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# INSTALLATION AND MAINTENANCE INFORMATION FOR THE Executech MODEL 1432 KSU HYBRID/KEY SYSTEM

SERIAL NUMBER _____

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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

Certain functional differences exist between the Model 1432 KSU Rev. A through M and the Model 1432 KSU Rev. N and above. Those differences, as well as other corrections and up-dates, are noted where applicable on the following pages: 1-1, 2-2, 2-12, 2-18, 3-1, 3-3, 3-5 thru 3-7, 3-14 thru 3-21, 3-25, and 3-26.

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 70-057, User's Guide for Multiline Station
- GCA 70-058, User's Guide for Single Line Station
- GCA 70-066, User's Guide for DSS/BLF Console
- GCA 48-002, Service Policy

## 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.

### DUAL REGISTRATION NOTIFICATION

This equipment can be hardware configured by the installer/dealer as either a key system or as a multifunction (hybrid) system. Configuration procedures can be found in the installation section of this publication. Because of this versatility, the FCC has granted a dual registration to the system. The installer/dealer must notify the telephone operating company of the new or changed registration number that reflects the configuration that this equipment is currently arranged to provide. The installer/dealer may be required to certify in writing to the telephone operating company how the system is configured. The telephone operating company may conduct an on-site inspection to verify the system configuration.

## 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 office to install one. The correct outlet jack for this system is a type RJ21X.

## 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. If 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 restrictions 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 to 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 D.C. 20402. Stock No. 004-000-00345-4.

RINGER EQUIVALENCE NUMBER

The REN of each line of the KSU is 0.4B. 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 electrical outlet. The KSU power supply requires a dedicated 117VAC 15 AMP circuit, with a third-wire ground, supplied to a 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 32-122 degrees F (0-50 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 1-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 holes are elongated with an enlargement at one end of the hole. This feature allows the mounting screws to be partially installed in the mounting surface before the KSU is hung on them.

6. Place the individual telephone stations as desired and in keeping with accepted industry and office 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.

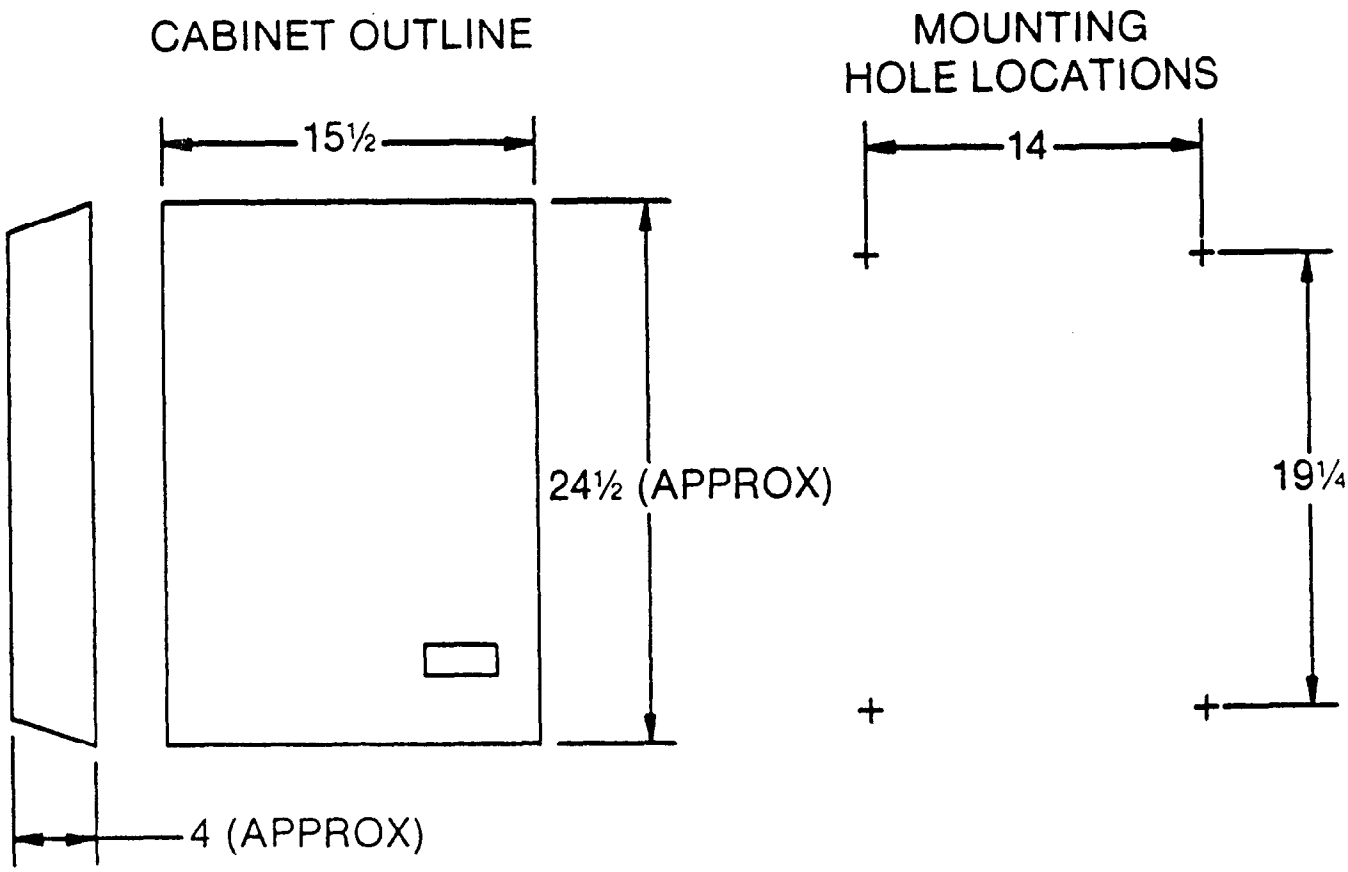



Figure 2-1. KSU Mounting Dimensions

## 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

To apply AC power to the KSU, connect the AC power cord to the NEMA 5-15R outlet which supplies the dedicated 117VAC @ 15 AMP electrical power. A plug-in, power line surge protector should be installed between the KSU power cord and the AC outlet.

**CAUTION**

Do not connect the AC power cord until the installation has been checked per the SYSTEM CHECKOUT instructions given later in this chapter.

### 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).

**CAUTION**

To help insure that foreign voltages, which could appear on the TELCO lines, do not damage the system, verify that gas discharge tubes or similar protection devices are installed, and properly grounded, in all connected TELCO lines.

### 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 polarity between the individual wires in a particular voice or data pair is not critical; however, do not connect the voice circuits to the data circuits.

IMPORTANT NOTE

Station ports are programmed for the type of equipment that is to be connected to them. A 22 Line/Feature Keyset must be installed at station port 10 and/or station port 11 as Class Of Service programming is performed from those ports.

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 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.

The pairings of the station ports are as follows:

| 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 Figure 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 as a PA 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 2-4 and Figure 2-4. 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.

## Station Auxiliary Jack Connections

For those stations equipped with an auxiliary jack, pins 3 and 4 (tip and ring leads) of this jack are connected to pins 1 and 6 of the station line jack. A 6-conductor station line cord is used, and the third pair is designated as the auxiliary-pair.

Refer to Figure 2-5 for an illustration of a typical auxiliary-pair wiring connection, and note the following wiring considerations:

- Wire a type 625A2-6 modular jack to be used as the station wall jack.
- Connect 3-pair cable between the station wall jack and an auxiliary 66M-xx connector block.
- Connect the voice-pair and data-pair from the auxiliary connector block to the station connector block.
- Connect the auxiliary-pair from the auxiliary connector block to the desired termination.
- Connect an appropriate line cord between the auxiliary jack and the auxiliary source equipment.

## A-Lead Control Device Connections

The KSU can detect an A-lead (A and A1) 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 2-4 and Figure 2-4 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 auxiliary connector block. The maximum distance between the device and the KSU must not exceed 50 feet. 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 the following 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 device protective ground pin(s).

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

It is required that a grounding wire, separate from the three wire AC line cord, be used. A ground stud is located on the KSU and on the power supply for this purpose. Wire #10 or #12, insulated, solid copper wires between these ground studs and a reliable earth ground such as a metal cold water pipe or a building frame ground.

Common Audible and Auxiliary Station Interface

Two sets of relay closure dry-contact points are available at the J-1 and J-2 station connector blocks.

- One set (J-1 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 Figure 2-2. Refer to the paragraph headed Area Paging Interface for a discussion for using these terminals in this alternate paging function.

**CAUTION**

Do not exceed a 1 amp at 24 volts (.5 amp at 48 volts) load on these control terminals. If the load requirements exceed this limit, 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 disabled as 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 enables a PBX feature which may incur a higher monthly tariff to the telephone company. This feature allows dial access to (automatic selection of) outgoing lines. The specific Executech feature that is enabled by the multifunction (hybrid) configuration 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 as detailed in Chapter 3, System Programming.

