system is fully protected, and therefore the installation does not require the services of an authorized agent. However, the installation procedures detailed in this manual should only be performed by individuals familiar with general telephone installation procedures.

The end user may perform routine maintenance procedures, such as the following listed ones, but all other servicing must be performed by factory authorized personnel.

- Place or replace any designation strips on the face of the telephone stations.

- Replace the line cord or handset coiled cord.

- Replace complete stations and station handsets. The handset is a special Comdial type. Other handset types will not work properly.

- Relocate the station when it is plugged into the proper system jacks.

RELATED INFORMATION

- IMI 01-001, Compliance Requirements To FCC Rules and Regulations Part 68 and 15

- IMI 01-005 Handling Of Electrostatically Sensitive Components

- GCA 40-028, General Information, Electronic Key System

- GCA 70-I 34, User's Guide for Multiline Station

- GCA 70-079, User's Guide for Single Line Station

- GCA 70-066, Users Guide for DSS/BLF Console

- GCA 70-I 48, User's Guide for 32-Button DSS/BLF Console

STATION TYPES

This Key Service Unit supports the operation of the following stations:

- 22 Line/Feature Keyset

- Reused 3/8 Line Keyset

- Single-Line Keyset

- DSS/BLF Console 32-Key, 40-Key, and 70-Key

INSTALLER/USER INFORMATION REGARDING FCC RULES AND REGULATIONS

This electronic key system complies with Federal Communications Commission (FCC) Rules, Part 68. The FCC registration label on the KSU contains the FCC registration number, the ringer equivalence number, the model number, and the serial number or production date of the system.

NOTIFICATION TO TELEPHONE COMPANY

Unless a telephone operating company provides and installs the system, the telephone operating company which provides the lines must be notified before a connection is made to them. The lines (telephone numbers) involved, the FCC registration number, and the ringer equivalence number must be provided to the telephone company. The FCC registration number and the ringer equivalence number of this equipment are provided on the label attached to the KSU. The user/installer is required to notify the telephone company when final disconnection of this equipment from the telephone company line occurs.

COMPATIBILITY WITH TELEPHONE NETWORK

When necessary, the telephone operating company provides information on the maximum number of telephones or ringers that can be connected to one line, as well as any other applicable technical information. The telephone operating company can temporarily discontinue service and make changes which could effect the operation of this equipment. They must, however, provide adequate notice, in writing, of any future equipment changes that would make the system incompatible.

INSTALLATION REQUIREMENTS

Connection of the electronic key system to the telephone lines must be through a universal service order code (USOC) outlet jack supplied by the telephone operating company. If the installation site does not have the proper outlet, ask the telephone company business off ice to install one. The correct outlet jack for this system is either a type RJ21X or type RJ14C.

PARTY LINES AND COIN LINES

Local telephone company regulations may not permit connections to party lines and coin lines by anyone except the telephone operating company.

TROUBLESHOOTING

If a service problem occurs, first try to determine if the trouble is in the on-site system or in the telephone company equipment. Disconnect all equipment not owned by the telephone company.

tf this corrects the problem, the faulty equipment must not be reconnected to the telephone line until the problem has been corrected. Any trouble that causes improper operation of the telephone network may require the telephone company to discontinue service to the trouble site after they notify the user of the reason.

REPAIR AUTHORIZATION

FCC regulations do not permit repair of customer owned equipment by anyone except the manufacturer, their authorized agent, or others who might be authorized by the FCC. However, routine repairs can be made according to the maintenance instructions in this publication, provided that all FCC restriiions are obeyed.

RADIO FREQUENCY INTERFERENCE

The electronic key system contains incidental radio frequency generating circuitry and, if not installed and used properly, may cause interference to radio and television reception. This equipment 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. These limits are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference to radio and television reception; in which case the user is encouraged to take whatever measures may be required to correct the interference. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged lo try to correct the interference by one or more of the following measures: Reorient the television or radio's receiving antenna, and/or relocate the KSU, the individual telephone stations, and the radio or TV with respect to each other. If necessary, the user should consult the manufacturer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications' Commission helpful: 'How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the Government Printing Office, Washington DC. 20402. Stock No. 004-000-00345-4.

RINGER EQUIVALENCE NUMBER

The REN of each line is 0.48. The FCC requires the installer to determine the total REN for each line, and record it at the equipment.

CHAPTER 2
INSTALLATION

MOUNTING CONSIDERATIONS

- The KSU cabinet should be attached vertically to any sturdy, flat, surface. It may be vertically rack mounted if desired.

- The KSU must be located within six (6) feet of a proper electricaloutlet. The KSU power supply requires a dedicated **117VAC** 15 AMP circuit, with a third-wire ground, supplied to a standard (NEMA **5-15R)** electrical outlet.

- The distance between the KSU and the **TELCO/PBX** jacks must be 25 feet or **less** as per FCC requirements. A nominal distance of 7 feet is recommended.

- The mounting location must be secure and dry and have adequate ventilation. The temperature range of the location must be within 32-l 22 degrees F (O-50 degrees C).

- If the mounting surface is damp or if it is concrete or masonry material, a backboard must be attached to the mounting surface to be used for KSU mounting. Suitable mounting backboards are available commercially or can be constructed out of **1/2-inch** plywood cut to size.

- Tools and hardware required for mounting the KSU cabinet include:

  - Fasteners -wood screws **(1/4** x l-inch round head), toggle bolts, or wall anchors

  - Screwdriver-to match fasteners

  - Electric drill - if prepared holes are required

  - Connecting tool - for fastening wires to a type-66 connector block.

- Crimping tool - for 623-type modular plugs

MOUNTING PROCEDURE

1. Unpack, and carefully inspect the KSU and stations for shipping damage. Notify the shipper immediately of any damages found. Verify that the packages contain all parts and accessories needed for proper installation and operation.

2. If a backboard is required at the mounting location, attach it securely to provide a stable KSU mounting surface.

3. A full scale mounting template is supplied in the KSU packing box. Hold or tape this template to the mounting surface, and mark the location of the mounting holes on the mounting surface as they are located on the template. The KSU mounting dimensions are also shown on Figure 2-1.

4. Drill holes **in** the mounting surface of a proper size to accommodate the hardware being used. If necessary, prepare these holes with inserts, anchors or other attachment devices as dictated by the type of mounting surface.

5. Attach the KSU to the mounting surface **with** four (4) screws installed through the KSU mounting flange **and** into the mounting surface holes. Note that the flange s are elongated with an enlargement nd of the hole. This feature allows the m screws to be partially installed in the mount. ce before the KSU is hung on them.

6. Place the individ telephone stations as desired and in keeping with accepted industry and off ice standards. A telephone station can be wall mounted if necessary as they are **desk/wall** reversable. Refer to Chapter 4, Maintenance, for **instructions** in preparing a **desk/wall** reversable station for wall mounting.

CABINET OUTLINE

|← — 15½ — →|

24½ (APPROX)

← — 4 (APPROX)

MOUNTING HOLE LOCATIONS

|← — 14 — →|

19¼

(ALL DIMENSIONS IN INCHES)

Figure 2-1. KSU Mountlng Dimensions

SYSTEM WIRIℕℊ

System cabling may be routed concealed or visible as the installation location requires. Good engineering practices must be observed and all applicable building codes must be adhered to. Tables 2-1 through 2-5 and Figures 2-2 through 2-5 illustrate the system wiring and connection points.

AC POWER CONNECTION

Employ a dedicated 11 7VAC 15 AMP circuit, with a third-wire ground, supplied to a standard electrical outlet (NEMA 5-15R) for the AC power connection. AC power connection is illustrated in Figure 3-2 shown below.

- A plug-in power line surge protector should be installed between the power cord and the AC outlet.

- Do not connect the AC power cord until the installation has been checked.

- To apply AC power, connect the power cord to the electrical outlet.

LINE CONNECTIONS

The KSU interface connection for the TELCO or PBX lines is a 50-pin, male connector. A 25-pair cable, properly terminated, must be connected from the KSU connector to the demarcation point connector (typically a 66M-xx connector).

CABLE CLIPS

The cabinet-mounted 50-pin male connector is equipped with a retaining clip. This clip is designed to secure the mated connection once it is made. The clip does this by snapping into a slot on the cable-mounted connector when it is pressed together with the cabinet-mounted connector. This retaining clip must be pulled back slightly to unsnap it before the connectors can be separated.

CAUTION

Transient voltage splkes, If Induced onto CO or CENTREX lines, can travel through the cable and Into the common equipment. The telephone company offers basic protection against this condition but it Is usually designed to protect the central office circuits. While it will also provide

some protection to the common
equipment, It should not be relied upon for
total protection. To help ensure that
external overvoltage surges do not
damage the system, It Is recommended
that gas discharge tubes, or similar
primary protectlon devices, be Installed,
and properly grounded, In all connected
TELCO Ilnes.

STATION CONNECTIONS

Connections between the KSU and the stations are
typically via type 66M-xx connector blocks which are
cable connected to the KSU 50-pin male connector.
The maximum distance allowed from the KSU to the
station is 1500 feet using #24 gauge, twisted-pair
cable.

If spare conductors exist in the cables that are run
between the KSU 66M-xx connector block and the
station jacks, It is a good practice to connect them to
earth ground. Doing this may help prevent them from
inducing radio frequency and/or AC interference into
the system.

CAUTION

The polarlty between the Individual wlres
In a particular voice or data palr Is not
critical; however, do not connect the voice
circults to the data clrcults.

*NOTE: Station ports are programmed for the type of
equipment that is to be connected to them.
Either an LCD Speakerphone must be
connected to station port 10 or a 22
Line/Feature Keyset must be connected to
station port 11 for Class Of Service
programming performance.*

REUSING THE 8 LINE BLF KEYSET

When the reused 8 Line BLF Keyset is installed at
station port 11, 12, or 13, the associated adjunct port
(11, 12, or 13) must be programmed for BLF 8 Line
Keyset operation; however, it cannot be connected to
ANY equipment.

- When the reused 8 Line BLF Keyset is installed at
any other station port, the following considerations
must be made:

- The data-paired port cannot be connected to any
equipment.

- The overload paired port cannot be used for an 8
Line BLF Keyset but can be used for regular
multiline or single-line station installation.

- The station port must be programmed for 8 Line
BLF Keyset operation. Refer to Chapter 3 for
details.

STATION PAIRING

Station ports are paired for both data and overload
protection as shown below:

DATA PAIRING		OVERLOAD	PAIRING
10 - ADJ 10	24 - 25	10-11	27-29
11 -ADJ 11	26 - 27	12-13	30-32
12 -ADJ 12	28 - 29	14-16	31-33
13 - ADJ 13	30-31	15 - 17	34-36
14 - 15	32-33	18-20	35 - 37
16 - 17	34 - 35	19-21	38-40
18 - 19	36-37	22-24	39-41
20 - 21	38-39	23-25 .	
22 - 23	40-41	26-28	

DSS/BLF CONSOLE CONNECTIONS

The system provides four designated adjunct
(console) ports. The adjunct ports are associated with
companion station ports as follows:

ADJUNCT PORT	STATION PORT
10	10
11	11
12	12
13	13

A DSS/BLF console may also be installed at any
station port that is data paired with a port containing a
companion telephone station. The station port that is
used by the console must be configured for console
operation by COS programming.

When installing a DSS/BLF console at a station port,
connect all four wires (voice pair and data pair) of the,
console cable to the station connector block. The
voice pair connections of the station port to which the
console is connected can also be connected as a PA
port.

Refer to the paragraph in this chapter headed *Area
Paging Interface • Station PA Port* and to the
Illustration shown in Flgure 2-3. Wire the Input of the
PA system to the DSS/BLF console voice-pair at the
station connector block. The station port must then be
programmed asa PA port.

Off-Hook Voice Announce
With Handsfree Answerback

The DB32S-xx Adjunct Feature Module can be used
to provide off-hook voice announcing (OHVA) to a
station that is already busy on a call, and allow
subsequent handsfree answerback (HFAB) by the
station user. Two data-paired station ports are
required to provide this feature.

- Connect a keyset to the first data-paired port.

- Connect the DB32S Adjunct Feature Module to the voice pair and data pair of the second data-paired port.

- For the feature to be enabled, the port to which the Adjund Feature Module is connected must be programmed as a DSS console with call announce.

SECURE OFF-HOOK VOICE ANNOUNCE TELEPHONE CONNECTIONS

This telephone system supports the Secure Off-Hook Voice Announce (SOHVA) feature provided by certain keyset models. Two data-paired station ports are required to provide the SOHVA feature.

NOTE: If non-secure off-hook voice announce capability is required, it can be provided by the model DB32S-xx console as described above.

The SOHVA equipped telephones contain a 6-position, 3-pair line jack. Using 6-wire, twisted-pair cable, connect the two inside pairs of the line jack to the first data-paired port and connect the outside pair to the second data-paired port. Refer to Flgure 2-5 for an illustration of this wiring.

- Connect pins 3 and 4 to the voice pair and pins 2 and 5 to data pair of the first data-paired port.

- Connect pins 1 and 6 to the voice pair of the second data-paired port.

To enable the SOHVA feature, the following programming considerations must be taken:

- The first paired-port must be programmed as a multiline port.

- The second paired-port must be programmed as a DSS console with call announce port.

POWER FAILURE STATION CONNECTIONS

The system provides three tip and ring pairs connected to lines 1, 2, and 3 as emergency, power failure circuits. These power failure pairs are located as detailed on Table 24 and Figure 24. A power failure pair is only active during a power failure. An industry standard, single-line telephone, such as a type 2500, can be connected to a power failure pair and used to provide communications capability should the AC power to the system be interrupted.

A-LEAD CONTROL DEVICE CONNECTIONS

The KSU can detect an A-lead (A and Al) control signal when it is applied to lines 7 and 8. An A-lead control device can be bridge-connected to these lines via terminal clips on the J-4 station connector block. Refer to Table 24 and Figure 24 for connection details.

DATA DEVICE CONNECTIONS

When a serial data printer is used for SMDR and COS printout, or a video display terminal (VDT) is used to perform class of service programming connect the data device to terminal clips on the J-4 station connector block.

The distance between the device and the KSU can be up to 500 feet in a quiet electrical enviroment. Shielded cable may be required at some sites for long runs. For longer distances, a limited distance modem must be used to relay the data communications between the wmmon equipment and the data device. Refer to Table 2-4 for connection details.

When preparing a cable for connection to a data device, refer to the manufacturer's manual for the equipment being interfaced, and make thefollowing wiring connections:

- Wire the KSU RD line (data from device to KSU) to the device TD (transmit data) output pin.

- Wire the KSU TD (data to device from KSU) pin to the device RD (receive data) pin.

- Wire the KSU SG (signal ground) pin to the device SG (signal ground) pin.

- Wire the KSU CTS (clear-to-send status from device to KSU) pin to the device RTS (request-to-send) output pin.

NOTE: The KSU requires a positive voltage, with respect to signal ground, in order to send data. If required, wire the KSU RTS (request-to-send status signal from the KSU to the device) pin to the device DSR (data-set-ready) input pin.

If required, wire the KSU PG (protective ground) line(s) to the protective ground pin(s) of the device.

The system defaults to 7-bit data with no parity at a baud rate of 1200. Configure the device, per the manufacturer's instructions, to'match the data format and baud rate that is set by COS programming.

SYSTEM GROUNDING

The wmmon equipment cabinet has internal secondary surge protection on all line ports. In order for this protection to be effective, the cabinet MUST be connected to a reliable earth ground such as a metal cold water pipe or a building frame ground. The grounding wire must be of #10 or #12 insulated, solid copper and separate from the three-wire AC line cord. A ground stud is located on the wmmon equipment cabinet for this purpose.

