Manual Title / Item Number

This manual is to be supplied with equipment only to assist in standard installation practices.

This manual is NOT for sale.

Compensation is required for shipping and handling charges only.

The information contained in this manual is currently the most accurate available, and may not contain all updates and revisions changes.

No information warrantee is implied.

KANEK0616500000 KANDA EK-616 R SYSTEM MANUAL F022

Bar Code Label

TAUMAN KING SER STAFFILL A

No. of The Team Committee

This increase is to be supplied with equipment.

Alexandra TOKATE and aniety

Congression is required to a consequence of the conference of the

The Self entation of this act inquire man ship out thinks of the selfer accurate as include and may concerning all updates and the selfall updates the single coverage.

.bsitper a samenes to become a con-





CORRECTIONS TO THE EK-616 INSTALLATION MANUAL

Page 5-1 Paragraph 5.11 Call Waiting:

Should Read:

After dialing a busy station and hearing the busy tone, a station user can push the OPT button and dial "4" to activate the Call Waiting feature.

Page 7-23 Paragraph 7.22:

Delete this paragraph and programming flow chart entirely.

Page 7-24 Table 15:

Delete this table entirely.

KANDA EK-616 ELECTRONIC KEY SYSTEM INSTALLATION & MAINTENANCE MANUAL

, 5

KANDA EK-616 ELECTRONIC KEY SYSTEM

CONTENTS

1.		CTION	
	Fig	ure 1	1-1
	Fig	ure 2	1-1
	Fig	ure 3	1-1
2.		L DESCRIPTION	
3.		CONFIGURATION	
4.		SPECIFICATIONS	
5.		S AND FEATURE DESCRIPTIONS	
6.		ATION	
		Site Selection	
		Cabinet Installation	
	6.03 V	Wiring Connections	6-1
		Station Wiring	
		CO Line and Power Failure Connections	
	6.06	Music and Common Ringer Connections	6-4
	6.08	EK-616 Quick Connect Block	6-4
	Fig	pure 4	6-2
	Fig	ure 5	6-2
	Fig	gure 6	6-3
	Fig	gure 7	6-3
	Fig	gure 8	6-4
	Fig	gure 9	6-5
7.	PROGRA	AMMING	7-1
	7.06	System Initialization	7-3
	7.07	Dial Signal Selection	7-4
	7.08	Dial Pulse Speed	7-4
	7.09	Break Ratio	7-5
	7.10	Speed Dial/PBX Pause Duration	7-6
	7.11	Flash Time Setting	7-8
	7.12	Hold Recall	7-9
	7.13	Held Party Disconnect	7-11
	7.14	Flexible Ringing Assignment	7-12
	7.15	Assigned Night Ringing	7-13
	7.16	Station Features	7-14
		Equal Access/DND/Off Hook Ringing/Background Music	
	7.17	Private Lines	7-16
	7.18	Toll Restriction Classes	7-16
	7.19	Toll Restriction Lists	7-18
	7.20	Toll Restriction - List 2 Assignment	7-21
	7.21	Special Lines	7-22
	7.22	PBX Access Codes	
	7.23	System Features	
		Toll Access/2-Line Conference/Exclusive	
		Hold/Speed-Dial Pause	

7.24	System Speed Dialing	7-25
	Table 1	7-1
	Table 2	7-2
	Table 3	7-6
	Table 4	7-7
	Table 5	7-9
	Table 6	7-10
	Table 7	7-12
	Toble 8	7-15
	Table 9	7-17
	Table 10	7-20
	Table 11	7-20
	Table 12	7-20
	Table 13	7-21
	Table 14	7-22
	Table 15	7-24
	Table 15	7-25
	Table 16	

. c - 0 1 1 1 1 1 1 1

INTRODUCTION

- 1.01 This manual includes general and detailed descriptions, installation practices, and maintenance and trouble-shooting procedures relevant to the Kanda EK-616 Electronic Key Telephone System.
- 1.02 Should revision of this document become necessary in the future, the reasons for reissue will be explained in this paragraph. Revision 2 currently supercedes previous documents.

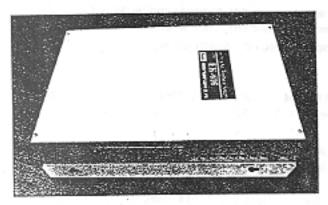


FIGURE 1. EK-616 KEY SERVICE UNIT

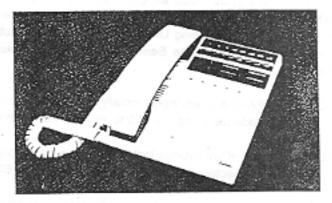


Figure 2. EK-616 EXECUTIVE TELEPHONE

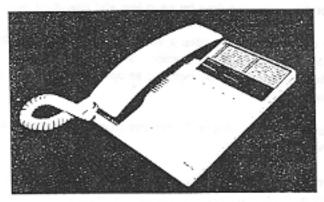


FIGURE 3. EK-616 BASIC TELEPHONE

GENERAL DESCRIPTION

- 2.01 The Kanda EK-616 has been designed as a small Electronic Key Telephone System for use in business applications where flexibility and reliability are prime considerations.
- 2.02 EK-616 utilizes stored program and microprocessor technologies in order to conserve space and reduce power consumption thereby reducing installation and operating costs.
- 2.03 Erasable Programmable Read-Only Memory (EPROM) is employed as the storage medium for the system operating instructions. Program changes are stored in Random Access Memory (RAM) and are preserved in the event of commercial power failure by a super-capacity condenser located on the main Central Processing Unit (CPU). The system automatically restarts itself when power is restored. Complementary Metal Oxide Semiconductor (CMOS) crosspoints provide space division switching of the voice paths.
- 2.04 EK-616 is equipped initially to serve 6 CO/PBX lines and 8 stations. One 8ST PCB must be added to bring EK-616 to its maximum capacity of 6 CO/PBX lines and 16 stations.
- 2.05 The KSU cabinet includes the power supply unit and is arranged for wall mounting. Modular connectors are used for terminating CO/PBX lines and telephone subsets.
- 2.06 The telephone subsets will operate on either Tone or Rotary CO/PBX lines. In addition, they will also operate in "mixed" systems where both types of lines are present. Common control circuitry determines the type of dial signal required by each line and responds accordingly.
- 2.07 EK-616 is easily operated and provides a variety of useful features and capabilities such as speed dialing, do-not-disturb, foll restriction, private line, flexible ringing, etc. Handsfree speakerphones and direct station selection may be included as optional capabilities by selection of appropriately equipped telephone subsets.
- 2.08 EK-616 is registered with the Federal Communications Commission as a fully protected electronic key telephone system.

100000	BI792C-14986-KF-E
Registration number	
Ringer Equivalence	FJ11C
USOC Jack number	ПЈТГО

NOTE: "This equipment complies with the requirements in part 15 of the FCC Rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference."

2.09 EK-616 has been approved for use in Canada by the Department of Communications.

	754 1429 A	
Certification number		
Load number	108	

3. SYSTEM CONFIGURATION

- 3.01 The EK-616 consists of a basic cabinet which includes the main CPU, power supply, 6 CO/PBX circuits, and 8 station circuits. It is also equipped with modular jacks for connecting CO/PBX lines, stations, power failure telephone, and music source for music on hold, and background music.
- 3.02 The EK-616 is initially configured as follows:
 - 6 CO Lines
 - 8 Stations
 - 4 Intercom Paths

An optional 8ST PCB may be added to increase the station capacity to a maximum of 16.

3.03 Telephone subsets are available in three different configurations. The STANDARD telephone provides access to all lines, intercom paths, and standard features. The SUPER telephone provides an additional handsfree speakerphone for use on CO line conversations. The EXECUTIVE set provides all basic features, a handsfree speakerphone, and direct station selection with busy lamp field. These three different subsets may be used in any combination.

SYSTEM SPECIFICATIONS

Physical Specifications 4.01

	Height	Width	Depth	Weight
KSU	15.75"	12.60°	2.56*	12.79 lb.
Subset	2.56"	6.61°	8.35*	1.76 lb.

Electrical Specifications and Characteristics 4.02

DC Resistance off-hook (Tip to Ring)

- less than 300 ohms at 20ma DC loop current

On-Hook AC impedance

- more than 10K ohms at 130VAC rms, 20Hz & 105VDC

Ringing Sensitivity

- No response at 10V rms, 20Hz

Acoustic ringing level

- more than 75dBA

Return Loss

 more than 2.5dB at 200 to 500Hz more than 8.0dB at 500 to 2500Hz more than 3.5dB at 2500 to 3400Hz

Characteristics of pulse signaling

Speed:

8 to 11 pps

Ratio:

58 to 64% (Break)

Interdigit: 300ms to 1 second

Characteristics of tone signaling

Signal Level

nominal: -6dBm to -4dBm low group: more than - 10dBm high group: more than -8dBm pair group: less than 2dBm

Frequency Deviation: within +1.5%

Frequency Distortion: less than -20dB at 500

to 3200Hz

Output Impedance on Return Loss; more than 3.5dB

Cycle Time: more than 100ms

Duration of Tone Signal: more than 50ms

Interdigit Time: 45ms to 3 seconds

Characteristics of automatic break & pause

Disconnect: 2 seconds

Pause:

4 seconds

Wiring length from KSU to extension

- 1000 feet and 50 ohm loop limit

NOTE: Specifications are subject to change without notice.