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

| SYSTEM INTERCONNECTION FOR KSU J-1 | | | | | | |
|---|---|---|---|---|---|---|
| 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 | | 2 | | | BLACK | 4 |
| WHITE—GREEN | 3 | 28 | 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 | GREEN | 1 |
| BLUE-WHITE | | 1 | | PAIR | RED | 2 |
| WHITE—ORANGE | 2 | 27 | | DATA | YELLOW | 3 |
| ORANGE-WHITE | | 2 | | PAIR | BLACK | 4 |
| WHITE—GREEN | 3 | 28 | STATION 19 | VOICE | GREEN | 5 |
| GREEN-WHITE | | 3 | | PAIR | RED | 6 |
| WHITE—BROWN | 4 | 29 | | DATA | YELLOW | 7 |
| BROWN-WHITE | | 4 | | PAIR | BLACK | 8 |
| WHITE—SLATE | 5 | 30 | STATION 20 | VOICE | GREEN | 9 |
| SLATE-WHITE | | 5 | | PAIR | RED | 10 |
| RED—BLUE | 6 | 31 | | DATA | YELLOW | 11 |
| BLUE-RED | | 6 | | PAIR | BLACK | 12 |
| RED-ORANGE | 7 | 32 | STATION 21 | VOICE | GREEN | 13 |
| ORANGE-RED | | 7 | | PAIR | RED | 14 |
| RED-GREEN | 8 | 33 | | DATA | YELLOW | 15 |
| GREEN-RED | | 8 | | PAIR | BLACK | 16 |
| RED—BROWN | 9 | 34 | STATION 22 | VOICE | GREEN | 17 |
| BROWN-RED | | 9 | | PAIR | RED | 18 |
| RED-SLATE | 10 | 35 | | DATA | YELLOW | 19 |
| SLATE-RED | | 10 | | PAIR | BLACK | 20 |
| BLACK-BLUE | 11 | 36 | STATION 23 | VOICE | GREEN | 21 |
| BLUE-BLACK | | 11 | | PAIR | RED | 22 |
| BLACK-ORANGE | 12 | 37 | | DATA | YELLOW | 23 |
| ORANGE-BLACK | | 12 | | PAIR | BLACK | 24 |
| BLACK—GREEN | 13 | 38 | STATION 24 | VOICE | GREEN | 25 |
| GREEN-BLACK | | 13 | | PAIR | RED | 26 |
| BLACK-BROWN | 14 | 39 | | DATA | YELLOW | 27 |
| BROWN-BLACK | | 14 | | PAIR | BLACK | 28 |
| BLACK-SLATE | 15 | 40 | STATION 25 | VOICE | GREEN | 29 |
| SLATE-BLACK | | 15 | | PAIR | RED | 30 |
| YELLOW-BLUE | 16 | 41 | | DATA | YELLOW | 31 |
| BLUE-YELLOW | | 16 | | PAIR | BLACK | 32 |
| YELLOW-ORANGE | 17 | 42 | STATION 26 | VOICE | GREEN | 33 |
| ORANGE-YELLOW | | 17 | | PAIR | RED | 34 |
| YELLOW-GREEN | 18 | 43 | | DATA | YELLOW | 35 |
| GREEN-YELLOW | | 18 | | PAIR | BLACK | 36 |
| YELLOW-BROWN | 19 | 44 | STATION 27 | VOICE | GREEN | 37 |
| BROWN-YELLOW | | 19 | | PAIR | RED | 38 |
| YELLOW-SLATE | 20 | 45 | | DATA | YELLOW | 39 |
| SLATE-YELLOW | | 20 | | PAIR | BLACK | 40 |
| VIOLET-BLUE | 21 | 46 | STATION 28 | VOICE | GREEN | 41 |
| BLUE-VIOLET | | 21 | | PAIR | RED | 42 |
| VIOLET-ORANGE | 22 | 47 | | DATA | YELLOW | 43 |
| ORANGE-VIOLET | | 22 | | PAIR | BLACK | 44 |
| VIOLET-GREEN | 23 | 48 | STATION 29 | VOICE | GREEN | 45 |
| GREEN-VIOLET | | 23 | | PAIR | RED | 46 |
| VIOLET-BROWN | 24 | 49 | | DATA | YELLOW | 47 |
| BROWN-VIOLET | | 24 | | PAIR | BLACK | 48 |
| VIOLET-SLATE | 25 | 50 | STATION 17 AUXILIARY INTERFACE | | GREEN | 49 |
| SLATE-VIOLET | | 25 | | | 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 | 18 | 43 | | DATA PAIR | YELLOW | 35 |
| GREEN-YELLOW | | 18 | | | BLACK | 36 |
| YELLOW-BROWN | 19 | 44 | STATION 39 | 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 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 |

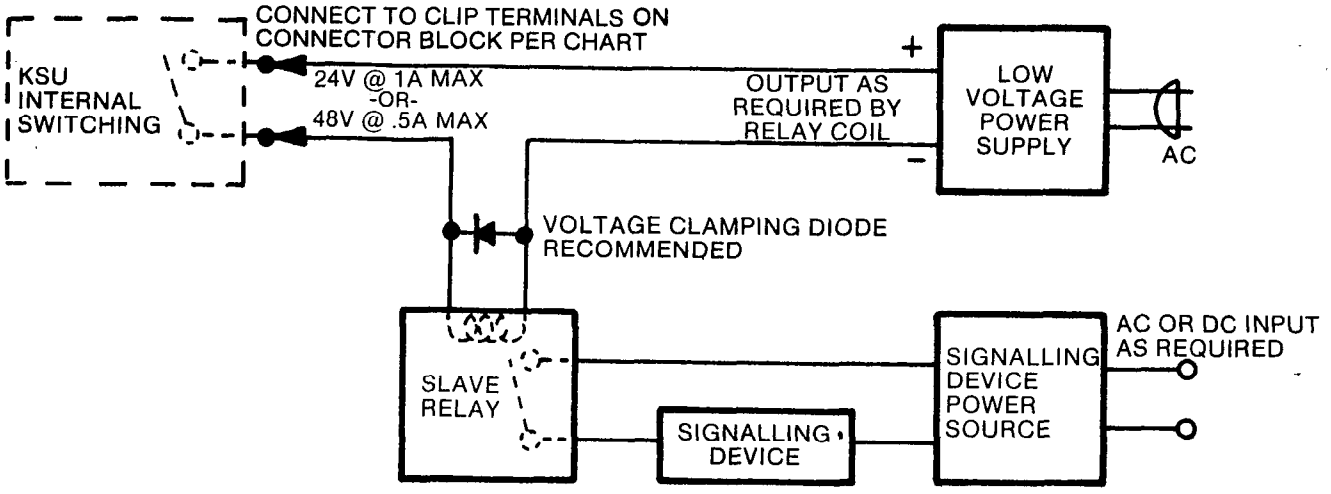
Table 2-4. Wiring For Auxiliary Connector Block J-4

| 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 | | | | 8 | |
| 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 | |

* Feature not available on Model 1432 KSU Rev. A through M.