COMMON AUDIBLE AND AUXILIARY STATION INTERFACE

Two sets of relay closure dry-contact points are available at the J-l and J-2 station connector bbcks.One set (J-l connections) provides a dry-contact closure whenever any of the TELCO/PBX lines, connected to the KSU, ring. The other set (J-2 connections) provides a dry-contact closure whenever system station port 17 rings. These contact closures track the ringing pattern in both cases. The contacts are closed during the ringing period and are open during the silent period.

A typical connection is illustrated in Flgure 2-2. Refer to the paragraph headedArea Paging Interfacefor a discussion for using these terminals in this alternate paging function.

CAUTION

Do not exceed a 1 amp at 24 volts (.5 amp at 46 volts) load on these control terminals. If the load requirements exceed thls llmlt, connect the load through an external slave relay. DO NOT CONNECT THESE CONTROL TERMINALS DIRECTLY TO THE 117VAC LINE.

AREA PAGING INTERFACE - STATION PA PORT

Any unused station port can be programmed to be a PA port instead of a telephone station port (see Chapter 3 for programming details).

The audio input of an external paging amplifier can be connected to the audio pair of the station port as illustrated in Figure 2-3.

The audio input connection must be isolated with a 600 ohm to 600 ohm audio matching transformer. Terminate the audio input of the PA system with a 620 ohm (nominal value) resistor.

If station port 39 is programmed as a PA port, the Common Audible contact points are automatically reconfigured as PA enable terminals. The contact closure now occurs when PA station 39 is dialed. The normal common audible function, as discussed

previously, is disabledas long as station 39 is a PA station.

If station port 41 is programmed as a PA port, the Auxiliary Station Interface (station port 17 audible) contact points are automatically reconfigured as PA enable terminals. The contact closure now occurs when PA station port 41 is dialed. The normal auxiliary station interface function, as discussed previously, is disabled as long as station port 41 is a PA station.

AREA PAGING INTERFACE - LINE PORT

A line port can be configured by class of service programming to be an AUXILIARY port. As an AUXILIARY port, it can be used to couple a station voice path to an external device. This is done from any allowed station by pressing the proper line key to select the AUXILIARY port. DTMF tones or dial pulses can be dialed through the 'auxiliary port as needed.

If direct access area paging is to be part of the system, connect the audio input of a paging amplifier to the line that is programmed to be an AUXILIARY port. The input impedance of this port is approximately 600 ohms. A tone select, zone-paging amplifier can be employed if desired. If used, the zone-select code must be dialed after the AUXILIARY port line select key is pressed.

KEY SYSTEM/MULTIFUNCTION (HYBRID) CONFIGURATION

The system can be configured to operate as either a key system or as a multifunction (hybrid) system.

Configuration is by way of a wire strap placed between clip terminals 27 and 28 of station connector block J-4.

The KSU is shipped from the factory as a key system' (KF). To convert operation over to the multifunction (MF) system, add the strap.

The KF and MF designations are equipment type catagories as stipulated in FCC rules and regulations, Part 68, and appear as part of the FCC Registration Number on the equipment label. The appropriate registration number must be reported to the telephone company at the time of connection along with other FCC mandated information. (Refer to *Installer/user Information Regarding FCC Rules And Regulations* found in Chapter 1 of this manual.)

Operationally, the multifunction (hybrid) configuration enablescertain PBX features which may incur a higher monthly tariff to thetelephone company. These features allow dial access to (automaticselection of) outgoing lines. The specific Executech feature that is enabled is:
- Line Group (Including Dial Access)

MUSIC INTERFACE

If music is to be part of the system, connect a KX registered music source to the KSU input jack (phono jack) provided for this purpose,

The impedance of this input is approximately 500 ohms. Level adjustment of the music source may be necessary. This may be done during system checkout.

CASSETTE TAPE RECORDER INTERFACE

A customer provided, audio cassette, tape recorder can be connected to the music interface jack. Class of service programming can be both stored and loaded via the recorder through this interface. This action is controlled from station 10 or 11 as detailed in Chapter *3, System Programming.*

Table 2-1. Wiring For Station Connector Block J-I

SYSTEM INTERCONNECTION FOR KSU J-I						
KSU INTERFACE CONNECTOR WIRING			CONNECTION BLOCK WIRING			
25-PAIR CABLE CONNECTIONS			ASSIGNMENT		4-WIRE CABLE CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.			COLOR	CLIP TERM.
WHITE—BLUE	1	26	STATION 10	VOICE PAIR	GREEN	1
BLUE-WHITE		1			RED	2
WHITE—ORANGE	2	27		DATA PAIR	YELLOW	3
ORANGE-WHITE		28			BLACK	4
WHITE—GREEN	3		ADJUNCT PORT 10	POWER PAIR	GREEN	5
GREEN-WHITE		3			RED	6
WHITE—BROWN	4	29		DATA PAIR	YELLOW	7
BROWN-WHITE		4			BLACK	8
WHITE—SLATE	5	30	STATION 11	VOICE PAIR	GREEN	9
SLATE-WHITE		5			RED	10
RED—BLUE	6	31		DATA PAIR	YELLOW	11
BLUE-RED		6			BLACK	12
RED-ORANGE	7	32	ADJUNCT PORT 11	POWER PAIR	GREEN	13
ORANGE-RED		7			RED	14
RED-GREEN	8	33		DATA PAIR	YELLOW	15
GREEN-RED		8			BLACK	16
RED—BROWN	9	34	STATION 12	VOICE PAIR	GREEN	17
BROWN-RED		9			RED	18
RED-SLATE	10	35		DATA PAIR	YELLOW	19
SLATE-RED		10			BLACK	20
BLACK-BLUE	11	36	ADJUNCT PORT 12	POWER PAIR	GREEN	21
BLUE-BLACK		11			RED	22
BLACK-ORANGE	12	37		DATA PAIR	YELLOW	23
ORANGE-BLACK		12			BLACK	24
BLACK—GREEN	13	38	STATION 13	VOICE PAIR	GREEN	25
GREEN-BLACK		13			RED	26
BLACK-BROWN	14	39		DATA PAIR	YELLOW	27
BROWN-BLACK		14			BLACK	28
BLACK-SLATE	15	40	ADJUNCT PORT 13	POWER PAIR	GREEN	29
SLATE-BLACK		15			RED	30
YELLOW-BLUE	16	41		DATA PAIR	YELLOW	31
BLUE-YELLOW		16			BLACK	32
YELLOW-ORANGE	17	42	STATION 14	VOICE PAIR	GREEN	33
ORANGE-YELLOW		17			RED	34
YELLOW-GREEN	18	43		DATA PAIR	YELLOW	35
GREEN-YELLOW		18			BLACK	36
YELLOW-BROWN	19	44	STATION 15	VOICE PAIR	GREEN	37
BROWN-YELLOW		19			RED	38
YELLOW-SLATE	20	45		DATA PAIR	YELLOW	39
SLATE-YELLOW		20			BLACK	40
VIOLET-BLUE	21	46	STATION 16	VOICE PAIR	GREEN	41
BLUE-VIOLET		21			RED	42
VIOLET-ORANGE	22	47		DATA PAIR	YELLOW	43
ORANGE-VIOLET		22			BLACK	44
VIOLET-GREEN	23	48	STATION 17	VOICE PAIR	GREEN	45
GREEN-VIOLET		23			RED	46
VIOLET-BROWN	24	49		DATA PAIR	YELLOW	47
BROWN-VIOLET		24			BLACK	48
VIOLET-SLATE	25	50	COMMON AUDIBLE AUXILIARY INTERFACE		GREEN	49
SLATE-VIOLET		25			RED	50

Table 2-2. Wiring For Station Connector Block J-2

SYSTEM INTERCONNECTION FOR KSU J-2						
KSU INTERFACE CONNECTOR WIRING			CONNECTION BLOCK WIRING			
25-PAIR CABLE CONNECTIONS			ASSIGNMENT		4-WIRE CABLE CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.			COLOR	CLIP TERM.
WHITE—BLUE	1	26	STATION 18	VOICE PAIR	GREEN	1
BLUE-WHITE	1	1	STATION 18		RED	2
WHITE—ORANGE	2	27	STATION 18	DATA PAIR	YELLOW	3
ORANGE-WHITE	2	2	STATION 18		BLACK	4
WHITE—GREEN	3	28	STATION 19	VOICE PAIR	GREEN	5
GREEN-WHITE	3	3	STATION 19		RED	6
WHITE—BROWN	4	29	STATION 19	DATA PAIR	YELLOW	7
BROWN-WHITE	4	4	STATION 19		BLACK	8
WHITE—SLATE	5	30	STATION 20	VOICE PAIR	GREEN	9
SLATE-WHITE	5	5	STATION 20		RED	10
RED—BLUE	6	31	STATION 20	DATA PAIR	YELLOW	11
BLUE-RED	6	6	STATION 20		BLACK	12
RED-ORANGE	7	32	STATION 21	VOICE PAIR	GREEN	13
ORANGE-RED	7	7	STATION 21		RED	14
RED-GREEN	8	33	STATION 21	DATA PAIR	YELLOW	15
GREEN-RED	8	8	STATION 21		BLACK	16
RED—BROWN	9	34	STATION 22	VOICE PAIR	GREEN	17
BROWN-RED	9	9	STATION 22		RED	18
RED-SLATE	10	35	STATION 22	DATA PAIR	YELLOW	19
SLATE-RED	10	10	STATION 22		BLACK	20
BLACK-BLUE	11	36	STATION 23	VOICE PAIR	GREEN	21
BLUE-BLACK	11	11	STATION 23		RED	22
BLACK-ORANGE	12	37	STATION 23	DATA PAIR	YELLOW	23
ORANGE-BLACK	12	12	STATION 23		BLACK	24
BLACK—GREEN	13	38	STATION 24	VOICE PAIR	GREEN	25
GREEN-BLACK	13	13	STATION 24		RED	26
BLACK-BROWN	14	39	STATION 24	DATA PAIR	YELLOW	27
BROWN-BLACK	14	14	STATION 24		BLACK	28
BLACK-SLATE	15	40	STATION 25	VOICE PAIR	GREEN	29
SLATE-BLACK	15	15	STATION 25		RED	30
YELLOW-BLUE	16	41	STATION 25	DATA PAIR	YELLOW	31
BLUE-YELLOW	16	16	STATION 25		BLACK	32
YELLOW-ORANGE	17	42	STATION 26	VOICE PAIR	GREEN	33
ORANGE-YELLOW	17	17	STATION 26		RED	34
YELLOW-GREEN	18	43	STATION 26	DATA PAIR	YELLOW	35
GREEN-YELLOW	18	18	STATION 26		BLACK	36
YELLOW-BROWN	19	44	STATION 27	VOICE PAIR	GREEN	37
BROWN-YELLOW	19	19	STATION 27		RED	38
YELLOW-SLOW	20	20	STATION 27	DATA PAIR	YELLOW	39
SLATE-YELL _			STATION 27		BLACK	40
VIOLET-BLUE	21	46	STATION 28	VOICE PAIR	GREEN	41
BLUE-VIOLET	21	21	STATION 28		RED	42
VIOLET-ORANGE	22	47	STATION 28	DATA PAIR	YELLOW	43
ORANGE-VIOLET	22	22	STATION 28		BLACK	44
VIOLET-GREEN	23	48	STATION 29	VOICE PAIR	GREEN	45
GREEN-VIOLET	23	23	STATION 29		RED	46
VIOLET-BROWN	24	49	STATION 29	DATA PAIR	YELLOW	47
BROWN-VIOLET	24	24	STATION 29		BLACK	48
VIOLET-SLATE	25	50	STATION 17 AUXILIARY INTERFACE		GREEN	49
SLATE-VIOLET	25	25	STATION 17 AUXILIARY INTERFACE		RED	50

Table 2-3. **Wiring** For Station Connector Block J-3

SYSTEM INTERCONNECTION FOR KSU J-3						
KSU INTERFACE CONNECTOR WIRING			CONNECTION BLOCK WIRING			
25-PAIR CABLE CONNECTIONS			ASSIGNMENT		4-WIRE CABLE CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.			COLOR	CLIP TERM.
WHITE—BLUE	1	26	STATION 30	VOICE PAIR	GREEN	1
BLUE-WHITE		1			RED	2
WHITE—ORANGE	2	27		DATA PAIR	YELLOW	3
ORANGE-WHITE		2			BLACK	4
WHITE—GREEN	3	28	STATION 31	VOICE PAIR	GREEN	5
GREEN-WHITE		3			RED	6
WHITE—BROWN	4	29		DATA PAIR	YELLOW	7
BROWN-WHITE		4			BLACK	8
WHITE—SLATE	5	30	STATION 32	VOICE PAIR	GREEN	9
SLATE-WHITE		5			RED	10
RED—BLUE	6	31		DATA PAIR	YELLOW	11
BLUE-RED		6			BLACK	12
RED-ORANGE	7	32	STATION 33	VOICE PAIR	GREEN	13
ORANGE-RED		7			RED	14
RED-GREEN	8	33		DATA PAIR	YELLOW	15
GREEN-RED		8			BLACK	16
RED—BROWN	9	34	STATION 34	VOICE PAIR	GREEN	17
BROWN-RED		9			RED	18
RED-SLATE	10	35		DATA PAIR	YELLOW	19
SLATE-RED		10			BLACK	20
BLACK-BLUE	11	36	STATION 35	VOICE PAIR	GREEN	21
BLUE-BLACK		11			RED	22
BLACK-ORANGE	12	37		DATA PAIR	YELLOW	23
ORANGE-BLACK		12			BLACK	24
BLACK—GREEN	13	38	STATION 36	VOICE PAIR	GREEN	25
GREEN-BLACK		13			RED	26
BLACK-BROWN	14	39		DATA PAIR	YELLOW	27
BROWN-BLACK		14			BLACK	28
BLACK-SLATE	15	40	STATION 37	VOICE PAIR	GREEN	29
SLATE-BLACK		15			RED	30
YELLOW-BLUE	16	41		DATA PAIR	YELLOW	31
BLUE-YELLOW		16			BLACK	32
YELLOW-ORANGE	17	42	STATION 38	VOICE PAIR	GREEN	33
ORANGE-YELLOW		17			RED	34
YELLOW-GREEN		43		DATA PAIR	YELLOW	35
GREEN-YELLOW	18	18			BLACK	36
YELLOW-BROWN		44	STATION 39	VOICE PAIR	GREEN	37
BROWN-YELLOW	19	19			RED	38
YELLOW-SLATE	20	45		DATA PAIR	YELLOW	39
SLATE-YELLOW		20			BLACK	40
VIOLET-BLUE	21	46	STATION 40	VOICE PAIR	GREEN	41
BLUE-VIOLET		21			RED	42
VIOLET-ORANGE	22	47		DATA PAIR	YELLOW	43
ORANGE-VIOLET		22			BLACK	44
VIOLET-GREEN	23	48	STATION 41	VOICE PAIR	GREEN	45
GREEN-VIOLET		23			RED	46
VIOLET-BROWN	24	49		DATA PAIR	YELLOW	47
BROWN-VIOLET		24			BLACK	48
VIOLET-SLATE	25	50	SPARE		GREEN	49
SLATE-VIOLET		25			RED	50

