COMDIAL

ExecuTech

Model 0616X & 0816X
Electronic Key Systems

This manual applicable for the following key system models:

- 0616X Manufacturing Code 8xxC and Later
- 0816X All Manufacturing Codes

IMI 66-031.04
3/89

Changes made to pages 3-8, 3-9, 3-15, 3-18, and 4-1 on 4/91

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CHAPTER 1
INTRODUCTION

MANUAL SCOPE

This publication contains installation, programming, and maintenance information for the following Execu-Tech electronic key systems and the associated telephone equipment.

- Model 0616X - manufacturing code 8xxC and later
- Model 0816X - all manufacturing codes

This 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 PUBLICATIONS

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

IMI 01-005, Handling Of Electrostatically Sensitive Components

GCA 70-011, Station User's Guide

GCA 70-044, Attendant Guide

GCA 40-031, General Description

INSTALLER/USER INFORMATION REGARDING FCC RULES AND REGULATIONS

This electronic key system complies with Federal Communications Commission (FCC) Rules, Part 68.

The FCC registration label on the KSU contains the FCC registration number, the ringer equivalence number, the model number, and the serial number or production date of the system.

NOTIFICATION TO TELEPHONE COMPANY

Unless a telephone operating company provides and installs the system, the telephone operating company which provides the lines must be notified before a connection is made to them. The lines (telephone numbers) involved, the FCC registration number, and the ringer equivalence number must be provided to the telephone company. The FCC registration number and the ringer equivalence number of this equipment are provided on the label attached to the KSU.

The user/installer is required to notify the telephone company when final disconnection of this equipment from the telephone company line occurs.

COMPATIBILITY WITH TELEPHONE NETWORK

When necessary, the telephone operating company provides information on the maximum number of telephones or ringers that can be connected to one fine, 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 win 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-N Interference Problems." This booklet is available from the Government Printing Office, Washington DC. 20402. Stock No. 004-000-00345-4.

RINGER EQUIVALENCE NUMBER

The REN of each line is 0.4B. 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 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 power supply requires a dedicated 117VAC .15 AMP circuit, with a third-wire ground, supplied to a standard (NEMA 5-15R) electrical outlet.
- The distance between the KSU and the TELCO/PBX jacks must be 25 feet or less as per FCC requirements. A nominal distance of 7 feet is recommended.
- The mounting location must be secure and dry and have adequate ventilation. The temperature range of the location must be within 32-122 degrees F (0-50 degrees C), and the relative humidity must be less than 90 percent non-condensing.
- 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 reauired for mountina jnclude:
  - 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 all equipment 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 mounting surface for the equipment.
3. A full scale mounting template is supplied in the packing box. Hold or tape it to the mounting surface, and mark the location of the mounting holes on the mounting surface as they are located on the template. The mounting dimensions are shown on Figure 2-l . .
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. This feature allows the mounting screws to be partially installed in the mounting surface before the cabinets are hung on them.
6. Place the individual telephone stations as desired and in keeping with accepted industry and office standards. Currently produced 8 tine Keysets can be wall mounted if necessary as they are desk/wall reversible. Currently produced keyset models include:
   - 3508-xx-xx-000M
   - 3508-xx-xx-035M
   - 3598-xx-xx-000S
   - 6414-xx
   - 6414L-xx
   - 6414S-xx

Refer to Chapter 4, Maintenance, for instructions in preparing a desk/wall reversible station for wall mounting.

Any previously produced keysets which may currently still be in service can also be wall mounted if necessary. Use a wall mounting bracket (part number 701032-056) for this purpose.

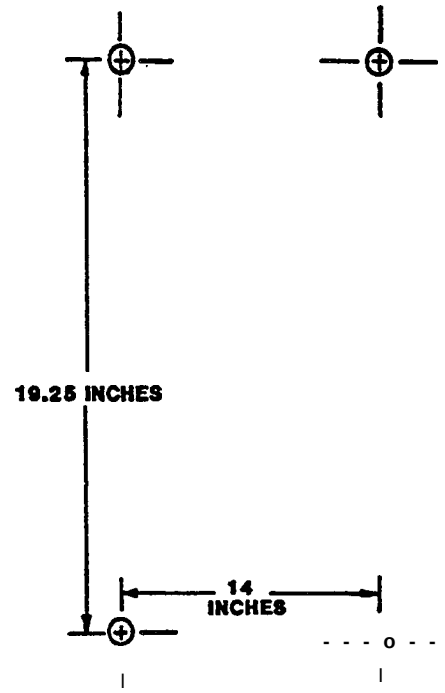


Figure 2-1. Mounting Dimensions

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. Table 2-I and Figures 2-2 through 2-4 illustrate the system wiring and connection points for the key system.

AC Power Connection

The AC power is applied to the system by connecting the AC power cord to the standard **(NEMA 5-15R)** electrical outlet which supplies the dedicated **117VAC @** 15 AMP electrical power.

The following precautions should be taken to help prevent damage to the system which could be caused by an electrical over-voltage condition.

CAUTION

- ***Do not connect the AC power cord until the installation has been checked per the SYSTEM CHECKOUT instructions given at the end of this Chapter.***
- ***Employ a dedicated 117VAC 15 AMP circuit, with a third-wire ground, supplied to a standard (NEMA 5-15R) electrical outlet for the power connection.***
- ***A plug-in, power line surge protectof should be installed between the KSU power cord and the AC power electrical outlet.***

Line Connection

The KSU interface connections for the **CO/PBX** lines are individual **modular** jacks. Wiring between the KSU connectors and the demarcation point connectors is via standard modular line cord. **The** maximum allowed tip/ring loop resistance **is** 1900 ohms from the KSU modular jack to the **CO/PBX** equipment.

CAUTION

To help Insure that foreign voltages, which could appear on the CO lines, do not damage the system, verify that gas discharge tubes orsimiiarprotection devices are installed, and properly grounded, in all connected CO lines.

Statlon Connection

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 connectors. The maximum distance allowed from the KSU to a 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.

Cable Clips

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

DSS/BLF Console Connection

The optional DSS/BLF console may be installed at any station port to work in conjunction with a companion station connected to the adjacent port (e.g.; port 10 for station and port 11 for console).

The installed distance limit between the KSU and a console is the same as that specified for a regular station. Connect all four wires (voice pair and data pair) of the console cable to the station connector block.

The voice pair connections of the console can be used simultaneously to enable a PA port function. Refer to the paragraph in this chapter headed Area Paging Interface - Station PA Port. Per that discussion, wire a PA amplifier input to the DSS/BLF console voice-pair at the connector block clip terminals. Use an audio matching transformer, as discussed in the referenced paragraph and Figure 2-3, to provide isolation. If an enable signal is required with the particular PA equipment being used, the console and PA equipment connections are limited to station ports 23 and 25.

The DSS/BLF console port must be programmed as a DSS/BLF port (see Chapter 3 for programming details) before console operation can take place. The console port must be also programmed as a PA port if a PA amplifier has been connected to the voice pair as part of the system.

Busy Lamp Field Stations

An optional keyset is available which is equipped with a 14 station Busy Lamp Field (BLF). Up to eight BLF stations can be connected to the system. A BLF station can be connected to any odd or even station port in the system per the following guidelines.

- The installed distance between the KSU and the BLF station must be limited to 1000 feet or less.
- The data-line paired station port cannot be used as a BLF station connection or as a regular station connection. Data-line pairing is: 1 O-l **1, 12-13, 14-15, 16-17, 18-19, 20-21, 22-23,** and 24-25.
- The overload paired station port cannot be used as a BLF station connection but can be used as a regular station connection. Overload pairing is: 1 **0-**12, **11-13, 14-16, 15-17, 18-20, 19-21, 22-24,** and **23-25.**
- A port, paired in either manner with a BLF station, can be used as a PA port if desired.

Power Failure Station Connection

The system provides a tip and ring-pair connected to line 1 as an emergency power failure circuit. This power failure pair is available at clip terminals on connector block J-l as detailed on Table 2-l and Figure 2-4. A power failure pair is only active during a commercial AC power failure. An industry standard, single-line telephone, such as a Comdial model 2500-xx, can be connected to a power failure pair and used to provide communications capability until the AC power to the system is restored.

A-Lead Control Device Connection

The KSU can detect an A-lead (A and Al) control signal when it is applied to lines 7 and 8. An A-lead control device can be bridge-connected to these lines via clip terminals on connector block J-2 as detailed on Table 2-1 and Figure 2-4.

Data Device Connection

When a serial data printer is used for SMDR and COS printout, connect it to clip terminals on connector block J-l as detailed on Table 2-1 and Figure 2-4.

The distance between the device and the KSU can be up to 500 feet in a quiet electrical environment. Shielded cable may be required at some sites for long runs. For longer distances, a limited distance modem must be used to relay the data communications between the KSU and the data device.

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 printer to wmmon equipment) 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) tine(s) to the device protective ground pin(s).

Data Format

Configure the data device to match the following data format and to receive data at the baud rate that is set by COS programming.

- 7-bit data with 2 stop bits and no panty • fixed
- Baud rate of 110 baud (default) • can be changed to 300 baud through class of service 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 for this purpose. Wire #10 or #12, insulated, solid copper wire between the ground stud 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-I station connector block.

- One set (J-I connections) provides a dry-contact closure whenever any of the TELCO/PBX lines, connected to the KSU, ring.
- The other set provides a dry-contact closure whenever system station 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 the 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

A station port can be configured by class of service programming to be a PA port. As a PA port, it can be used to couple a station voice path to an external device (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 paging amplifier with a 620 ohm (nominal value) resistor.
- If station port 23 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 23 is dialed. The normal common audible function, as discussed previously, is disabled as long as station 23 is a PA station.
- If station port 25 is programmed as a PA port, the Auxiliary Station Interface (station 17 audible) contact points are automatically reconfigured as PA enable terminals. The contact closure now occurs when PA station 25 is dialed. The normal auxiliary station interface function, as discussed previously, is disabled as long as station 25 is a PA station.

Area Paging Interface - LIne Port

A fine port can be configured by COS 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 station with that tine appearance 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.