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 |




| FUNCTION | CONNECTIONS |
|---|---|
| COMMON AUDIBLE | J-1 CLIPS 49, 50 |
| STATION 17 RINGING | J-2 CLIPS 49, 50 |

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

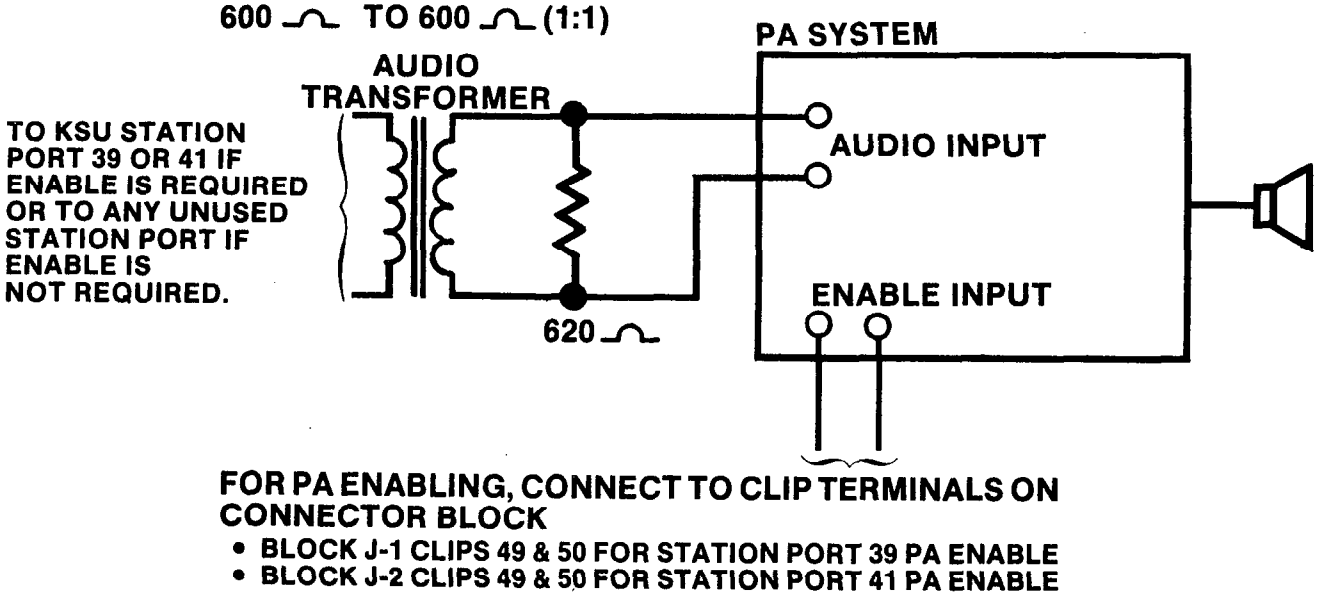



Figure 2-3. PA Connections

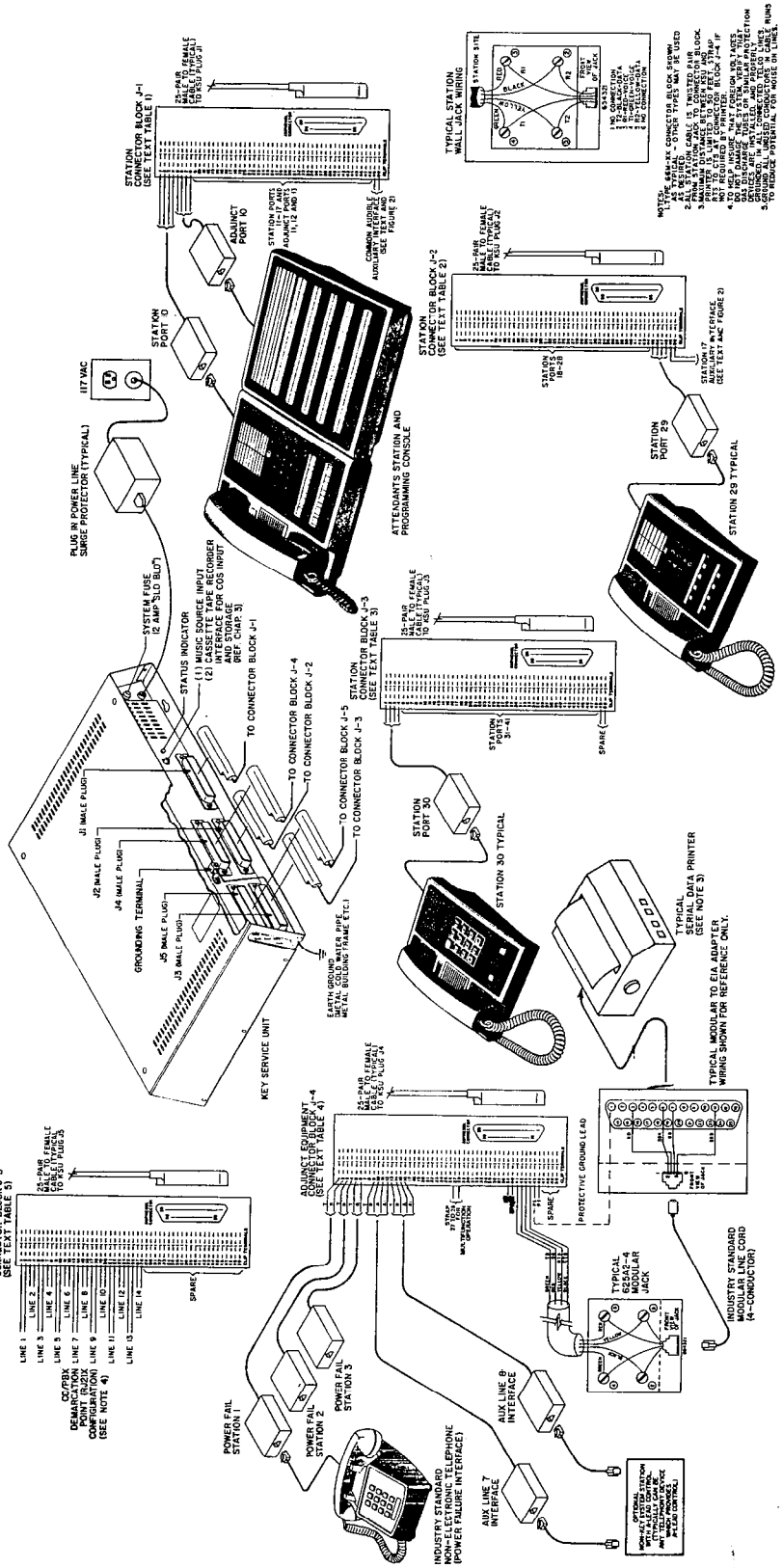



Figure 2-4. System Interconnection-Typical Connections

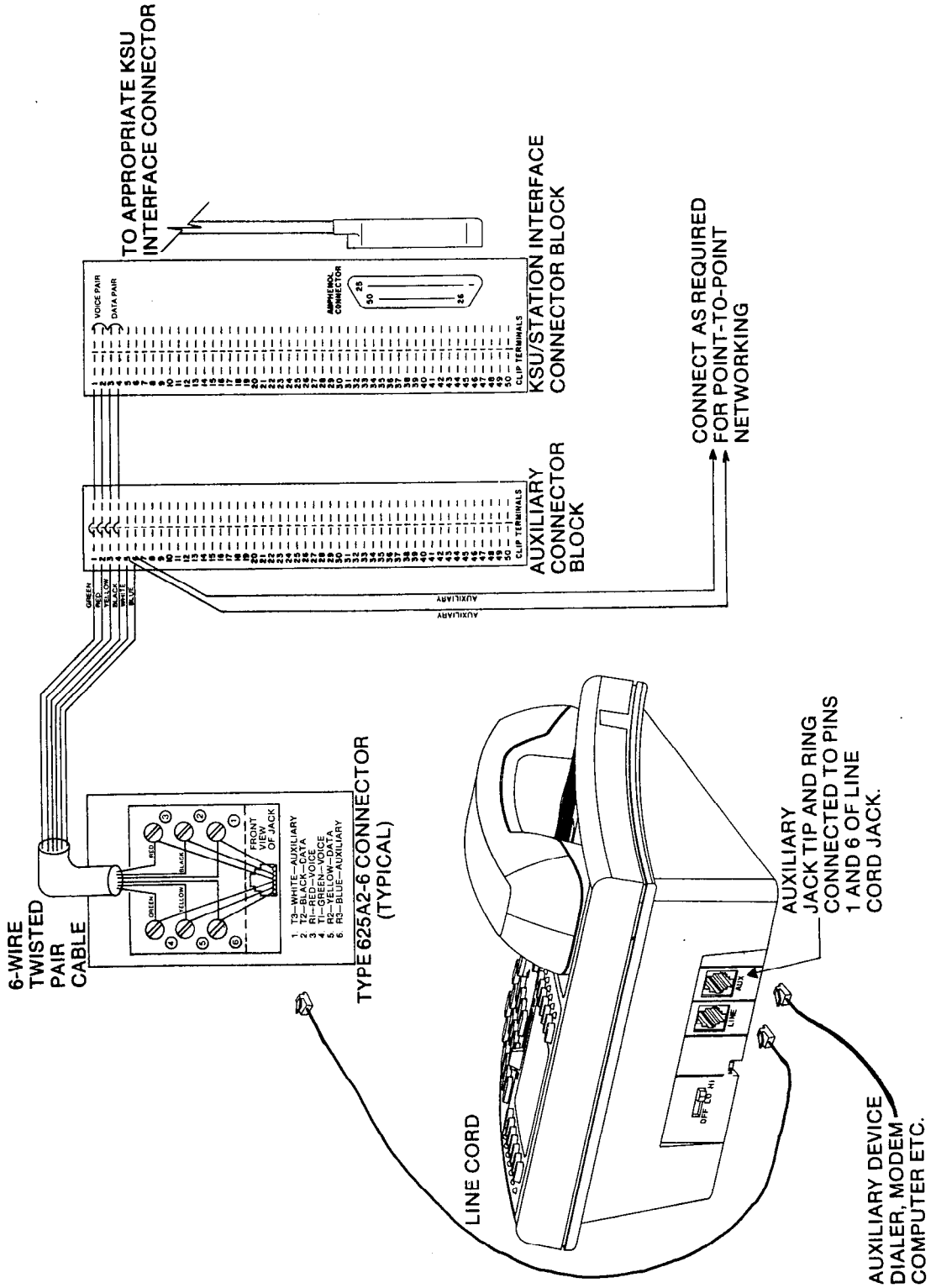



Figure 2-5. Typical 6-Wire, Auxiliary-Pair Wiring

## SYSTEM CHECKOUT

### Initial Condition

The system operating features are set to a set of 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.

| MEASURED PAIR | MEASURED STATION RESISTANCE IN OHMS | | | | |
|---|---|---|---|---|---|
| | 22 LINE/ FEATURE | 3 AND 8 LINE | SINGLE LINE | 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 |
| AUX PAIR | OPEN | N/A | OPEN | N/A | N/A |

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 | MEASURED 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 as follows:

| UNIT UNDER TEST | 66M-xx BLOCK CONNECTION | METER LEAD POLARITY | MEASURED VOLTAGE |
|---|---|---|---|
| TYPICAL EVEN STATION Repeat for each even sta. | Voice 1 | (+) | +33 +/- 5 VDC |
| | Data 3 | (-) | |
| | Voice 2 | (+) | +33 +/- 5 VDC |
| | Data 4 | (-) | |
| TYPICAL ODD STATION Repeat for each odd sta. | Voice 9 | (+) | -33 +/- 5 VDC |
| | Data 11 | (-) | |
| | Voice 10 | (+) | -33 +/- 5 VDC |
| | Data 12 | (-) | |

Variant readings can indicate a possible wiring, station, or common equipment problem.

## General Check

1. Check the red light emitting diode (LED) system status indicator. Be sure that it is on steady. If it 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.

# CHAPTER 3
# SYSTEM 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.

- All COS programming commands must originate at a 22 Line/Feature Keyset installed at station port 10 or 11 and a companion DSS/BLF Console installed at adjunct port 10 or 11 respectively. No COS programming commands will be accepted from any other stations connected to the system.

NOTE

A Model 1432 KSU Rev. A through M can only be programmed from a keyset and console installed at station port 10 and adjunct port 10. Programming of these KSU revisions from station port 11 and adjunct port 11 is not permitted.

- Programming overlays are included with each system for use in identifing the keys required for COS programming. One overlay fits over the keys of the station installed at station port 10 or 11 and designates the A-field and B-field keys. The other overlay fits over the keys of the console installed at adjunct port 10 or 11 and designates the C-field keys.

- 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.

- On a KSU Rev. A through M, programming steps must be performed with less than 17 seconds between keystrokes; otherwise, a timeout will occur. If a timeout occurs, the programming mode must be re-entered. The timeout period for a KSU Rev. N and above has been extended to 5 minutes.

## 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 multifunction (hybrid) system configuration, to originate outside calls with a Single-Line Keyset, 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. Alternately 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 keys 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.

## BASE LEVEL PROGRAM ENTRY MODE

The first step in any COS programming sequence is to enter the base level programming mode from station port 10 or 11 (port 10 only for KSU rev. A through M). Once in this mode, COS can be set as desired.

To enter base level:

1. Press the ITCM key. The dial tone will sound.
2. Press the following keys 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 * key. 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 default 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 key B5

3 Press keypad key(s) to choose default settings

| | |
|---|---|
| 1 = system COS default | 4 = pulse dialing - all lines |
| 2 = line COS default | 5 = tone dialing - all lines |
| 3 = station COS default | 6 = flexible key/function default |
| # = One 80 column SMDR line (KSU Rev. N and above) | 8 = Two 40 column SMDR lines (All KSU revisions) |

7051684 = master default (CAUTION: resets all values and clears all stored memory - Do not perform while system is in use)

4 Press * MONITOR

## PROGAMMING OVERLAYS

Several different telephone and console overlays are packed with the system. The overlay to be used is dependent upon the particular models of equipment connected to the programming station port (10 or 11) and the respective adjunct port (10 or 11). The programming overlays are illustrated in Figure 3-1. Full-scale copies of the overlays are also included at the end of this chapter. The full-scale copies can be removed and prepared for use if needed.