Table 2-4. Wiring For Auxiliary Connector Block J-4

SYSTEM INTERCONNECTION FOR KSU J-4						
KSU INTERFACE CONNECTOR WIRING			CONNECTION BLOCK WIRING			
25-PAIR CABLE CONNECTIONS			ASSIGNMENT		CABLE CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.			COLOR	CLIP TERM.
WHITE—BLUE	1	26	POWER FAIL STA. 1	TIP		1
BLUE-WHITE		1		RING		2
WHITE—ORANGE	2	27	POWER FAIL STA. 2	TIP		3
ORANGE-WHITE		2		RING		4
WHITE—GREEN	3	28	POWER FAIL STA. 3	TIP		5
GREEN-WHITE		3		RING		6
WHITE—BROWN	4	29	SPARE			7
BROWN-WHITE		4				6
WHITE—SLATE	5	30	AUX. EQUIP. INTERFACE TO CO LINE 7	TIP	GREEN	9
SLATE-WHITE		5		RING	RED	10
RED—BLUE	6	31		A	YELLOW	11
BLUE-RED		6		A1	BLACK	12
RED-ORANGE	7	32	AUX. EQUIP. INTERFACE TO CO LINE 8	TIP	GREEN	13
ORANGE-RED		7		RING	RED	14
RED-GREEN	8	33		A	YELLOW	15
GREEN-RED		8		A1	BLACK	16
RED—BROWN	9	34	SPARE			17
BROWN-RED		9				18
RED-SLATE	10	35	SPARE			19
SLATE-RED		10				20
BLACK-BLUE	11	36	SPARE			21
BLUE-BLACK		11				22
BLACK-ORANGE	12	37	SPARE			23
ORANGE-BLACK		12				24
BLACK—GREEN	13	38	SPARE			25
GREEN-BLACK		13				26
BLACK-BROWN	14	39	KEY/MULTIFUNCTION STRAP(OUT FOR KEY)			27
BROWN-BLACK		14				28
BLACK-SLATE	15	40	SPARE			29
SLATE-BLACK		15				30
YELLOW-BLUE	16	41	SPARE			31
BLUE-YELLOW		16				32
YELLOW-ORANGE	17	42	SPARE			33
ORANGE-YELLOW		17				34
YELLOW-GREEN	18	43	SPARE			35
GREEN-YELLOW		18				36
YELLOW-BROWN	19	44	SPARE			37
BROWN-YELLOW		19				38
YELLOW-SLATE	20	45	SMDR DATA PRINTER INTERFACE	RD		39
SLATE-YELLOW		20		SPARE		40
VIOLET-BLUE	21	46		TD		41
BLUE-VIOLET		21		SG		42
VIOLET-ORANGE	22	47		RTS		43
ORANGE-VIOLET		22		CTS		44
VIOLET-GREEN	23	48		PG		45
GREEN-VIOLET		23		PG		46
VIOLET-BROWN	24	49	SPARE			47
BROWN-VIOLET		24				48
VIOLET-SLATE	25	50	SPARE			49
SLATE-VIOLET		25				50

Table 2-5. Wiring For CO/PBX Connector Block J-5

SYSTEM INTERCONNECTION FOR KSU J-5						
KSU INTERFACE CONNECTOR WIRING			CONNECTION BLOCK WIRING			
25-PAIR CABLE CONNECTIONS			ASSIGNMENT		CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.			COLOR	CLIP TERM.
WHITE—BLUE	1	26	CO LINE 1	TIP		1
BLUE-WHITE		1		RING		2
WHITE—ORANGE	2	27	CO LINE 2	TIP		3
ORANGE-WHITE		2		RING		4
WHITE—GREEN	3	28	CO LINE 3	TIP		5
GREEN-WHITE		3		RING		6
WHITE—BROWN	4	29	CO LINE 4	TIP		7
BROWN-WHITE		4		RING		8
WHITE—SLATE	5	30	CO LINE 5	TIP		9
SLATE-WHITE		5		RING		10
RED—BLUE	6	31	CO LINE 6	TIP		11
BLUE-RED		6		RING		12
RED-ORANGE	7	32	CO LINE 7	TIP		13
ORANGE-RED		7		RING		14
RED-GREEN	8	33	CO LINE 8	TIP		15
GREEN-RED		8		RING		16
RED—BROWN	9	34	CO LINE 9	TIP		17
BROWN-RED		9		RING		18
RED-SLATE	10	35	CO LINE 10	TIP		19
SLATE-RED		10		RING		20
BLACK-BLUE	11	36	CO LINE 11	TIP		21
BLUE-BLACK		11		RING		22
BLACK-ORANGE	12	37	CO LINE 12	TIP		23
ORANGE-BLACK		12		RING		24
BLACK—GREEN	13	38	CO LINE 13	TIP		25
GREEN-BLACK		13		RING		26
BLACK-BROWN	14	39	CO LINE 14	TIP		27
BROWN-BLACK		14		RING		28
BLACK-SLATE	15	40	SPARE			29
SLATE-BLACK		15				30
YELLOW-BLUE	16	41	SPARE			31
BLUE-YELLOW		16				32
YELLOW-ORANGE	17	42	SPARE			33
ORANGE-YELLOW		17				34
YELLOW-GREEN	18	43	SPARE			35
GREEN-YELLOW		18				36
YELLOW-BROWN	19	44	SPARE			37
BROWN-YELLOW		19				38
YELLOW-SLATE	20	45	SPARE			39
SLATE-YELLOW		20				40
VIOLET-BLUE	21	46	SPARE			41
BLUE-VIOLET		21				42
VIOLET-ORANGE	22	47	SPARE			43
ORANGE-VIOLET		22				44
VIOLET-GREEN	23	48	SPARE			45
GREEN-VIOLET		23				46
VIOLET-BROWN	24	49	SPARE			47
BROWN-VIOLET		24				48
VIOLET-SLATE	25	50	SPARE			49
SLATE-VIOLET		25				50

CONNECT TO CLIP TERMINALS ON CONNECTOR BLOCK PER CHART

KSU INTERNAL SWITCHING

24V @ 1A MAX
-OR-
4av @ .5A MAX

OUTPUT AS REQUIRED BY RELAY COIL

LOW VOLTAGE POWER SUPPLY

AC

VOLTAGE CLAMPING DIODE RECOMMENDED

SLAVE RELAY

SIGNALLING DEVICE POWER SOURCE

AC OR DC INPUT AS REQUIRED

SIGNALLING DEVICE

FUNCTION	CONNECTIONS
COMMON AUDIBLE	J-I CLIPS 49, 50
STATION 17 RINGING	J-2 CLIPS 49, 50

Figure 2-2. Common Audible/Auxiliary Station Interface Wiring (Typical Connection)

600 ～ TO 600 ～ (1:1)

AUDIO TRANSFORMER

PA SYSTEM

TO KSU STATION PORT 39 OR 41 IF ENABLE IS REQUIRED OR TO ANY UNUSED STATION PORT IF ENABLE IS NOT REQUIRED.

AUDIO INPUT

620 ～

ENABLE INPUT

FOR PA ENABLING, CONNECT TO CLIP TERMINALS ON CONNECTOR BLOCK
. BLOCK J-I CLIPS 49 & 50 FOR STATION PORT 39 PA ENABLE
. BLOCK J-2 CLIPS 49 & 50 FOR STATION PORT 41 PA ENABLE

Figure 2-3. PA Connections

Flgure 2-4. System Interconnectlon-Typical Connections

VOICE PAIR
(PAIRED STATION)

DATA PAIR

VOICE PAIR

6-WIRE
TWISTED PAIR
CABLE

TYPICAL
PAIRED
STATION
PORTS

NO
CONNECTION

TO SECURE
OFF-HOOK
VOICE ANNOUNCE
TELEPHONE

6-WIRE
LINE
CORD

FRONT
VIEW
OF JACK

1 -VOICE (PAIRED STATION)
2 -DATA
3 -VOICE
4 -VOICE
5 -DATA
6 -VOICE (PAIRED STATION)

TYPE 625A2-6 CONNECTOR
(TYPICAL)

AMPHENOL
CONNECTOR

C

25
50

26

CLIP TERMINALS

TYPICAL STATION
CONNECTOR BLOCK

Figure 2-5. Secure Off-Hook Voice Announce Telephone Connections

SYSTEM CHECKOUT

INITIAL CONDITION

The system operating features are set to default conditions at initial power up. These conditions provide a basic operating system with a known set of parameters, and the system should be initially checked out with the default conditions in place. At anytime while the system is operating, default conditions can be reset from station port 10 or 11 per the instructions provided in Chapter 3.

CHECK OUT

Check the KSU and telephone installation for proper operation by performing the following resistance and voltage measurements.

Resistance Check

Make the following resistance measurements at the station connector blocks under the following conditions:

- KSU AC power cord disconnected from electrical outlet.

- Power interconnection cable connected between KSU and power supply.

- KSU connected to station connector blocks.

- Stations wired, and wiring punched down on blocks.

- Bridging clips removed from blocks to isolate stations from KSU.

1. Measure the resistance of each installed station and wiring from the station side of the connector blocks. Resistance values will vary with cable length and station type but should be within the following limits.

2. Measure the resistance of the KSU and cables from the KSU side of the station connector blocks. Resistance values should be within the following limits.

MEASURED PAIR	STATION RESISTANCE IN OHMS				
	MULTILINE KEYSET	3 AND 8 LINE KEYSET	SINGLE LINE KEYSET	DSS/BLF CONSOLE	8 LINE BLF
VOICE PAIR	40-150	40-150	40-150	0.3 - 100	40-150
DATA PAIR	0.3 - 100	40 - 150	0.3 - 100	0.3 - 100	40 - 150

MEASURED PAIR	KSU RESISTANCE IN OHMS
VOICE PAIR	40 - 50
DATA PAIR	0.3 - 0.5

Voltage Check

Make the following voltage measurements at the station connector blocks under the following conditions:

- Bridging clips installed

- AC power connected to the KSU

Measure the voltage across one voice line and one data line and then across the other voice line and the other data line for each even and odd station. The measured voltage must be per the following chart. Variant readings can indicate a possible wiring, station, or KSU problem.

UNIT UNDER TEST	66M-xx BLOCK CONNECTION	METER LEAD POLARITY	MEASURED VOLTAGE
TYPICAL EVEN STATION (Repeat for each even sta.)	Voice 1	(+)	
	Data 3	(-)	+33 +/- 8 VDC
	Voice 2	(+)	
	Data 4	(-)	+33 +/- 8 VDC
TYPICAL ODD STATION (Repeat for each odd sta.)	Voice 9	(+)	
	Data 11	(-)	-33 +/- 8 VDC
	Voice 10	(+)	
	Data 12	(-)	-33 +/- 8 VDC

General Check

1. Check the red light emitting diode (LED) system status indicator. Be sure that it is on steady. If if is off or flashing, disconnect and reconnect the AC power plug. If the indicator is still not on steady, refer to the Failure Analysis Flow Chart found in Chapter 4.

2. Refer to the station User's Guide for operating information. Perform a general operational test of the system by exercising the system features from station port 10 or 11. Operational parameters are per the system default conditions as detailed in Chapter 3 until Class Of Service (COS) programming is performed.

3. Once the basic system is verified as operational, perform the COS programming.

GENERAL INFORMATION

- Class Of Service (COS) programming consists of the following major categories: General System COS, Toll Table Entry, Line COS, and Station COS.

- Class of service programming can be performed from either station port 10 or station 11. In addition, a 32-button DSS/BLF console must be installed in the adjunct port 10 or 11 respectively.

  - When programming from station port 10, employ an LCD Speakerphone and take note of the following important condition: *The LCD Speakerphone does not provide buttons B4 through B8. In performing the following procedures, whenever a programming step calls for buttons Bl through B8 to be pressed, first press the B1 button to shift the A-field buttons. When shifted, buttons A 1 through A8 will represent buttons B1 through B8. The B1 button performs a shift/no-shift toggle action each time it is pressed. The associated indicator turns on (shift) when A 1 - A8 = Bl - B8 and off (no-shift) when A1 - A8 = A1 - A8.*

    $$\boxed{CAUTION}$$

    It Is very Important to return the A-field buttons to their normal, or no-shift, state after the required B1 - B8 programming action Is taken.

  - When programming from station port 11, employ a 22 Line/Feature keyset, and perform the procedures as detailed in this chapter.

- Programming overlays are included with each system for use in identifing the buttons required for COS programming. One overlay fits over the buttons of the station installed at station port 10 or 11 and designates the A-field and B-field buttons. The other overlay fits over the buttons of the console Installed at adjunct port 10 or 11 and designates the C-field buttons. Full size copies of the programming overlays are included at the end of this chapter for use if needed.

- System and line COS programming do not require that a sequential process be followed once the base level program entry mode has been established except where noted herein. Station COS programming does follow a sequential process.

- Prior to taking any programming action, determine the system, line and station COS conditions and all toll restriction requirements. Record this data on the programming reference tables included within the programming procedures.

- A set of COS values can be recorded on cassette tape from a programmed system and later re-loaded into the same system or into another system. This method of programming can be employed in lieu of using the step-by-step programming sequence.

- A complete or a partial printed record of the COS program values can be obtained with a serial data printer connected to the SMDR output lines of the KSU. Complete details concerning this procedure are included at the end of this chapter.

SPECIAL PROGRAMMING REQUIREMENTS

SINGLE-LINE KEYSETS

Several programming steps under COS programming must be observed for proper operation of a Single-Line Keyset.

- When the system is strapped for key system configuration, the Single-Line Keyset is an intercom only station. It can be configured for private line only by programming the applicable station port for the prime line automatic feature. When the port is programmed with the prime line automatic feature, the Single-Line Keyset cannot be programmed with station speed dial numbers.

- When the system is strapped for the muttifunction (hybrid) system configuration, originating outside calls with a Single-Line Keyset requires that one or more lines must be programmed into a line group.

- In order to receive outside calls on a Single-Line Keyset, the call must be answered by an attendant using a multiline station and transferred to the single-line station. Otherwise, the Single-Line Keyset station port must be programmed to have the ringing line preference feature with ringing enabled on all desired lines. Aftemately it can be programmed to have the prime line automatic feature with ringing enabled at the prime line.

REUSED 8 LINE BLF KEYSET

Even though an 8 Line BLF Keyset is physically connected to only one station port, it appears to the system as two data-paired stations. Special programming is required to enable proper operation of a reused 8 Line BLF Keyset.

- The station port to which it is connected must be programmed for a 3 and 8 Line Keyset.

- The paired station port must be programmed for an 8 Line BLF Keyset although it can not be connected to any equipment.

- When the 8 Line BLF Keyset is connected to station port 11, 12, or 13, the respective adjunct port serves as the paired port.

- When connected to station ports 14 through 41, the paired port is as charted in Chapter 2, Installation, or Chapter 5, Maintenance.

After COS programming of the station port is complete, the DSS/BLF buttons of the 8 Line BLF Keyset must be programmed, from that station. Program them to contain the intercom dialing sequence for each station in the system for which visual indication is desired,

It should be noted that certain features, such as call-back messaging, are not available with the 8 Line BLF Keyset.

CLASS OF SERVICE PROGRAMMING WITH A 40-BUTTON OR A 32-BUTTON CONSOLE

The system will recognize either a C42 through C49 from a 40-button console or a HOLD, 1 through HOLD, 8 from the keyset as the same programming buttons. Because of this, it is possible to program with a 32-button console installed at adjunct port 10 or 11. The programming buttons C42 through C49 (normally provided by a 40-button console and not available on a 32-button console) are relocated to the keyset as follows:

40-BUTTON CONSOLE BUTTON	ALTERNATE KEYSET BUTTON WHEN 32-BUTTON CONSOLE IS INSTALLED
C42	HOLD, 1
c43	HOLD, 2
C44	HOLD, 3
c45	HOLD, 4
C46	HOLD, 5
c47	HOLD, 6
C48	HOLD, 7
c49	HOLD, 8

BASE LEVEL PROGRAM ENTRY MODE

The first step in any COS programming sequence is to enter the base level programming mode. Once in this mode, COS can be set as desired.