- The audio input of an external paging amplifier can be connected to the tip and ring leads of the line port.
- The audio input connection must be isolated with a 600 ohm to 600 ohm audio matching transformer. Terminate the audio input of the paging amplifier with a 620 ohm (nominal value) resistor.

A DTMF 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.

MusicOnHold

If music on hold 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.

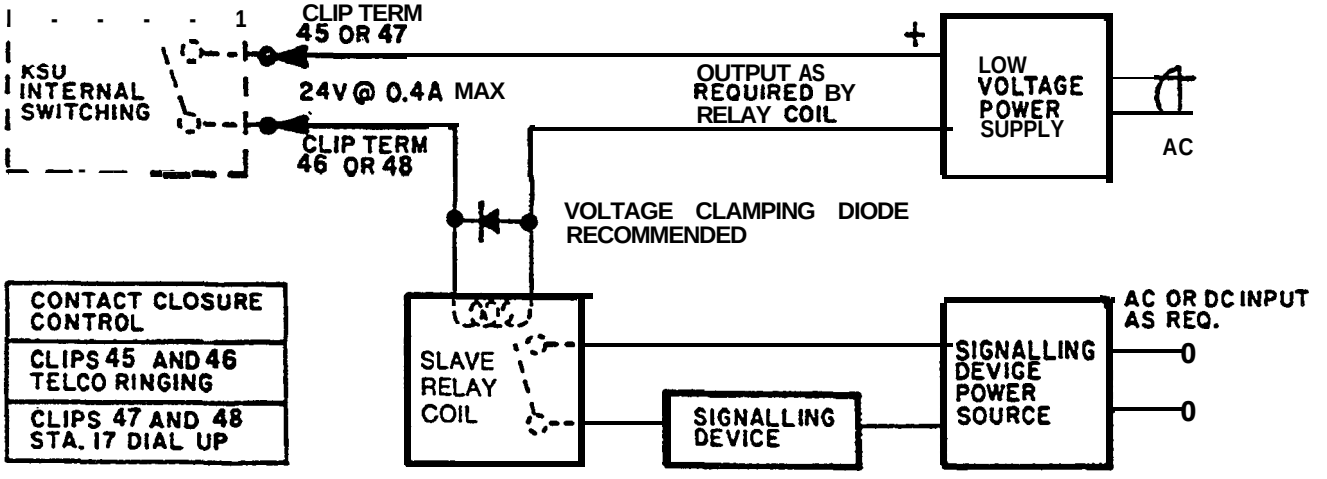
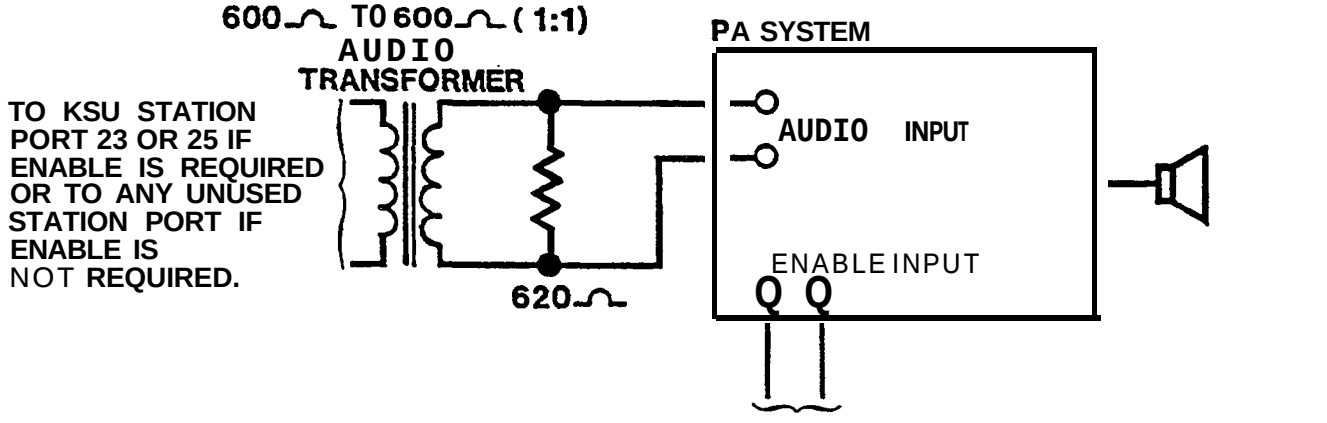


Figure 2-2. External Signalling-Typical Connection.



TO KSU EXTERNAL CONTROL CONNECTION POINTS ON 66M-XX CONNECTOR BLOCK.

- CLIPS 45 & 46 FOR STATION PORT 23 PA ENABLE
- CLIPS 47 & 48 FOR STATION PORT 25 PA ENABLE

Figure 2-3. PA Connections.

Table 2-l. KSU To Station Wring.

25 PAIR CABLE FROM J1 & J2		AMP CONN PIN NO	CONNECTION BLOCK FOR J1		CONNECTION BLOCK FOR J2		STATION CABLE WIRING	
WIRE COLOR	PAIR		STA. NO.	ASSIGNMENT	STA. NO.	ASSIGNMENT	COLOR	CLIP TERM
WHITE-BLUE	1	26	10	VOICE PAIR	20	VOICE PAIR	GREEN	1
BLUE-WHITE		1					RED	2
WHITE-ORANGE	2	27		DATA PAIR		DATA PAIR	YELLOW	3
ORANGE-WHITE		2					BLACK	4
WHITE-GREEN	3	28	11	VOICE PAIR	21	VOICE PAIR	GREEN	5
GREEN-WHITE		3					RED	6
WHITE-BROWN	4	29		DATA PAIR		DATA PAIR	YEUDW	7
BROWN-WHITE		4					BLACK	6
WHITE-SLATE	5	30	12	VOICE PAIR	22	VOICE PAIR	GREEN	9
SLATE-WHITE		5					RED	10
RED-BLUE	6	31		DATA PAIR		DATA PAIR	YEUOW	11
BLUE-RED		6					BLACK	12
RED-ORANGE	7	32	13	VOICE PAIR	23	VOICE PAIR	GREEN	13
ORANGE-RED		7					RED	14
RED-GREEN	8	33		DATA PAIR		DATA PAIR	YELLOW	15
GREEN-RED		8					BLACK	16
RED-BROWN	9	34	14	VOICE PAIR	24	VOICE PAIR	GREEN	17
BROWN-RED		9					RED	18
RED-SLATE	10	35		DATA PAIR		DATA PAIR	YEUDW	19
SLATE-RED		10					BLACK	20
BLACK-BLUE	11	36	15	VOICE PAIR	25	VOICE PAIR	GREEN	21
BLUE-BLACK		11					RED	22
BLACK-ORANGE	12	37		DATA PAIR		DATA PAIR	YELLOW	23
ORANGE-BLACK		12					BLACK	24
BLACK-GREEN	13	38	16	VOICE PAIR	SPARE	—	GREEN	25
GREEN-BLACK		13					RED	26
BLACK-BROWN	14	39		DATA PAIR		—	YELLOW	27
BROWN-BLACK		14					BLACK	28
BLACK-SLATE	15	40	17	VOICE PAIR	SPARE	—	GREEN	29
SLATE-BLACK		15					RED	30
YELLOW-BLUE	16	41		DATA PAIR		—	YELLOW	31
BLUE-YELLOW		16					BLACK	32
YELLOW-ORANGE	17	42	18	VOICE PAIR	SPARE	—	GREEN	33
ORANGE-YELLOW1		17					RED	34
YELLOW-GREEN	18	43		DATA PAIR		—	YELLOW	35
GREEN-YELLOW		18					BLACK	36
YELLOW-BROWN.	19	U	19	VOICE PAIR	SPARE	—	GREEN	37
BROWN-YELLOW		19					RED	38
YELLOW-SLATE	20	45		DATA PAIR		—	YELLOW	2 9
SLATE-YELLOW		20					BLACK	40
VIOLET-BLUE	21	46	SMDR	TD	FROM TELCO LINE 7	TIP	GREEN	41
BLUE-VIOLET		21		GND.		RING	RED	42
VIOLET-ORANGE	22	47		RTS		A	YELLOW	43
ORANGE-VIOLET		22		CTS		A1	BLACK	44
VIOLET-GREEN	23	48	COMM.	CONTACT	FROM TELCO LINE6	TIP	GREEN	45
GREEN-VIOLET		23	AUDIB.	CONTACT		RING	RED	46
VIOLET-BROWN	24	49	STA 17	CONTACT		A	YELLOW	47
BROWN-VIOLET		24	AUDIB.	CONTACT		AI	BLACK	48
VIOLET-SLATE	25	50	POWER	TIP	SPARE		GREEN	49
SLATE-VIOLET		25	FAIL	RING			RED	56