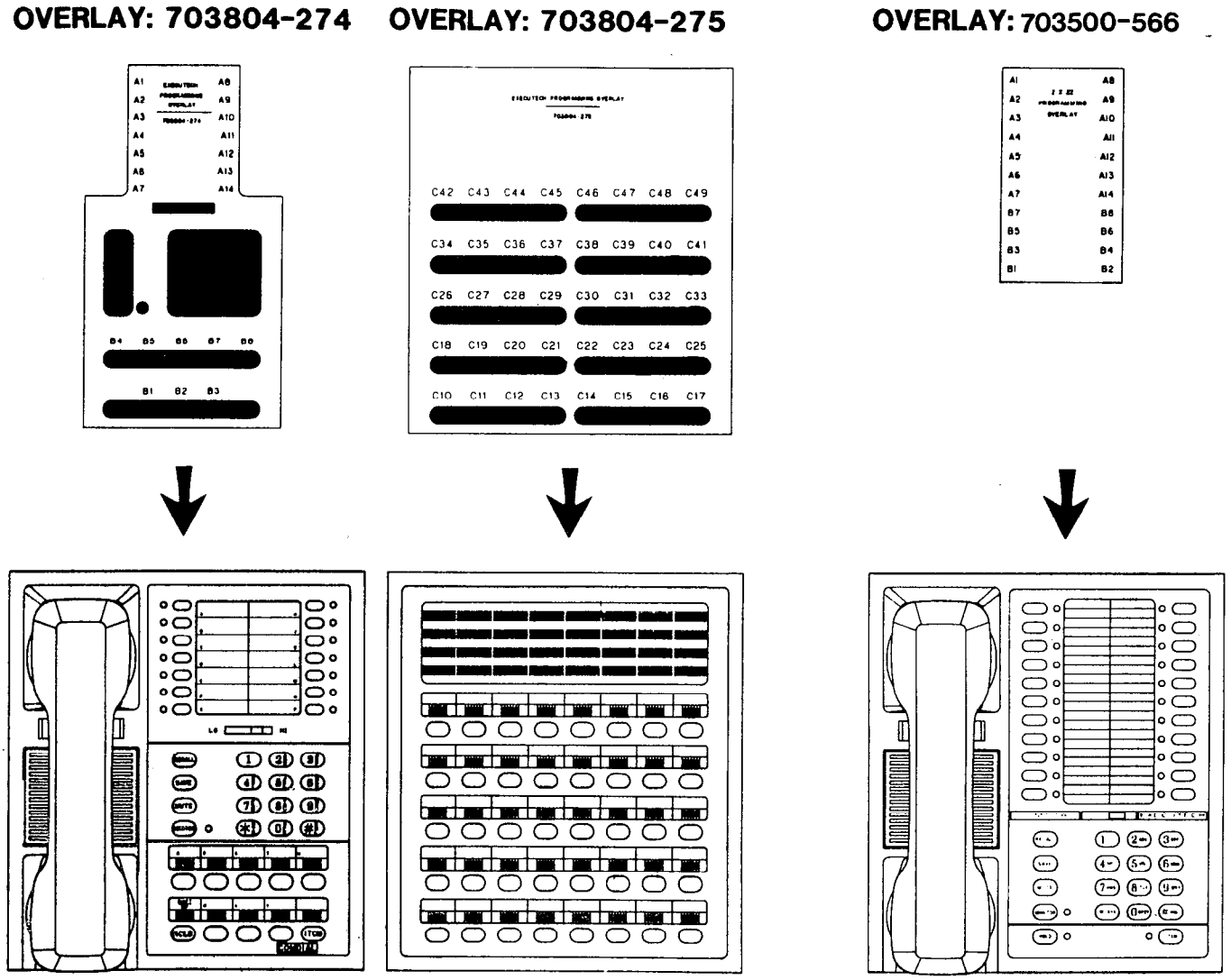



Figure 3-1. Programming Overlay Identification

## SYSTEM COS PROGRAMMING PROCEDURE

SYSTEM DEFAULTS

- Recall/flash time = 2 seconds
- Pause time = 1 second
- Timed Hold recall time = 60 seconds
- Intercom signalling = voice first
- Central message Desk = not assigned
- Unanswered call transfer = 20 seconds
- Printer baud rate = 1200 baud, 7-bit data
- Print length = 40 Col.
- Port Assignments: All station ports= 22 Line/Feature Keyset
  All adjunct ports = 40-Key DSS/BLF Consoles
  Station and adjunct ports 10 alway default

PROCEDURE

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

**2** Set recall/flash time
- Press program key B1
- Press keypad key for time
- Press *

**3** Set pause time.
- Press program key B2
- Press keypad key for time
- Press *

**4** Set timed hold recall time
Press program key B3
- Press keypad key for time
- Press *

**5a** Set the baud rate of printout
- Press program key B6
- Set baud rate with keypad
- Press *

**5b** Set line length of printout*
- Press program key B5
- Press # for one 80 col.
  -or-
- Press 8 for two 40 col.
- Press *

**6** Choose intercom first signalling
- Press RECALL for voice
- press SAVE for tone
- Press *

**7** Specify central message desk (only one central message desk per system allowed)
- Press #
- Press console key C10 - C41 to choose station 10 - 41
- Press *

Note: to cancel, press # *

**8** Set recall time for unanswered call transfer*
- Press program key B7
- Press keypad keys for time (see programming chart for values)
- Press *

**9** Specify station type for each adjunct port
- Press console key to identify adjunct port
  C43 = adjunct port 11
  C44 = adjunct port 12
  C45 = adjunct port 13
- Press console key to specify equipment type.
  C46 = 8 Line BLF Keyset
  C47 = DSS/BLF Console

-continued

*** Feature not available on Model 1432 KSU Rev. A through M.**

System COS programming procedure-continued

**10** Specify station type for each station port
- Press console keys C10 - C41 to identify station port 10 - 41
- Press console key to specify station type
  C42 = Single-Line Keyset (administrative phone)
  RECALL = Single-Line Keyset (hotel/motel phone)*
  C46 = 8 Line BLF Keyset
  C47 = DSS/BLF Console (40-key)
  C48 = 3 and 8 Line Keyset
  C49 = 22 Line/Feature Keyset
  C10 = 32-Key Console (without call announce)*
  Keypad Key 6 = 32-Key Console (with call announce)*
  Keypad Key 7 = LCD Phone*
- Press * and repeat steps for each active station port

NOTE: The step 10 action sets STATION COS for IDed port to the DEFAULT conditions for that type of station.

**11** Press *

**12** Press MONITOR to exit or proceed to next COS

***Feature not available on Model 1432 KSU Rev. A through M.**

# SYSTEM COS PROGRAMMING REFERENCE TABLE

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

BASE LEVEL (ITCM) (*) (7) (4) (6) (*)

**2**

| (B1) RECALL/FLASH TIME | | |
|---|---|---|
| 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**

| (B2) PAUSE TIME | | |
|---|---|---|
| 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**

| (B3) HOLD RECALL TIME | | |
|---|---|---|
| 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**

| (B6) BAUD RATE FOR COS AND SMDR DATA | | |
|---|---|---|
| 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** *

| (B5) PRINT OUT LINE LENGTH | |
|---|---|
| (#) | 80 COLUMN 1 LINE |
| (8) | 40 COLUMN 2 LINES |

**6**

| INTERCOM FIRST CHOICE SIGNALLING | | |
|---|---|---|
| (RECALL) | VOICE | |
| (SAVE) | TONE | |

**7**

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

**8** *

| (B7) RECALL TIME UNANSWERED CALL TRANSFER | | |
|---|---|---|
| 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. | |

* **Feature not available on Model 1432 KSU Rev. A through M.**

**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.

### 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. Alternately, allow all numbers in the 978 exchange by entering 1804978 in an ALLOW table.
5. Press the # key 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 area codes typically have a 1 or a 0 as a middle digit, prevent long 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 * (base level entry if not active)

**2** Press program key B4 (enter toll program mode)

**3** Press console key C10 - C25 to select table number (1 - 16)

| KEY | C10 | C11 | C12 | C13 | C14 | C15 | C16 | C17 |
|---|---|---|---|---|---|---|---|---|
| TABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| KEY | C18 | C19 | C20 | C21 | C22 | C23 | C24 | C25 |
| TABLE | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

**4** Select table type
- Deny - press program key B5
- Allow - press program key B6

**5** Select table entry
- Press program key A1 - A4 to select entry 1 - 4

KEY A1 A2 A3 A4
ENTRY 1 2 3 4

**6** Dial number (16 digits max.) (Press # for "match anything" digit)

**7** Repeat steps 5 and 6 until all numbers are programmed in table.

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

**9** Press *

**10** Press MONITOR to exit or proceed to next COS programming step.

## TOLL RESTRICTION PROGRAMMING REFERENCE TABLES

RESTRICTION TABLE 1

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 | 1 | # | # | # | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |

TABLE ASSIGNMENT: LINES ____ STATIONS ____

RESTRICTION TABLE 2

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 | 1 | 8 | 0 | 0 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |

TABLE ASSIGNMENT: LINES ____ 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 | 1 | 9 | 0 | 9 | | | | | | | | | | | | |
| 2 | 1 | 8 | 0 | 5 | | | | | | | | | | | | |
| 3 | 1 | 6 | 1 | 9 | | | | | | | | | | | | |
| 4 | 1 | 9 | 0 | 0 | | | | | | | | | | | | |

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 | 1 | 0 | 1 | 8 | | | | | | | | | | | | |
| 2 | 1 | 2 | 1 | 3 | | | | | | | | | | | | |
| 3 | 1 | 3 | 1 | 0 | | | | | | | | | | | | |
| 4 | 1 | 7 | 1 | 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 | 9 | 7 | 6 | | | | | | | | | | | | | |
| 2 | 1 | 9 | 0 | 0 | | | | | | | | | | | | |
| 3 | 1 | # | # | # | | | | | | | | | | | | |
| 4 | 4 | 1 | 1 | | | | | | | | | | | | | |

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 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 | 1 | 8 | 00 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 8

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 | 1 | # | # | # | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 9

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

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 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | 6 | | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | | | | | | |
| 4 | 9 | | | | | | | | | | | | | | | |

TABLE ASSIGNMENT: LINES _____ STATIONS _____

RESTRICTION TABLE 14

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 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
- Dial Mode = DTMF
- Toll Tables = none assigned
- Line groups = none assigned
- Privacy status = private
- Abandoned Hold Timeout = 50 msec.

---

PROCEDURE

**1** Press ITCM * 7 4 6 * (base level entry if not now active)

**2** Select line to be programmed.
Perform all applicable steps.
- Press program key A1 - A14 to choose line 1 - 14

**3** Select line type
Press program key:
- Disabled = key C46
- Auxiliary = key C47
- CO/PBX = key C48

**4** Select line group
Press program key:
(multifunction config. only)
- None = key C41
- Gp 1 = key C34
- Gp 2 = key C35
- Gp 3 = key C36
- Gp 4 = key C37

**5** Select dialing mode
Press program key:
- Pulse/tone = key C26
- Tone only = key C27

**6** Select privacy mode
Press program key:
- Private = C28
- Non-private = C29

**7** Assign toll tables
Press program key(s)
- Clear all assignments = C33
- Assign tables per chart

| TABLE | KEY | TABLE | KEY |
|---|---|---|---|
| 1 | C10 | 9 | C18 |
| 2 | C11 | 10 | C19 |
| 3 | C12 | 11 | C20 |
| 4 | C13 | 12 | C21 |
| 5 | C14 | 13 | C22 |
| 6 | C15 | 14 | C23 |
| 7 | C16 | 15 | C24 |
| 8 | C17 | 16 | C25 |

**6** Select privacy mode
Press program key:
- Private = key C28
- Non-private = key C29

**8** Set abandoned hold timeout period
Press program key:
- 300 msec. = key C42
- 50 msec. = key C43

**9** Repeat steps 2 - 8 for each line

**10** Press *

**11** Press MONITOR to exit or proceed to next COS programming step.

# LINE COS PROGRAMMING REFERENCE TABLE

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

BASE LEVEL ITCM * 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 | | | | | | | | | | | | | | |
| 6 | 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 | 300 MSEC | | | | | | | | | | | | | | |
| | | 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
- Ringing line preference =disabled
- Personal ringing tone = tone 1
- Toll tables = none assigned
- Line access denied = none
- Idle line preference = none
- All-call receive = enabled
- All-call originate = enabled
- Zone page receive = disabled
- Zone page originate = disabled
- Automatic hold = disabled
- System speed dial toll restric. = disabled
- Voice announce block = disabled
- Privacy status = private
- Executive override = disabled
- Prime line/group = none
- Single Line Keyset accesses intercom
- Ringing assignment = all lines ring on stations 10, 17, 39, and 41
- Origination denied = none
- Night transfer = all lines ring on stations 10, 17, 39 and 41
- Reserved intercom link = none
- Message originate = disabled
- Line/key assignment:

  3 and 8 Line Keyset
- B=Field keys (B1=B8) = lines 1 - 8

  22 Line/Feature Keyset
- A-Field keys = lines 1 - 14
- B-Field keys = autodial locations

### PROCEDURE

- Perform all steps in sequence.
- Skip those steps not required.