To enter base level:

1. Press the ITCM button. The dial tone will sound.

2. Press the following buttons in sequence; ✳ 7 4 6. Note that the dial tone stops and a tone burst sounds to indicate that the base level programming mode is entered.

3. Press the ✳ button. The dial tone will return as a confirmation that the base level mode is active.

4. Proceed from this point to program the system, line, or station COS and the toll restriction tables.

CLASS OF SERVICE DEFAULT

The system can be defaulted to a standard class of service per the following procedure. The defautt conditions are listed at the beginning of each COS programming procedure and shaded on the programming reference charts.

1. Press ITCM ✳ 7 4 6 ✳.

2. Press program button B5 (B1, A5, B1 on LCD Speakerphone).

3. Press keypad button(s) to choose default setting:

    1 ≡ system defautt
    2 ≡ line defautt
    3 ≡ station defautt
    4 ≡ pulse dialing, all lines
    5 ≡ tone dialing, all lines
    6 ≡ button mapping default
    # ≡ one 80-column SMDR line
    8 ≡ two 40-column SMDR lines
    CI 0 ≡ enable TRANS/CONF support
    C11 ≡ enable SAVE support
    Cl2 ≡ immediate transfer on
    Cl3 ≡ immediate transfer off
    1051684 ≡ master default

⚠ CAUTION

Master default action resets all values and clears all stored memory - Do not perform thls programming action while the system Is In use.

4. Press ✳ MNTR (SPKR on speakerphones) to end.

SYSTEM COS PROGRAMMING PROCEDURE

SYSTEM DEFAULTS

Recall/Flash Time = 2 Seconds
Intercom Signalling = Voice First
Pause Time = 1 Second
Central Message Desk = Not Assigned
Timed Hold Recall Time = 60 Seconds
Unanswered Call Transfer = 20 Seconds
Printer Baud Rat8 = 1200 baud, 7-bit Data
Print Length -40 Column
Port Assignments:
- All Station Ports= 22 Line/Feature Keyset
- All Adjunct Ports = 40-button DSS/BLF Consoles
- Station And Adjunct Ports 10 Always Default

PROCEDURE

1. Press ITCM ✳ 7 4 6 ✳ (base level entry if not active).

2. Set recall/flash time.

   - Press program button B1 (BI , AI, B1 on LCD Speakerphone).

   - Press keypad button for time.
1 = 80 msec.	6 = 875 msec.
2 = 300 msec.	7 = l.Osec.
3 = 500 msec.	8 = 1.5 sec.
4 = 600 msec.	9 = 2.0 sec.
5 = 750 msec.	0 = 3.0 sec.

   - Press S to return to base level.

3. Set pause time.

   - Press program button B2 (B1, A2, B1 on LCD Speakerphone).

   - Press keypad button for time.
1 = .5 sec.	6 = 5.0 sec.
2 = 1.0 sec.	7 = 7.5 sec.
3 = 1.5 sec.	8 = 10.0 sec.
4 = 2.0 sec.	9 = 15.0 sec.
5 = 3.0 sec.	0 = 20.0 sec.

   - Press S to return to base level.

4. Set timed hold recall time.

   - Press program button B3 (B1, A3, B1 on LCD Speakerphone).

   - Press keypad button for time.
1 = 30 sec.	6 = 240 sec.
2 = 60 sec.	7 = 300 sec.

3 = 90 sec.	8 = 360 sec.
4 = 120 sec.	9 = 420 sec.
5 = 180 sec.	0 = disabled

   NOTE: The 0 program selection enables an exclusive hold condition (when set at a station) to place a line in a ho/d condition at one station that cannot be released at any other station.

   - Press ✳ to return to base level.

5a. Set baud rate of printout.

   - Press program button B6 (B1 , A6, B1 on LCD Speakerphone).

   - Set baud rate with keypad.
1 = 110 baud, 7 bits	6 = 2400 baud, 7 bits
2 = 150 baud, 7 bits	7 = 3600 baud, 7 bits
3 = 300 baud, 7 bits	8 = 4800 baud; 7 bits
4 = 600 baud, 7 bits	9 = 9600 baud, 7 bits
5 = 1200 baud, 7 bits	0 = 19200 baud, 7 bits

   - Press ✳ to return to base level.

5b. Set line length of printout.

   - Press program button B5 (BI, A5, B1 on LCD Speakerphone).

   - Press # for one 80 column.
     -OR-
     Press 8 for two 40 columns.

   - Press *to return to base level.

6. Choose intercom first signalling.

   - Press TAP for voice.
     -OR-
     Press TRANS/CONF for tone.

   - Press *to return to base level.

7. Specify central message desk (only one central message desk per system allowed).

   - Press #.

   - To choose station 10 - 41, press console button C10 - C41.

   - To cancel, press # ✳.

   - Press ✳ to return to base level.

8. Set recall time for unanswered call transfer.

   - Press program button **B7** (BI , A7, **B1** on LCD Speakerphone).

   - Press keypad buttons for time.
1 = 10 sec.	6 = 60 sec.
2 = 20 sec.	7 = 90 sec.
3 = 25 sec.	**8** = 120sec.
4 = 30 sec.	**9** = 180 sec.
5 = 45 sec.	0 = 240 sec.

   - Press ✳ to return to base level.

9. Specify station type for each adjunct port.

   - Press console button to identify adjunct port.
     C43 = adjunct port 11
     C44 = adjunct port 12
     C45 = adjunct port 13

   - Press console button to specify equipment type.
     C46 = **8-Line** BLF **Keyset**
     C47 = **DSS/BLF** Console

10. Specify station type for each station port.

    - Press console buttons **C10 - C41** to identify station port 10 - 41.

    - Press console button to specify station type.
      C42 = Single-Line **Keyset** (administrative phone)
      TRANS/CONF = Single-Line **Keyset** (hotel/motel phone)
      C46 = 8 Line BLF **Keyset**
      C47 = DSS/BLF Console **(40-button)**
      C48 = 3 and 8 Line **Keyset**
      C49 = 22 Line/Feature **Keyset**
      CI 0 = **32-Button** Console (without call announce)
      6 = **32-Button** Console (with call announce)
      7 = LCD Speakerphone

    - Press ✳ and repeat steps for each active station **port.**

NOTE: The step 10 action sets station class of service for specified port to the default conditions for that type of station.

11. Press ✳ MNTR (SPKR) to **exit** programmming mode.

3-4

SYSTEM COS PROGRAMMING REFERENCE TABLE

- Shading denotes system default conditions.
- Check off values chosen for system being programmed

EASE LEVEL (ITCM) (★) (7 (4 (6) (★)

2 RECALL/FLASH TIME
B1 (B1 A1 B1 LCD PHONE)

KEY	TIME	CHECK-OFF
1	80 MSEC	
2	300 MSEC	
3	500 MSEC	
4	600 MSEC	
5	750 MSEC	
6	875 MSEC	
7	1.0 SEC	
8	1.5 SEC	
9	2.0 SEC.	
0	3.0 SEC	

3 PAUSE TIME
B2 (B1 A2 B1 LCD PHONE)

KEY	TIME	CHECK-OFF
1	5 SEC	
2	1.0 SEC	
3	1.5 SEC	
4	2.0 SEC	
5	3.0 SEC	
6	5.0 SEC	
7	7.5 SEC	
8	10.0 SEC	
9	15.0 SEC	
0	20.0 SEC	

4 HOLD RECALL TIME
B3 (B1 A3 B1 LCD PHONE)

KEY	TIME	CHECK-OFF
1	30 SEC	
2	60 SEC.	
3	90 SEC	
4	120 SEC	
5	180 SEC	
6	240 SEC	
7	300 SEC	
8	360 SEC	
9	420 SEC	
0	DISABLED	

Note 0 program selection (disabled) enables exclusive hold condition (when set at station) to place line on hold that cannot be released at any other station

5a BAUD RATE FOR COS AND SMDR DATA
B6 (B1 A6 B1 LCD PHONE)

KEY	DATA SPEED	CHECK-OFF
1	110 BAUD, 7 BITS	
2	150 BAUD, 7 BITS	
3	300 BAUD, 7 BITS	
4	600 BAUD, 7 BITS	
5	1200 BAUD, 7 BITS	
6	2400 BAUD, 7 BITS	
7	3600 BAUD, 7 BITS	
8	4800 BAUD, 7 BITS	
9	9600 BAUD, 7 BITS	
0	19200 BAUD, 7 BITS	

5b PRINTOUT LINE LENGTH
B5 (B1 A5 B1 LCD PHONE)

(#)	80 COLUMN 1 LINE
(8)	40 COLUMN 2 LINES

6 INTERCOM FIRST CHOICE SIGNALLING

(TAP)	VOICE	
(Flash)	TONE	

7

(#)	CENTRAL MESSAGE DESK
(C10)-(C41)	STATION PORT ASSIGNED
(#) (★)	NONE ASSIGNED

8 RECALL TIME UNANSWERED CALL TRANSFER
B7 (B1 A7 B1 LCD PHONE)

KEY	TIME	ENTRY
1	10 SEC	
2	20 SEC	
3	25 SEC	
4	30 SEC	
5	45 SEC	
6	60 SEC	
7	90 SEC	
8	120 SEC	
9	180 SEC	
0	240 SEC	

9

STATION TYPE	ADJUNCT PORT			
	10	(C43) 11	(C44) 12	(C45) 13
8 LINE BLF KEYSET	N/A			
DSS/BLF CONSOLE				

10

STATION TYPE		STATION PORT															
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
(C42)	SINGLE-LINE																
(C46)	8 LINE BLF																
(C47)	DSS/BLF CONSOLE																
(C48)	3 AND 8 LINE																
(C49)	22 LINE/FEATURE																
(C10)	32-KEY CONSOLE W/O C.A.																
(6)	32-KEY CONSOLE W C.A.																
(7)	LCD PHONE																

STATION PORT															
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41

TOLL RESTRICTION PROGRAMMING

In order for toll restriction to take effect, the following three-fold process must occur:

One or more toll tables must be entered.

Toll tables must be assigned to all appropriate lines.

Toll tables must be assigned to all appropriate stations

Only the toll table(s) which are entered and assigned to both a line and a station using that line will invoke any toll restriction. Toll tables 1 and 2 have entries defauted in them and these tables are assigned to all lines by default. These tables are not assigned to stations by default.

TABLE ENTRY PROCEDURE

1. Determine the types of dialing restrictions which **must** be imposed on the system. Typically, this includes access codes which result in toll charges, and certain local numbers as desired.

2. If the restricted dialing codes will be imposed consistently on most or all stations in the system, list them on one or two tables. If wide variation in the dialing restrictions is planned, spread the listing out across several tables.

3. Strategically group the listings on the tables so that a list of restrictions can be applied to a particular station or group of stations.

4. Designate each table as a DENY table or as an ALLOW table. The numbers entered in a DENY table are prevented from being dialed. ALLOW tables take precedence over DENY tables. Therefore, an entry in an allow table will provide an explicit exception to an entry in a DENY table. Note that the system always permits the dialing of any number not explicitly denied. Also, system speed dial numbers will not be toll restricted unless specified by station COS programming.

   Example A: Provide a simple and broad toll restriction format by creating a DENY table with two entries: ENTRY (1) = 1 ENTRY (2) = 0. This format prevents all long distance and operator calls.

   Example **B**: Prevent the dialing of all numbers within the (804) area code, while allowing the dialing of one specific number within that area code, by entering 1804 in a DENY table and 18049782200 in an ALLOW table.

5. Enter the **#** character in place of a particular digit to condense a range of numbers into one entry. The # character is a "match-anything" digit, and

can be included in an entry in either a DENY table or an ALLOW table.

   Example A: If 357, 377,387, and 397 dialing is to be prohibited, list one entry of **3#7** on a DENY table to cover them all.

   Example B: Since all area codes typically have a 1 or a 0 as a middle digit, prevent bng distance calls to those area codes by entering **1#1#** and **1#0#** in a DENY table.

6. Since **it** is important that emergency numbers never be restricted, **always** create an allow table with entries of 911 and 1911 to override any DENY tables that have been created.

7. If the system is installed behind a PBX, include an access code as part of every table entry.

8. Once these tables are completely filled out, enter the restriction planning tables on the line, and station programming reference charts to record the planned toll restrictions for the system.

TOLL RESTRICTION PROGRAMMING PROCEDURE

1. Press **ITCM** ✳ 7 4 6 ✳ .

2. Press program button **B4 (B1,** A4, **B1** on LCD Speakerphone).

3. Select table.

   • Console button Cl 0 - C25 = table 1 - 16.

4. Select table type.

   • Deny - press program button **B5 (B1,** AS, **B1** on LCD Speakerphone).

   • Allow - press program button **B6 (B1,** A6, **B1** on LCD Speakerphone).

5. Select table entry.

   • Program button Al - A4 = Entry 1 - 4

6. Dial number (16 digits maximum).

   • Remember, press **#** for "match anything" digit.

7. Repeat steps 5 and 6 until all numbers are entered into tables.

8. Repeat steps 3 through 7 until all tables are programmed

9. Press ✳ MNTR (SPKR) to exit programming mode.

TOLL RESTRICTION PROGRAMMING REFERENCE TABLES

RESTRICTION TABLE 1

TYPE ALLOW _____ DENY __X__

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1															
2	9	7	6													
3	4	1	1													
4	0															

TABLE ASSIGNMENT LINES **ALL** STATIONS _____

RESTRICTION TABLE 2

TYPE ALLOW __X__ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	8	0	0												
2	9	1	1													
3																
4																

TABLE ASSIGNMENT: LINES **ALL** STATIONS _____

RESTRICTION TABLE 3

TYPE ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 4

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT- LINES _____ STATIONS _____

RESTRICTION TABLE 5

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT LINES _____ STATIONS _____

RESTRICTION TABLE 6

TYPE ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 7

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT. LINES _____ STATIONS _____

RESTRICTION TABLE 6

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES _____ STATIONS _____

Toll Restriction Tables - continued

RESTRICTION TABLE 9

TYPE ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER 116 MAXIMUM)															
	1	12	13	14	5	16	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT. LINES _____ STATIONS _____

RESTRICTION TABLE 10

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 11

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER 116 MAXIMUM															
	1				5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT. LINES _____ STATIONS _____

RESTRICTION TABLE 12

TYPE. ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT. LINES _____ STATIONS _____

RESTRICTION TABLE 13

TYPE ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	16	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT- LINES _____ STATIONS _____

RESTRICTION TABLE 14

TYPE. ALLOW _____ D E N Y _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT. LINES _____ STATIONS _____

RESTRICTION TABLE 15

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT LINES _____ STATIONS _____

RESTRICTION TABLE 16

TYPE: ALLOW _____ DENY _____

ENTRY	ENTRY NUMBER (16 MAXIMUM)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES _____ STATIONS _____

LINE COS PROGRAMMING

LINE DEFAULTS

Line Type = TELCO
Line Groups = None Assigned
Dial Mode = DTMF
Privacy Status = Private
Toll Tables = None Assigned
Abandoned Hold Timeout = 50 Msec.

PROCEDURE

1. Press ITCM ✳ 7 4 6 ✳.

2. Choose line to be programmed.

   - Press Al - **A14** = Line **1** - 14.