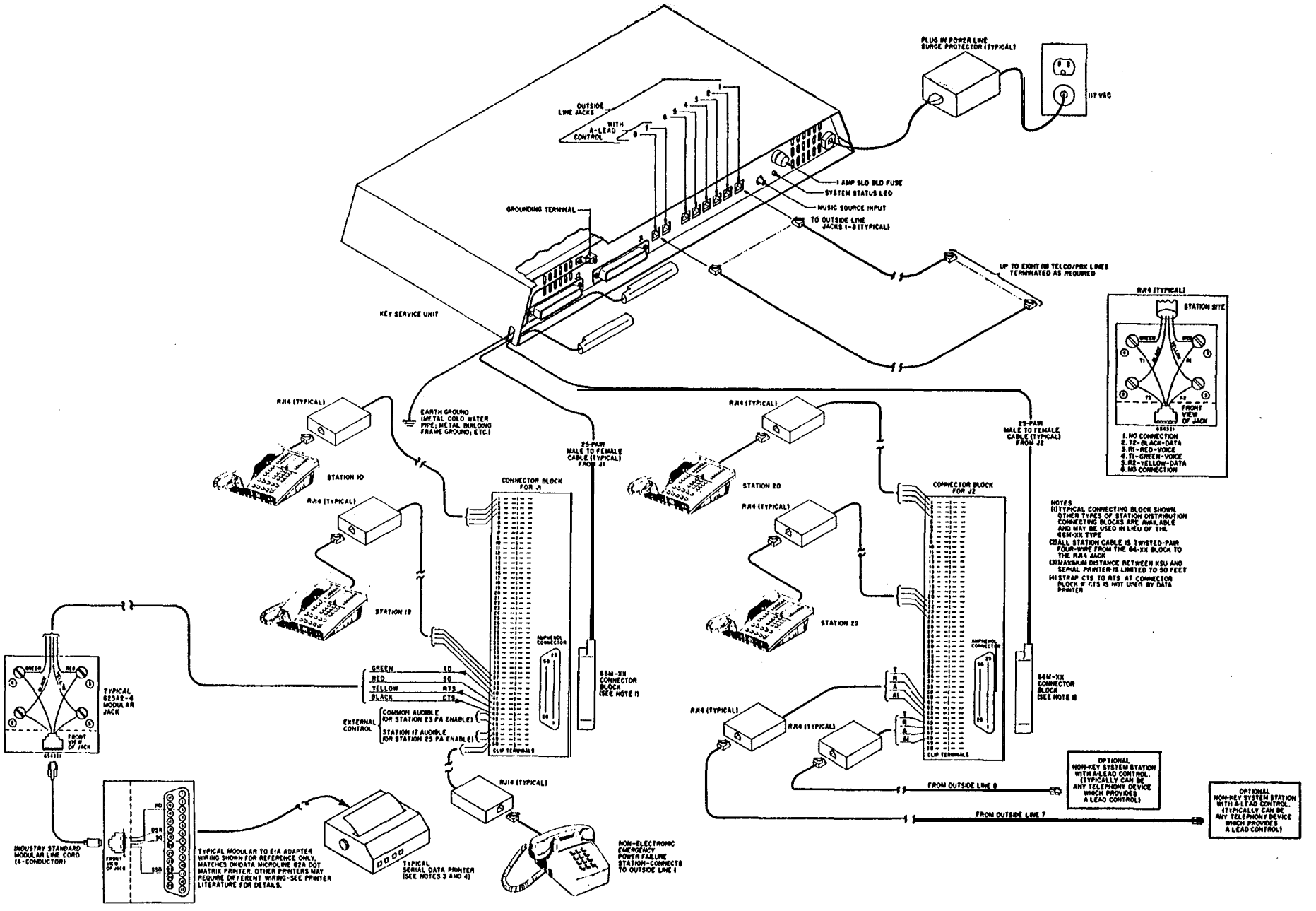


Figure 2-4. System Interconnection - Typical Connections.
(Model 0816X Shown - Model 0616X Same Except 6 lines)

CHECKOUT

Check the KSU and telephone installation for proper operation by performing the following actions.

Resistance Check

Make the following resistance measurements at the Station connector blocks under the following conditions.

- AC power cord disconnected from electrical outlet.
- KSU connected to station connector blocks.
- Stationswired, and wiring punched down on blocks.
- Bridging clips removed from blocks to isolate stations from common equipment.

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. Readings which are outside of these limits indicate a possible wiring or station problem.

   VOICEPAIR: (40 OHMS MIN.-150 OHMS MAX.)
   DATAPAIR: (0.3 OHMS MIN.–100 OHMS MAX.)

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.

MEASURFD 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 common equipment

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 5	(+)	-33 +/- 5 VDC
	Data 7	(-)	
	Voice 6	(+)	-33 +/- 5 VDC
	Data 8	(-)	

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 systemfeaturesfrom station port 10 or 11. Operational parameters are per the system default conditions as detailed in Chapter 3 until 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 setting the Class Of Service (COS) operating conditions. COS programming is divided into the following three major categories: System COS, tine COS, and Station COS.
- All COS programming commands must originate at station 10. No COS programming commands can be accepted from any other station connected to the system. COS programming causes station 10 to default to a square condition (line select key 1 selects line 1, key 2 selects line 2, etc.). It is recommended that station 10 always remain in a square conditionto avoid possible programming confusion.
- COS programming does not require that a sequential process be followed once the base level program entry mode has been established except where noted herein.
- The system defaults to preset characteristics when it is initially powered up or whenever programmed to do so. If the default characteristics, or any other previously set characteristics, are satisfactory, those portions of the programming sequence may be omitted.
- Prior to taking any programming action, record the system, line and station COS conditions on Table 3-1, 3-2, and 3-3 (included at the end of this chapter). Also, record all toll restriction requirements on Table 3-4.
- THE PROGRAMMING STEPS MUST BE PERFORMED WITH LESS THAN 17 SECONDS OF DELAY TIME BETWEEN KEYSTROKE OPERATIONS. A delay of longer that 17 seconds causes the KSU programming mode to time out.
- Flgure 3-3 found at the end of this chapter provides a quick-reference flow diagram of the class of service programming requirements.
- Programming is the same for both the model 0616X and 0816X key systems. The only difference between these two models is the number of lines which each serves (six or eight).

BASE LEVEL PROGRAM ENTRY MODE

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

1. Press ITCM. The dial tone will sound.
2. Press the following keys in sequence: ✱ 7 4 6. The dial tone stops and a tone burst sounds to indicate that the base level programming mode is entered.
3. Press ✱. The dial tone will return as a confirmation that the base level mode is active.

CLASS OF SERVICE DEFAULT

The system can be defaulted to a standard class of service per the following procedure.

1. Press ITCM.
2. Press the following keys: ✱ 7 4 6 ✱ # 0 ✱
3. Press MONITOR.

The following system default conditions are set:

- All lines are DTMF
- Voice signalling attempted first when intercom call is made
- 1 sec. pause time
- 2 sec. dial tone recall time
- 30 sec. recall from hold
- All lines private
- All lines are CO lines
- No toll restriction set
- 300 msec. held call abandon time
- No ringing line preference enabled
- No prime line is chosen
- DSS/BLF port is disabled
- PA port is disabled
- No delayed ringing enabled
- No access denied
- No origination denied
- No automatic privacy released
- Day and night ringing patterns set as follows:
  - station 10, 1 7, and 24 all lines
- System-wide, all call paging in zone D
- Printer port set for 110 baud data rate
- Line select keys l-n selects lines l-n (squared pairing)

PROGRAMMING KEYS

Figure 3-1 illustrates the programming keys called out in the following procedures.

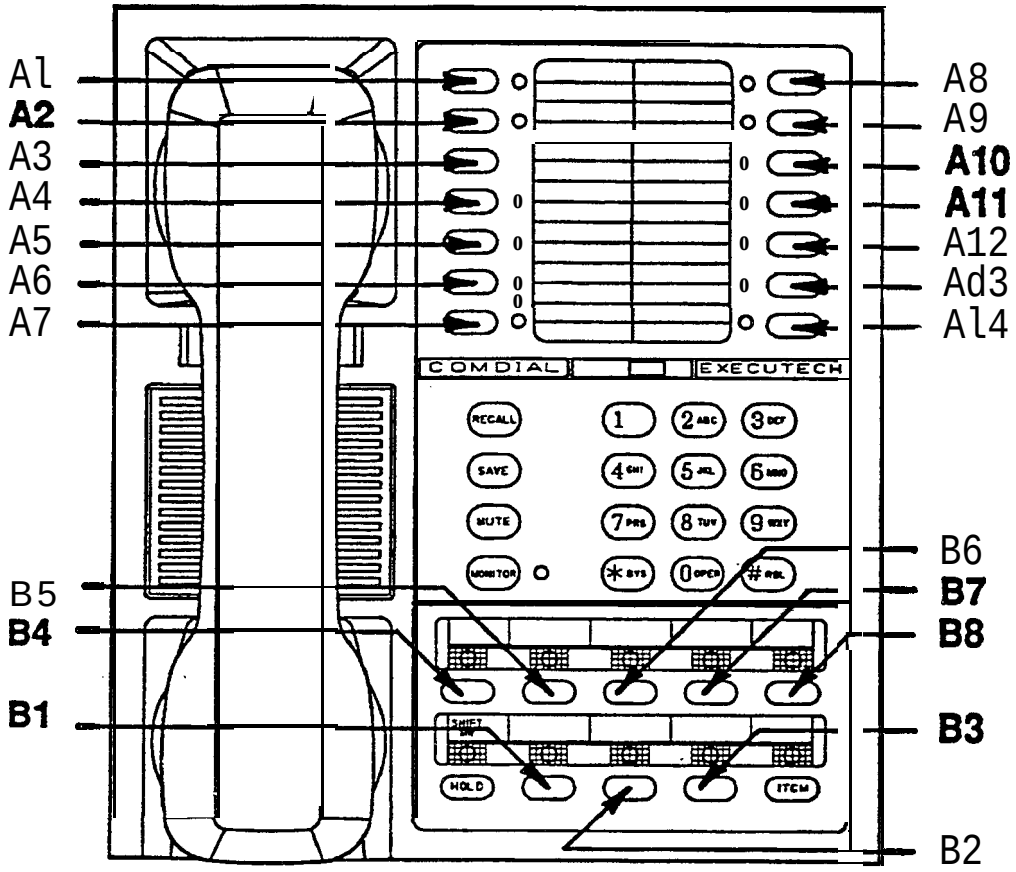


Figure 3-l. Programming Key Layout

SYSTEM COS PROGRAMMING PROCEDURE

SYSTEM DEFAULTS

- All lines are DTMF
- Voice signalling attempted first when intercom call is made
- 1 sec. pause time
- 2 sec. dial tone recall time
- 30 sec. recall from hold
- All lines private
- All lines are CO lines
- No toll restriction set
- Printer port set for 110 baud data rate
- 2 sec. automatic pause insertion wait time

PROCEDURE

NOTE: Before performing this procedure, turn to the System COS Programming Reference Chart (Table 3-1), locatedat the end of this chapter, and record all system COS requirements on it.

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

2. Select the **PULSE/TONE** or TONE ONLY dialing system default characteristics.
   - Press #. Dial tone will stop.
   - Press 0 to select **TONE ONLY.**

   -or-
   - Press 1 to select **PULSE/TONE.**
   - Press ✱. Dial tone will return.

NOTE: In addition to setting the dialing mode, the above action defaults the system, line and station COS.

3. Select Intercom **signalling** first performed when intercom call is placed.
   - Press Al3 for tone signalling.

   -or-
   - Press Al4 for voice signalling.
   - Press ✱.