**1** Press ITCM * 7 4 6 * (base level entry)

**2** Press program key B8 (program entry)

**3** Specify station to be programmed and perform applicable steps
- Press program key C10 - C41 to select station port 10 - 41

Action defaults following settings:
- PA port
- Prime line
- Voice blocking
- Executive override
- Message wait-originate
- Automatic hold
- System speed dial toll rest.
- Ringing line preference

**4** Enable PA port (DO NOT PROCEED BEYOND THIS STEP - IF PERFORMED)
- Press keypad key 1
- Return to step 3

**5** Block voice announced intercom calls
- Press keypad key 2

**6** Enable executive override
- Press keypad key 3

**7** Enable toll table restriction on system speed dial numbers
- Press keypad key 4

- continued

Station COS - continued

**8** Choose personal ringing tones (22 Line/Feature Keysets)
- TONE 1 = keypad key 7
- TONE 2 = keypad key 8
- TONE 3 = keypad key 9
- TONE 4 = keypad key 0

**9** Set automatic hold
- Press keypad key 5

**10** Enable message wait originate
- Press keypad key 6

**11** Select prime line or prime group
- Press program key A1 - A14 to select line 1 - 14 or press ITCM to select intercom line
- Press HOLD or key(s) B1 - B3 to choose prime group 1 - 4

**12** Set ringing line preference
- Press program key:
  Enabled = B5
  Disabled = B4

**13** Select ringing assignments
RINGING
- Press program key C42 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

DELAYED RINGING
- Press program key C43 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

**14** Select Night Transfer (ringing)
- Press program key C44 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

**15** Select automatic privacy release
- Press program key C45 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

**16** Select access denied
- Press program key C46 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

**17** Select call origination denied
- Press program key C47 (clears previous settings)
- Press program key(s) A1 - A14 = lines 1 - 14

**18** Select idle line preference (hybrid config. only)
- Press program key C48 (clears provious settings)
- Press program key(s) A1 - A14 = lines 1 - 14

-continued

Station COS - continued

**19a** Enter toll table assignment mode
To clear all toll tables assigned
- Press program key C49

**19b** Specify toll tables
- Press program keys per chart:

| KEY | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 |
|---|---|---|---|---|---|---|---|---|
| TABLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| KEY | A9 | A10 | A11 | A12 | A13 | A14 | B4 | B5 |
| TABLE | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

**20** Reserve intercom link
- Press #
- Press keypad key 1-7 to reserve link 1-7

-or-

- Press 0 key for no reserved link
- Press console key C42 to continue with next step

**21** Select all-call and/or zone paging
- Press #
- Press RECALL to disable all paging assignments (if desired)

ALL-CALL
- Press program key A4 to originate
- Press program key A8 to receive
- Press console key C42 to continue with next program step

ZONES A, B, AND C
- Press #
- Press program keys A1-A3 and A5-A7 to enable zones

| | ORIGINATE | | | RECEIVE | | |
|---|---|---|---|---|---|---|
| KEY | A1 | A2 | A3 | A5 | A6 | A7 |
| ZONE | A | B | C | A | B | C |

- Press console key C42 to continue with next program step

- continued

Station COS - continued

**22** Specify flexible key/function assignment (non-square configuration), if required.

3 AND 8 LINE KEYSET

- Press program key B6
- Press program keys B1 - B8 to choose line keys 1 - 8
  - Fast tone bursts will sound
- Press program keys A1 - A14 to assign lines 1 - 14

-or-

- Press RECALL key to disable line appearance
  - Tone bursts stop
- Repeat for each line assigned

**22** LINE/FEATURE KEYSET

- Press program key B6

Assign Lines To Keys
- Press key to be assigned (A or B field) - Fast tone bursts sound
- Press program keys A1 - A14 to assign lines 1 - 14
  - Tone bursts stop
- Repeat for all keys requiring line appearance

Disable Line Appearance At Keys (clears any prior assignment)
- Press key to be denied appearance - Fast tone bursts sound
- Press RECALL key - tone bursts stop
- Repeat procedure for all required key locations

Assign DSS To Keys
- Press key to be assigned (A or B field) - Fast tone bursts sound
- Press program keys C10 - C41 to choose station ports 10 - 41
  - Tone bursts stop
- Repeat for all keys requiring DSS assignment

Assign Autodial To Keys (clears any prior assignment)
- Press key to be assigned (A or B field) - Fast tone bursts sound
- Press RECALL key - tone bursts stop
- Repeat procedure as required for all autodial keys

Assign Dynamic Loop Keys (clears any prior assignment)*
- Press key B1, B2, or B3 - Fast tone bursts sound
- Press RECALL key - tone bursts stop
- Repeat for B2 and B3 if required

*** Feature not available on Model 1432 KSU Rev. A through M.**

- continued

Station COS - continued

**23** Press *

**24a** Choose next station port for programming
- Press program key B8
- Press console keys C10 - C41

-or-

**24b** Block program a group of stations with same COS as previously programmed station*
- Press * HOLD
- Press program key (C10 - C41) to specify model station port
- Press program key (C10 - C41) to specify first station in block
- Press program key (C10 - C41) to specify last station in block.

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

**25** If block programming of step 24b is not performed, repeat steps 5 through 24a for each station in system.

**26** Press * MONITOR to exit programming.

* **Feature not available on Model 1432 KSU Rev. A through M.**

- end

## STATION ID (REF SYSTEM COS CHART)

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

BASE LEVEL (ITCM) (*) (7) (4) (6) (*)

STATION PROGRAMMING MODE (88)

| 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) | (0) |

**11**

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

| PRIME GROUP-AUTOMATIC | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| (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. | | | | | | | | | | | | | | |

**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. | | | | | | | | | | | | | | | |

| 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 | | |

**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) |
| (RECALL) CLEARED | | | | |
| PRESS (C42) TO CONTINUE | | | | |

**20**

| (#) RESERVE INTERCOM LINKS | | | | | | | |
|---|---|---|---|---|---|---|---|
| NONE | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| PRESS (C42) 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) | | | | | | | | |

| 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 | A7 | | |
| 10 | A10 | | |
| 11 | A11 | | |

(B6) 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-10)(C-41) | LINE ASSIGNED | | | | | | | | | | | | | | | | | | | | | | |
| | DSS STA. ASSIGNED | | | | | | | | | | | | | | | | | | | | | | |
| (RECALL) | AUTO DIAL ASSIGNED | | | | | | | | | | | | | | | | | | | | | | |
| | DISABLED | | | | | | | | | | | | | | | | | | | | | | |
| | DYNAMIC LOOP KEY * | | | | | | | | | | | | | | | | | | | | | | |

*** Feature not available on Model 1432 KSU Rev. A through M.**

# COS AND SMDR PRINTOUT

## COS PRINTOUT

When a data printer is connected to the system, it can be commanded, from station port 10 or 11, 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 Recording (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 * (base level entry if not active)

2 Press program key B6

3 Choose desired printout
* Press program key per chart. Printout begins immediately.

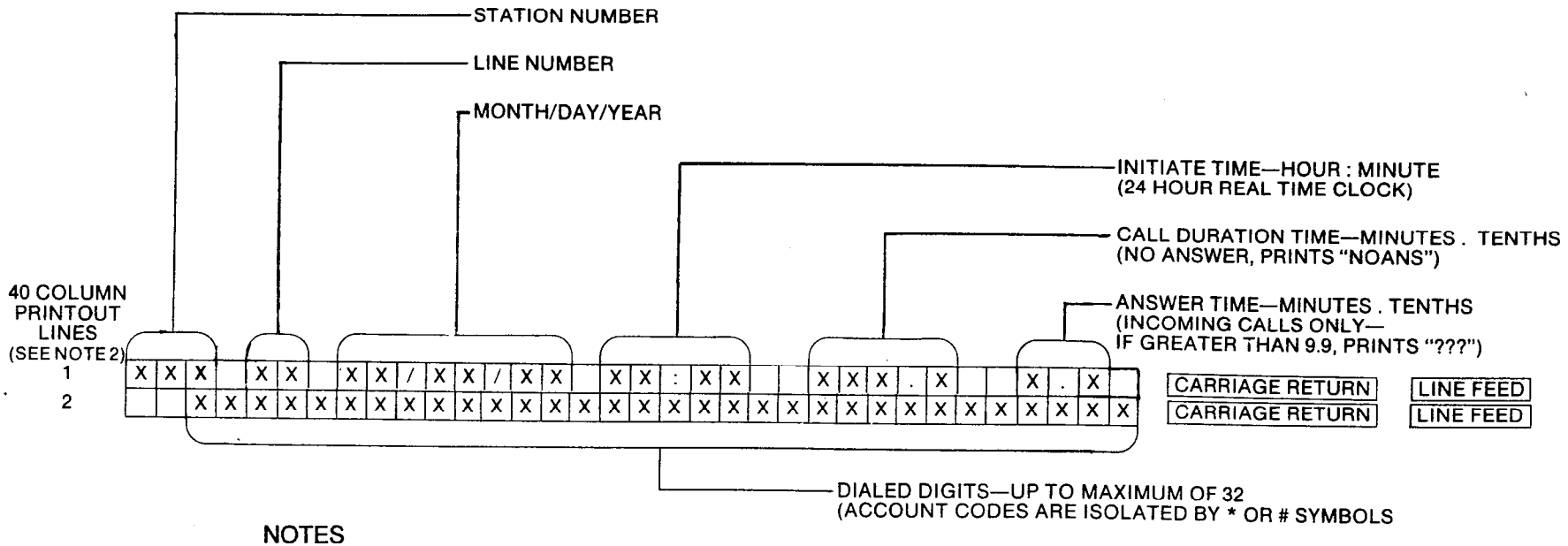
| PRINTOUT | PROGRAM KEY |
|---|---|
| All COS | B4 |
| System COS | B5 |
| Line COS | B6 |
| Toll Tables | B7 |
| All Station COS | B8 |
| One Station COS | C10 - C41 (to choose station port) |

4 To stop printout,
On Model 1432 KSU Rev. A through M: press * B7
On Model 1432 KSU Rev. N and later: press B3.

5 Press * MONITOR (ends procedure)

## 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 3-2. Two 40-column printout lines can be obtained from any KSU revision. One 80-column printout can be obtained from KSU Rev. N or above.




## 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. ALSO SEE NOTE 3

☞ 3. AN 80 COLUMN ONE-LINE PRINTOUT IS ONLY AVAILABLE ON KSU REV. N AND ABOVE.

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

| PRINTOUT EXAMPLES | |
|---|---|
| UNANSWERED INCOMING CALL | 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<br>**1234 |
| OUTGOING CALL (LOCAL) | 16 2 12/05/86 16:58 2.0<br>9782200 |
| OUTGOING CALL (WITH ACCOUNT CODES) | 24 2 12/05/86 17:01 .5<br>11233456789*0#*7412580#9631*# |
| AC POWER FAILURE AND RESTORATION | OFF TIME ** 12/05/86 17:03<br>** 12/05/86 17:08 |

## CASSETTE TAPE RECORD OF COS VALUES

- Connect audio cassette tape recorder to music interface on side of KSU.
- Do not perform other programming action while tape system is active.
- If the system includes a data printer, appropriate response messages will be printed during the recording and loading of COS data.