3. Select line type.

   - Disabled = C46

   - Auxiliary = **C47**

   . CO/PBX = **C48**

4. Select line group (hybrid configuration only)

   - None = C41

   - Group 1 = C34

   - Group 2 = C35

   - Group 3 = C36

   - Group 4 = C37

5. Select dialing mode.

   - Pulse/tone = C26

   - Tone only = C27

8. Select privacy mode

   - Private = C28

   - Non-private = C29

7. Assign toll tables.

   - Clear all assignments = C33.

   - Program button Cl 0 - **C25** = tables **1** - 16

8. Set abandoned hold timeout period.

   - 300 msec. = **C42**

   - 50 msec. = **C43**

9. Repeat steps 2 - 8 for each line.

10. Press ✳ MNTR (SPKR) to exit programming.

LINE COS PROGRAMMING REFERENCE TABLE

- Shading denotes line default conditions.
- Check off values chosen for lines being programmed

BASE LEVEL (TCM)(★)(7)(4)(6)(★)

LINE PROGRAMMING MODE (A1)-(A14)

	PROGRAMMED FEATURE			LINE NUMBER													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
3	SELECT LINE TYPE	(C46)	DISABLED														
		(C47)	AUXILIARY														
		(C48)	CO/PBX														
4	LINE GROUPS	(C34)	GROUP 1														
		(C35)	GROUP 2														
		(C36)	GROUP 3														
		(C37)	GROUP 4														
		(C41)	NONE ASSIGNED														
5	DIAL MODE	(C26)	PULSE/TONE														
		(C27)	TONE ONLY														
5	PRIVACY MODE	(C29)	NON-PRIVATE														
		(C28)	PRIVATE														
7	TOLL RESTRICTION TABLE ASSIGNMENT	(C10)	1														
		(C11)	2														
		(C12)	3														
		(C13)	4														
		(C14)	5														
		(C15)	6														
		(C16)	7														
		(C17)	8														
		(C18)	9														
		(C19)	10														
		(C20)	11														
		(C21)	12														
		(C22)	13														
		(C23)	14														
		(C24)	15														
		(C25)	16														
		(C33)	NONE														
8	ABANDONED HOLD TIMEOUT	C42	300MSEC														
		(C43)	50 MSEC														

CO/PBX NUMBERS AND STATION ASSIGNMENTS

* Power Fail Lines (1, 2, and 3)
** A-Lead Control Lines (7 and 8)

STATION COS PROGRAMMING

STATION DEFAULTS

PA Port = Disabled
Executive Override = Disabled
Ringing Line Preference = Disabled
Prime Line/group = None
Personal Ringing Tone = Tone 1
Single Line Keyset Accesses Intercom
Ringing Assignment = All Lines Ring on Stations 10, 17, 39, And 41
Line Access Denied = None
Toll Tables = None Assigned
Origination Denied = None
Idle Line Preference = None
Night Transfer = All Lines Ring On Stations 10, 17, 39 And 41
All-Call Receive = Enabled
All-Call Originate = Enabled
Reserved Intercom Link = None
Zone Page Receive = Disabled
Zone Page Originate = Disabled
Message Originate = Disabled
Automatic Hold = Disabled
System Speed Dial Toll Restriction = Disabled
Voice Announce Block = Disabled
Privacy Status = Private
Line/Button Assignment (Button Mapping):
3 And 8 Line Keyset:
- B-Field Buttons: B1 - B8 = Lines 1 - 8
22 Line/feature Keyset
- A-Field Buttons: Al - Al4 = Lines 1 - 14
- B-Field Buttons: Bl - B8 = Autodial Locations

PROCEDURE

Perform all steps in sequence.

Skip those steps not required.

1. **Press ITCM * 7 4 6 *.**

2. Press program button B8 (B1, A8, B1 on LCD Speakerphone).

3. Specify station to be programmed, then perform applicable steps.

    - Press Cl0 - C41 for station port 10 to 41

    - If desired, press TRANS/CONF to default following settings.
      PA port = disabled
      Prime line/group = none
      Voice announce block = disabled
      Executive override = disabled
      Message originate = disabled
      Automatic hold = disabled
      System speed dial toll restriction = disabled

4. Enable PA port if desired.

    - Press keypad button 1

*NOTE: If a selected station port is programmed to be a PA port, per step 4, do not perform any further programming for this selected station port. Instead, return to step 3 to program another station port or press * MNTR (SPKR) to end programming.*

5. Block voice announced intercom calls

    - Press keypad button 2.

6. Enable executive override.

    - Press keypad button 3.

7. Enable toll table restriction on system speed dial numbers.

    - Press keypad button 4.

8. Choose personal ringing tones (22 Line/Feature Keysets).

    - TONE 1 = keypad button 7
    - TONE 2 = keypad button 8
    - TONE 3 = keypad button 9
    - TONE 4 = keypad button 0

9. Set automatic hold.

    - Press keypad button 5.

10. Enable message wait originate.

    - Press keypad button 6.

11. Select prime line, prime group or prime intercom.

    - A1 - A14 = line 1 - 14.
      -OR-
    - HOLD HOLD = group 1.

      B1 (B1, Al, B1 on LCD Speakerphone) = group 2

      B2 (Bl, A2, B1 on LCD Speakerphone) = group 3

      B3 (Bl, A3, B1 on LCD Speakerphone) = group 4
      -OR-
    - ITCM = intercom

12. Set ringing line preference.

- **B5** (**B1**, A5, **B1** on LCD Speakerphone) = enabled

- **B4** (BI, A4, **B1** on LCD Speakerphone) = disabled

13. Select ringing assignments

RINGING

- Press program button C42 (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

DELAYED RINGING

- Press program button **C43** (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

14. Select Night Transfer (ringing)

- Press program button **C44** (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

15. Select automatic privacy release.

- Press program button C45 (clears previous settings).

- Choose lines: Al - Al 4 = lines 1 - 14

16. Select access denied.

- Press program button C46 (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

17. Select call origination denied.

- Press program button **C47** (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

18. Select idle line preference.

- Press program button **C48** (clears previous settings).

- Choose lines: Al - Al4 = lines 1 - 14

19. Assign toll tables to station.

- Press program button **C49** (clears previous assignments).

- Specify toll tables to be assigned.
  Al - Al4 = tables 1 - 14
  B4 = table 15
  B5 = table 16.

20. **Reserve** intercom link.

- Press **#**.

- Press keypad button 1 - 7 to reserve link l-7.
  -OR-
- Press 0 **key for** no reserved link.

- Press console key C42 to continue with next programming step.

21. Select all-call and/or zone paging.

- Press #

- Press TAP to disable all paging assignments (if desired).

ALL-CALL

- Press program button A4 to originate.

- Press program button A8 to receive.

- Press console button C42 to continue with next programming step.

ZONES A, B, AND C

- Press **#**

- Select zones.

- Al - A3 = originate zones A - C

- A5 - A7 = receive zones A - C

- Press console button C42 to continue with next programming step.

22. Specify flexible button/function assignment (non-square configuration)

3 AND 8 LINE KEYSET LINE ASSIGNMENT

a. Press program button B6 (Bl, A6, B1 on LCD Speakerphone).

b. Select button to be programmed.
B1 - B8 (B1, Al - A8, B1 on LCD Speakerphone).

c. Select line: Al - Al4 = lines 1 - 14
     OR-
Press TAP button to disable line appearance.

d. Repeat steps a - c for'each line assigned, then go to step 23.

22 LINE/FEATURE KEYSET LINE ASSIGNMENT

a. Press program button B6 (B1, A6, B1 on LCD Speakerphone).

b. Select button Al - Al4
     -OR-
B1 - B8 (B1, Al - A8, B1 on LCD Speakerphone).

c. Select line: Al - Al4 = lines 1 - 14
     -OR-
Press TAP button to disable line appearance.

d. Repeat steps b and c for each line assigned.

e. Go to step 23.
     -OR-
Repeat step b to select button for DSS nr autodial assignment.

22 LINE/FEATURE KEYSET DSS ASSIGNMENT

a. Press program button B6 (B1, A6, Bl on LCD Speakerphone).

b. Select button: Al - Al4
     -OR-
B1 - B8 (Bl, Al - A8, B1 on LCD Speakerphone).

c. Choose station port to be assigned to key Cl0 - C41 = station ports 10 - 41

d. Repeat steps b and c for all buttons requiring DSS assignment.

e. Go to step 23.
     -OR-
Repeat step b to select button for line or autodial assignment.

22 LINE/FEATURE KE YSET AUTODIAL AND DYNAMIC LINE BUTTON ASSIGNMENT

a. Press program button B6 (B1, A6, B1 on LCD Speakerphone).

b. Select button: Al - Al4
     OR-
B1 - B8 (B'i, Al - A8, B1 on LCD Speakerphone).

NOTE: B1 - B3 (B1, Al - A3, B1 on LCD Speakerphone) = Dynamic Line Buttons.

c. Press TAP button.

d. Repeat steps b and c for all buttons requiring autodial capability.

e. Go-to step 23.
     -OR-
Repeat step b to select button for DSS or line assignment.

23. Press ✱ and repeat from step 3 to choose next station port for programming.
     -OR-
Press ✱ MNTR (SPKR) to end programming.

BLOCK PROGRAMMING

A group of stations can be programmed with the same COS as a previously programmed station.

1. Press ITCM * 7 4 6 *

1. Press HOLD HOLD.

2. Specify model station port.

   - C10 - C41 = station port 10 - 41.

3. Specify first station port.

   - C10 - C41 = station port 10 - 41.

4. Specify last station port.

   - C10 - C41 = station port 10 - 41.

NOTE: Flexible button/function assignments for station port 10 or 11 cannot be changed by block programming.

5. Press * MNTR (SPKR) to end programming.

THROUGH-DIALING WITH AN OPX BOX

When enabled, this feature inhibits the common equipment from sending DTMF tones on the CO line ii the device attached to the OPX Box (such as an industry-standard model 2500 telephone set) is capable of this function.

When disabled, this feature allows the KSU to send DTMF tones on the CO line if the device attached to the OPX Box (such as a rotary dial telephone set) is not capable of this function. The system is defaulted to disable this feature.

To program station port to be occupied by OPX Box,

1. Press ITCM * 7 4 6 *.

2. Select station port for OPX Box use.

   - C12 - C41 = station port 12 - 41

3. Press C42.

4. Press *.

5. Press B8 (B1, *A8,* B1 on LCD Speakerphone)

6. Select OPX Box port (same port as selected in step 2).

7. Choose OPX through-dialing mode.

   - TAP = enabled

   - B7 (B1, A7, B1 on LCD Speakerphone) = .
     disabled

8. Press * MNTR (SPKR) to end programming.

HUNT GROUP PROGRAMMING

Station ports can be assigned to intercom hunt groups. When a station assigned to a hunt group is busy, a call to it will ring at the next idle station in the group. Typical hunt groups operate as follows:

TERMINAL HUNTING

Assume that a terminal hunt group is formed as follows:

- Station port 013 is linked to station port 014
- Station port 014 is linked to station port 015
- Station port 015 is linked to station port 016.

If station port 013 and 014 are busy when an intercom call is directed to station port 013, that call will ring at station port 015 because it is the first idle port in the group. If port 015 is also busy, the call will ring at station port 016. If port 016 is also busy, the call will sound a busy tone at the calling station.

In the above example, the group is open-ended or terminal. A call will be routed down the group from the busy station port. If it reaches the end of the group without encountering an idle station, it will stop.

A particular station can be linked at the end of more than one hunt group so long as the sixteen station ports per group are not exceeded. For instance, a second terminal hunt group could be formed along with the example shown above:

Station port 020 is linked to station port 021

Station port 021 is linked to station port 022

Station port 022 is linked to station port 016.

Thus, station port 016 would serve in both terminal hunt groups although the groups are independent otherwise. Other terminal hunt groups could also be formed with station port 016 as the last station in the group.

CIRCULAR HUNTING

A hunt group can be made circular by linking the last port in the group with the first port in the group. From the first example given above, a circular hunt group could be formed as follows:

- Station port 013 is linked to station port 014
- Station port 014 is linked to station port 015
- Station port 015 is linked to station port 016
- Station port 016 is linked to station port 013.

In a circular hunt group, a call will search around the group until it encounters an idle station port or until all stations in the group, up to a maximum of sixteen, are searched.

HUNT GROUP GUIDE LINES

In forming intercom hunt groups, the following guide lines apply:

- A minimum of two stations ports can form one hunt group.
- A maximum of sixteen station ports can be placed in one hunt group.
- Multiple hunt groups can be formed.
- The call forwarding feature is disabled for all but the fast station port assigned to a hunt group.
- The maximum number of hunt groups that can be formed is determined by the number of stations available and the sixteen station per group limitation.
- A station port can have only one other station port added to it but it can be added to the end of any number of station ports. In this case, it adds to the count in each hunt group that it is added to. See example 1 (page 4-15)..
- A station port can be the first or intermediate port in only one hunt group. See examples 2 and 3 (page 4-15).

PROGRAMMING

To program two station ports Into a hunt group,

1. Press ITCM ✳ 7 4 6 ✳.
2. Press B8 (B1, A8, B1 on LCD Speakerphone)..
3. Choose first station port in link:

   - Cl0 - C41 = station port 10 - 41.

4. Press B8 (BI, A8, B1 on LCD Speakerphone).
5. Choose second station port in link:

   - C10 - C41 = station port 10 - 41.

6. Press TAP.
7. Press ✳ and repeat steps 2 - 6 for next hunt group.
      OR-
      Press ✳ MNTR (SPKR) to end.

To add addttlonal atatlon ports to a hunt group (16 maxlmum) or to link the last statlon to the flrst to form a circular group,

1. Press ITCM ✳ 7 4 6 ✳.
2. Press B8 (BI, A8, B1 on LCD Speakerphone).
3. Select last station port in link:

   - C10 - C41 =stationportIO-41.

4. Press B8 (B1, A8, B1 on LCD Speakerphone).

5. Choose next station port in link. (Choose first station port in link if circular link is desired.)

- CI0 - C41 = station port 10 - 41.

6. Press TAP.

7. Press ✳ and repeat steps 2 - 6 until all station ports are linked as desired.
-OR-
Press ✳ MNTR (SPKR) to end.
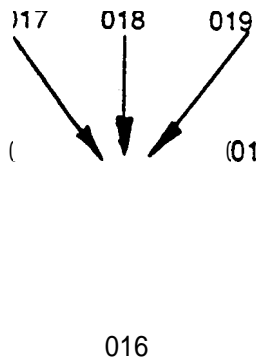
To clear a hunt group link,

1. Press ITCM ✳ 7 4 6 ✳.

2. Press B8 (B1, A8, B1 on LCD Speakerphone).
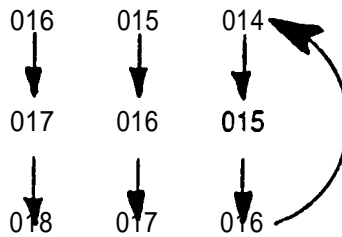
3. Select station port to be unlinked.

- C10 - C41 = station port 10 - 41.

4. Press B8 (BI, A8, B1 on LCD Speakerphone).

5. Press ✳ MNTR (SPKR) to end.

EXAMPLE 2
(proper links)

EXAMPLE 3
(improper link) X

STATION COS PROGRAMMING REFERENCE TABLE
(Copy this page as required for additional reference sheets)

- Shading denotes station default conditions.
- Check off or enter values chosen for stations being programmed

IMPORTANT NOTE. To choose B-field programming buttons on LCD Speakerphones. press B1 then press Al through A8 to represent B-field buttons.