4. Select time interval for programmed pause.
   - Press 4. Dial tone will stop.
   - Press key to select time interval per chart. Tone burst confirms selection.
   - Press ✱. Dial tone will sound.

KEY	TIME(SEC)	KEY	TIME(SEC)
1	0.5	6	5.0
2	1.0	7	7.5
3	1.5	8	10.0
4	2.0	9	5.0
5	3.0	0	20.0

5. Select pulse dial operatlng characteristics.
- Press 5. Dial tone will stop.
- Press keypad key to select operating characteristic per chart. Tone burst confirms selection.

KEY	PULSES PER SECOND	BREAK/MAKE RATIO
1	10 PPS	60/40
2	20 PPS	60/40

- Press the ✱ key. Dial tone will sound.

6. Select **flash/dial tone recall time** interval.
- Press 6. Dial tone will stop.
- Press keypad key to select time interval from chart.

KEY	TIME INTERVAL	KEY	TIME INTERVAL
1	80 MSEC.	6	875 MSEC.
2	300 MSEC.	7	1.0 SEC.
3	500 MSEC	8	1.5 SEC.
4	600 MSEC.	9	2.0 SEC. (DEFAULT)
5	750 MSEC.	0	3.0 SEC.

- Press ✱. Dial tone will sound.

7. Select **hold** recall **time** interval.
- Press 7. Dial tone will stop.
- Press keypad key to select hold recall interval from chart.

KEY	HOLD RECALL TIME	KEY	HOLD RECALL TIME
1	30 SEC. (DEFAULT)	6	240 SEC.
2	60 SEC.	7	300 SEC.
3	90 SEC.	8	360 SEC.
4	120 SEC.	9	420 SEC.
5	180 SEC.	0	DISABLED

NOTE: The 0 program selection makes it possible for an exclusive hold condition, when set at a station, to place a line on a pennanent hold thaf cannot be released at any other station.

- Press ✳. Dial tone will sound.

8. Select **toll restriction table entries. Refer to** programming table (Table 3-4) to preselect entry requirements.
   - Select table with memory key. The dial tone will stop when the selection is made.

KEY	TABLE	KEY	TABLE
AI	1	A5	5
A2	2	A6	6
A3	3	A7	7
A4	4	A8	8

   - Select **mode of table** with keypad key. Tone burst conforms selection.

KEY	TABLE MODE
2	ALLOW
3	DENY

   - Select **entry line on table** with memory key. Action clears any current entry and causes continuous busy tone to sound.

KEY	TABLE ENTRY
A9	1
A10	2
A11	3
A12	4

   - Dial **number for entry line. Press # key** to enter "match anything" digit. Tone burst sounds after each key is pressed.

*NOTE: An **entry** line can contain a maximum of 16 digits. When the maximum number of digits are entered, the system sounds a fast **ringback** tone, and steps to the next entrypoint on a table or to the next table.*

   - If less than sixteen digits are entered on line, select next entry location with memory key.
   - Repeat procedure for each desired toll restriction table.

*NOTE: Select an **entry** line even if no input is required. This action insures that any previous entry is cleared. Select a table and then select each line in the table to clear the table of **all** entries. Do not dial any numbers after the entry line selections.*

   - Press ✳.

9. Program **data speed baud rate** for printer port.
   - Press 3 to set data speed of 300 baud.

   -or-

   * Press 0 to set data speed of 110 baud **(default).**
   - Press ✳.

10. When the system stores a dialed number for later **redial,** it automatically stores a pause each time the user waits a period of time between digits. (The length of the stored pause was programmed in step 4.) To program **length of time to wait between digits** is inserted, proceed as follows:
    - Press **ITCM** ✳ 7 4 6 ✳ to enter programming mode.
    - Press RECALL..
    - Press keypad key 1 to set wait time to 750 milliseconds.

    -or-

    * Press keypad key 2 to set wait time to 2 seconds.
    - Press ✳.

11. Press **MONITOR** to exit system COS programming mode.

LINE COS PROGRAMMING PROCEDURE

LINE DEFAULTS

- All lines private
- All lines are CO lines
- No toll restriction Set
- Dialing mode is tone only
- 300 msec. held call abandon time

PROCEDURE

NOTE: Before performing this procedure, turn to the Line COS Programming Reference Chart (Table 3-2), located at the end of this chapter, and record all line COS requirements on it.

1. Enter base level programming mode:
   - Press ITCM ✱ 7 4 6 ✱. The dial tone will sound.
2. Choose privacy status of each line.
   - Press 8. Dial tone will stop. This action initializes all lines as private. This condition is also system default value.
   - Press line select key of each line which is to be non-private.
   - A tone burst sounds after each selection for confirmation.
   - Press ✱. Dial tone will sound.
3. Press tine select key (program keys BI-B6 for model 0616X or B1 -B8 for model 0816X) for line to be programmed. Dial tone will stop.

NOTE: Selecting a line forprogramming clears all assigned toll restriction tables.

4. Specify line type per chart with keypad key. Atone burst will confirm selection.

KEY	FUNCTION
0	LINE PORT DISABLED
1	AUXILIARY PORT
2	TELCO PORT (DEFAULT)
3	PABX PORT

5. Press memory keys to assign toll restriction tables toline.

KEY	TABLE	KEY	TABLE
AI	1	A6	6
A2	2	A6	6
A3	3	A7	7
A4	4	A8	8

6. Specify dialing mode per chart with keypad key. A tone burst will confirm selection.
7. Press keypad key to restore after hold is abandoned.

KEY	TIME INTERVAL
8	50 MSEC.
9	300 MSEC. (DEFAULT)

8. Repeat procedure from step 3 for next fine to be programmed.

NOTE: There are a maximum of six lines to be programmed on a model 0616X system and a maximum of eight lines on an 0816X system-

9. Press& MONITOR to exit line COS programming. Dial tone will sound.

STATION COS PROGRAMMING PROCEDURE

STATION DEFAULTS

- No ringing line preference enabled
- No prime line is chosen
- DSS/BLF port is disabled
- PA port is disabled
- No delayed ringing enabled
- No access denied
- No origination denied
- No privacy released
- Day and night ringing patterns set as follows:
  - station 10, 17, and 24 all lines
- System-wide, all call paging in zone D
- tine select keys 1 -n selects lines 1 -n (squared pairing)

PROCEDURE

NOTE: Before performing this procedure, turn to the Station COS Programming Reference Chart (Table 3-3), located at the end of this chapter, and record ail station COS requirements on it.

1. Enter the base programming mode:
   - Press ITCM * 7 4 6 *. Dial tone will sound.
2. Press a two-key sequence on keypad to choose station port for programming (i. e.,to choose station 11 press 11). Tone burst sounds to confirm selection. Improper selection results in dial tone.

NOTE: Station port selection defaults the following features: DSS/BLF port enable, PA port enable, prime line selection, and ringing line preference enable. Pius, toil restriction table assignments are disabled.

3. Configure port as DSS/BLF console port (if console port is required).
   - Press RECALL. Tone burst sounds to confirm selection.
   - Skip this step if DSS/BLF console is not installed at station port currently being programmed.
   - If enabled, do not proceed beyond this step unless port is also to be programmed as PA port.
4. Configure port as PA port (if PA port is desired).
   - Press 9. Tone burst confirms selection.
   - Skip this step if PA port is not desired.
   - Do not proceed beyond this step if PA port selection is made.
5. Choose **prime line or prime intercom.** Tone burst confirms selection.
   - Press tine select key for line desired.

   -or-

   * Press ITCM.

NOTE: if more than one iine selection key is pressed, the last one pressed selects the accep ted prime line.

6. Enable **ringing line preference.**
   - **Press 1.**
7. **Press memory keys to assign toll restriction tables to station.**

KEY	TABLE	KEY	TABLE
A1	1	A5	5
A2	2	A6	6
A3	3	A7	7
A4	4	A8	8

   - At this point, there are no toll restriction tables assigned.
   - Tone burst confirms each selection.

   Skip to step 16 after programming the toll restriction table assignments unless other station COS programming **must be performed.**

   - During initial programming of a station, it is recommended that programming steps 8-14 be performed in the order that they are presented below. In steps 8-14, the default condition is automatically set whenever the program selection key is pressed. This default value is overridden by the subsequent programming action.
   - During subsequent reprogramming of a station, any step, controlling a feature that does not need to be reprogrammed, can be skipped over thus leaving the current COS condition intact. It is not necessary to return to the base programming mode to shift from one programming step to another except when performing step 15. Program step 15, which sets the line appearance to key assignment, must be followed by a return to base level programming (press *).
8. Program **direct ringing** assignments.

NOTE: A line may be programmed for direct ringing or delayed ringing but not for both ring-

ing features. If direct rtngtng is selected after delayed rtngtng is selected, delayed rtngtng wttt be disabled.

- Press 2 for direct tinging. **Tone burst** sounds to confirm.
- **Default** condition of no ringing enabled now set on all iines.
- Press line select **key** (program **keys B1-**B6 for 0616X and **B1 -B8** for 0816X) **for** each line on which direct ringing **is** desired. Tone sounds after each selection.