5. FEATURES AND FEATURE DESCRIPTIONS

- 5.01 ADD-ON CONFERENCE White talking on a CO line, an extension can add one or two additional extensions to the conversation. An extension is added by placing the CO line on hold, dialing the extension number and announcing the call. When the called station lifts the handset, the originating station pushes the "*" button on the dial pad and the conference is established. A second extension can be added by repeating the procedure.
- 5.02 ALL CALL PAGE By lifting the handset and dialing "0", all idle stations can be signaled with a distinctive alerting tone and voice announcement. A station user hearing the announcement can lift the handset, dial "#" and be connected to the caller.
- 5.03 ALTERNATE POSITION ANSWERING This feature allows a station user to answer an intercom call intended for another station. When the call announce tone is heard, the handset is lifted and the "#" button on the dial pad is pressed. Alternate position answering is not possible in the handsfree mode.
- 5.04 AUTOMATIC HOLD A CO line is automatically placed on hold when a DSS button is pushed for an intercom call. Since this is a function of the DSS button, it is only available on the EXECUTIVE telephone subset.
- 5.05 AUTOMATIC HOLD RECALL A CO line will automatically alert the station which placed it on hold after a programmable time-out period. This feature may be disabled through programming. The time-out period may be set for 30 to 450 seconds in 30 second increments.
- 5.06 AUTOMATIC HELD PARTY DISCONNECT The system will automatically release a CO line in the event that the held party abandons the call. The disconnect timing may be set from 50 to 750 ms in 50 ms increments. The system is initially set for 500ms.
- 5.07 AUTOMATIC PBX PAUSE When EK-616 is used behind a PBX, a pause will be automatically inserted after the PBX line access code is dialed. The duration of the pause may be programmed from .5 to 7.5 seconds in .5 second increments. The default setting is for 3 seconds.
- 5.08 AUTOMATIC PRIVACY Conversations are automatically secured against intrusion by other stations. The "*" button is used as a privacy release for establishing a conference. (See par. 5.01)
- 5.09 BACKGROUND MUSIC An external source of music may be connected to the system for music on hold and/or background music. The background music will be heard through the speakers on idle telephones. The music will be muted when there is any activity at the telephone. A station user can turn the music on or off by pushing the OPT button and dialing "5". The level of the music is adjusted at each station by the volume control on the telephone. Each station may be programmed for the background music capability.
- 5.10 CALL ANNOUNCE WITH HANDSFREE ANSWERBACK A call announcement to another station is made by lifting the handset, dialing the station number (or pushing the DSS button) and speaking into the handset after the alerting tone is heard. The called party will hear the alerting tone and the announcement and may answer handsfree or by picking up the handset.
- 5.11 CALL WAITING After dialing a busy station and hearing the busy tone, a station user can push the OPT button to activate the Call Waiting feature. The waiting station will hear the call waiting tone through the handset while the busy station hears the tone through the telephone speaker. The tone is repeated at regular intervals as a reminder. When the busy station hangs up, the call

announce tone will be heard by both stations and the waiting station can then voice announce. If the waiting station hangs up first, the feature is cancelled.

- 5.12 COMMON AUDIBLE RINGING A customer provided signaling device may be connected to the system for common audible ringing on CO lines. CO line ringing activates a set of contacts in the KSU which can be connected to a relay for applying power to a horn, loud bell, or other device.
- 5.13 DIRECT STATION SELECTION WITH BUSY LAMP FIELD -The EXECUTIVE subset is equipped with a DSS/BLF which allows the station user to call any extension by pushing one button. LEDs for each DSS button provide visual indications of the status of each extension. EXECUTIVE subsets may be installed as required.
- 5.14 DO NOT DISTURB Pushing the DND button while on hook activates the "do not disturb" feature. Incoming calls (intercom or CO) cannot reach a station in this mode. Automatic hold recall will still function while this feature is activated. Pushing the DND button again will deactivate the feature.
- 5.15 EXCLUSIVE HOLD WITH INDICATION A CO line can be placed in an exclusive hold condition by pushing the HOLD button twice. While in this condition, no other station can pick up the held line. A call can be switched from hold to exclusive hold and back again by pushing the HOLD button repeatedly. Exclusive hold is indicated at the controlling station by the alternating flash and quick-flash of the CO line LED. LEDs at other stations will display a normal busy condition and a busy tone will be returned to a station attempting to pick up a line under exclusive hold. This feature can be disabled through programming.
- 5.16 FLASH KEY Pushing the FLASH button allows a user to recall CO dial tone without releasing the line. This is useful when an error in_dialing occurs or when the user wishes to make successive calls on the same CO line.
- 5.17 FLEXIBLE NIGHT SERVICE Two modes of night service are available for the EK-616. Ringing can be programmed to specific stations or arranged for all lines to ring at all stations. Activation of night service is accomplished by pushing the "OPT" button and dialing "2" or "3" to select the night mode. Pushing the "OPT" button and dialing "1" returns the system to the day ringing mode.
- 5.18 FLEXIBLE RINGING ASSIGNMENT Through programming, stations are assigned incoming ringing signals for any or all CO lines to which they have access. All stations are preassigned in the default program to ring on all lines. Ringing assignments are totally flexible and can be programmed without regard to station or line sequence.
- 5.19 HANDSFREE OPERATION A handsfree speakerphone is provided in the SU-PER and EXECUTIVE telephone subsets. The speakerphone allows a station user to carry on handsfree conversations on CO lines.
- 5.20 LAST NUMBER REDIAL Automatic last number redial is accomplished by pushing the SDIAL button and dialing "#". The line will be automatically disconnected and reseized.
 Up to 32 digits will then be automatically redialed.
- 5.21 LINE PRESELECTION This feature allows a station user to select a CO line before picking up the handset. The handset must be picked up (or the speaker turned on) within 5 seconds of selecting the line.

- 5.22 MUSIC ON HOLD An external music source for music on hold may be connected to the KSU through the modular jack provided. The music source should have an impedance of 600 ohms and a range of from -23dB to 0dB.
- 5.23 NONVOLATILE MEMORY Programming options are protected from loss due to power failure by a super capacity condenser.
- 5.24 ON-HOOK DIALING (CALL MONITORING) On-hook dialing with call monitoring is possible on CO lines by pushing the SPKR button to activate the speaker. The number may then be dialed and the station user may listen handsfree until the called party answers. At this time, the handset is lifted to carry on the conversation. If the telephone is equipped with a speakerphone, the conversation can continue in the handsfree mode.
- 5.25 POWER FAILURE RESTART In the event of a commercial power failure, the system will automatically restart itself once the power is restored. Calls in progress at the time of power failure will be dropped.
- 5.26 POWER FAILURE TRANSFER, The modular jacks provided for connection of the CO lines are also used for connection of single line telephones for use during commercial power failure. Each single line telephone will be connected to one CO line. Calls in progress will be lost when a power failure occurs and again when power is restored. (See par. 6.05)
- 5.27 PRIVATE LINE Private lines may be programmed by the installer for access by only one or two stations. The particular lines and the stations allowed access may be selected as required. Any or all lines may be programmed as private lines.
- 5.28 PUSHBUTTON DIALING EK-616A telephones are equipped with pushbutton keypads but dial signals are generated by the system. CO lines are equipped with a switch which is used to select the type of signal (Tone or Rotary Pulse) to be sent on that line. This arrangement allows use of both types of lines by the same telephone subset.
- 5.29 SPED DIALING (STATION) Each telephone subset has access to ten personal speed dial numbers which are programmed by the station user. The numbers may be up to 16 digits in length including pauses. Speed dial numbers may be chained together for dialing telephone numbers that are more than 16 digits. In addition, manual dialing and speed dialing can be combined for dialing long telephone numbers. It is also possible to program speed dial numbers so that part of the number is dialed in Rotary Pulse and the rest is dialed in Tone.
- 5.30 SPEED DIALING (SYSTEM) The system provides 50 speed dial numbers for common use by all stations. These numbers can be up to 16 digits in length including pauses. Speed dial numbers can be chained together or combined with manual dialing for numbers longer than 16 digits. Rotary Pulse and Tone dialing can be combined in the same speed dial number. System speed dial numbers may be programmed by the installer or by the user.
- 5.31 TOLL RESTRICTION Stations can be assigned one of 5 different toll restriction classes by the installer. The toll restriction classes are:

Class A - Totally unrestricted.

Class 8 - "0" and international call restriction.

Class C - Restricted to local calls only.

Class D - Intercom only with some allowed codes.

Class E - Intercom only with no allowed codes.

These basic toll restriction classes can also be modified somewhat to allow or deny dialing of particular codes.

6. INSTALLATION

SITE SELECTION

- 6.01 The location selected for the installation of the EK-616 cabinet should meet the following requirements:
 - Adequate space should be available for mounting the KSU as well as allowing easy access for the initial installation and subsequent maintenance.
 - Station and line cabling requirements should be considered for both the initial installation and future system expansion.
 - The KSU should be located at least 3 meters (10 feet) from other electronic equipment such as copy machines, electronic typewriters, etc.
 - 4) A commercial power outlet (110 VAC) should be available within the length of the power cord. The circuit should not be shared with other equipment and should not include a switch which might be accidentally turned off. A surge protection device is strongly recommended to protect against voltage fluctuations.
 - 5) The location should be free of direct sunlight, excessive dust, and corrosive fumes. The temperature should be held within -10 to +55 degrees Centrigrade (+14 to +99 Fahrenheit). The relative humidity should not exceed 95% at +35 degrees Centigrade (+95 Fahrenheit).
 - A good quality earth ground of less than 200 ohms must be provided. A 14 gauge copper wire connected to a metal cold water pipe or ground rod is recommended.
 - The station loop limit is 50 ohms. Telephone subsets must be located within 300 meters (1000 feet) of the KSU.

CABINET INSTALLATION

Caution: The EK-616 contains static sensitive components. Personnel required to handle PCBs or wiring must be familiar with the proper handling techniques and use the necessary safeguard equipment to protect static sensitive devices.

6.02 The KSU cabinet is arranged for wall mounting with two slotted holes provided in the mounting flanges on either side of the cabinet. The location of the mounting holes should be marked on the wall while holding the cabinet in the proper position. The screws provided with the KSU should be started in the wall and the cabinet should then be mounted before finally tightening the screws. (See Figure 4.)

WIRING CONNECTIONS

6.03 Station, CO line, and option connections are made via modular connectors located on both sides of the KSU cabinet. Telephone subsets are connected with 2-pair station wire home-run to the KSU cabinet. Wiring and connections are explained in the following paragraphs.

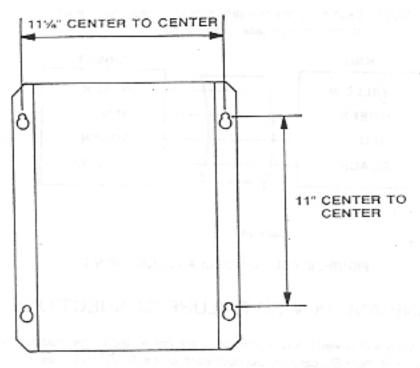


FIGURE 4, EK-616A WALL MOUNTING

STATION WIRING

6.04 Four conductor modular jacks for station connections are found on the right side of the KSU cabinet. Each jack is marked with the station number of the telephone it serves. Up to 16 telephones may be connected when the additional 8/ST PCB is installed in the KSU. Station wiring should be connected as shown in Figures 5. & 6.