BASE LEVEL (ITCM) (★:) (7:) (4:) (6:) (★:)

STATION PROGRAMMING MODE (B8)

STATION ID (REF SYSTEM COS CHART,	
PORT	
STA TYPE	
EXTENTION	
LOCATION	

4

PA PORT	
	DISABLED
(1)	ENABLED

		ENABLED	DISABLED
5	(2) VOICE BLOCK		
6	(3) EXECUTIVE OVERRIDE		
7	(4) SYS SPEED TOLL		
9	(5) AUTOMATIC HOLD		
10	(6) MESSAGE WAIT-ORIG		

8

PERSONAL RINGING			
TONE 1	TONE 2	TONE 3	TONE 4
(7)	(8)	(9)	(9)

11

PRIME LINE-AUTOMATIC																						
NONE	ITCM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	(ITCM)	(A1)	(A2)	(A3)	(A4)	(A5)	(A6)	(A7)	(A8)	(A9)	(A10)	(A11)	(A12)	(A13)	(A14)	(A5)	(A11)	(A3)	(A10)	(A2)	(A8)	(A1)	(A8)

PRIME GROUP-AUTOMATIC			
1	2	3	4
HOLD HOLD	B1	B2	B3

12

RINGING LINE PREFERENCE	
B5	ENABLED
B4	DISABLED

13-14

RINGING ASSIGNMENT FOR LINES	1	2	3	4	5	6	7	8	9	10	11	12	13	14
(C42) RINGING														
(C43) DELAYED RINGING														
(C44) NIGHT RINGING														

DEFAULTS TO RINGING ON ALL LINES FOR STATIONS 10, 17, 39, AND 41

LINE SELECT KEYS			
1	A1	12	A12
2	A2	13	A13
3	A3	14	A14
4	A4		
5	A5		
6	A6		
7	A7		
8	A8		
9	A9		
10	A10		
11	A11		

15-18

		NONE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
(C45)	AUTO PRIVACY REL																
(C46)	ACCESS DENIED																
(C47)	ORIG DENIED																
(C48)	IDLE LINE PREF																

19

(C49) TOLL TABLE ASSIGNMENT																
NONE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	(A1)	(A2)	(A3)	(A4)	(A5)	(A6)	(A7)	(A8)	(A9)	(A10)	(A11)	(A12)	(A13)	(A14)	B4	B5

21

ALL-CALL AND ZONE PAGING	ZONE A	ZONE B	ZONE C	ALL-CALL
RECEIVE	(A5)	(A6)	(A7)	(A8)
ORIGINATE	(A1)	(A2)	(A3)	(A4)
(TAP) CLEARED				
PRESS (C49) TO CONTINUE				

20

(E) RESERVE INTERCOM LINKS							
NONE	1	2	3	4	5	6	7
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)

PRESS (C49) TO CONTINUE

22

(B6) KEY MAPPING—3 AND 8 LINE KEY SET								
MAPPED KEY	B1	B2	B3	B4	B5	B6	B7	B8
LINE ASSIGNED								
DISABLED (RECALL)								

KEY MAPPING-22 LINE FEATURE KEYSET																						
	MAPPED KEY	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	B1	B2	B3	B4	B5	B6	B7	B8
(C-1)(C-4)	LINE ASSIGNED																						
	DSS 51A ASSIGNED																						
	AUTO DIAL ASSIGNED																						
(TAP)	DISABLED																						
	DYNAMIC LOOP KEY																						

LINE SELECT KEYS			
1	A1	12	A12
2	A2	13	A13
3	A3	14	A14
4	A4		
5	A5		
6	A6		
7	A7		
8	A8		
9	A9		
10	A10		
11	A11		

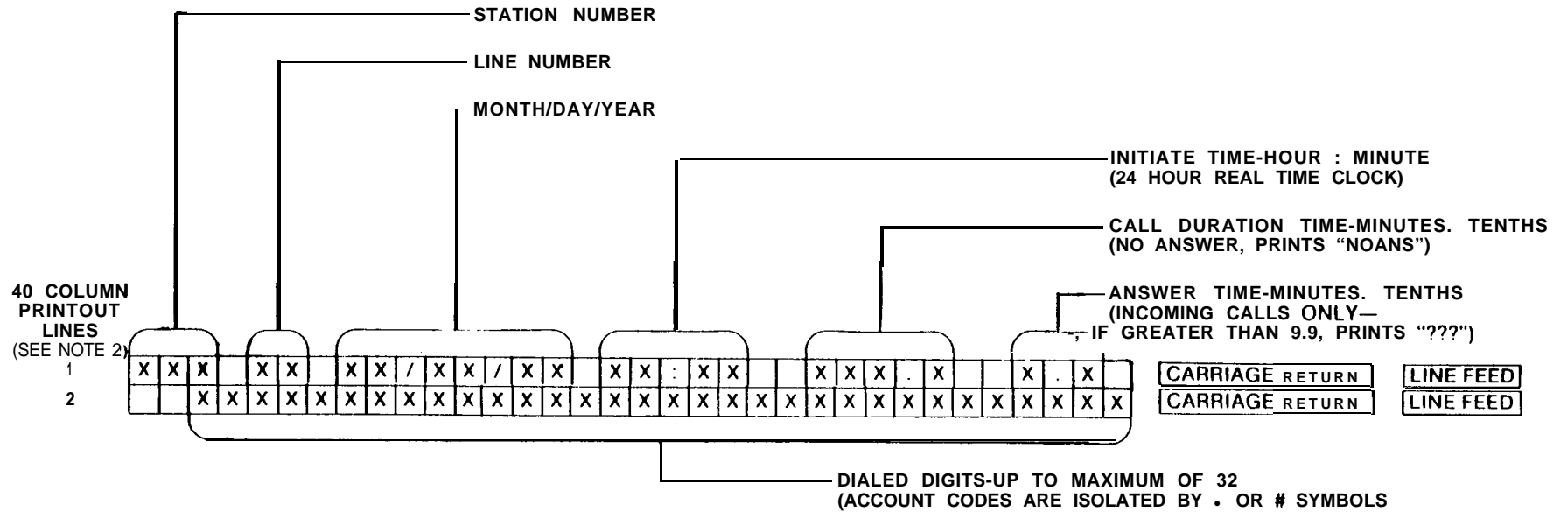# COS AND SMDR PRINTOUT

COS PRINTOUT

When a data printer is connected to the system, it can be commanded, from the programming station, to print the class of service (COS) programming configuration. Partial or complete printouts can be obtained. When the printer is being used to obtain a COS printout, the Station Message Detail ecording (SMDR) function is temporarily halted. SMDR data collection is continued by the system during a COS printout operation; however, if more than two calls are logged for any one line, call records may be lost.

1. Press ITCM ✱ 7 4 6 ✱.

2. Press program button B6 (BI, A6, B1 on LCD Speakerphone).

3. Choose desired data printout. Printing begins immediately after choice is made.

- B4 (B1, A4, B1 on LCD Speakerphone) = All COS data

- B5 (B1, A5, B1 on LCD Speakerphone) = System COS data

- B6 (B1, A6, B1 on LCD Speakerphone) = Line COS data

- B7 (B1, A7, B1 on LCD Speakerphone) = Toll Table data

- B8 (B1, A8, B1 on LCD Speakerphone) = All station COS data

- CI0 - C41 = COS data for station 10 - 41

4. If desired, stop printout by pressing B3 (B1, A3, B1 on LCD Speakerphone).

5. Press ✱ MNTR (SPKR) to end.

SMDR PRINTOUT

The SMDR printout data is provided automatically as it is generated. No intervention is required to obtain the printout. The data is formatted as shown in Figure 3-1. One 80-column printout is provided.

STATION NUMBER

LINE NUMBER

MONTH/DAY/YEAR

INITIATE TIME-HOUR : MINUTE
(24 HOUR REAL TIME CLOCK)

CALL DURATION TIME-MINUTES. TENTHS
(NO ANSWER, PRINTS "NOANS")

ANSWER TIME-MINUTES. TENTHS
(INCOMING CALLS ONLY—
IF GREATER THAN 9.9, PRINTS "???")

40 COLUMN PRINTOUT LINES
(SEE NOTE 2)

CARRIAGE RETURN   LINE FEED

CARRIAGE RETURN   LINE FEED

DIALED DIGITS-UP TO MAXIMUM OF 32
(ACCOUNT CODES ARE ISOLATED BY . OR # SYMBOLS

NOTES

1. CARRIAGE RETURN AND LINE FEED IMMEDIATELY FOLLOW LAST PRINTED CHARACTER ON EACH LINE. ALSO SEE NOTE 2

2. ILLUSTRATED PRINTOUT IS 40 COLUMN, TWO-LINE FORMAT. ON 80 COLUMN ONE-LINE PRINTOUT FORMAT, CARRIAGE RETURN AND LINE FEED CHARACTERS AT END OF LINE 1 ARE REPLACED BY TWO SPACES FOLLOWED BY ENTIRE CONTENTS OF LINE 2.

3. OUTGOING CALL MUST BE OFF-HOOK FOR 20 SECONDS MINIMUM OR NO RECORDING OCCURS.

PRINTOUT EXAMPLES	
UNANSWERED INCOMING CALL	1 1 12/05/86 16:51 NOANS 0.6
ANSWERED INCOMING CALL	16 1 12/05/86 16:52 1.6 0.2
ANSWERED INCOMING CALL (WITH CALLER ID ADDED BY STATION DURING CALL)	24 1 12/05/86 16:53 1.2 0.2 "1234
OUTGOING CALL (LOCAL)	16 2 12/05/86 16:58 2.0 9 7 8 2 2 0 0
OUTGOING CALL (WITH ACCOUNT CODES)	2 2 12/05/86 17:01 .5 11233456789*0#*7412580#9631*#
AC POWER FAILURE AND RESTORATION	. OFF TIME . * 12/05/86 17:03 . . 12/05/86 17:08

Figure 3-1. SMDR Printout Details

CASSETTE TAPE RECORD OF COS VALUES

GENERAL INFORMATION

- Connect the audio cassette tape recorder microphone connector to the music interface jack on the side of the KSU.

- Do not perform any other programming action while the tape system is active.

- Program the baud rate of the tape data to be either 100 or 50 baud as desired. (See System COS for programming details.)

- if the system includes a data printer, appropriate response and error messages will be printed during the recording and loading of COS data.

- When COS data is sent from the KSU to an audio cassette tape recorder for recording, a lead-in tone is sent prior to the data. During play-back, this lead-in tone alerts the system to receive the class of service data.

- When playing back the stored class of service data, the tape must be started during the lead-in tone. If it is not, the system will reject the recorded class of service data.

- To insure a successful load, comparison, or verification of recorded class of service data, always start the tape during the lead-in tone. The following precautions will insure that this is done.

Before playing back pre-recorded class of service data, perform the following actions:

- Rewind the tape to the beginning.
- Disconnect the cable connecting the recorder and the KSU.
- Set the play-back volume for approximately one-half of maximum.
- Play the tape and listen to the lead-in tone. Verify that it is not distorted.
- Rewind the tap to the point where the lead-in tone begins.
- Connect the cable between the KSU and the tape recorder.

- Program the system to accept pre-recorded class of service data.
- Start the tape (from the point where the lead-in tone ·☞· first heard).

If the bad is unsuccessful, repeat the bad procedure with the play-back volume set for approximately two-thirds of maximum.

RECORDING COS DATA TO TAPE

To record currently stored COS program values on cassette tape forlater use,

1. Install blank cassette tape, and prepare recorder for recording.
2. Cause recorder to begin recording blank cassette tape from beginning.
3. Press **ITCM ✳ 7** 4 6 ✳ .
4. Press **ITCM B8 (ITCM B1**, A8, **B1** on LCD Speakerphone) to start recording process. COS recording requires approximately 12 minutes. Programming station will ring when recording is complete.

To abort recording procedure (if requlred),

1. **Press ITCM ✳ 7 4 6 ✳** .
2. Press **ITCM B8 (ITCM B1** , **A8, B1** on LCD Speakerphone).

LOADING COS DATA FROM TAPE

To load previously recorded COS program values Into system to replace current program values, proceed as follows:

1. Install pre-recorded cassette tape, and prepare recorder for playback.
2. **Press ITCM ✳ 7 4 6 ✳** .
3. Press **ITCM** HOLD HOLD to load COS features,
4. Start tape playback. COS loading requires approximately 10 minutes. Programming station will ring when loading is complete.

To abort playback procedure (If requlred),

1. **Press ITCM ✳ 7 4 6 ✳** .
2. Press **ITCM B8 (ITCM B1**, A8, **B1** on LCD Speakerphone).

SYSTEM CLOCK INFORMATION

All clock setting and adjustment must be performed 'rom station port 10 or 11.

SETTING THE CLOCK

1. Press **ITCM**, then dial ✳ **#**.

2. Dial the clock date with the keypad.

   - Hours must be expressed in **24-hour** format

   - Values less that 10 must be expressed as Ox

   - Date sequence = YEAR, MONTH, DAY, HOUR, MINUTE in two-character format.
     For Example: 9004010244

3. If the **SMDR** printer is installed and operating, the clock date will be printed as per the following example:
   - 01/08/86 16:00

4. Reset the minutes setting, if necessary, as follows:

   (a)Repeat step 1.

   (bbial the new minutes digits, and press the # button.

   (c)A new clock date printing will occur.

5. To obtain a printing of the current clock date, press **ITCM** ✳ **# #**. Printing will occur automatically once each 24-hour period in the following format:
   MOIDYNR 00:00 (current date and 00:00 hours)

POWER INTERRUPTION

The system clock will continue to run for at least 30 minutes after AC power has been removed from the system. If power is restored within the **30-minute** backup period, the following printing sequence will occur:

- LAST VALID CLOCK = **MO/DY/YR** HR:MN (time of power outage) MOIDYNR **HR:MN** (time of power return)

If power is not restored within the backup period, the following printing sequence will occur when the power is restored.

- CLOCK NOT VALID = **12/01/86 00:00** (default clock date) The clock will begin running from the default date. It must be reset to the current date per the instructions above.

SYSTEM SPEED DIAL PROGRAMMING

Fifty (50) system speed dial numbers can be stored from station port 10 or 11 for use at all stations in the system. System speed dial numbers will not be toll restricted unless specified by station COS programming. A chart is provided on page 4-21 to be used for recording the stored numbers

1. Press **ITCM** ✳.

2. Press **TRANS/CONF**.

3. Dial storage location (10 - 59)

4. Choose line or group preselection (multifunction (hybrid) system only).

   - Dial 1 **- 4 for** group.
     -OR-
   - Press a line button for tine.
     -OR-
   - Dial 0 **for no** group or line preselection.

NOTE: The button-to-line assignment is per programming arrangement. Refer to the station COS programming reference chart for the button-to-line assignment of the programming station.

5. Dial speed dial number (up to 32 digits).

   - Dial 1 **- 0, #,** and ✳ as required.

   - If required, press HOLD to store pause.

   - If required, press TAP to store hookflash.