9. Program **delayed ringing** assignments.
   - Press 3 for delayed tinging. Tone burst sounds to confirm.
   - Press line select key (program keys **B1-**B6 for 0616X and **B1 -B8** for 0816X) for each line on which delayed **ringing** is desired.
   - Tone sounds after each selection. Delay time is 15 seconds.
10. Choose **access denied** status.
    - Press 4. Tone burst sounds. **Default** condition of access not denied set on all lines.
    - Press line select key (program keys **B1-**B6 for 0616X and **B1 -B8** for 0816X) for each line on which access is to be denied.
    - Tone burst sounds after each selection.
11. Program **call origination denied** status.
    - Press 5. Tone burst sounds. Default condition of call origination not denied set on all lines.
    - Press line select key (program keys **B1-**B6 for 0616X and **B1 -B8** for 0816X) for each line on which call origination is to be denied. Tone burst sounds after each selection.
12. Set access to **privacy release.**
    - Press 6. Tone burst sounds. Defauit condition of no access to privacy release set on all lines.
    - Press line select key (program keys **B1-**B6 for 0616X and Bl **-B8** for 0816X) for each line on which access is to be denied. Tone burst sounds after each selection.
13. Set night ringing status.
    - Press 8. Tone burst sounds. **Default** condition of no night ringing **will** be set on all lines.
    - Press line select key (program keys **B1-**B6 for 0616X and **B1 -B8** for 0816X) for each line on which night ringing is desired. Tone burst sounds after each selection.
14. **Set all-call and zone paglng** capability. Default value is all-call at all stations in system.
    - Press **#.** Tone burst sounds. Clears sta**tion from paging zones A, B,** and C.
    - Press **ITCM** to clear station from **all-call (if required).**
    - **To assign reception by zone,**
    - Press line select key **1 (B1)** for zone A
    - Press tine select key 2 (B2) for zone B
    - Press line select key 3 **(B3) for** zone **C.**
    - Press line select key 4 **(B4)** for all-call (if it was previously cleared).
    - To enable origination by zone,
    - Press line select key 5 (B5) for zone A
    - Press line select key 6 (B6) for zone B
    - Press line select key 7 **(B7)** for zone C
    - Press line select key 8 (B8) for all-call (if it was previously cleared).

*NOTE: Step **15 must be immediately followed by** a **return** to bass level.*

15. Set **line appearance to key assignment if cur**rent settings are not correct. System **default** configures **line** appearance to key assignment so that **line** assignments are squared. A squared **assign**ment has tines I-6 assigned to keys BI-B6 for model 0616X, and lines l-8 assigned to keys **B1-**B8 for model 816X.
    - To re-assign line/key configuration,
    - Press 7. Tone burst sounds.
    - Press Gne key **(B1-B8).** Tone burst sounds.
    - **Press keypad key** for **number of line (1-**6). Tone burst sounds.
    - Press **next line** key and keypad key combination. Repeat for each line. **All** iine select keys can be programmed to select same tine if such a condition is desired.
    - To disable line select key and indicator tight for any **lines** which are unassigned to a particular station,
    - Press line select key for unassigned line.
    - Press 9.
    - Repeat for each unassigned line.
16. Press ✱ to return to base programming mode.
17. Repeat steps 1 through 16 for each station connected to the system.
18. Press MONITOR to exit programming mode.

SMDR AND COS PRINTOUT

SMDR PRINTOUT

A data printer can be connected to the system to be used for printing station message detail recording (SMDR) information. The SMDR 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. Either an 80 column or a 40-column printout line can be selected through the system COS programming.

COS PRINTOUT

When a data printer is connected to the system to be used for printing SMDR data, it can be commanded from station 10 to also print a record of the current COS configuration. Partial or complete printouts can be obtained. When the printer is being used to obtain a COS printout, the SMDR printout is temporarily halted; however, SMDR data collection is continued by the system during a COS printout operation. If more than two calls are logged for any one tine during the halt, call records may be lost. Typical COS printouts are shown in Figure 3-3.

To obtain the COS printout,

- Press ITCM ✱ 7 4 6 ✱ (base level if not active)

KEY	FUNCTION
A9	PRINTOUT STOPS AT NEXT BREAK-POINT
A10	COMPLETE PRINTOUT
A11	PRINT SYSTEM AND LINE COS PLUS TOLL RESTRICTIONS
A12	PRINT SELECTED STATION COS (DIAL STATION PORT WITH KEYPAD KEY)

- Press memory key to select type of printout desired.

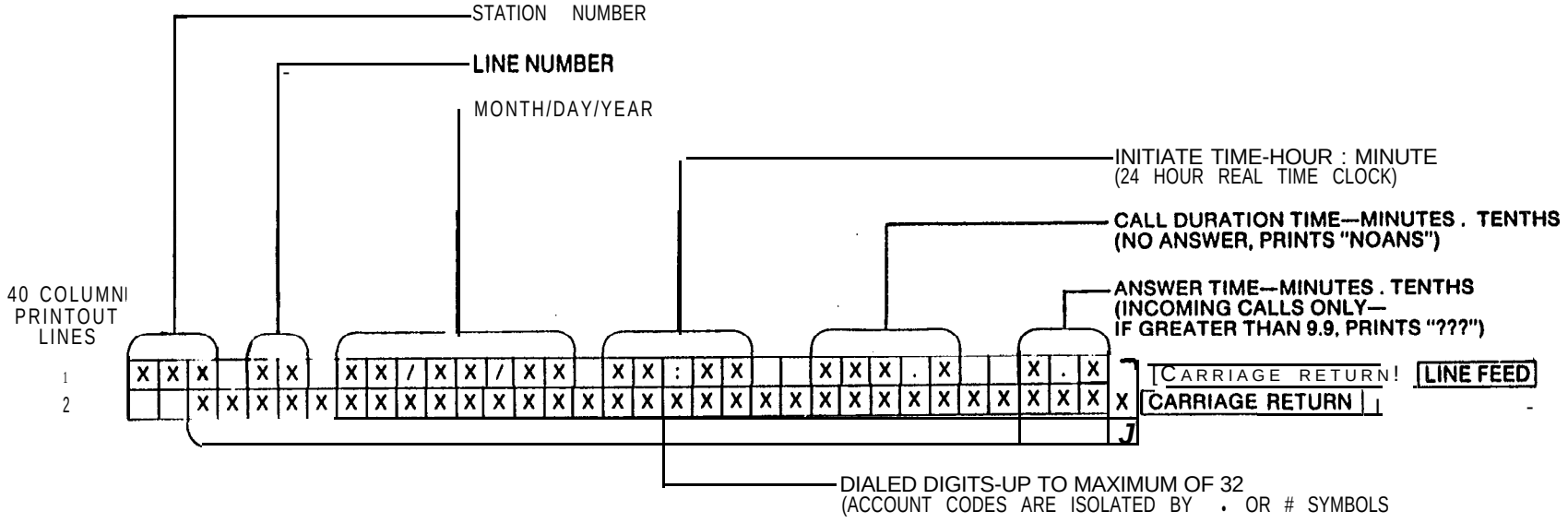
The COS printout will begin immediately.

To abort printout,

- Press memory key A9.

To exit COS printout mode,

- Press ✱ MONITOR.



NOTES

1. CARRIAGE RETURN AND LINE FEED IMMEDIATELY **FOLLOW** LAST PRINTED CHARACTER ON EACH **LINE.**

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 **1234
OUTGOING CALL (LOCAL)	16 2 12/05/86 16:58 2.0 9782200
OUTGOING CALL (WITH ACCOUNT CODES)	2 4 2 12/05/86 17:01 .5 11233456789*0#*7412580#9631*#
AC POWER FAILURE AND RESTORATION	OFF TIME . * 12/05/8617:03 ** 12/05/86 17:08

Figure **3-2.** Station Message Detail Record Printout Format

```
SYSTEM  COS

  PAUSE  TIRE    2.0 SEC
  PULSE DIAL  20 PPS
  FLASH  TIME    720  MSEC
 HOLD RECALL  240 SEC

LINE COS

LINE  PRV  TYPE  PU-  HOLD  TOLL
      RLS        LSE  50MS  TABLES

  1        C.O.            123  6
  2        C.O.            123  6
  3        C.O.            123  6
  4    x   C.O.            123  6
  5    x   AUX                   78
  6        NONE
  7        PABX    x   X      456
  8    X   PABX    x   X      456


STATION  13

  TOLL   RESTRICTION   123
       P.A.  ENABLE
        PRIME  LINE  1

   LINE       1 2 3 4 5 6 7 8

       RING     X
 DELAY  RING  X
  NITE  RING
ACCESS  DENY
ORIGIN  DENY
PRIVACY RLS

 ALL  CALL      RECEIVE      ORIGIN
    GROUP       A B C D      A B C D
                      X            X

 BUTTON    1 2 3 4 5 6 7 8
 LINE NO.  2 3 4 1 6 7 8 5
```

```
TOLL  RESTRICTION  TABLES

TABLE 1  DENY
1  1
2  0
3   .
4

TABLE 2 ALLOW
1  17034344664
2  17039493113
3  1985
4  1831

TABLE3   DENY
1  8313
2  5891
3
4

TABLE 4 DENY
1  91
2  90
3
4

TABLE 5 ALLOW
1  91804
2  917034341133
3  91703494????
4

TABLE6  ALLOW
1  1800
2  91800
3
4

TABLE 7 DENY
1  1
2  2
3  3
4  91985

TABLE 8 ALLOW
1  4
2  5
3  6
4  17039491234
```

Figure 3-3. Typical COS Printout
(Model 0616X Shown. Model 0616X same except six lines)

SYSTEM CLOCK INFORMATION

SETTING THE CLOCK

1. Press **ITCM,** then dial ✱ #.
2. Dial clock date with keypad keys.
   - Values less than 10 must be dialed as ox.
   - Hours must be expressed in 24-hour format.
   - Enter: YEAR MONTH DAY HOUR MINUTE

Example: 8808061530 (August 6, 1988, 3:30 PM)

3. If SMDR printer is installed and operating, clock date will be printed as illustrated in following typical example: ✱✱ **01/08/86** 16:00
4. Reset minutes setting, if necessary, as follows:
   - Repeat step **1.**
   - Dial new digits, and press **#.**
   - A new clock date printing will occur.

CHECKING THE TIME SETTING

A printing of the current clock date can be obtained from station 10 whenever needed as follows:

- Press **ITCM** and dial ✱ # #.

A clock date printing will automatically occur once each 24-hour period. This daily, automatic printing will formatted as follows:

✱✱MO/DY/YR 00:00 (current date and 00:00 hours)

P O W E R INTERRUPTION

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

OFF **TIME ✱✱ 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

Ten (10) system speed dial numbers can be stored from station 10 for use at all stations in the system.

To store speed dial numbers,

- Press ITCM *.
- Perform the following steps:
  - Press SAVE.
  - Dial storage location (1-O) from keypad.
  - Press line select key (program keys B1-B8) to identify line to be preselected during operation (otherwise system will pick prime line or last line used).
  - Dial speed dial number from keypad (up to 31 digits).
  - Dial 1 • 0, #, and * as required.
  - Press HOLD to store pause if required.
  - Press RECALL to store flash if required.
  - Repeat the preceding steps for each number to be stored.