### RECORDING COS DATA TO TAPE

To record currently stored COS program values on cassette tape for later use, proceed as follows:

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 B4 to start recording process.
5. To abort procedure (if required),
   - Press ITCM * 7 4 6 * ITCM
   - Press program key B8.

COS recording requires approximately 12 minutes. Station port 10 or 11 will ring when recording is complete.

### 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 to load COS features.
4. Start tape playback.
5. To abort the procedure (if required),
   - Press ITCM * 7 4 6 * ITCM
   - Press program key B8.

COS loading requires approximately 10 minutes. Station port 10 or 11 will ring when loading is complete.

## SYSTEM CLOCK INFORMATION

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

### SETTING THE CLOCK

1. Press ITCM , then dial * #

2. Dial the clock date with the key pad keys

   YEAR MONTH DAY HOUR MINUTE

   NOTE
   Values less than 10 must be dialed as 0X.
   Hours must be expressed in the 24-hour format.

3. If the SMDR printer is installed and operating, the clock date will be printed as follows.

   ** 01/08/86 16:00 (Example)

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

   a. Repeat step 1.
   b. Dial the new minutes digits, and press the # key.
   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.

** MO/DY/YR 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)
MO/DY/YR 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.

* Press ITCM *

* Press SAVE

* Dial storage location (10 - 59)
* Choose line or group preselection
  (multifunction (hybrid) system only)
  * Dial 1 - 4 for group
    -or-
  * Press a line key for line
    Note: Key-to-line assignment per programming arrangement.
    Refer to station COS programming reference chart
    for station port 10 key-to-line assignments.
    -or-
  * Dial 0 for no group or line preselection
* Dial speed dial number (up to 32 digits)

  * Dial 1 - 0, #, and *

  * Press HOLD to store pause if required

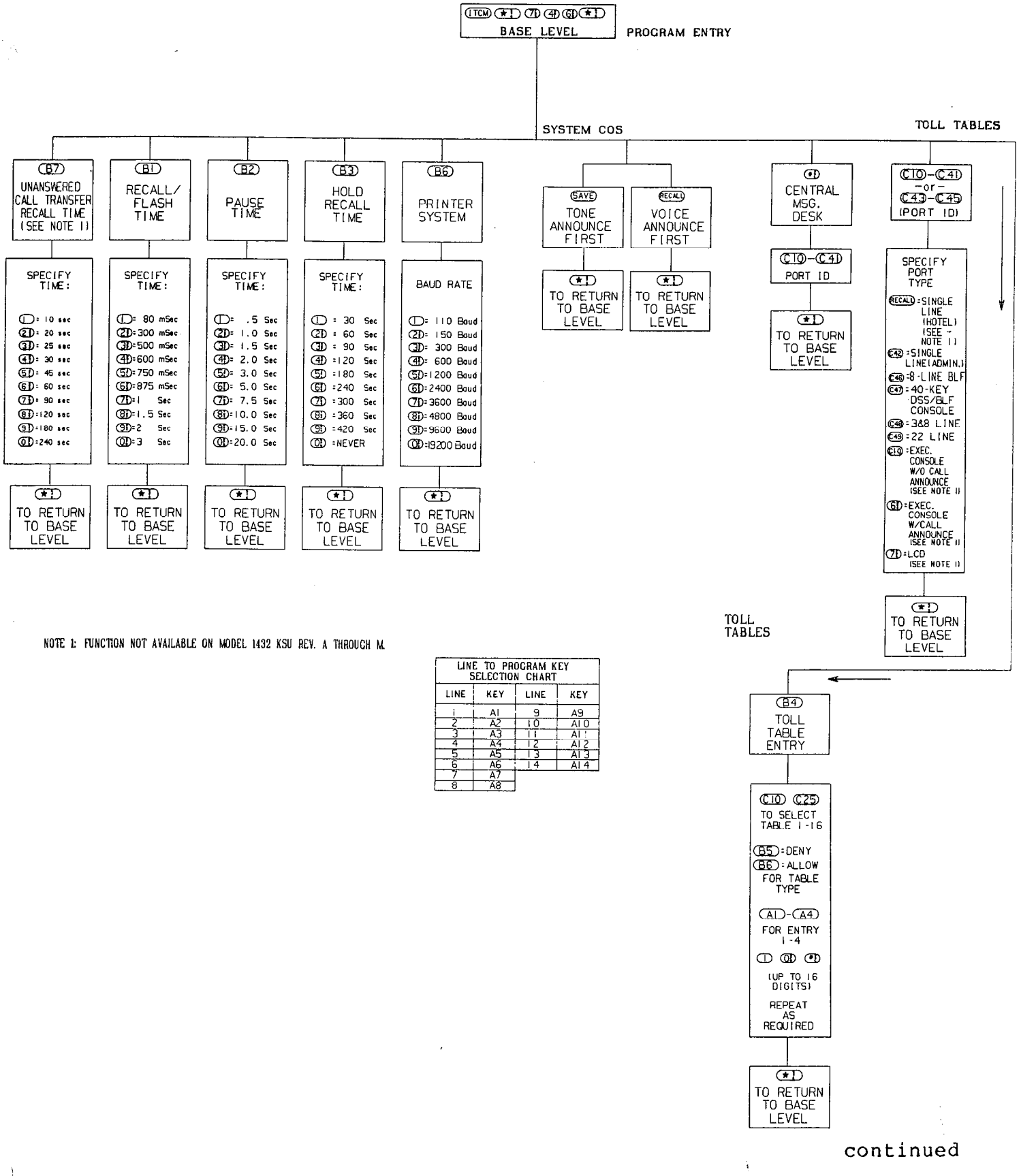
  * Press RECALL to store flash if required

* Press SAVE and repeat procedure for each number.

* Press MONITOR to end procedure

## SYSTEM SPEED DIAL INDEX

| | | | | | |
|---|---|---|---|---|---|
| *10 | | *27 | | *45 | |
| *11 | | *28 | | *46 | |
| *12 | | *29 | | *47 | |
| *13 | | *30 | | *48 | |
| *14 | | *31 | | *49 | |
| *15 | | *32 | | *50 | |
| *16 | | *33 | | *51 | |
| *17 | | *34 | | *52 | |
| *18 | | *35 | | *53 | |
| *19 | | *36 | | *54 | |
| *20 | | *37 | | *55 | |
| *21 | | *38 | | *56 | |
| *22 | | *39 | | *57 | |
| *23 | | *40 | | *58 | |
| *24 | | *41 | | *59 | |
| *25 | | *43 | | | |
| *26 | | *44 | | | |



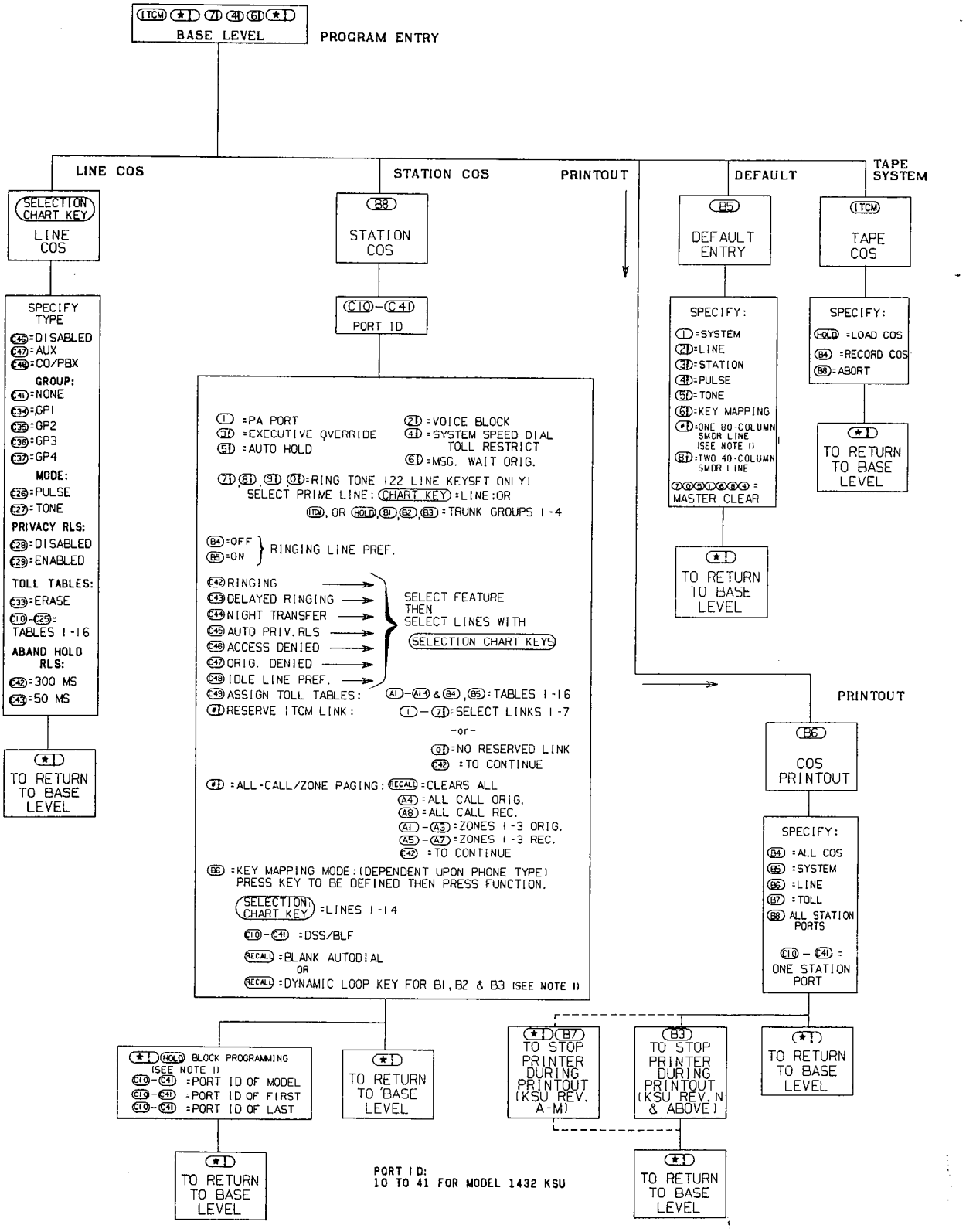

NOTE 1: FUNCTION NOT AVAILABLE ON MODEL 1432 KSU REV. A THROUGH M.