6. Press **TRANS/CONF** and repeat steps 3 - 5 for each number.
   OR-
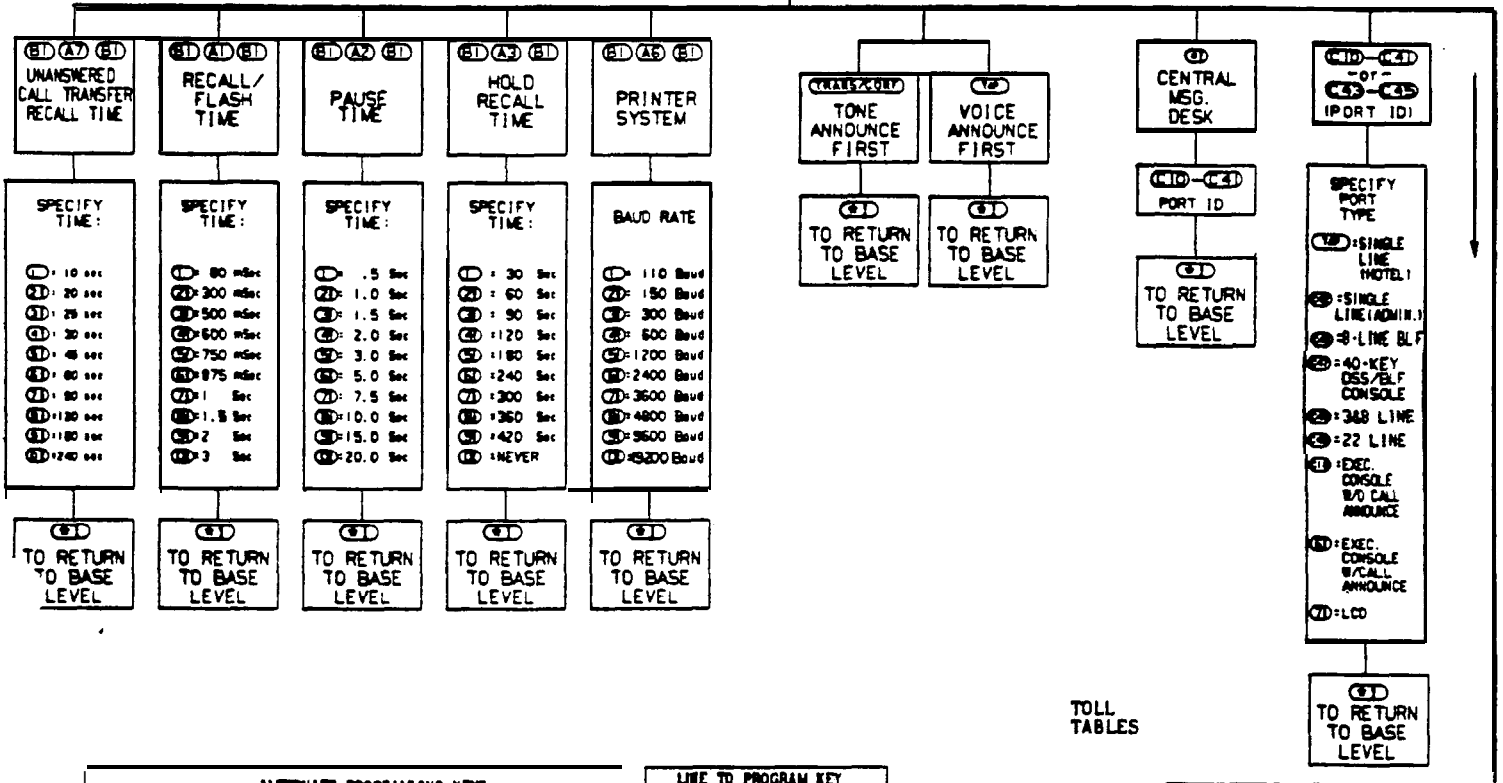Press **MNTR** (SPKR) to end procedure.

SYSTEM SPEED DIAL RECOHD			
LOC	NUMBER	LOC	NUMBER
01		31	
02		37	
03		33	
04		34	
05		35	
06		36	
07		37	
08		38	
09		39	
10		40	
11		41	
17		47	
13		43	
14		44	
15		45	
16		46	
17		47	
18		48	
19		49	
20		50	
21		51	
27		57	
23		53	
24		54	
25		55	
26		56	
27		57	
28		58	
29		59	
30			

LCD SPEAKERPHONE
PROGRAMMING CHART (SHEET 1)
MODEL 1432B HYBRID/KEY SYSTEM
(REVISION Fxx90

BASE LEVEL   PROGRAM ENTRY

SYSTEM COS

| UNANSWERED CALL TRANSFER RECALL TIME | RECALL/ FLASH TIME | PAUSE TIME | HOLD RECALL TIME | PRINTER SYSTEM | TONE ANNOUNCE FIRST | VOICE ANNOUNCE FIRST | CENTRAL MSG. DESK | (PORT ID) |

SPECIFY TIME:
- 10 sec
- 20 sec
- 25 sec
- 30 sec
- 45 sec
- 60 sec
- 90 sec
- 120 sec
- 180 sec
- 240 sec

SPECIFY TIME:
- 80 mSec
- 300 mSec
- 500 mSec
- 600 mSec
- 750 mSec
- 875 mSec
- 1 Sec
- 1.5 Sec
- 2 Sec
- 3 Sec

SPECIFY TIME:
- .5 Sec
- 1.0 Sec
- 1.5 Sec
- 2.0 Sec
- 3.0 Sec
- 5.0 Sec
- 7.5 Sec
- 10.0 Sec
- 15.0 Sec
- 20.0 Sec

SPECIFY TIME:
- 30 Sec
- 60 Sec
- 90 Sec
- 120 Sec
- 180 Sec
- 240 Sec
- 300 Sec
- 360 Sec
- 420 Sec
- NEVER

BAUD RATE
- 110 Baud
- 150 Baud
- 300 Baud
- 600 Baud
- 1200 Baud
- 2400 Baud
- 3600 Baud
- 4800 Baud
- 9600 Baud
- 19200 Baud

TO RETURN TO BASE LEVEL

PORT ID

TO RETURN TO BASE LEVEL

SPECIFY PORT TYPE
- :SINGLE LINE (HOTEL)
- :SINGLE LINE (ADMIN.)
- :8-LINE BLF
- :40-KEY DSS/BLF CONSOLE
- :3x8 LINE
- :22 LINE
- :EXEC. CONSOLE W/O CALL ANNOUNCE
- :EXEC. CONSOLE W/CALL ANNOUNCE
- :LCD

TO RETURN TO BASE LEVEL

TOLL TABLES

ALTERNATE PROGRAMMING KEYS	
40-KEY CONSOLE PROGRAM KEYS	ALTERNATE KEYSET PROGRAM KEYS WHEN 22-KEY CONSOLE IS EQUIPPED
C42	HOLD,1
C43	HOLD,2
C44	HOLD,3
C45	HOLD,4
C46	HOLD,5
C47	HOLD,6
C48	HOLD,7
C49	HOLD,8

LINE TO PROGRAM KEY SELECTION CHART			
LINE	KEY	LINE	KEY
1	A1	9	A9
2	A2	10	A10
3	A3	11	A11
4	A4	12	A12
5	A5	13	A13
6	A6	14	A14
7	A7		
8	A8		

TOLL TABLE ENTRY

TO SELECT TABLE 1-16

:DENY :ALLO FOR TABLE TYPE

FOR ENTRY 1-4

(UP TO 16 DIGITS)

REPEAT AS REQUIRED

TO RETURN TO BASE LEVEL

LCD SPEAKERPHONE
PROGRAMMING CHART (SHEET 2)
MODEL 14328 HYBRID/KEY SYSTEM
(REVISION Fxx90 AND ABOVE)

BASE LEVEL   PROGRAM ENTRY

LINE COS   STATION c o s   PRINTOUT   DEFAULT   TAPE SYSTEM
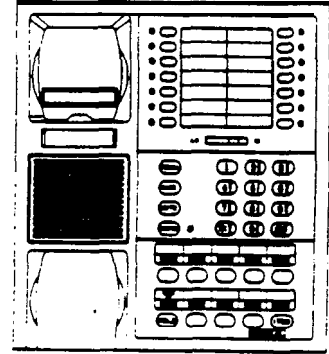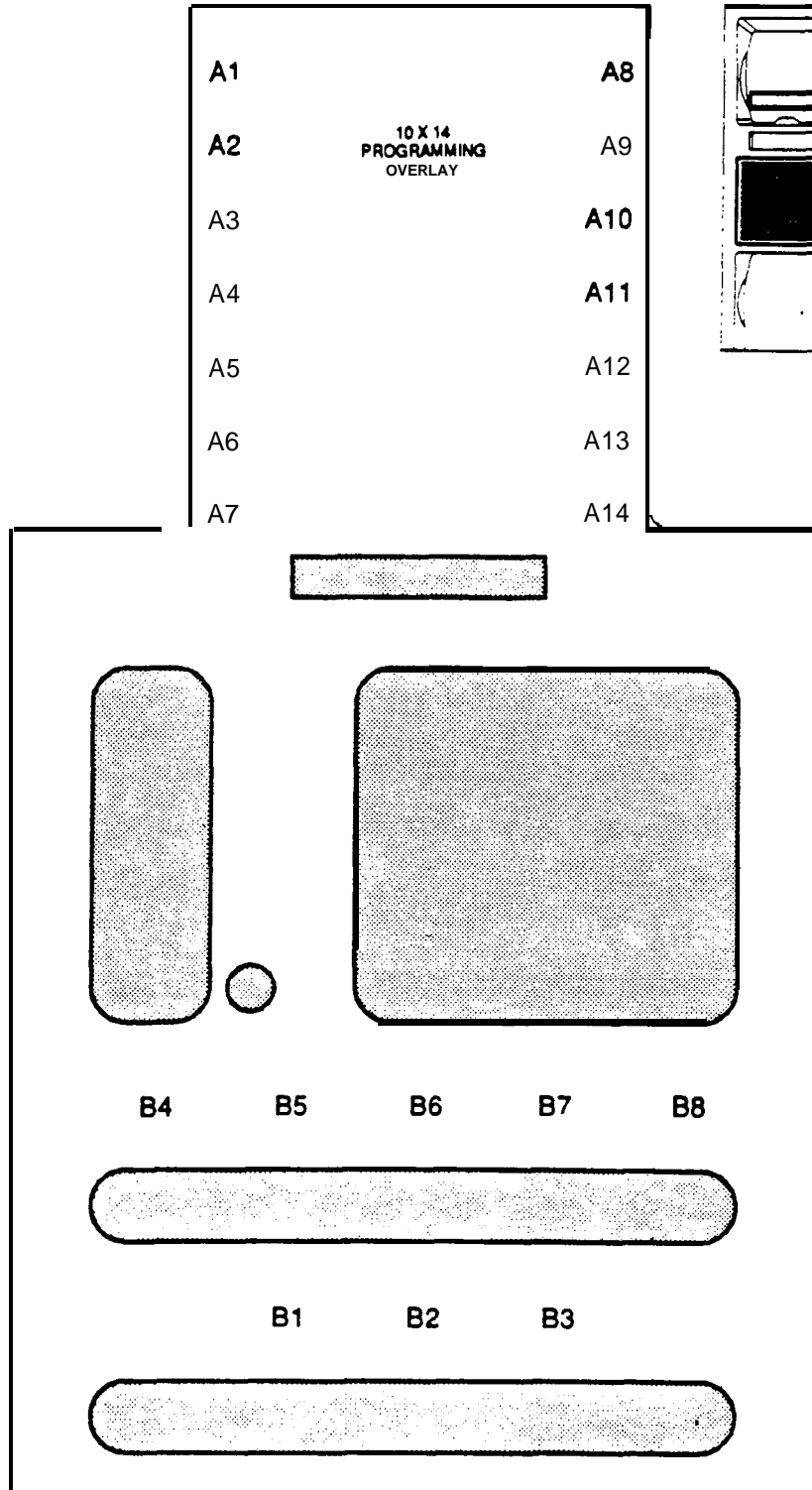
SELECTION CHART KEY
LINE COS

STATION COS

DEFAULT ENTRY

TAPE COS

PORT ID

SPECIFY TYPE
: DISABLED
: AUX
: CO/PBX
GROUP:
: NONE
: GP1
: GP2
: GP3
: GP4
MODE:
: PULSE
: TONE
PRIVACY RLS:
: DISABLED
: ENABLED
TOLL TABLES:
: ERASE
: TABLES 1-16
ABAND HOLD RLS:
: 300 MS
: 50 MS

TO RETURN TO BASE LEVEL

:OPX THRU DIALING ENABLED
:OPX THRU DIALING DISABLED

: PA PORT   : VOICE BLOCK
: EXECUTIVE OVERRIDE   : SYSTEM SPEED DIAL TOLL RESTRICT
: AUTO HOLD
: MSG. WAIT ORIG.

: RING TONE (22 LINE KEYSET ONLY)
SELECT PRIME LINE: CHART KEY : LINE :OR
,cm ..., ... : TRUNK GROUPS 1-4
PRESS TRANS/CONF TO DEFAULT THESE FEATURES

: OFF
: ON } RINGING LINE PREF.

RINGING ⟶
DELAYED RINGING ⟶
NIGHT TRANSFER ⟶
AUTO PRIV. RLS ⟶
@ACCESS DENIED ⟶
ORIG. DENIED ⟶
IDLE LINE PREF. ⟶

SELECT FEATURE THEN SELECT LINES WITH SELECTION CHART KEYS

ASSIGN TOLL TABLES : ... : TRUNK GROUPS 1-4
RESERVE ITCM LINK : — : SELECT LINKS 1-7
-or-
: NO RESERVED LINK
: TO CONTINUE

: ALL-CALL/ZONE PAGING: : CLEARS U L
: ALL CALL ORIG
: ALL CALL REC.
- : ZONES 1-3 ORIG.
- : ZONES 1-3 REC.
: TO CONTINUE

: KEY WING MODE: (DEPENDENT UPON PHONE TYPE)
PRESS KEY TO BE DEFINED THEN PRESS FUNCTION.
SELECTION CHART KEY : LINES 1-14
- : DSS/BLF
: BLANK AUTODIAL
OR
: DYNAMIC LINE KEY FOR B1, B2 & B3

SPECIFY:
: SYSTEM
: LINE
: STATION
: PULSE
: TONE
: KEY MAPPING
: ONE 80-COLUMN SHOR LINE
: TWO 40-COLUMN SHOR LINE
: TRANS/CONF
: SAVE
: IMMEDIATE XFR ON
: IMMEDIATE XFR OFF
: MASTER CLEAR

TO RETURN TO BASE LEVEL

SPECIFY:
: LOAD COS
: RECORD COS
: ABORT

TO RETURN TO BASE LEVEL

PRINTOUT

COS PRINTOUT

SPECIFY:
: ALL COS
: SYSTEM
: LINE
: TOLL
: ALL STATION PORTS
- : ONE STATION PORT

BLOCK PROGRAMMING
- : PORT ID OF MODEL
- : PORT ID OF FIRST
- : PORT ID OF LAST

TO RETURN TO BASE LEVEL

TO RETURN TO BASE LEVEL

PORT ID:
10 To 41 FOR MODEL 1432 KSU

TO STOP PRINTER DURING PRINTOUT

TO RETURN TO BASE LEVEL

TO RETURN TO BASE LEVEL

22 LINE/FEATURE KEYSET
PROGRAMMING CHART (SHEET 1)
MODEL 1492B HYBRID/KEY SYSTEM
(REVISION Fxx90 AND ABOVE)

| SYSTEM COS

ALTERNATE PROGRAMMING KEYS

40-KEY CONSOLE PROGRAM KEYS	ALTERNATE KEYSET PROGRAM KEYS WHEN 22-KEY CONSOLE IS EQUIPPED
C42	HOLD,1
C43	HOLD,2
C44	HOLD,3
C45	HOLD,4
C46	HOLD,5
C47	HOLD,6
C48	HOLD,7
C49	HOLD,8