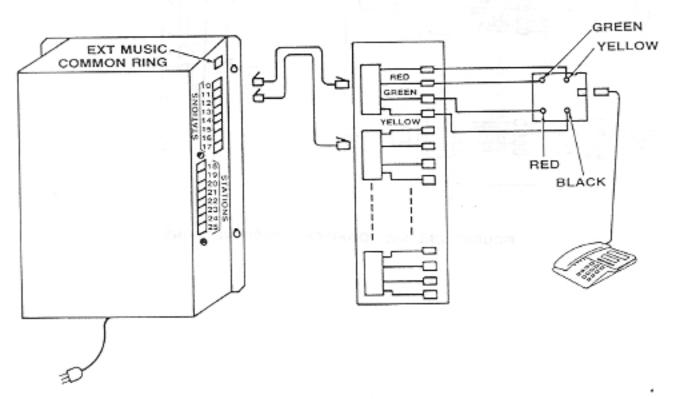


FIGURE 5, EK-616A STATION CONNECTIONS

NOTE: Each KSU modular jack should correspond to each subset modular jack as shown below.

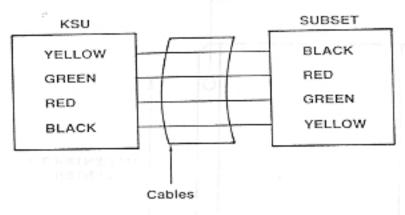


FIGURE 6. KSU TO MODULAR JACK WIRING

CO LINE AND POWER FAILURE CONNECTIONS

6.05 CO/PBX lines and power failure terminations are connected to the modular jacks provided on the left side of the KSU cabinet. Connect each of the 6 CO/PBX lines to the red and green conductors at the terminal board. Single line telephones can be connected to the yellow (tip) and black (ring) conductors to provide service during commercial power failure. (See Figure 7.)

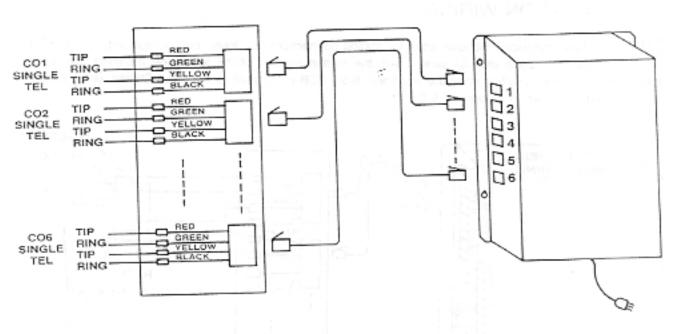


FIGURE 7. LINE AND POWER FAILURE CONNECTIONS

MUSIC AND COMMON RINGER CONNECTIONS

6.06 The uppermost modular jack on the right side of the KSU cabinet is provided for connecting an external music source for background music and/or music on hold and for connecting a common audible signaling device. The music source should be connected to the red and green conductors. The optimum music on hold is obtained when the input level is within the range of -15 to -5 d8m at an impedance of 600 ohms. The level of the hold music can be controlled by adjustment of the rheostat marked "VR1" located on the main KSU PCB inside the KSU cabinet. The rheostat marked "VR2" can be used to adjust the background music volume. (See Figure 8.)

6.07 The common audible should be connected to the yellow and black conductors. The output is connected to a make contact in the KSU with a capacity of 30V at 1 amp. (See Figure 8.) There is no voltage present on this contact.

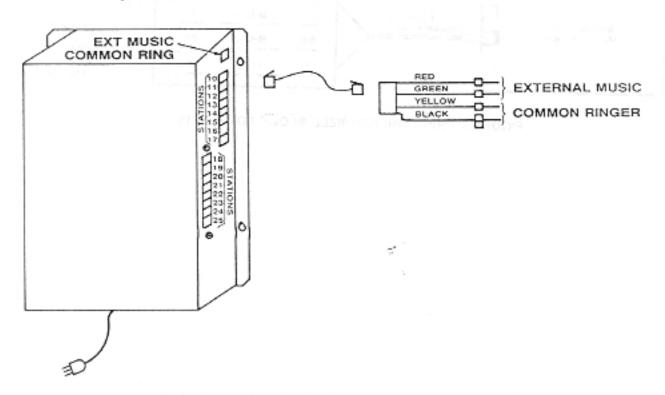


FIGURE 8, HOLD MUSIC AND COMMON RINGER CONNECTIONS

EK-616 QUICK CONNECT BLOCK

6.08 An optional cross-connect block is available for station, music and common audible connections to the EK-616 KSU. The block provides quick connect terminals for station wiring and options. Up to twelve stations can be connected to the block in its standard configuration. The block provides modular 4-wire plugs on 12-inch pigtails to simplify station wiring and reduce installation time. The modular plugs are wired so that the installer can terminate station wire on the block following the standard color code format. The KANDA part number for this block is 445099. Figure 9 illustrates the connection arrangement provided by this block.

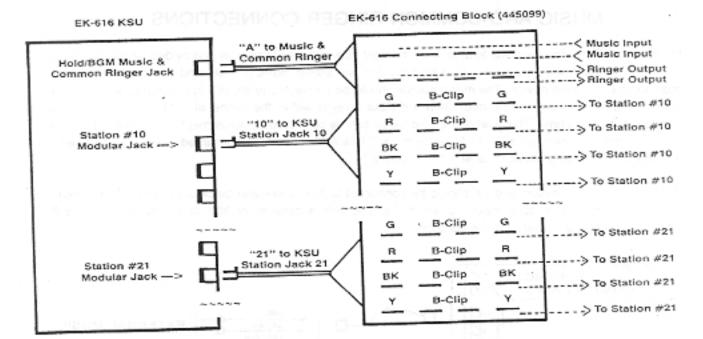


FIGURE 9. PRECONNECTORIZED BLOCK FOR EK-616

PROGRAMMING

7.01 The EK-616A software contains certain default operating instructions which allows the system to function without initial system programming. The default function settings are shown in Table 1. These functions can be modified by the installer to meet the needs of individual installations.

TABLE 1. DEFAULT PROGRAM SETTINGS

DIAL SIGNALING ROTARY PULSE SETTINGS (when pulse signaling is selected)	DTMF (ALL LINES) SPEED: 10pps BREAK RATIO: 60%
SPEED DIAL/AUTO PBX PAUSE	3 SECONDS
FLASH BUTTON TIMING	.75 SECONDS
HOLD INCOMES THROWARD	180 SECONDS
HELD PARTY DISCONNECT TIMING	500 mS
SYSTEM SPEED DIAL	(NONE)
ASSIGNED NIGHT RINGING	(NONE)
RINGING ASSIGNMENTS	ALL LINES AT ALL STATIONS
PRIVATE LINES	(NONE)
TOLL RESTRICTION TOLL RESTRICTION LISTS LIST 1 - PBX ACCESS CODES LIST 2 - SPECIAL ALLOWED CODES LIST 3 - COMMON ALLOWED CODES LIST 4 - LONG DISTANCE DEFINITION LIST 5 - EQUAL ACCESS CODE LIST 6 - COMMON DENIED CODES	(NONE) (NONE) "800" - "*11" "*1#" - "*0#" "10" "0##"
SPECIAL LINES EQUAL ACCESS	(NONE) DISABLED AT ALL STATIONS ENABLED AT ALL STATIONS

SPECIAL LINES
EQUAL ACCESS
DND (Do Not Disturb)
OFF-HOOK RINGING
BACKGROUND MUSIC
TOLL ACCESS
2 LINE CONFERENCE
EXCLUSIVE HOLD
SPEED DIAL PAUSE

DISABLED AT ALL STATIONS ENABLED AT ALL STATIONS ENABLED AT ALL STATIONS DISABLED AT ALL STATIONS "1" IGNORED AS FIRST DIGIT ENABLED ENABLED

AUTOMATIC

7.02 System programming is accomplished through a series of functions which are performed at the subset installed as station #10. For programming purposes, an EXECUTIVE telephone must be used. Programming may be done while the system is in use.

7.03 Various buttons on the EXECUTIVE telephone are used during programming to activate or modify different functions and features. These buttons, along with their functions are shown in Table 2. LEDS on the subset are used to verify programming and to indicate the status of each feature.

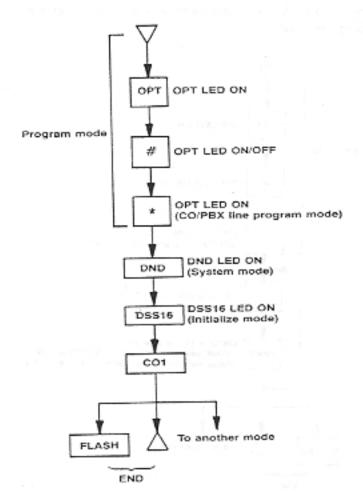
TABLE 2. BUTTON PROGRAMMING FUNCTIONS

BUTTON	SYMBOL	PROGRAMMING FUNCTION
DSS	DSS# (# = 1 to 16)	USED FOR PROGRAMMING OF PARTICULAR STATIONS AND TO SELECT PARTICULAR FEATURE PROGRAMMING MODES
co	CO# (# = 1 to 6)	USED FOR PROGRAMMING OF PARTICULAR LINES AND CO LEDS ARE USED TO VERIFY PROGRAMMED DATA
HOLD	HOLD	USED TO SELECT STATION RELATED PROGRAM MODES
OPT	OPT	USED TO SELECT LINE RELATED PROGRAM MODES
DND	DND	USED TO SELECT SYSTEM RELATED PROGRAM MODES
SDIAL	SDIAL	USED TO SELECT VARIOUS PROGRAM FUNCTIONS AND TO INDICATE VARIOUS CONDITIONS BY LED STATUS
SPKR	SPKR	USED TO SELECT VARIOUS PROGRAM FUNCTIONS AND TO INDICATE VARIOUS CONDITIONS BY LED STATUS
FLASH	FLASH	USED TO ESCAPE FROM THE PROGRAMMING MODE
		NOTE: IN THE PROGRAMMING EXAMPLES

- 7.04 To activate the programming mode, push the "OPT" button, the "#", and the "*" in sequence while in the on-hook state. When the "OPT" button is pushed, its LED will light steady. As soon as the "#" button is pushed the LED will begin to flash. It will light steady, again, when the "*" button is pushed. To exit the programming mode, lift the handset or push the "FLASH" button and the LED will go out.
- 7.05 Once in programming mode, it is possible to move from one function mode to another by pushing another button related to the desired function. To end the programming sequence, the handset must be lifted (or the "FLASH" button pushed).