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 | | |

Figure 3-3. Programming Reference Chart

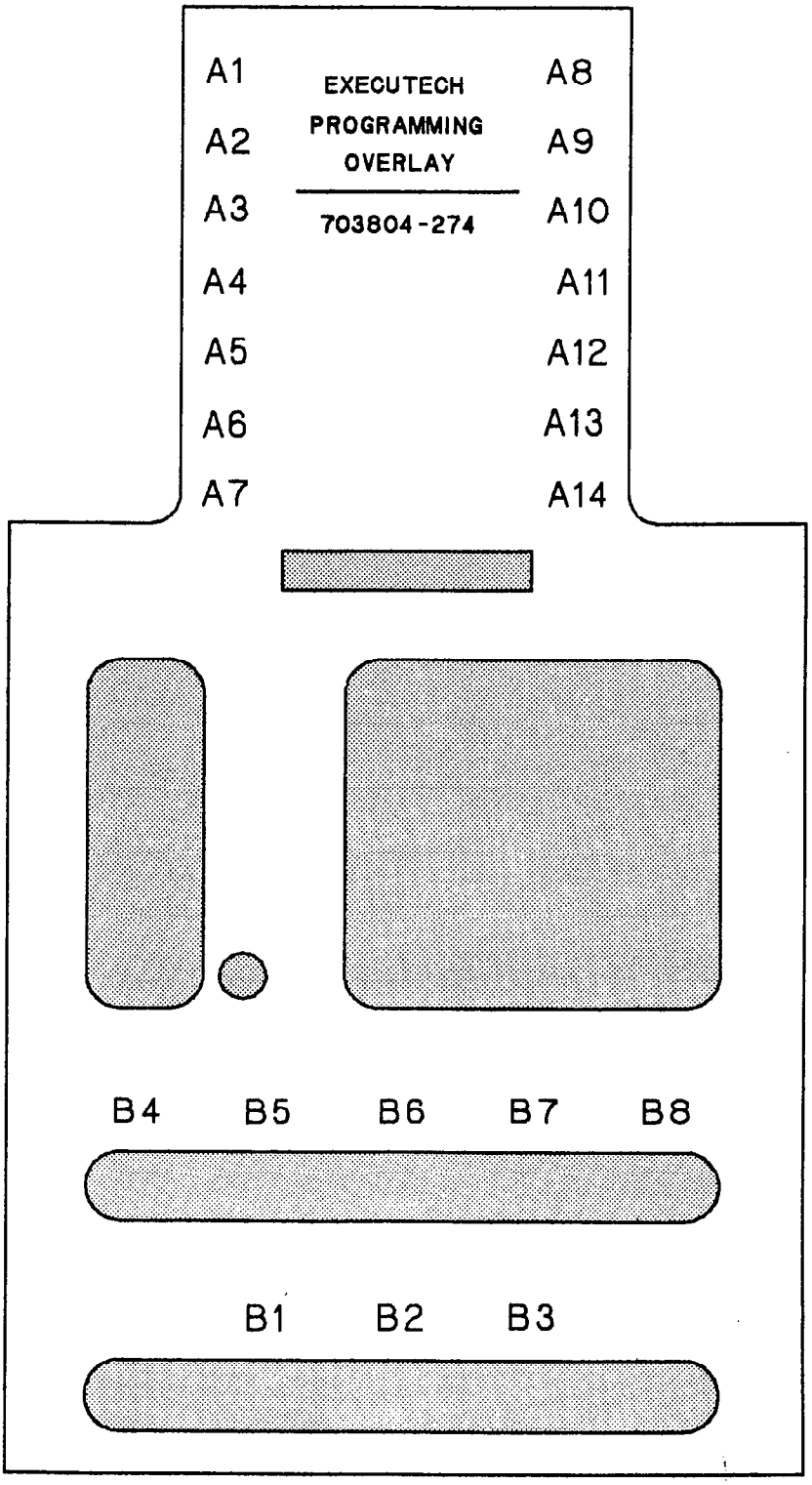
## programming reference chart - continued




NOTE 1: FUNCTION NOT AVAILABLE ON MODEL 1432 KSU REV. A THROUGH M.

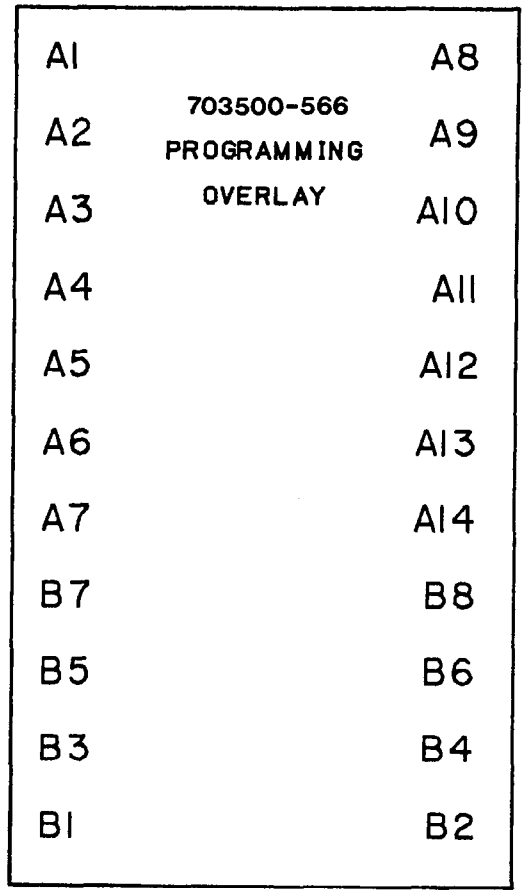
## STATION 10 - PROGRAMMING OVERLAY

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



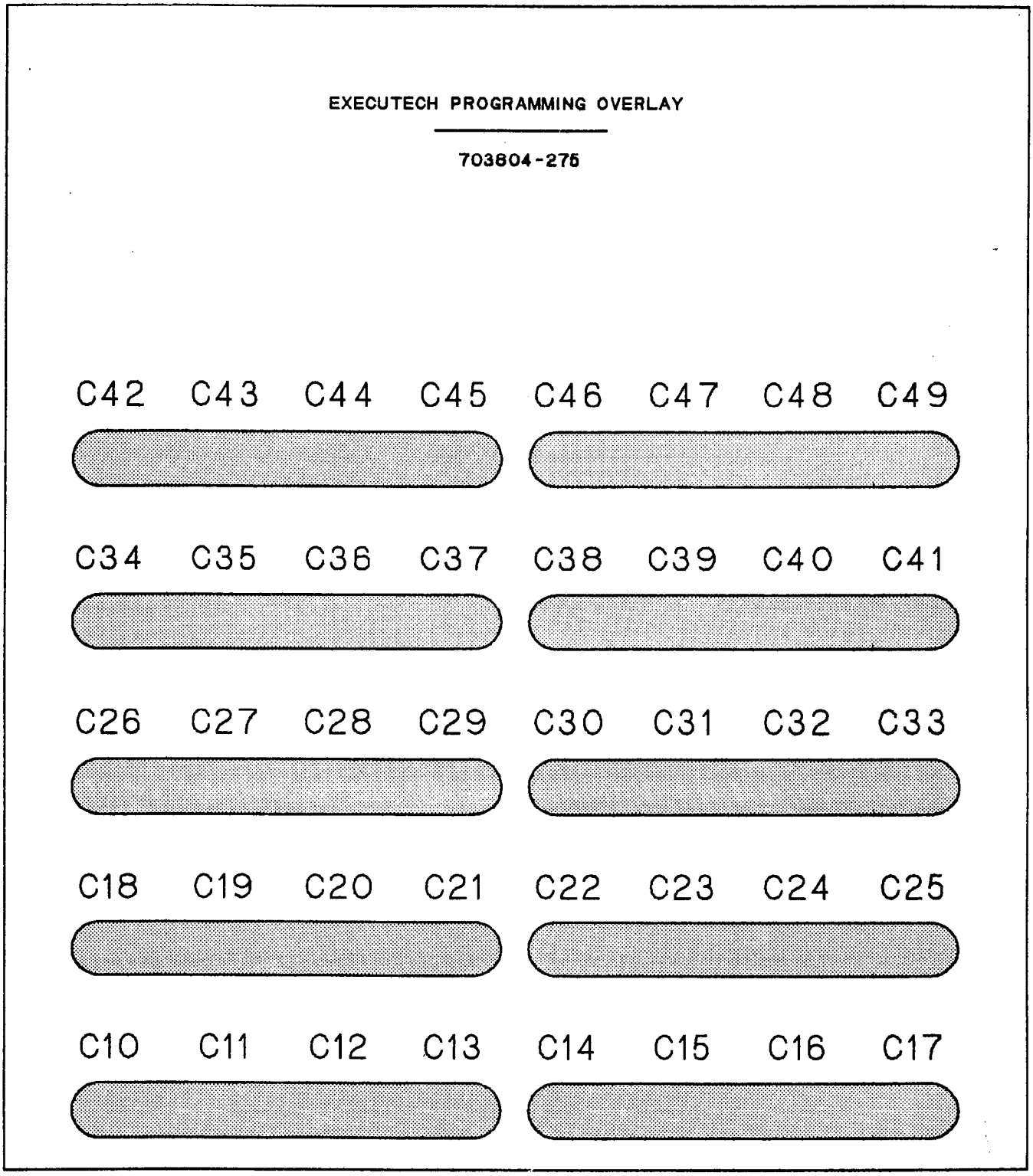
## STATION 10 - PROGRAMMING OVERLAY

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



CONSOLE - PROGRAMMING OVERLAY

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



# CHAPTER 4
# MAINTENANCE

## TECHNICAL ASSISTANCE AND REPAIR SERVICE

### Technical Assistance

Should you experence 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 refering to this manual, call the Comdial Technical Service staff. They can be reached at 800-431-4345 (in Virginia: 800-654-3345) 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 KSU or an individual station needs repair, subsequent to the warranty period, 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 Corporation
1180 Seminole Trail
P.O. Box 7266
Charlottesville, VA 22906-7266
Attention: Repair Department
Telephone: (804) 978-2400

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

## 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, SLO-BLO 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.

IMPORTANT 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 follows:

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 volume is set to med. or high) |

22 LINE/FEATURE KEYSET

| SEQUENCE | INDICATION |
|---|---|
| 1 | MONITOR indicator lights |
| 2 | B-Field indicators light in sequence (B1 - B8) |
| 3 | HOLD indicator lights |
| 4 | ITCM indicator lights |
| 5 | A-Field indicators light in sequence (A1 - A14) |
| 6 | All indicators extinguished |
| 7 | Ringer sounds (be sure volume is set to 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.

IMPORTANT NOTE

THE COMPANION STATION WILL BE DISABLED DURING THE TIME 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, 11, 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 properly 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.

Table 3. Station Pairing

| 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.