LINE TO PROGRAM KEY SELECTION CHART

LINE	KEY	LINE	KEY
1	A1	9	A9
2	A2	10	A10
3	A3	11	A11
4	A4	12	A12
5	A5	13	A13
6	A6	14	A14
7	A7		
8	A8		

TOLL
TABLES

22 LINE/FEATURE KEYSET
PROGRAMMING CHART (SHEET 2)
MODEL 14328 HYBRID/KEY SYSTEM
(REVISION Fxx90 AND ABOVE)

[ITCM] [*] [7] [4] [6] [*]
BASE LEVEL   PROGRAM ENTRY

LINE COS   STATION COS   PRINTOUT   DEFAULT   TAPE SYSTEM

LINE COS

(SELECTION CHART KEY)
LINE COS

SPECIFY TYPE
[3]:DISABLED
[4]:AUX
[5]:CO/PBX

GROUP:
[1]:NONE
[2]:GP1
[3]:GP2
[4]:GP3
[5]:GP4

NODE:
[6]:PULSE
[7]:TONE

PRIVACY RLS:
[8]:DISABLED
[9]:ENABLED

TOLL TABLES
[3]: ERASE
[10]-[25]:
TABLES 1-16

ABAND HOLD RLS:
[6]:300 MS
[7]:50 MS

[*]
TO RETURN
TO BASE
LEVEL

STATION COS

[B8]
STATION COS

[C10]-[C41]
PORT ID

[B8] :OPX THRU DIALING ENABLED
[B7] :OPX THRU DIALING DISABLED
[1] :PA PORT   [2]:VOICE BLOCK
[3] :EXECUTIVE OVERRIDE   [4]:SYSTEM SPEED DIAL TOLL RESTRICT
[5] :AUTO HOLD   [6]:MSG. WAIT ORIG.
[7][8][9][0]:RING TONE (22 LINE KEYSET ONLY)
  SELECT PRIME LINE: (CHART KEY):LINE:OR
  [10], OR [HOLD][HOLD] [B1][B2][B3]:TRUNK GROUPS 1-4
PRESS (TRANS/CONF) TO DEFAULT THESE FEATURES

[B4]:OFF } RINGING LINE PREF.
[B5]:ON
[B2]RINGING
[B3]DELAYED RINGING ──→
[B4]NIGHT TRANSFER ──→   SELECT FEATURE
[B5]AUTO PRIV. RLS ──→   THEN
[B6]ACCESS DENIED ──→   SELECT LINES WITH
[B7]ORIG. DENIED ──→   (SELECTION CHART KEYS)
[B8]IDLE LINE PREF. ──→
[B9]ASSIGN TOLL TABLES: [A1]-[A14] & [B4],[B5]:TABLES 1-16
[B0]RESERVE ITCM LINK :   [1]-[7]:SELECT LINKS 1-7
                          -or-
                          [0]:NO RESERVED LINK
                          [*]:TO CONTINUE
[B1]:ALL-CALL/ZONE PAGING: [TAP]:CLEARS ALL
                          [A4]:ALL CUL ORIG.
                          [A8]:ALL CALL REC.
                          [A1]-[A3]:ZONES 1-3 ORIG.
                          [A5]-[A7]:ZONES 1-3 REC.
                          [*]:TO CONTINUE

[B5]:KEY MAPPING MODE : (DEPENDENT UPON PHONE TYPE)
  PRESS KEY TO BE DEFINED THEN PRESS FUNCTION.
  (SELECTION CHART KEY):LINES 1-14
  [10]-[41]:DSS/BLF
  [TAP]:BLANK AUTODIAL
      OR
  [TAP]:DYNAMIC LINE KEY FOR B1,B2 & B3

DEFAULT

[B5]
DEFAULT ENTRY

SPECIFY:
[1]:SYSTEM
[2]:LINE
[3]:STATION
[4]:PULSE
[5]:TONE
[6]:KEY MAPPING
[7]:ONE 80-COLUMN SMDR LINE
[8]:TWO 40-COLUMN SMDR LINE
[9]:TRANS/CONF
[10]:SAVE
[11]:IMMEDIATE XFER ON
[12]:IMMEDIATE XFER OFF
[1][2][3][4][5][6][7] :
MASTER CLEAR

[*]
TO RETURN
TO BASE
LEVEL

TAPE COS

[ITCM]
TAPE COS

SPECIFY:
[HOLD][HOLD]:LOAD COS
[B4] :RECORD COS
[B5]:ABORT

[*]
TO RETURN
TO BASE
LEVEL

PRINTOUT

[B6]
COS PRINTOUT

SPECIFY:
[B4] :ALL COS
[B5] :SYSTEM
[B6] :LINE
[B7] :TOLL
[B8] ALL STATION PORTS
[C10] - [C41] :
ONE STATION PORT

[HOLD]   [*]
TO STOP   TO RETURN
PRINTER   TO BASE
DURING   LEVEL
PRINTOUT

[*]
TO RETURN
TO BASE
LEVEL

[HOLD][HOLD] BLOCK PROGRAMMING
[10]-[41] :PORT ID OF MODEL
[10]-[41] :PORT ID OF FIRST
[10]-[41] :PORT ID OF LAST

[*]
TO RETURN
TO BASE
LEVEL

[*]
TO RETURN
TO BASE
LEVEL

PORT ID:
10 TO 41 FOR MODEL 1432 KSU

STATION 10 - PROGRAMMING OVERLAY
- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

LCD SPEAKERPHONE
5x14 OVERLAY A6
FOR 14328

AI

A2

A3

A4

AS

A6

A7

A6

A9

A10

A11

A12

AI3

AI4

FOR B1 THRU B8,
PRESS B1 THEN
PRESS A1 - A8

BI   B2   B3

STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

A1   A8

A2   **10 X 14**   A9
            PROGRAMMING
             OVERLAY

A3   A10

A4   A11

A5   A12

A6   A13

A7   A14

B4   B5   B6   B7   B8

B1   B2   B3

STATION 10 - PROGRAMMING oVEaLAY
• Cut out along border.
• Cut out shaded openings
• Fit over station faceplate.

10 X 14
PROGRAMMING
OVERLAY

A1 A2 A3 A4 A5 A6 A7

A8 A9 A10 A11 A12 A13 A14

B1 B2 B3

B4 B5 B6 B7 B8

STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

A I	**A 0**
A 2	**A9**
A 3	**A I 0**
A 4	**A I I**
A 5	**A I 2**
A 6	**A I 3**
A7	**A I 4**
B 8	**A I 5**
B 6	**B 7**
B4	**B 5**

5 X 20
PROGRAMMING
OVERLAY

B1   **B**2   **B**3

- Cut out along border.
- Cut out shaded openings
- Fit over station faceplate.

PROGRAMMING OVERLAY. 32 BUTTON DSS/BLF
703804-456

C25	C41		C25	C41		C25	C41
C24	C40		C24	C40		C24	C40
C23	C39		C23	C39		C23	C39
C22	C38		C22	C38		C22	C38
C21	C37		C21	C37		C21	C37
C20	C36		C20	C36		C20	C36
C19	c35		C19	c35		C19	c35
C18	C34		C18	c34		C18	C34
C17	C33		C17	c33		C17	C33
C16	C32		C16	C32		C16	C32
C15	C31		C15	C31		C15	C31
C14	C30		C14	C30		C14	C30
C13	c29		C13	C29		C13	C29
C12	C28		C12	C28		C12	C28
C11	C27		C11	C27		C11	C27
C10	C26		C10	C26		C10	C26

STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

A I		A 8
A 2	2 X 22 PROGRAMMING OVERLAY	A 9
A3		A 10
A 4		A I 1
A 5		A I 2
A 6		A I 3
A 7		A I 4
B 7		B8
B 5		B 6
B 3		B4
B1		B2

CONSOLE - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over console faceplate.

EXECUTECH PROGRAMMING OVERLAY

703804 -275

| C42 | C43 | C44 | C45 | C46 | C47 | C48 | C49 |

| C34 | C35 | C36 | C37 | C38 | C39 | C40 | C41 |

| C26 | C27 | C28 | C29 | C30 | C31 | C32 | C33 |

| CI8 | CI9 | C20 | C21 | C22 | C23 | C24 | C25 |

| C10 | C11 | C12 | C13 | CI4 | C15 | CI6 | CI7 |

CHAPTER 4
MAINTENANCE

TECHNICAL ASSISTANCE AND REPAIR SERVICE

TECHNICAL ASSISTANCE

Should you experience difficulty with installation, checkout, or programming, and have made an attempt to isolate the problem using information provided herein; or should you encounter problems at a later date which cannot be resolved by referring to this manual, call the Comdlal Technical Service staff. They can be reached at l-800-368-8224 between the hours of 8:00 AM and 8:00 PM Eastern time, Monday through Friday.

When calling for technical assistance, you should be at the job site and you should have in your possession, as a minimum, an accurate volt-ohm meter and a copy of this manual.

REPAIR SERVICE

If your common equipment cabinet or an individual station needs repair, it may be returned to Comdial. Comdial will, at their option, either repair the defective equipment or replace it with a remanufactured unit. This repair will be done for a fixed charge. For information on this charge, please call or write to the address given below.

Comdial
P.O. Box 7266
Charlottesville, VA 22906
Attention: Repair Department
Telephone: (804) 978-2400
                 l-800-877-4448

When returning equipment for repair, pack it carefully to prevent damage. Any damages during shipment will be the responsibility of thepurchaser. The equipment should be shipped freight or postage prepaid. The shipping address is:

Comdial
1180 Seminole Trail
Charlottesville, VA 22901
Attention: Repair Department

FUSE LOCATION

The KSU is protected against short circuit damage by a fuse located in the primary of the AC transformer winding. Fuse FS-1 is a 2 amp, 250V slow-blow type fuse. The fuse holder is located near the top of the right side of the KSU cabinet. Always replace this fuse with one of the same value and type, otherwise, equipment damage could result.

FAILURE ISOLATION

WIRING

Refer to the installation check out procedure for instructions for testing the system wiring for possible failure.

SYSTEM STATUS INDICATOR

The red LED located near the fuse holder is the system status indicator. This indicator should turn on steady when AC power is applied to the KSU. If the indicator flashes after power up, it could be indicating a processor failure. Unplug and reconnect the AC power to the KSU and observe the LED indication. If it still shows a flashing indication, refer to Figure 4-1.

STATION SELF TEST

The multiline stations can be self tested for proper operation per the following instructions.

1. Disconnect the line cord at the station base.

NOTE: The adjacent odd or even station will be disabled during the time that the station line cord is being disconnected Or reconnected.

2. Press and hold the MUTE key, and reconnect the line cord to the station connector. The station will automatically perform a self test routine. Release the MUTE key as soon as the test begins. The sequence of the test is as foiiows:

3 AND 8 LINE KEYSET

SEQUENCE	INDICATION
1	B-Field indiactors light is sequence (B1 - B8)
2	ITCM indicator lights
3	MONITOR indicator lights
4	All indicators extinguished in same order as lighted
5	Ringer sounds (be sure vol. is med. or high)

22 LINE/FEATURE KEYSET

SEQUENCE	INDICATION
1	MONITOR indicator lights
2	B-Field indicators light in sequence (Bl - B8)
3	HOLD indicator lights
4	ITCM indicator lights
5	A-Field indicators light in sequence (Al - A14)
6	All indicators extinguished
7	Ringer sounds (be sure vol. is med. or high)

3. Replace any station that does not pass the self test.

DSS/BLF CONSOLE SELF TEST

Test the DSS/BLF Console for proper lamp operation per the following procedure:

1. Disconnect the console line cord plug from the line.

2. Press and hold console key C10 while reconnecting the line cord plug to the line.

NOTE: The companion station will be disabled during the rim8 that the console is being disconnected and reconnected.

3. Release console key C10, and note that the BLF indicators will each turn on in sequence beginning with the station 10 indicator. The indicators will then turn off and the console will become operational.

PAIRED STATIONS

Station ports 10, 11, 12, and 13 are paired for data with adjunct ports 10, 11, 12, and 13 respectively. Station ports 10 through 41 are paired for data and for overload protection as shown in Table 3. Adjunct ports 10, 1 1, 12, and 13 are not overload paired with any other port.

If erratic light indications or ring signals occur at a paired station, an open data pair at either station may be the fault. A station with an open data line may work property on a short loop but fail on a long loop. Test the wiring of stations showing this symptom per the checkout procedure given in Chapter 2.

If a fault occurs which causes more than 300 ma. of current to be drawn, the overload paired stations are disabled by circuit action. Disconnect the disabled stations and reconnect them one at a time to isolate the faulty one. Station pairing is per the following chart:

DATA PAIRING		OVERLOAD PAIRING	
10 - ADJ 10	24 - 25	10 - 11	26-28
11 - ADJ 11	26 - 27	12 - 13	27 - 29
12 - ADJ 12	28 - 29	14 - 16	30-32
13 - ADJ 13	30 - 31	15 - 17	31 - 33
14 - 15	32 - 33	18-20	34-36
16 - 17	34 - 35	19 - 21	35-37
18 - 19	36 - 37	22 - 24	38-40
20 - 21	38 - 39	23 - 25	39-41
22 - 23	40 - 41		

FAILURE ANALYSIS

KSU AND STATION

Figure 4-1 details a failure analysis flow chart to assist a service technician in isolating a failure in a defective system. One way to isolate a failure is to substitute a known good assembly for a suspected one. This is the recommended failure isolation method to use with the system. Connecting and disconnecting stations to the system does not affect the stored station auto/speed dial memory data. This data is stored in the KSU memory and not at the individual stations. Replacing the KSU, however, causes all stored memory to be lost. This includes all memory dialing numbers as well as all COS programming data.

Figure 4-l. Failure Analysis Flow Chart

DESK/WALL REVERSAL AND WALL MOUNTING
(22 Line/Feature Keyset and Single-Line Keyset, Only)

CONVERSION

To convert a station from a standard desk model to one which can be hung on the wall, follow the procedure outlined below.

1. Remove and discard the pull out directory (22 Line/Feature Keyset, Only)

2. Remove the lower housing of the station, and rotate it 180 degrees.

> [!CAUTION]
> The PWB contains circuitry which Is sensitive to static electricity discharge. Be sure that your body and the workplace are properly grounded to avoid any static electricity discharge while performing the desk/wall reversal.

3. Remove the knockouts from the desired mounting holes as illustrated in Figure 4-2.

4. Replace the lower housing. Make sure that all wires are clear.

WALL MOUNTING

Mount the station directly on the wall using two, #10, panhead screws (obtained bcally), or mount it on a wall jack cover plate. If mounted uslng a wall jack cover plate, an AT&T type 630B wall plate Is recommended for best results.

1. If #10 screws are used, thread them into the wall within 1/8-inch of the surface. Refer to Figure 6-I for the spacing dimensions.

2. Insure that the housing is converted property for a wall mounting installation (see above instructions).

3. Position the keyhole shaped holes in the bottom of the station over the #10 screws or the cover plate studs. Slide the statbn down until a slight click is felt.

4. To remove the station, lift up to unsnap both screws or studs from the bottom housing, and lift the station away from the wall.

Wall Plate — Or — #10 Screws

15/16"

Knockout Holes. 2
#10

Wall Plate.

Latching Lever
Push In To Latch
Pull Out To Unlatch

0

Housing Screws
(4 Places)

Figure 4-2 Statlon' Wall Mounting Details
(22 Line/Feature Keyset shown - Single-Line Keyset slmllar)

PUBLICATION INDEX