To end procedure,

- Press MONITOR

SYSTEM SPEED DIAL INDEX

(enter programmed numbers)

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

0 _____

Table 3-1. System COS Programming Reference

PROCEDURE	RECORD (Shading Denotes Default Value)
Note: Circle the record values at right before performing the procedure given below.	**Note: Circle the desired value for the system being programmed.**
1. BASE LEVEL ENTRY . **Press ITCM * 7 4 6 ***	
2. PULSE/TONE OR **TONE ONLY** DIALING MODE . **Press #** . Press 0 for tone dialing **-or-** . Press **1 for** pulse/tone dialing . **Press ***	TONE ONLY | PULSE/TONE SWITCHABLE
3. FIRST **ATTEMPTED** INTERCOM SIGNALING MODE . Press AI3 for tone signalling . Press AI4 for voice signalling . Press*	VOICE SIGNALLING | TONE **SIGNALLING**
4. TIME **INTERVAL** FOR PROGRAMMED PAUSE . Press4 . Press one key . Press *	SECONDS 0.5 | **1.0** | 1.5 | 2.0 | 3.0 5.0 7.5 10. | 15. | **20.**
KEY: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | **0** SEC.: **0.5** | **1.0** | **1.5** | **2.0** | **3.0** | **5.0** | **7.5** | **10.** | **15.** | **20.**	
5. PULSE DIAL CHARACTERISTICS • PPI AND MAKE/BREAK . Press5 . Press **1** = 10 PPI and **60/40** **-or-** . Press **2** = 20 PPI and **60/40** . **Press ***	**10 PPI and 60/40** **20 PPI and 60/40**
6. **HOOKSWITCH FLASH/RECALL TIME** INTERVAL . Press6 . Press one key: . Press*	SECONDS .08 | .30 | .50 | .60 | .75 | .875 | 1.0 | 1.5 | **2.0** | 3.0
KEY: 1 | **2** | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 SEC.: **.08** | **.30** | **.50** | **.60** | **.75** | **.875** | 1.0 | 1.5 | 2.0 | 3.0	
7. HOLD RECALL TIME INTERVAL . Press7 . Press one key: . Press *	SECONDS **30** | 60 | **90** 1120118012401300 | **360** | **420** | **none**
KEY: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 SEC.: 30 80 90 120 180 240 300 360 420 **none**	

8. TOLL RESTRICTION REQUIREMENTS . Set system toll restriction requirements per instructions given on Table 3-4	Record all toll restriction data on table 3-4.
9. SMDR DATA SPEED BAUD RATE . Press 3 = 300 baud -or- . Press 0 = 110 baud . Press *	300 BAUD 110 BAUD
10. AUTOMATIC PAUSE . Press RECALL . Press1 = 750 msec. -or- . Press2 = 2sec. . Press *	2 SEC. 750 MSEC.
11. END PROGRAMMING . Press MONITOR ***Note:*** *If a timeout occurs during the programming sequence, perform base level entry again and proceed at any program step.*	

Table 3-2. Line COS Programmlng Reference

PROCEDURE	RECORD (Shading Denotes System Default Values)
NOTE *Enter the information In the box at right before performing the program procedures given below*	**NOTE** *Check each line number block for the fine feature that is set. Write in the calling number and location status.*
1. BASE LEVELENTRY . Press ITCM ✳ 746 ✳	FEATURE SETTING / LINE NUMBER (Check Block) 1 2 3 4 5 6 7 8
2. PRIVACY STATLJS . Press 6. All line6 private . Press keys for non-private. . (B1-B8 for model 0816X) . (B1-B6 for model 0616X) . Press*	PRIVATE NON-PRIVATE
3. SELECT LINE FOR PROGRAMMING . Press B1-B8 (model 0816X) -or- . Press B1-B6 (model 0616X)	DISABLED
4. SPECIFY LINE TYPE . Press key: 0 = Disabled Line 1= Auxiliary Line 2 = CO Line 3 = PBX Line	AUXIL TELCO PABX
5. ASSIGN TOLL TABLES TO LINE . Press memory keys: A1-A8 = Tables I-8	TOLL RESTRICTION TABLES 1 2 3 4 5 6 7 8
6. DIALING MODE OF LINE . Press 6 = pulse/tone dialing -or- . Press 7 = tone only dialing	PULSE/TONE TONE ONLY
7. ABANDONED HOLD RECALL TIME . Press 8 = 50 msec -or- . Press 9 = 300 msec.	HOLD ABANDON TIME OUT 50 ms / 300 ms
8. SELECT NEXT LINE FOR PROGRAMMING . Press B1-B8 (model 0616X) -or- . Press B1-B6 (model 0616X) -or- 9. END LINE COS PROGRAMMING . Press ✳ MONITOR	CALLINGNO. LOCATION ASSNG.
NOTE: If a timeout occurs during the programming sequence, perform base level entry again and proceed at any program step.	

Table 3-3. Station COS Programming Reference
(Copy this sheet as required)

PROCEDURE	RECORD (Shading Denotes System Default Values)
NOTE ***Circle*** *or enter the* ***record values at*** *right* ***before proceeding with the programming procedure given below.***	***NOTE*** *Enter* ***information*** *or* ***circle desired values*** *below* ***before performing the programming procedure given on the left.***
1. BASE LEVEL ENTRY • Press ITCM * 7 4 6 *	STATION LOCATION: _____
2. DIAL TWO-DIGIT PORT NUMBER	INTERCOM NUMBER:
3. CONFIGURE AS DSS/BLF PORT (Optional) . Press RECALL -or- 4. CONFIGURE AS PA PORT (Optional) • Press 9	DSS/BLF PORT: YES / NO PA PORT: YES / NO
Note: Do not proceed beyond step 4 if PA port is configured. 5. ASSIGN PRIME LINE • Press B1-B6 (model 0616X) -or- • Press B1-B8 (model 0816X) • Press ITCM	(0616X) 1 2 (3 4 5 6 ITCM NONE (0816X) 1 2 3 4 5 6 7 8 ITCM NONE
6. ASSIGN RINGING LINE PERFERENCE • Press 1	RINGING LINE PREFERENCE: YES / NO
7. ASSIGN TOLL TABLES • Press A1-A8 to assign Tables 1-8	TABLES 1 2 3 4 5 6 7 8 NONE
8. DIRECT RINGING ASSIGNMENTS • Press 2 • Press B1-B6 (model 0616X) -or- • Press B1-B8 (model 0816X) ***DFLT = All lines ring on stations 10, 17, 24***	(0616X) 1 2 3 4 5 6 NONE (0816X) 1 2 3 4 5 6 7 8 NONE
9. DELAYED RINGING ASSIGNMENTS • Press 3 • Press B1-B6 (model 0616X) -or- • Press B1-B8 (model 0816X)	(0616X) 1 2 3 4 5 6 NONE (0816X) 1 2 3 4 5 6 7 8 NONE
10. ACCESS DENIED . Press4 • Press B1-B6 (model 0616X) -or- • Press B1-B8 (model 0816X)	(0616X) 1 2 3 4 5 6 NONE (0816X) 1 2 3 (4 5 6 7 8 NONE
11. CALL ORIGINATION DENIED • Press 5 • Press B1-B6 (model 0616X) -or- • Press B1-B8 (model 0816X)	(0616X) 1 2 3 4 5 6 NONE (0816X) 1 2 3 4 5 6 7 8 NONE
12. ACCESS TO PRIVACY RELEASE . Press6 . Press B1-B6 (model 0616X) -or- . Press B1-B8 (model 0816X)	(0616X) 1 2 3 4 5 6 NONE (0816X) 1 2 3 4 5 6 7 8 NONE

Table 3-3, STATION COS PROGRAMMING REP ERENCE (Continued)
(Copy this sheet as required)

PROCEDURE	RECORD (Shading Denotes System Default Values)
NOTE *Circle or enter the* ***record values*** *at right* ***before proceeding with the programming procedure given below***	***NOTE*** *Enter information or circle desired values below before Performing the programming procedure given on the left.*
13. NIGHT RINGING STATUS • Press **8** • Press **B1-B6** (model 0616X) **-or-** • Press **B1-B8** (model 0816X) ***DF'LT = All lines ring on stations 10, 17, 24***	(0616X) | 1 | 2 | 3 | 4 | 5 | 6 | NONE (0816X) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | NONE
14. ALL CALL AND ZONE PAGING . Press # **ITCM** to clear all-call . Press keys: **B1-B4** = receive A. B, C, and all-call . Press keys: **B5-B8** = originate A. B. C and all-call	RECEIVE PAGING ZONE | A | B | C | ALL-CALL KEY | B1 | B2 | B3 | B4 ORIGINATE PAGING ZONE | A | B | C | ALL-CALL KEY | B5 | B6 | B7 | B8
15. LINE APPEARANCE/KEY ASSIGNMENT • Press **7** • Press **B1-B8** to choose line key • Dial **1-6** (0616X) **-or-** . Dial **1-8** (0816X) • Choose next line key and dial line number. • Repeat for all line keys. • Disable unused key and light • Press key (**B1-B8**) • Press **9**	0616X and 0816: KEY B1 DF'LT 1; B2 2; B3 3; B4 4; B5 5; B6 6 0816X ONLY: B7 7; B8 8 AS'GND LINE
16. RETURN TO BASE LEVEL . Press* 17. PROGRAM NEXT STATION . Repeat procedure from step 2 **-or-** 18. END PROGRAMMING . Press MONITOR ***NOTE: If*** *a timeout occurs during the* ***programming*** *sequence, perform base level entry again and proceed at any progmm step.*	

Table 3-4. Toll Restriction Programming Reference

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.

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

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

5. Enter the # character in place of a particular digit to condense a range of numbers into one entry. The # character is a "match-anything" digit, and can be included in an entry in either a DENY table or an ALLOW table.

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

   Example B: Since 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 entriesof 911 and 1911 tooverride 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 pfanning tables on the line, and station programming reference charts to record the planned toll restrictions for the system.