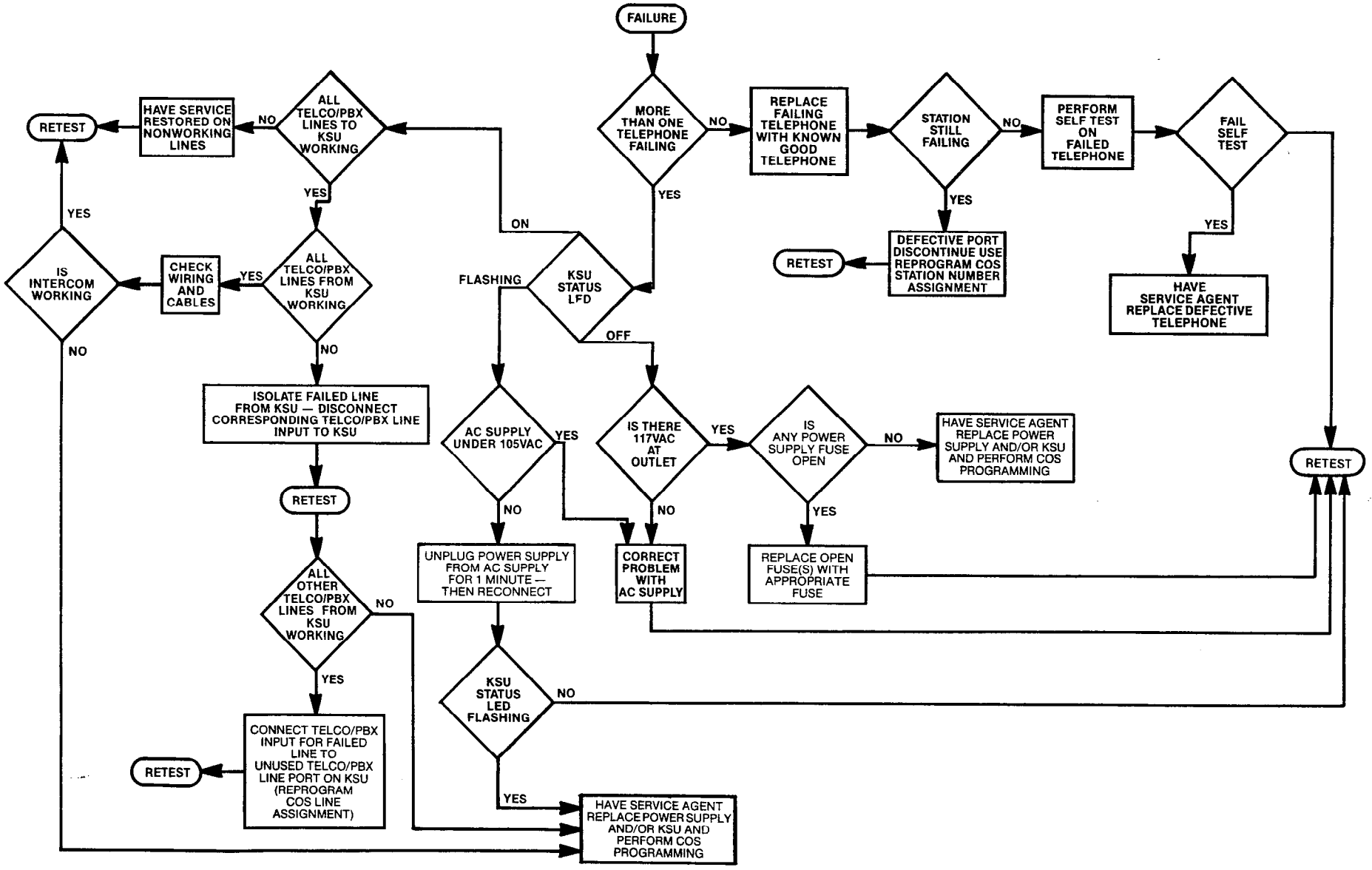



Figure 4-1. Failure Analysis Flow Chart

## 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 locally), or mount it on a wall jack cover plate.

1. Thread the #10 screws into the wall within 1/8-inch of the surface. Refer to Figure 4 for the spacing dimensions.

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

3. Pull out the latching lever.

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

5. Push the latching lever in to lock the station in place.

6. To remove the station, pull out the latching lever, lift to unsnap both screws or studs from the bottom housing, and lift the station away from the wall.

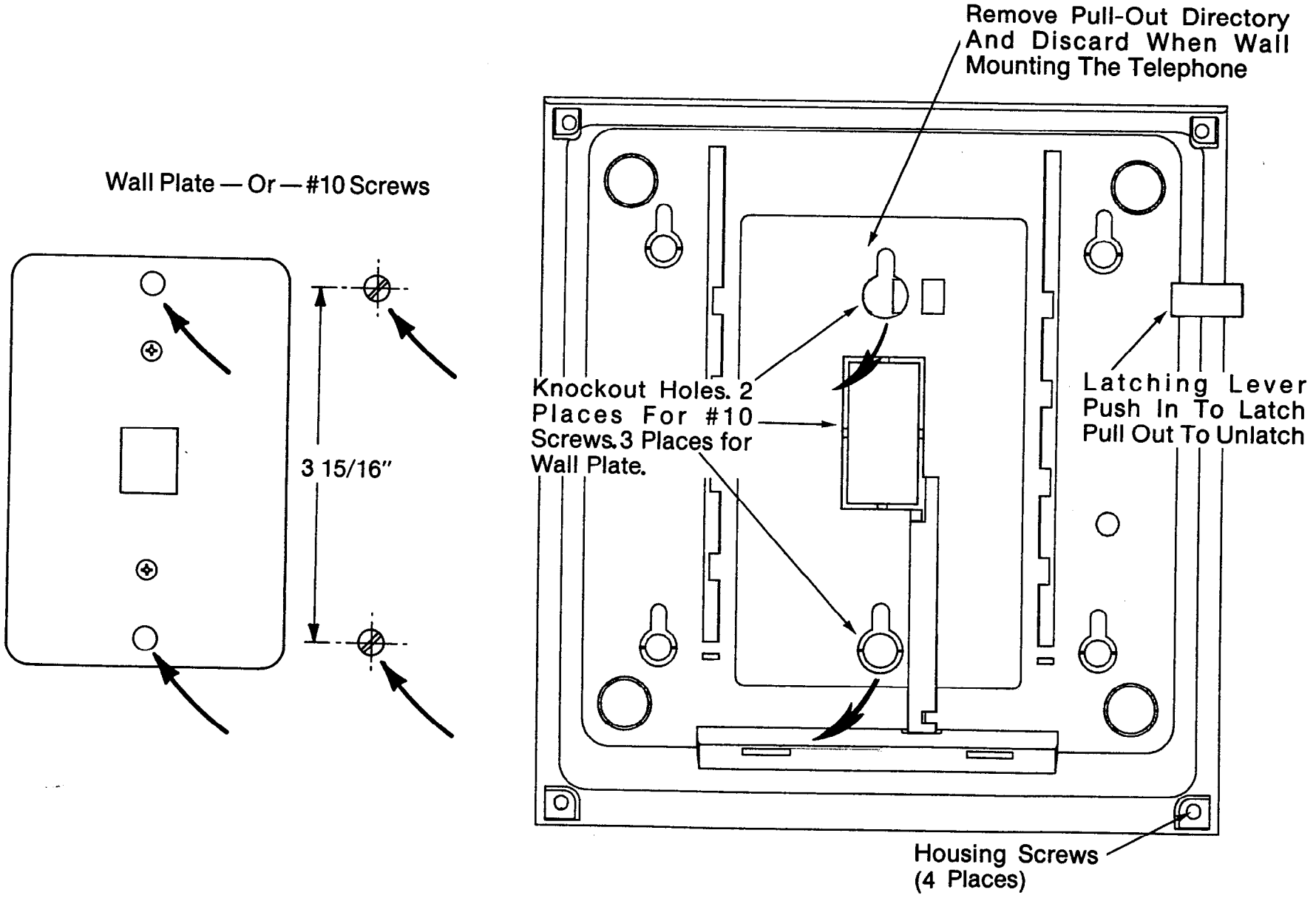



Figure 4-2. Station Wall Mounting Details
(Note: 22 Line/Feature Keyset shown - Single-Line Keyset similar)

REPLACEMENT PARTS LIST

| ORDER CODE | DESCRIPTION OF PART |
|---|---|
| 1432 KSU | Key Service Unit, 14 Lines, 32 Stations |
| | 22 Line/Feature Keyset Desk/Wall Reversible: |
| 3500-XX-CT-000S | Speakerphone, 10x14 Key Field |
| 3502-XX-CT-000M | Monitor, 10x14 Key Field |
| 3614-XX-CT-000M | Monitor, 10x14 Key Field |
| 3614-XX-CT-000S | Speakerphone, 10x14 Key Field |
| 3614-XX-CT-LCDS | Speakerphone, 10x14 Key Field, LCD Display |
| 3614-XX-DG-000M | Monitor, 10x14 Key Field, Data Jack |
| 3614-XX-DG-000S | Speakerphone, 10x14 Key Field, Data Jack |
| 3614-XX-DG-LCDS | Speakerphone, 10x14 Key Field, Data Jack, LCD Display |
| 3620-XX-DG-000M | Monitor, 5x20 Key Field, Data Jack |
| 3620-XX-DG-000S | Speakerphone, 5x20 Key Field, Data Jack |
| 3622-XX-CT-000M | Monitor, 2x22 Key Field |
| 3622-XX-CT-000S | Speakerphone, 2x22 Key Field |
| 3622-XX-DG-000M | Monitor, 2x22 Key Field |
| 3622-XX-DG-000S | Speakerphone, 2x22 Key Field |
| | Single-Line Keyset (Proprietary); Desk/Wall Reversible: |
| 3600-XX-CT-000M | Message Waiting Light, Hold Key |
| 3600-XX-CT-009M | Message Waiting Light |
| 3600-XX-CT-579M | Message Waiting Light, Hold Key, Tap Key |
| | DSS/BLF Console: |
| DSS-BLF-32-XX | 32-Key DSS, 32-LED BLF |
| DSS-BLF-40-XX | 40-Key DSS, 40-LED BLF |
| DSS-BLF-70-XX | 70-Key DSS, 70-LED BLF |
| KA-M-xx | Handset |
| | Handset Cord |
| H4DU-6-M-xx | 6-foot length |
| H4DU-9-M-xx | 9-foot length |
| H4DU-12-M-xx | 12-foot length |
| | Line Cord, 6-Wire, Flat |
| 703508-868 | 10-Inch |
| 703027-040 | 7-Foot |
| 703027-027 | 14-Foot |
| 703508-867 | 25-foot |
| 703500-550 | Cable Assembly, Data Printer |
| 703508-869 | Designation Strip Package, includes |
| | 50 number cards |
| | 50 autodial index cards/design. strips |
| | 50 pull-out reference index cards |
| | 5 number card covers |
| | 5 autodial index covers |
| | 5 designation strip covers |
| 703500-560 | Lens Assembly, Pull Out Directory |

XX = COLOR (See parts catalog for details)

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