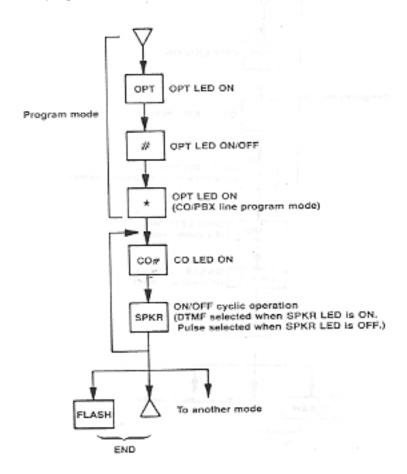
SYSTEM INITIALIZATION

7.06 The initialization program should always be performed when a new system is installed. This procedure will clear the system memory and prepare it for new programming. The EK-616 will be reset to the default program through this process. Press the "OPT" button and dial "#" and "" to enter the program mode. Press the "DND" button, then "DSS 16" and finally the "CO1" button. Lift the handset or push the "FLASH" button to exit the program mode or press the appropriate button to enter another programming segment.



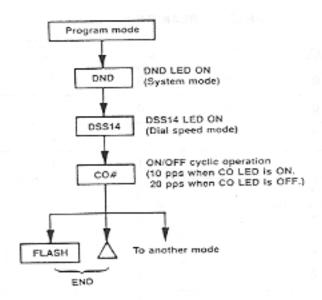
DIAL SIGNAL SELECTION

7.07 Each CO/PBX line may be programmed for either Tone or Rotary Pulse signaling. The system is initially set for Tone signaling on all lines. While on hook, press the "OPT" button and dial "#" and "*" to enter the program mode. Then select and press a CO button, The LED on the "SPKR" button will light to indicate the TONE setting. Push the "SPKR" button to change the dial signal to Rotary Pulse and the LED will go out. The "SPKR" button can be pushed again and again to alternate from TONE to Rotary signaling. When the appropriate signaling has been selected, push the next CO button and select the dial signaling for that line with the "SPKR" button in the same way as before. Lift the handset or push the "FLASH" button to exit this program mode.



DIAL PULSE SPEED

7.08 The dial pulse speed can be programmed for either 10 or 20pps for Rotary Pulse lines. Enter the program mode (See par. 7.04) and press the "DND" button to enter "System" programming. Then press "DSS 14" and its LED will light. Press the appropriate CO button and its LED will light when set for 10pps or go out when set for 20pps. Pushing the CO button again will change the setting as indicated by its LED. Push other CO buttons to change their settings, exit the program mode by lifting the handset or pushing the "FLASH" button, or go to another mode by pushing the appropriate DSS button.



BREAK RATIO

7.09 The break ratio may be programmed for Rotary Pulse CO lines. The initial setting is for 60%. After entering the program mode (See par. 7.04), press the "DND" button to select the system mode, and then press the "DSS 13" button to enter the "break ratio" mode. Select the desired break ratio using the "CO3" to "CO6" buttons as indicated in Table 3. The LED on the CO button will light to indicate "1" and remain unlit to indicate "0". Each time a CO button is pushed the indication will change from one to the other. Exit programming by lifting the handset or pushing the "FLASH" button or go on to another program mode by pushing the appropriate DSS button.

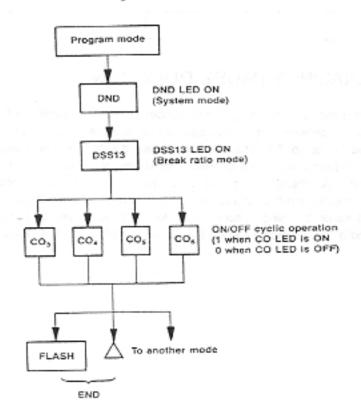


TABLE 3. BREAK RATIO

Break ratio (%)	COa	CO4	COs -	COs	
56	0	0	0	0	
57	0	0	0	1	
58	0	0	1	0	
59	0	0	1 1	1	
60	0	1	0	0	Initial setting
61	0.	1	0 .	1	
62	0	1	1	0	
63	0	1	1	1	
64	1	0	0	0	
65.	1	0	0	1	H-MA-FF
66	1	0	pHoof to the	oc . 0	Poly and
67	.1	0	1	1	Ti goni di
68	9	1	0	0	9705
69	1 1	· 1	0	1	I PROJECT
70	1	÷ 1	1	0	TO DO THE OWNER OF THE
71	1	1	1	1	

SPEED DIAL/PBX PAUSE DURATION

7.10 When activating the speed dialing or last number redial while behind a PBX, a pause is automatically provided between the line access number and the dialed number. The duration of this pause can be programmed for up to 7.5 seconds. This pause duration is also used when programming speed dial numbers where a pause is desired between two strings of dialed digits. In the initial setting the pause duration is 3 seconds. To change the pause duration, enter the program mode, press the "DND" button to select the system mode, and then press the "DSS 9" button to enter the pause time setup mode. Select the desired pause duration by using buttons "CO3" to "CO6" according to Table 4. A "1" is indicated when the CO LED is on and a "0" is indicated when the CO LED is off. Each time a CO button is pushed, its condition changes.

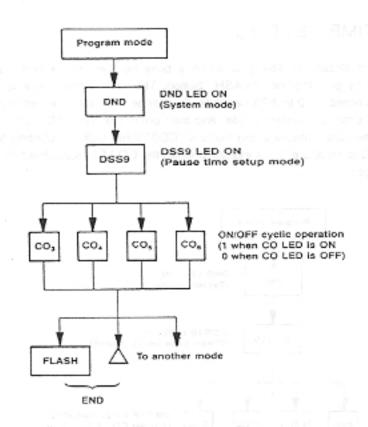


TABLE 4. PAUSE DURATION

Pause time(s)	CO3	CO4	COs	COe	Remarks
0	0 .	0	0	0	
0.5	0	0	0	1	
1.0	0	0	1	0	
1.5	0	0	1	2943 1	
2.0	0	1	0	0	
2.5	0	1	0	1	
3.0	0	1	1	0	Initial setting
3.5	0	1	1	1	
4.0	1	0	0	0	
4.5	1	0	0	1	
5.0	1	0	1	0	
5.5	1	0	1	1	
6.0	1	1	0	0	
6.5	1	1	0	1	
7.0	1	1	1	. 0	
7.5	1	1	1	1	

FLASH TIME SETTING

7.11 When an error occurs in dialing or when a busy number is reached, the CO line can be disconnected by pushing the "FLASH" button. The flash (reset) time is initially set for .75 seconds but can be programmed for 0 to 3.75 seconds. To change the flash time, enter the program mode, press the "DND" button to enter the system mode, and then press the "DSS 10" button to select the flash time setup mode. Select the flash time by using buttons "CO3" thru "CO6" according to Table 5. A "1" is indicated when the CO LED is on and a "0" is indicated when the CO LED is off. Each time the CO button is pushed its condition changes.

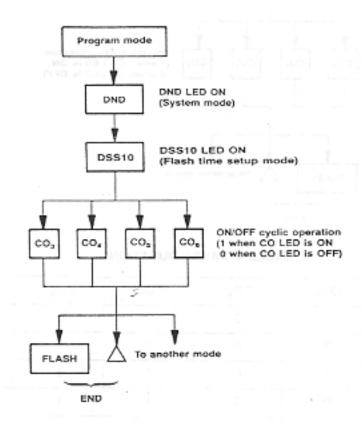


TABLE 5, FLASH TIMING

Flash time (sec)	CO3	CO	CO,	CO ₆	Remarks
0	0	0	0	0	
0.25	0	0	0	1	
0.5	0	0	1	0	
0.75	0	0	1	1	Initial setting
1.0	0	1	. 0	0	
1.25	0	1	0	1	
1.5	0	1	1	0	
1.75	0	1	1	1	
2.0	1	0	0	0	
2.25	1	0	0	1	
2.5	1	0	1	0	
2.75	1	0	1	1	
3.0	1	1	030.0 8.43	0	
3.25	1 -	1-	0	.1	
3.5	1	- 1	1	0	
3.75	1	1	1	1	

HOLD RECALL

7.12 Hold recall timing can be programmed for up to 450 seconds (in 30 second increments). In addition, hold recall can be disabled by setting the recall timing to "0". In the initial setting, the hold recall time is set at 180 seconds. To adjust the timing, enter the program mode, press "DND" to enter the system mode, and press the "DSS 11" button to select the hold recall timing mode. Use buttons "CO3" thru "CO6" to select the appropriate setting according to Table 6. A "1" is indicated when the CO LED is on and "0" is indicated when the CO LED is off. Pushing the CO button changes the LED indication.

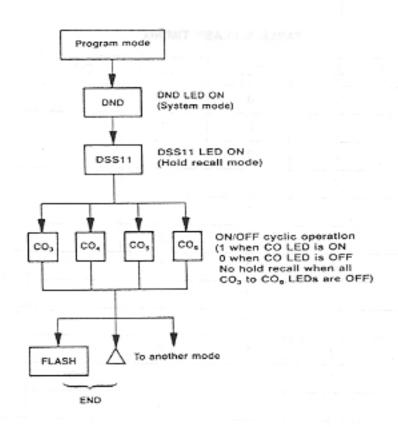


TABLE 6. HOLD RECALL TIMING

Hold recall time (sec)	CO ₃	CO ₄	CO ₅	CO ₆	Remarks
STOP	0	0	0	0	OFF
30	0	0	0	1	
60	0	0	1	0	
90	. 0	0	1	1	
120	0	- 1	0	0	601
150	0	. 1	0	pace 1 ner	ada min
180	0	1	1	0	Initial setting
210	0	1	W- 11 - C	1.00 100 00	
240	1	0	0	. 0	
270	1	0	0	1	
300	1	0	1	0	
330	1	0	1	1	
360	1	1	0	0	
390	1	1	0	1	
420	1	1	1	0	
450	1	1	1	1	

HELD PARTY DISCONNECT.

7.13 Held party disconnect timing may be programmed (in 50ms increments) for up to 750ms. In addition, held party disconnect can be disabled by setting the detection timing to "0". The initial setting is for 500ms. After entering the program mode, press the "DND" button to select the system mode, and press the "DSS12" button to enter the held party disconnect mode. Change the setting by using buttons "CO3" thru "CO6" according to Table 7. A "1" is indicated when the LED is on and a "0" is indicated when the LED is off. The LED indication changes each time the CO button is pushed.