PROGRAMMING PROCEDURE

1. Select toll restriction table

KEY	TABLE	KEY	TABLE
AI	1	A5	5
A2	2	A6	6
A3	3	A7	7
A4	4	A8	8

2. Select table type

KEY	TABLE MODE
2	ALLOW
3	DENY

3. Select entry line

KEY	ENTRY
A9	1
A10	2
A11	3
A12	4

4. Dial entry number (16 digits max). Press # key to enter "match anything" digit.
5. Repeat procedure for each table.
6. Press * MONITOR.

TOLL 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																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL 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																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 3
TYPE: ALLOW DENY
ENTRY ENTRY NUMBER (16 MAXIMUM)

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

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 4
TYPE: ALLOW DENY
ENTRY ENTRY NUMBER (16 MAXIMUM)

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

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 5
TYPE: ALLOW DENY
ENTRY ENTRY NUMBER (16 MAXIMUM)

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

TABLE ASSIGNMENT: LINES STATIONS

TOLL 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: UNES STATIONS

TOLL RESTRICTION TABLE 7
TYPE: ALLOW DENY
ENTRY ENTRY NUMBER (16 MAXIMUM)

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

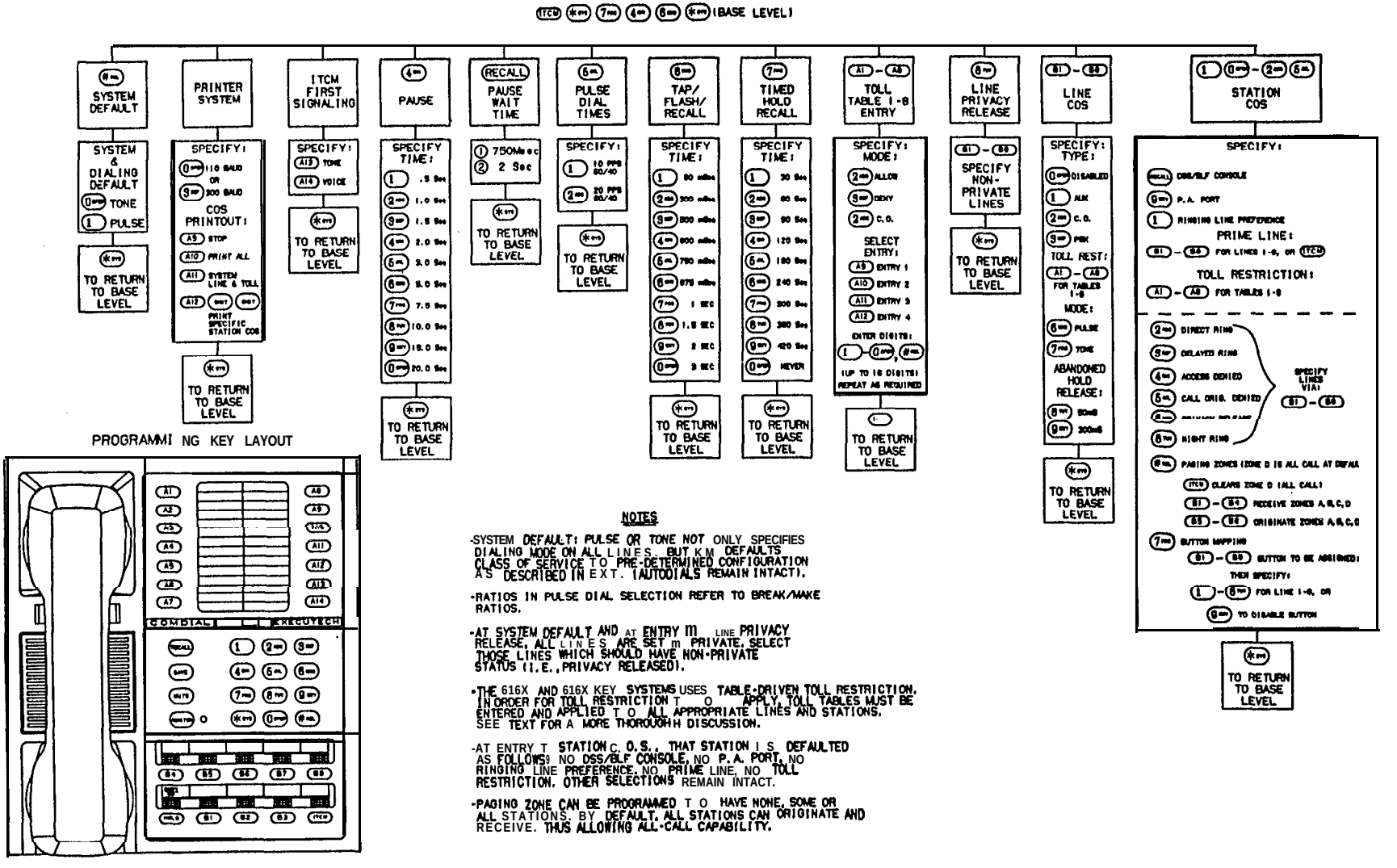
TABLE ASSIGNMENT: LINES STATIONS

TOLL 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																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

EXECUTECH MODELS 0616X, 0816X
CLASS OF SERVICE PROGRAMMING



PROGRAMMI NG KEY LAYOUT

NOTES

-SYSTEM DEFAULT: PULSE OR TONE NOT ONLY SPECIFIES DIALING MODE ON ALL LINES. BUT KM DEFAULTS CLASS OF SERVICE TO PRE-DETERMINED CONFIGURATION AS DESCRIBED IN EXT. (AUTODIALS REMAIN INTACT).

-RATIOS IN PULSE DIAL SELECTION REFER TO BREAK/MAKE RATIOS.

-AT SYSTEM DEFAULT AND AT ENTRY IN LINE PRIVACY RELEASE, ALL LINES ARE SET IN PRIVATE. SELECT THOSE LINES WHICH SHOULD HAVE NON-PRIVATE STATUS (I.E., PRIVACY RELEASED).

-THE 616X AND 616X KEY SYSTEMS USES TABLE-DRIVEN TOLL RESTRICTION. IN ORDER FOR TOLL RESTRICTION TO APPLY, TOLL TABLES MUST BE ENTERED AND APPLIED TO ALL APPROPRIATE LINES AND STATIONS. SEE TEXT FOR A MORE THOROUGH DISCUSSION.

-AT ENTRY T STATION C.O.S., THAT STATION IS DEFAULTED AS FOLLOWS: NO DSS/BLF CONSOLE, NO P.A. PORT, NO RINGING LINE PREFERENCE, NO PRIME LINE, NO TOLL RESTRICTION. OTHER SELECTIONS REMAIN INTACT.

-PAGING ZONE CAN BE PROGRAMMED TO HAVE NONE, SOME OR ALL STATIONS. BY DEFAULT, ALL STATIONS CAN ORIGINATE AND RECEIVE. THUS ALLOWING ALL-CALL CAPABILITY.

Figure **3-4.** Programming Flow Diagram

CHAPTER 4
MAINTENANCE

TECHNICAL ASSISTANCE AND REPAIR SERVICE

Technlcal Assistance

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

Technical Services: l-800-366-8224

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

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

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. The shipping address is:

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

FUSE LOCATION

The KSU is protected against short circuit damage by a fuse located in the primary of the AC transformer winding. The fuse is a 1 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

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-l.

Station Self Test

Exercise the station self test feature as follows:

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:
   - The tine select indicators will light in sequence from 1 to 8.
   - The intercom select indicator will light.
   - The speaker indicator will light.
   - All indicators will turn off in the same sequence.
   - The ringer will sound • Be sure that the ringer volume control is set to the medium or high volume setting.
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 fne.

2. Press and hold the station 10 select key while reconnecting the line cord plug to the line.

IMPORTANTNOTE: THE COMPANION STATION WILL BE DISABLED DURING THE TIME THAT THE CONSOLEIS BEING DISCONNECTED AND RECONNECTED.

3. Release the station 10 select key, 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

Data Line Pairing

All stations are even/odd paired on the data lines as shown in Table 4-l. Station 10 is paired with station 11, etc. 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 station wiring per the checkout procedure given in Chapter 2.

Overload Pairing

All stations are paired as shown in Table 4-l for overload current protection. If a fault occurs which causes more than 300 ma. of current to be drawn, the paired stations are disabled by circuit action. Disconnect the disabled stations and reconnect them one at a time to isolate the faulty one.

Table 4-1. Station Pairing

DATA LINE PAIRING	OVERLOAD PAIRING
10–11	10–12
12–13	11–13
14–15	14–16
16–17	15–17
18–19	18–20
20–21	19–21
22–23	22–24
24–25	23–25

Failure Analysis

Figure 4-l 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.