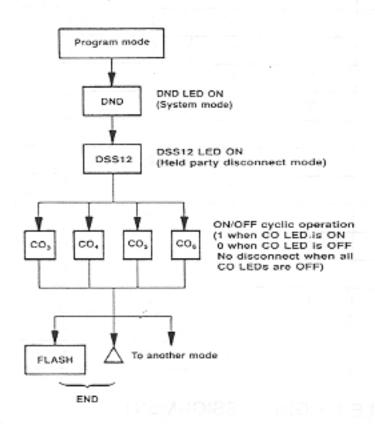
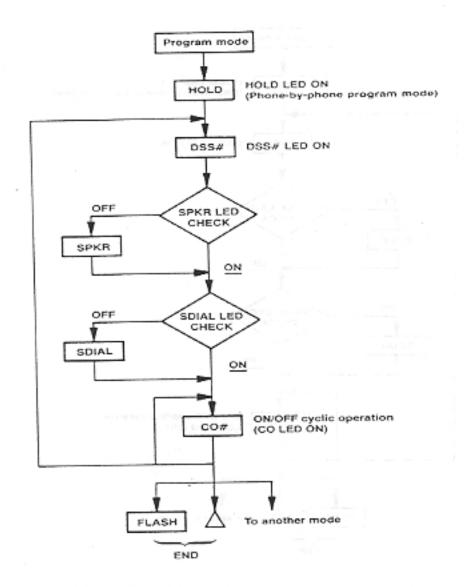


TABLE 7. DISCONNECT DETECT TIMING

Detection time (ms)	CO ₃	CO ₄	CO,	CO	Remarks
No.	0	0	0	0	No disconnect
50	0	0	0	1	
100	0	0	and the s	0	N
150	0	0	1	1	
200	0	1	0	0	
250	0	1	0 .	1	
300	0	1	- 1	0	
350	0	1	1	1	
400	-1	0	0	.0	
450	1	0	0	1	
500	1	0	1	0	Initial setting
550	-10 ·1	0	1	1	
600	1000	1	0	0	
650	1	1	0	1	
700	1	-3 1	1	0	
750	1	1	1	1	

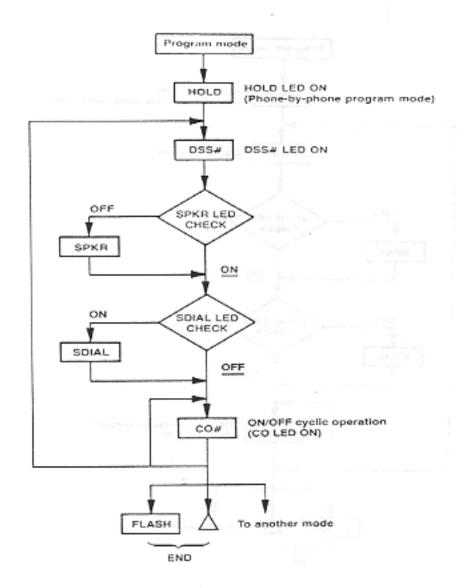
FLEXIBLE RINGING ASSIGNMENT

7.14 CO line ringing may be programmed for each station. In the initial setting, all CO lines ring at all stations. After entering the program mode, press the "HOLD" button to select the station program mode, and then press the DSS button corresponding to the station to be programmed. The LED on the "SPKR" button should be lit. If not, push the "SPKR" button to light the LED. The LED on the "SDIAL" button should also be lit. If not, push the "SDIAL" button to light the LED. Next, press the CO line button(s) for the line chosen to ring at the station, Press the DSS button for the next station to be programmed and repeat the procedure until all stations are programmed as desired.



ASSIGNED NIGHT RINGING

7.15 It is possible to assign incoming CO line ringing to specific stations for night service. There are no restrictions as to how the ringing assignments may be made except that private lines will not ring at stations without access. In the default program there is no preset assignment for this feature. While in the program mode, push the "HOLD" button and then press the DSS button for the station chosen to receive the night ringing. Next, check to see that the "SPKR" LED is on. If not, press the "SPKR" button to light the LED. The "SDIAL" LED should also be off. If not, press the "SDIAL" button to extinguish the LED. Then press the CO button(s) corresponding to the lines chosen to ring at the station. Press the DSS button for the next station to be programmed and repeat the procedure until all stations are programmed as desired.



STATION FEATURES

EQUAL ACCESS/DND/OFF-HOOK RINGING/BACKGROUND MUSIC

7.16 Stations may be programmed individually to either enable or disable equal access, DND, off-hook ringing and background music. In the initial setting equal access is disabled, DND is enabled, off-hook ringing is enabled and background music is disabled at all stations. After entering the program mode, press the "HOLD" button to select station feature programming. Then push the DSS button corresponding to the station to be programmed. Make sure that the "SPKR" and "SDIAL" LEDs are off. If not, press the button to turn off the LED. The "CO1" LED will be lit when equal access is enabled for the station. The "CO2" LED will be lit when DND is enabled. The "CO3" LED will be lit when off-hook ringing is enabled. And, the "CO4" LED will be lit when background music is enabled. If any of these features are disabled for the selected station, the respective CO button LED will be off. (Refer to Table 8.) Press the appropriate CO button to reverse the condition of the LED and the feature for that station. Press another DSS button and repeat the procedure for other stations to be programmed.

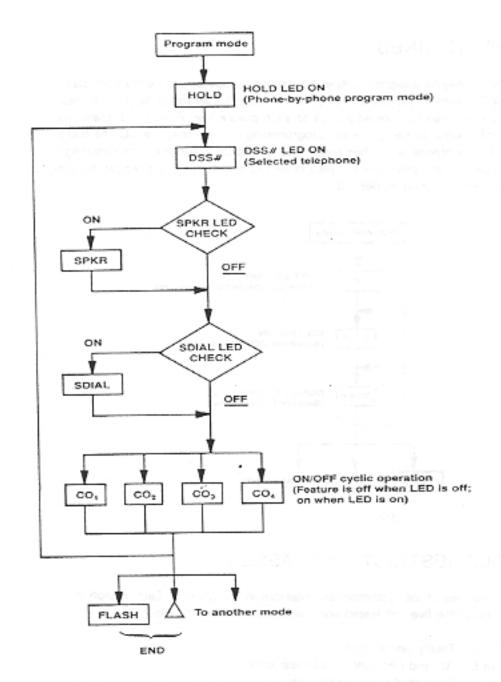


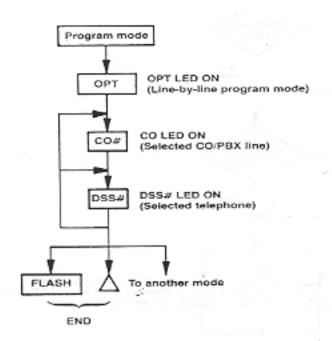
TABLE 8. STATION FEATURE STATUS AND IDENTIFICATION

CO LED Condition		Feature and Condition		
CO, LED	ON OFF	Equal Access:	Enabled Disabled *	
CO ₂ LED	ON OFF	DND:	Enabled * Disabled	
CO, LED	ON OFF	Off Hook Ringing:	Enabled *	
CO₄ LED	ON OFF	Background Music:	Enabled Disabled *	

[&]quot;" Indicates Default Setting

PRIVATE LINES

7.17 CO lines may be assigned to specific stations for use as private lines. All stations have access to all CO lines in the initial setting. All lines can be arranged as private lines if needed but a maximum of two stations can be allowed access to each private line. Enter the system program mode and then press the "OPT" button to select the line programming mode. Press the CO line button corresponding to the line chosen as a private line. Then press one or two DSS buttons corresponding to the station(s) which will have access to the private line. Press other CO line buttons and repeat the procedure until the private lines have been assigned as desired.



TOLL RESTRICTION CLASSES

- 7.18 Five classes of toll restriction are available in the EK-616. Each station may be programmed for one of the five Toll Restriction Classes as described below:
 - Class A Totally unrestricted.
 - Class B "0" and international call restriction.
 - Class C Restricted to local calls only.
 - Class D Intercom only with some allowed codes.
 - Class E Intercom only with no allowed codes.

All stations are set for Class A in the default program. To change the Toll Restriction Class, enter the program mode and press the "HOLD" button to enter station feature programming. Then press the DSS button corresponding to the station to be programmed. If the "SPKR" LED is on, push the "SPKR" button to turn it off. Check to be sure that the "SDIAL" LED is on. If not, push the "SDIAL" button to turn the LED on. Next dial a digit from "0" to "4" to select the toll restriction class. The CO button LEDs will light to confirm the class setting. Table 9 shows the LED indication for each class. Push another DSS button to select another station or the appropriate button(s) to go to another program mode or end programming.

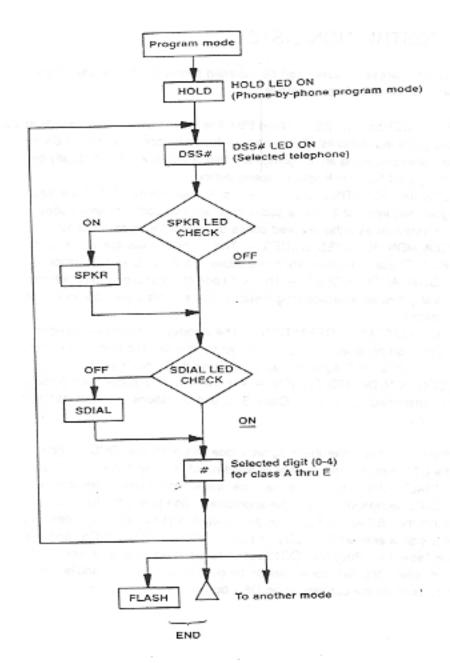


TABLE 9. TOLL RESTRICTION CLASS ASSIGNMENT

Toll Class	А	В	С	D	Ε
Class "#"	0	1	2	3	4
CO LED Indication	Class A	Class 8	Class C	Class D	Class E
CO ₄ CO ₅ CO ₆	OFF OFF	OFF OFF ON	OFF ON OFF	OFF ON ON	ON OFF OFF

TOLL RESTRICTION LISTS

- 7.19 The basic toll restriction classes can be modified somewhat by the use of six Toll Restriction Lists. The lists are described as follows:
 - List 1 PBX ACCESS CODES Three PBX line access codes of up to 2 digits each may be programmed in this list. Toll restriction does not apply unless the PBX line access code is dialed preceding an out-going call. Also, a pause will automatically be provided when using Last Number Redial or speed dialing.
 - List 2 SPECIAL FLOATING CODES Up to four codes of 3 digits each may be programmed into List 2. These codes may be office codes or area codes. List 2 may then be assigned as either allowed codes or denied codes as required.
 - List 3 COMMON ALLOWED CODES The 3 codes available in List 3 must be 3 digits each. These are codes which are allowed to Class C and D Stations.
 - List 4 EQUAL ACCESS CODE This is 1 code of either 2 or 3 digits which is used to allow calling thru an alternate long distance carrier. This code applies to Class B, C and D stations.
 - List 5 LONG DISTANCE DEFINITION The 2 codes in this list are used to define basic toll restriction parameters. In default program, the definition for area codes is used. These codes must be 3 digits and apply to Class B, C and D stations.
 - List 6 COMMON DENIED CODES A maximum of 3 codes with 3 digits each can be programmed into this list. Class B, C and D stations are restricted from dialing these codes.

To enter codes into these lists, first enter the program mode and push the "DND" button. The "DND" LED will light. Next push the DSS button corresponding to the desired list (See Table 10.). Then check the status of the "SPKR" and "SDIAL" LEDs to determine the code position to be programmed (See Table 11.). Push the "SPKR" and/or "SDIAL" button(s) to select the appropriate code position. Next, dial the digits which are to be programmed. Push the "SDIAL" button after dialing each digit to step to the next digit position (See Table 12.). Each time a digit is entered, the LEDs for buttons "CO3", "CO4", "CO5" and "CO6" will indicate the digit selected (See Table 13.). Push the "CO1" button to erase one digit at a time if required. When the code has been entered, select the next code position by pushing the "SPKR" and/or "SDIAL" button(s) or move to the next list by pushing the corresponding DSS button.

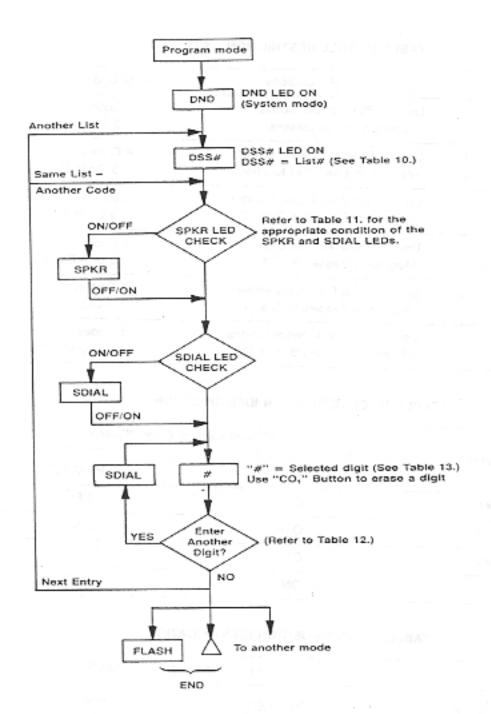


TABLE 10. TOLL RESTRICTION LISTS

DSS Button	Toll Lists & Functions	# of Codes & Digits	
DSS 1	List 1 - PBX Access Codes (Applies to all toll classes)	3 Codes: 2 Digits Each	
DSS 2	List 2 - Special Floating Codes (Applies to a selected function)	4 Codes: 3 Digits Each	
DSS 3	List 3 - Common Allowed Codes (Applies to Class C & Class D)	3 Codes: 3 Digits Each	
DSS 4	DSS 4 List 4 – Equal Access Code (Applies to classes B, C & D)		
DSS 5	List 5 - Long Distance Definition (Applies to classes B, C & D)	2 Codes: 3 Digits Each	
DSS 6	List 6 - Common Denied Codes (Applies to classes B, C & D)	3 Codes: 3 Digits Each	

TABLE 11. CODE POSITION IDENTIFICATION

	LED Indication for Code Position		
Code Position for Each List	"SDIAL" LED	"SPKR" LED	
Code #1	OFF	OFF	
Code #2	OFF	ON	
Code #3	ON	OFF	
Code #4	ON	ON	

TABLE 12. DIGIT POSITION IDENTIFICATION

	LED Indication	of Digit Position
Digit Position in Each Code	"CO," LED	"CO ₂ " LED
Digit #1	OFF	OFF
Digit #2	OFF	ON
Digit #3	ON	OFF

NOTE: Push the "SDIAL" button after entering each digit to step to the next digit position.

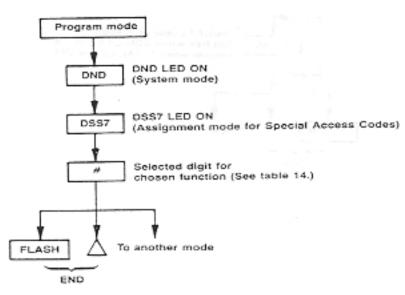
TABLE 13. DIGIT IDENTIFICATION

	159641 1 ***	LED Indication fo	r Selected Digits	
Dialed Digit	CÓ³	"CO4"	"CO ₅ "	CO6,
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON .	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON
0	ON	OFF	ON	OFF
	ON	OFF	ON	ON
#	ON	ON	OFF	OFF

[&]quot;" Represents any digit from 2 thru 9

TOLL RESTRICTION - LIST 2 ASSIGNMENT

7.20 Toll Restriction List 2 may include up to four 3-digit codes. Codes in List 2 may be area codes, office codes or special service codes. List 2 may be considered as a "floating" list and can consist of allowed codes or denied codes depending on how it is used. To define the use of codes in List 2, enter the program mode and push the "DND" button. The "DND" LED will light. Next, push the "DSS 7" button causing its LED to light. Finally, dial a digit (0-4) to specify the use of the codes in List 2 as indicated in Table 14. Push the "FLASH" button to exit the program mode or other buttons to move to another programming mode.



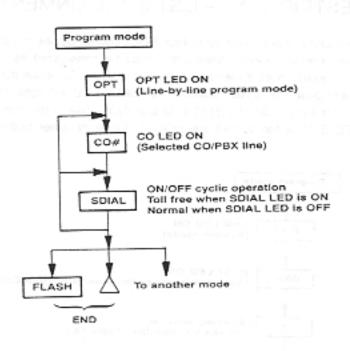
[&]quot;#" Represents any digit from 0 thru 9

TABLE 14. LIST 2 FUNCTION IDENTIFICATION

List 2 Selectable		Le de la la	CO LED Indication			
Functions	(Selected Digit)	CO3	CO4	COs	CO6	
Codes Have No Function	0	OFF	OFF	OFF	OFF	
Codes Denied In Toll Class B, C, D	1	OFF	OFF	OFF	ON	
Codes Denied In Toll Class C & D	2	OFF	OFF	ON	OFF	
Codes Allowed In Toll Class C & D	3	OFF	OFF	ON	ON	
Codes Allowed In Toll Class B, C, D	4	OFF	ON	OFF	OFF	

SPECIAL LINES

7.21 Any of the CO lines may be programmed as a special line which is exempt from the normal toll restriction. This allows restricted stations to make calls on specific lines. No special lines are designated in the default program. To set up special lines, enter the program mode and press the "OPT" button to enter the CO line features mode. Then select the CO line by pressing a CO line button. Press the "SDIAL" button and the LED will light to indicate that the line is designated as a special line. Pressing the "SDIAL" button again will turn the LED off which indicates a normal CO line. Push another CO button and repeat the procedure to program other lines.



PBX ACCESS CODES

7.22 If EK-616 is installed for use behind a PBX, it is possible to program the PBX line access codes. This programming provides two useful functions. An EK-616 station is exempt from toll restriction until the PBX line access code is dialed on a CO line. This allows full access to features within the PBX while still providing toll control on outside lines. In addition, a pause is automatically inserted behind the PBX line access code when it is used as the first digit(s) in redialing or in speed dialing. The system allows up to three codes to be programmed. The line access codes may be one or two digits. After entering the program mode, press the "DND" button to select the system features mode. Press the "DSS 1" button, its LED will light and the system will be ready to accept the first PBX line access code. The "SDIAL" LED will light to indicate that the first digit may be input. Use buttons "CO3", "CO4", "CO5", and "CO6" according to Table 15, to enter the digit. If a second digit is to be programmed, push the "SPKR" button and its LED will light. Enter the second digit in the same way as the first. Push "DSS 2" and "DSS 3" to repeat the procedure for the second and third line access codes if required.

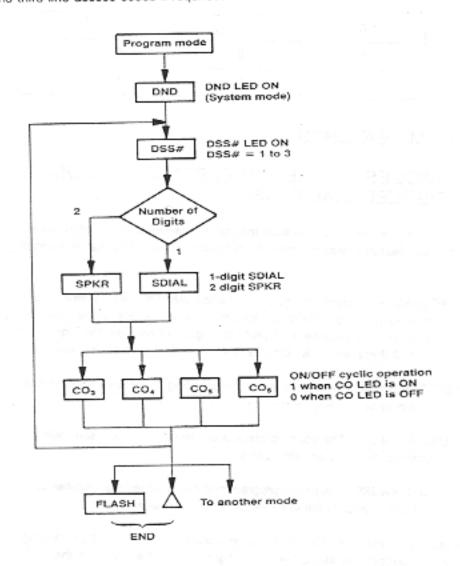


TABLE 15. PBX ACCESS CODES

Dial No.	CO ³	CO ₄	COs	CO
0	0	0	0	0
1	0	0 .	0	et perto 1
2	0 0 0	0	1	0
3	0	0	1	1
4	0	101 101	0	0
5	0	1	0	1
6	0	1 8	10.10.000	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

SYSTEM FEATURES

TOLL ACCESS/2-LINE CONFERENCE/EXCLUSIVE HOLD/SPEED-DIAL PAUSE

- 7.23 Several features in the EK-616 system may be programmed on a system-wide basis. Programming of these features requires only one program function. The features and explanations are listed below:
 - TOLL ACCESS Customizes the toll restriction plan for areas where "1-plus" dialing is not required for long distance calling or for areas where some local numbers look the same as an area code. If "1-plus" dialing is not required the "Ignore" mode should be used. If there are local numbers which look like area codes, use the "Detect" mode.
 - 2-LINE CONFERENCE The ability of conferencing 2 CO lines may be enabled or disabled system-wide as required.
 - EXCLUSIVE HOLD The ability to place a CO line call on exclusive hold may be enabled or disabled on a system-wide basis.
 - SPEED-DIAL PAUSE A pause programmed into a speed-dial number can be automatically timed or manually timed based on system requirements.