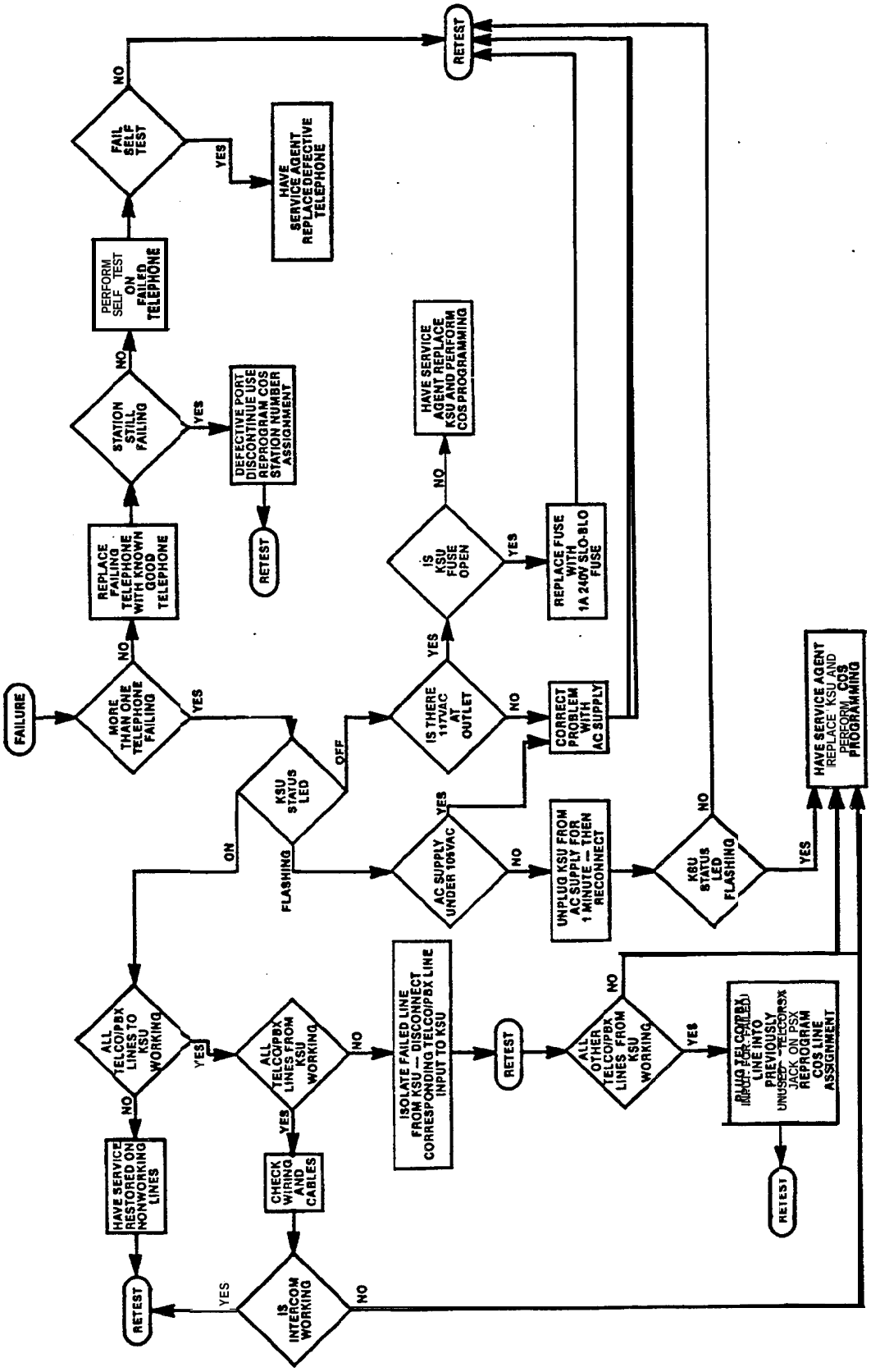


Figure 4-1. Failure Analysis Flow Chart

INDEX

COMDIAL

Executech User's Guide

Models 308/616/816/824

For this operation...	See page...

THE BASICS

THE FEATURES

THE OPTIONAL FEATURES

THE BASICS

Placing a call

On hook

- Press line key. Listen for dial tone.
- Dial number.
- Lift handset, when party answers.
- Hang up handset to end call.

Offhook

- Lift handset.
- Press line key. (This step is not necessary if a line has been assigned to you-a prime line.)
- Listen for dial tone.
- Dial number.
- Hang up handset to end call.

Answering a call

- Press line key. (This step is not necessary if you have a prime line or if your phone answers any ringing line.)
- Lift handset.

Placing a call on hold

Manual hold

(Any station can retrieve held call.)

- Press HOLD.
- To return to call on hold, press flashing line key.

Exclusive hold

(Only your station can retrieve held call.)

- Press HOLD twice.

Note: *Hold Recall-A call placed on hold will*

automatically ring at the station which placed it on hold after a programmed period of time. If the call is on exclusive hold, the call will revert to manual hold after the initial period.

Placing intercom calls

Voice signalling

- Lift handset.
- Press ITCM.
- Press a memory key (or dial extension number). To call system operator, dial 0.
- Voice announce.

Tone signalling

- Press ITCM.
- Press memory key (or dial extension number).
- Press ITCM again.
- When party answers, lift handset to talk.

Note: *Some systems may be programmed to tone signal as the first option. In that case the first set of instructions applies to tone signaling, the second to voice signaling.*

Answering intercom calls
(caller controls the signalling)

To answer a voice-signalled intercom call

- Speak toward the set.
- Lift handset if privacy desired.

To answer a tone-signalled intercom call

- Lift handset to talk.

Transferring outside calls

If the line on which the call appears is shared by you and the station to receive the call

- Press (m). (Call is placed on hold automatically.)
- Press a memory key (or dial extension number).
- Voice announce the call and line number.
- Hang up handset.

If station does not share line appearance

- Press ITCM. (Call is placed on hold automatically.)
- Press a memory key (or dial extension number).
- Voice announce the call and ask station to lift handset.
- Press RECALL TAP. (Station immediately has the call.)

To return to outside call
(busy or no answer)

- Press flashing line key.

Conference calls

Multiline conference
(2 external, 1 internal parties)

Note: Conference transmission levels are not compensated and connections of parties must be supervised by one inside party.

- Establish first outside call and press HOLD.
- Establish second outside call.
- Press and hold down line key for second call.

- Press line key for first call.
- Release both line keys. (Conference is established.)

Add-on conference

(1 external, 2 internal parties)

- Establish outside call.
- Press ITCM (outside call placed on hold).
- Press a memory key (or dial extension number).
- Ask intercom party to lift his handset, and to press and hold down the held line key.
- Press and hold down the line key of held outside call.
- Release line key when conference is established.

THE FEATURES

Redialing

Last number redial

- Press (#). (If on line, listening to dial tone, press **shift** key and then (#).)

Saved number redial

(saving a number just dialed)

- Press (m) during or after the call.

To dial the saved number

- Press **shift** key and then (SAVE)

Automatic redial

- When busy tone is heard, press **auto redial** key and hang up. (Station will redial number once a minute for 10 minutes.)
- To cancel, press **auto redial** key again.
- When ringing tone is heard, lift handset.

Automatic dialing

To program numbers

- Press (ITCM). Listen for tone.
- Press (SAVE). Tone will stop.
- Press desired memory key.
- If a specific line is to be used, press the line key. (Otherwise, system will pick prime line or last line used.)
- Dial number sequence to be stored. (up to 15 digits)
  - Press dial pad to store digits I-0, # and *.
  - Press (HOLD) to store pause.
  - Press (RECALL TAP) to store hookswitch flash.

- Repeat the last four steps for each number to be stored.
- Press (MONITOR OFF) to end programming.

To automatically dial numbers

- Press memory key.
- When party answers, lift handset.

Station speed dialing

To program numbers

- Follow same steps given for Automatic Dialing using the dial keys 1-O as memory locations,

To speed dial numbers

- Press desired dial key 1-O. (If on line, listening to dial tone, press **shift** key and then desired dial key 1-0.)

System speed dialing

To program numbers

(Program from station 10.)

- Press (ITCM). Listen for tone.
- Press (X). Tone will stop.
- Press (SAVE).
- Press desired dial key 1-O.
- If a specific line is to be used, press the line key. (Otherwise, system will pick prime line or last line used.)
- Dial number sequence to be stored. (up to 31 digits)
  - Press dial pad to store digits l-0, #and ✱.
  - Press (HOLD) to store pause.
  - Press (RECALL TAP) to store hookswitch flash.

- Repeat the last four steps for each number to be stored.
- Press MONITOR OFF to end programming.

To dial numbers

(from any station)

- Press * and then the dial key. (If on line, listening to dial tone, press **shift** key, * and then the desired dial key 1-O.)

Line monitoring

To activate while on a call

- Press MONITOR OFF.
- Hang up handset.

Note: *If a party places you on hold, you can monitor until his return, then lift handset.*

To cancel

- Lift handset to resume conversation or press MONITOR OFF to disconnect.

Recall/Tap

- If your system has been configured for Tap, press RECALL TAP to generate a timed "Flash" for accessing PBX, Centrex and custom calling services.
- If your system has been configured for Recall, press RECALL TAP to disconnect, as if you had hung up, and obtain a new dial tone for another call.

Note: *System can be configured for Recall or Tap, but not both.*

Area paging
(requires external paging unit)

One-button access
(Paging unit connects to Key Service Unit line port.)

- Press line key dedicated to paging.
- Lift handset. (Dial area code if required.)
- Make announcement.

Two-button access
(Paging unit connects to Key Service Unit station port.)

- Press ITCM.
- Lift handset.
- Press a memory key (or dial 2-digit access code).
- Make announcement.

All call and zone paging
(available on most models)

- Press ITCM and lift handset.
- Dial zone number (4,5, or 6—7 for All Call).
- Make announcement.

Direct station selection (DSS)

One-button intercom calling
(recommended for attendant answering stations)

To program DSS numbers

- Press ITCM. Listen for tone.
- Press SAVE. Tone will stop.
- Press memory key (1-14).

- Press ITCM.
- Dial station number.
- Repeat last four steps for all stations.
- Press -.

Voice Signalling DSS
- Lift handset.
- Press memory key (l-l 4)
- Voice announce.

If you are transferring a call, the outside line is automatically placed on hold when a memory key is pressed.

Tone Signalling DSS
- Press memory key (1-14).
- Press ITCM.
- When station answers, lift handset.

Night transfer

To activate
(from station 10 only)
- Press ITCM. Listen for tone.
- Press #. Tone will stop.

To cancel
- Repeat the two steps above.

Do not disturb

To silence your ringer and appear busy to intercom calls
- Press MONITOR OFF.

To cancel
- Press MONITOR OFF again.

Mute

To prevent other party from hearing

- Press and hold down (m).
- Release (MUTE) to resume two-way conversation.

Pulse/tone switching

If your telephone service is pulse (rotary) and you must convert to tone after selecting a line or while dialing

- Press (#P). (System will switch back to pulse dialing when call is terminated.)

Note: *Pulse/Tone switching can be* programmed *into memory keys by pressing* (#P) *during number storage sequence.*

THE OPTIONAL FEATURES

Speakerphone operation

Placing a call

- Press line key.
- Dial number or press memory key.
- When party answers, speak toward the set.

Answering a call

- Press line key.
- Speak toward the set.

Ending a call

- Press MONITOR OFF.

Switching from handset to speakerphone

- Press MONITOR OFF.
- Hang up handset.

Switching from speaker phone to handset

- Lift handset.

BLF station operation

- Lights (LEDs) adjacent to memory keys 1-14 indicate station statuses (dark indicating idle, steady-on indicating busy).

Note: *On Model 824 system you must program memory keys for DSS operation. (See DSS programming.) LEDs will then indicate status of programmed stations.*