To program these features, enter the program mode and push the "DND" button causing its LED to light. Then push the "DSS 8" button and its LED will also light. Check the status of the LEDs on the "CO1", "CO2", "CO3" and "CO4" buttons. The condition of these LEDs will indicate the status of the features as shown in Table 16. Push the appropriate CO button to change the condition of the LED and the status of the respective feature. Push the "FLASH" button to exit from the programming mode or push other buttons to move to another programming function.

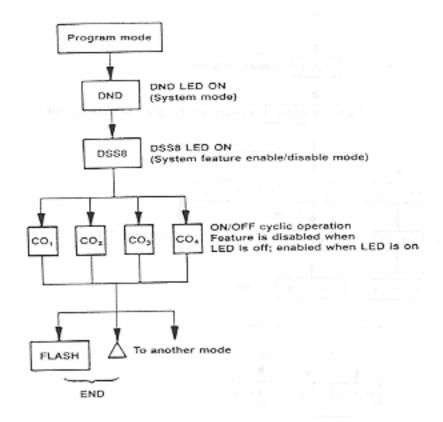


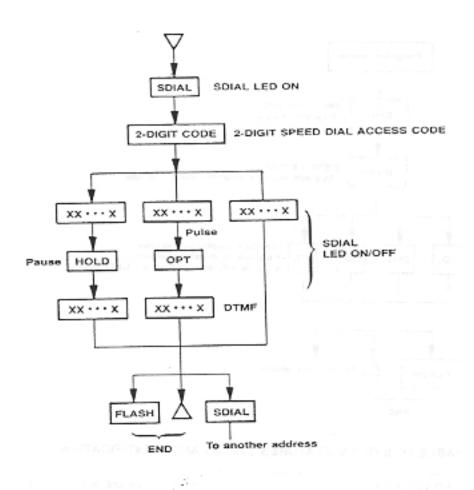
TABLE 16. SYSTEM FEATURES STATUS AND IDENTIFICATION

CO LED Co	ndition .	System Feature and	d Condition
CO, LED	ON OFF	Toll Access: Ignore "1" as First Dig Detect "1" as First Dig	
CO ₂ LED	ON OFF	2 Line Conference:	Enabled * Disabled
CO ₃ LÉD	ON OFF	Exclusive Hold:	Enabled * Disabled
CO4 LED	ON OFF	Speed Dial Pause:	Manual Automatic

[&]quot;" Indicates Default Setting

SYSTEM SPEED DIALING

7.24 System speed dial numbers are programmed in the same way as station speed dial numbers, however, only station #10 may be used to enter system speed dial numbers. Up to 50 system speed dial numbers may be programmed and accessed using dial codes 10 thru 59. Each speed dial number can be up to 16 digits in length. To program system speed dial numbers, push the "SDIAL" button while on hook, dial the appropriate speed dial code (10 thru 59), and enter the digits through the telephone dial pad. To enter a pause, push the "HOLD" button. Each pause counts as one digit. To change the dialing from Rotary Pulse to Tone in the middle of a speed dial number, push the "OPT" button. Repeat the procedure to enter additional speed dial numbers. Lift the handset or push the "FLASH" button to exit the program mode.



NOTE 1: To insert a pause, press the HOLD button.

NOTE 2: To change the address signal from Pulse to DTMF during dialing, press the OPT button.



ddendum A. KANDA EKN-616 ELECTRONIC KEY TELEPHONE SYSTEM

A.01 The Kanda EKN-616 KSU (part number 445240) is an enhanced version of the EK-616 KSU and includes several new features and changes to the KSU hardware. Changes and additions are described in the following paragraphs. The EK-616 KSU is NOT upgradable to include the new features because of the hardware requirement for a "Clock Circuit" which is needed to support the LCD Display (Executive Plus) telephones.

HARDWARE CHANGES AND COMPATIBILITY

- A.02 The EKN-616 KSU allows the optional Doorphone/Page Adaptor to be installed within the KSU cabinet. The new Doorphone/Page Adaptor is identified as the EKN-616A-DORU (part number 445270). There is no change to the functions or operation of this optional unit. The earlier Doorphone/Page Adaptor (part number 445070), which is an externally mounted module, may be used with the EKN-616 KSU and is fully compatible.
- A.03 The EKN-616 KSU includes a "Clock Circuit" which is necessary to support telephones equipped with the LCD display. In addition, this KSU contains a lithium battery which protects programming in the event of a commercial power failure. An improved grounding lug has also been added to the KSU cabinet.
- A.04 There is no change to other equipment. All telephones, the 8/ST PCB (part number 445057) and other hardware are compatible with the EKN-616 KSU-

LCD DISPLAY TELEPHONES

- A.05 Telephones which include an LCD display are available as an option for use with the EKN-616 KSU. These telephones are identified as the Executive Plus telephones. Two colors, ash grey with black trim (part number 445111) and all black (part number 445112), are available in the Executive Plus model. Any or all stations in the system may be equipped with these telephones. The Executive Plus telephones are NOT compatible with earlier versions of the EK-616 KSU.
- A.06 The Executive Plus telephone includes direct station selection, busy lamp field and handsfree speakerphone as well as the liquid crystal display. Information provided by the LCD display includes:
 - All Call Page The station initiating an all call page will be identified. An all call page from Station 10 would be displayed as "A10".
 - b) Alternate Answer When the Alternate Answer (call pickup) feature is activated, the answering party will be shown the station number of the calling party. The calling party will also be shown the station number of the answering party.

- c) Call Duration Timer The duration of a call will be provided on both incoming and outgoing CO line calls. The timer will start automatically immediately after an incoming call is answered and ten seconds after the last digit is dialed on outgoing calls.
- d) Call Waiting When the audible call waiting tone is heard at a station, the display will identify the waiting party by station number.
- e) Calling Number When an intercom call is received, the station number will be identified and preceded by the letter "P". For example, a call from Station 10 would be displayed as "P10".
- f) Clock and Calendar The display will provide the month, date, time of day, day of the week, second time zone, timer, and alarm. All clocks may be set at one time through the telephone at Station 10.
- g) Dialed Digits All digits dialed on intercom or on an outside line will be displayed. A maximum of eleven digits will be displayed at one time.
- Doorphone Signal A station user receiving a signal from one of the Doorphone units will see the letters "Dr" followed by the number of the doorphone ("I" or "2").
- Held Line When an outside line is placed on hold, the line number preceded by the letter "H" will be displayed. If Line 6 was placed on hold, "H6" would be displayed.
- j) Hold Recall When a line placed on hold begins to recall at the holding station, the held line indication described above will begin to flash.
- k) Meet Me Answer When the Meet Me Answer feature is activated after an All Call Page, the paging party will be shown the station number of the answering party.
- Message Waiting The station leaving a call-back request at another station will be identified. The display will show the letters "CP" followed by the station number.
- m) Ringing Line The display will identify incoming calls by showing the line number preceded by the letter "L". For example, an incoming call on Line 3 would be displayed as "L3". Only those telephones programmed to ring will receive this display.
- Speed Dial Numbers While speed dial numbers are being stored or automatically dialed, the display will provide the speed dial code along with the digits of the telephone number.
- Programming Indication During system programming at Station 10 the LCD will indicate System, Station or CO Line program mode.

ADDITIONAL FEATURES

- All features previously provided by the EK-616 KSU are included in the EKN-616 system. Additional features have also been added to the standard software capabilities of the EKN-616 KSU. These additional features are described in the following paragraphs.
- A.08 EXECUTIVE BARGE-IN Stations equipped with a DSS/BLF may be allowed through programming to override privacy in order to join or monitor calls in progress. Barge-In applies only to outside line conversations. Barge-In is activated when the station user lifts the handset (or activates the speaker) and pushes the DSS button associated to the station which is to be monitored. Activating the speaker allows the call to be monitored only. When the handset is used, it is possible to both listen and talk. No alerting tone is provided to the parties being monitored. A maximum of two stations may be programmed to use the Barge-In feature.
 - NOTE: Since no alerting tone is provided to the monitored parties, the use of this feature may be considered an illegal invasion of privacy in some areas. Kanda Telecom assumes no responsibility for the use of this feature in such areas.
- A.09 MESSAGE WAITING After dialing a station number, a station user may push the "OPT" button and dial "7" to request a call-back from the called station. At the called station, the Message (HOLD) lamp will flash and an audible tone will be heard every 15 seconds. The LCD display (if equipped) will identify the station leaving the call-back request. To return the call, the station user lifts the handset and pushes the "HOLD" button. To cancel the message before the call is returned, the originating station user may push the "OPT" button and dial "7" while on hook.
- A.10 REMOTE CONTROL CONTACTS Through programming, The Common Audible Contacts may be reassigned for use as control contacts for various devices. A station user activates these contacts by pushing "OPT" and "6" while on hook. The digit "1" is then dialed to close (make) the contacts and the digit "0" is dialed to open (break) the contacts. The contacts may be closed and opened repeatedly by alternately dialing "1" and "0". The contacts may be left in either condition permanently by pushing any other button or by lifting the handset.
- A.11

 TOLL RESTRICTION OVERRIDE A programmable five-digit code can be used to allow users to make calls from stations which are normally toll restricted. A user who knows the code lifts the handset, dials the code within 5 seconds, pushes the line button and dials the desired telephone number. When the code is entered correctly, a confirmation tone will be heard before the line button is pushed. The line must be seized within five seconds after entering the code. Once the code has been entered and the line has been seized, multiple calls can be made by using the "FLASH" button to renew dial tone after each call. The code must be re-entered, however, if a different line is selected or if a call is terminated by replacing the handset (or turning the speaker off). The code may consist of up to five digits and must be defined or changed through the programming procedure.

· established

SYSTEM PROGRAMMING

A.12 System programming for EKN-616 is exactly the same as for the previous EK-616 system. Only the additional programming procedures required to actlyate or select additional features for the EKN-616 system are described in the following paragraphs. Other features described in the previous paragraphs require no programming procedures.

DOORPHONE STATION SELECTION EXECUTIVE BARGE-IN TOLL RESTRICTION OVERRIDE

A.13 Both Executive Barge-In and Toll Restriction Override are set up through a modified procedure of the Doorphone Station Selection Program. Up to two stations may be allowed to use the Executive Barge-In feature. Any station may be selected as one of those which are allowed to use this feature. However, only stations equipped with DSS/BLF telephones can activate Barge-In. (See par. A.08) Any station user who knows the code may override toll restriction at any other station in order to make outside calls. (See par. A.11) To establish these features, enter the programming mode and push the "DND" button. The DND LED will light. Next push "DSS 15" (the 15th DSS button, NOT Station 15) and its LED will light. Push the "SPKR" button until the status of the "SPKR" and "SDIAL" LEDs correspond to the desired item as shown in Table 18. Dial the appropriate digits for the selected station or to define the secret code as indicated in Table 18. As each digit is being entered, the digit position and the actual entry can be checked against Table 19. and Table 20. A specific digit can be erased while being displayed by pushing the "CO1" button.

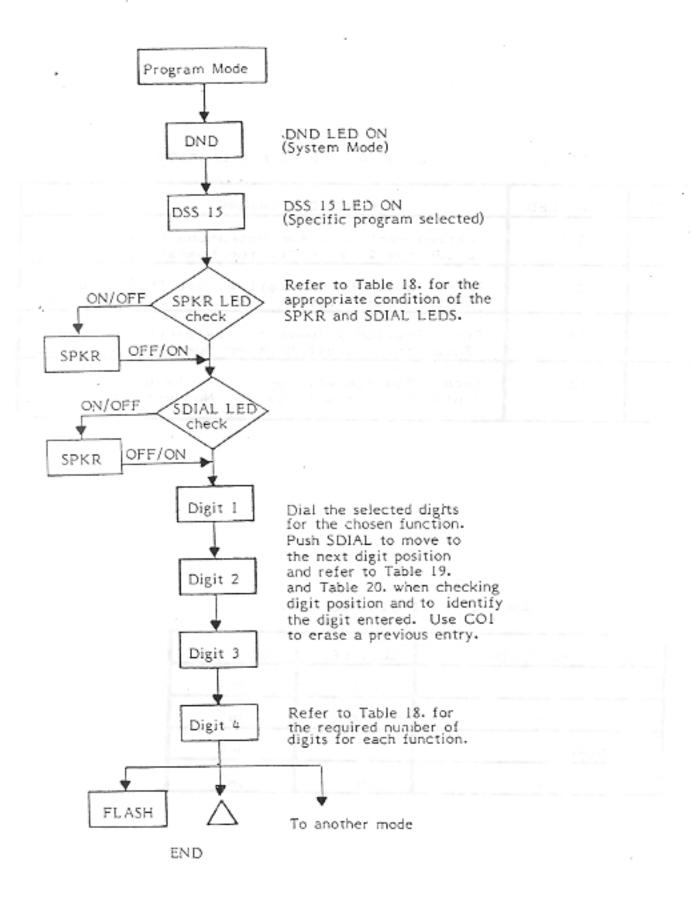


TABLE 18. FUNCTION AND FEATURE SELECTION

SPKR LED	SDIAL LED	FUNCTION/FEATURE
OFF	OFF	Station Port used for Doorphone/Page Adaptor Enter the 2-digit Station Number: ()()
ON	OFF	Secret Code (First Digit always "9") Enter up to 4 more digits: 9-()-()-()-()
OFF	ON	First Station allowed to use Barge-In Enter the 2-digit Station Number: ()()
DN .	ON	Second Station allowed to use Barge-In Enter the 2-digit Station Number: ()()

TABLE 19. DIGIT POSITION

DIGIT POSITION	CO 1 LED	CO 2 LED
Digit 1	OFF	OFF
Digit 2	OFF	ON
Digit 3	ON	OFF
Digit 4	DN	ON

TABLE 20. DIGIT IDENTIFICATION

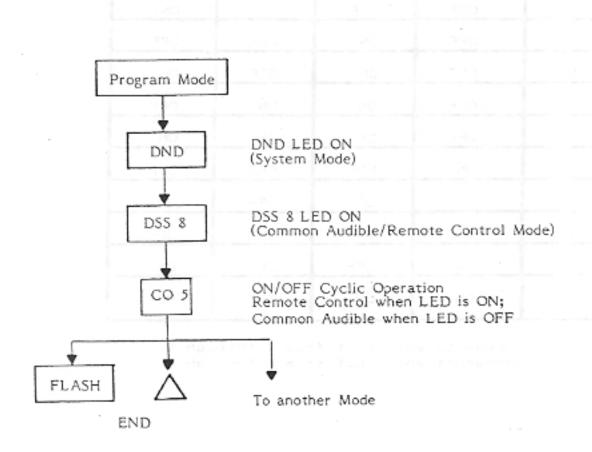
	LED Indic	ation for	Selected D	igits
DIALED DIGIT	"CO 3"	"CO 4"	"CO 5"	"CO 6"
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	· ON.	· ON
4	OFF	ON	OFF	OFF
5	OFF	DN	OFF	ON
6	OFF	ON	DN	OFF
. 7	OFF	ON	ON	ON
8	DN	OFF	OFF	OFF
9	ON	OFF	DFF	DN
ø ·	DN	OFF	ON	OFF
*	ON	OFF	ON .	ON
#	ON	ON	OFF	OFF

Represents any digit from 2 through 9 Represents any digit from 0 through 9

REMOTE CONTROL CONTACTS COMMON AUDIBLE

A.14

The Common Audible Contacts can be assigned for use as Remote Control Contacts if desired. (See par. A.10) The programming procedure required to define the function of these contacts is an extension of the System Features program described in Section 7. (See par. 7.23) To define the function of these contacts enter the programming mode and push the "DND" button. The DND LED will light. Then push "DSS 8" and its LED will light. Then check the status of the "CO5" LED. To use the contacts for Common Audible, the "CO5" LED should be "off". To use the contacts for Remote Control, the LED should be "on". Change the status of the LED by pushing the "CO5" button.



CLOCK AND CALENDAR SETTING

- A.15 The time, date and day of the week are set for all Executive Plus (LCD display) telephones in the system at one time through an Executive Plus telephone connected to Station 10. The procedure for setting the clock and calendar is as follows:
 - a) HOUR DISPLAY MODE While the handset is in the cradle (and the speaker is off) push "OPT" and dial "+" and "3". The letter "H" or "F" will appear and flash to indicate that the clock is presently in either the 12-hour ("H") or 24-hour ("F") display mode. To change the display mode, dial "1" for 12-hour mode or "2" for 24-hour mode. The letter ("H" or "F") will indicate the selected display mode. Dial "#" to confirm and enter the selected mode.
 - b) DAY OF WEEK The previous procedure will cause the day of the week display to flash. Dial a digit from "1" to "7" to select the correct day. Sunday is represented by the digit "1", Monday by the digit "2", etc. The selected day will appear on the display. Dial "#" to confirm and enter the selected day.
 - c) TIME The previous procedure will cause the displayed time to flash. Enter the hours and then the minutes on the dial pad in 12-hour format. For example, 2:07 (AM or PM) is entered as "0207" (even if 24-hour display mode has been selected). Both the hours and minutes must be entered as two digits. Dial "*" to select the correct AM/PM indication. When "AM" is selected there will be no display but when "PM" is selected those letters will be seen above the time. Confirm and enter the time and AM/PM setting by dialing "#".
 - d) DATE The previous procedure will cause the displayed date to flash. Enter the desired date on the dial pad. The year, month and day are entered in that order and must each be entered as two digits. For example, January 1, 1987 would be entered as "870101". Confirm and enter the date by dialing "#".
 - e) (Finish) When all items have been entered, push the "FLASH" button to exit from the Clock/Calendar setting mode. (Note: During the setting procedure, dial "#" to skip over a particular item (leaving it unchanged) in order to move to the next item.)

SECOND TIME ZONE SETTING

- A.16 The clock function includes the ability to set and display a secondary time zone at individual stations if desired. The setting of the second time zone is done at each station. Only the time will be displayed when this function is activated at the telephone. The procedure used to set the second time zone is as follows:
 - a) Push "OPT" and dial "*" and then "4". A letter will appear and to indicate that the second time zone will be displayed in either 12-hour ("H") or 24-hour ("F") format. This will be the same format as is displayed by the primary clock. It cannot be changed at the individual telephone.

- b) At the same time, the present setting in hours and minutes will appear and flash. Enter the hours and then the minutes on the dial pad in 12-hour format. For example, 2:07 (AM or PM) is entered as "0207" (even if 24-hour display mode has been selected for the primary clock). Both the hours and minutes must be entered as two digits. Dial "x" to select the correct AM/PM indication. When "AM" is selected there will be no display but when "PM" is selected those letters will be seen above the time. Confirm and enter the time and AM/PM setting by dialing "#". Return to the original display mode by pushing "FLASH" or wait 30 seconds for the original display to return automatically.
- c) To display the second time zone while the telephone is idle, push "OPT" and dial "*" and "2". To return to the primary clock display, push "OPT" and dial "*" and "1". Either of the time zones will continue to be displayed until the other is selected.

TIMER SETTING

- A.17 Included in the clock function is the ability to set and activate a timer at each telephone which can be used as a reminder. Once the timer is set and activated it will count down and deliver a four-second alerting tone when the selected time has expired. The procedure for setting and activating the timer is as follows:
 - a) With the handset in the cradle (and the speaker turned off), push "OPT" and dial "+" and "5". The timer will be displayed as minutes and seconds and the two-digit minute indicator will flash.
 - b) Enter the amount of time desired in whole minutes up to 99. Dial "#" to confirm and enter the minutes.
 - c) Dial "*" to start the timer. (Once the timer is running, the "*" can also be used to stop it.) Push "FLASH" to return to the clock/calendar display (or wait 30 seconds and it will return automatically). When the selected time expires a four-second tone will be heard through the speaker at the telephone.

ALARM SETTING

- A.18 Also included in the clock function is the ability to set and activate an alarm which will provide seven short bursts of tone when the primary clock reaches the set time. The alarm is set and activated through the following procedure:
 - a) With the handset in the cradle (and the speaker turned off), push "OPT" and dial "*" and "6". The alarm setting will be displayed as minutes and seconds and will flash.
 - b) Enter the desired time of day in 12-hour format. Both the hour and minute must be entered as two digits. Dial "*" to change the entered time from AM to PM or vice versa. Dial "#" to confirm and enter the setting.
 - c) Dial "*" to activate the alarm. (The "*" is also used to disable the alarm.) Return to the original display mode by pushing "FLASH" (or wait 30 seconds for the original display to return automatically). When the primary clock reaches the selected time, seven short tone bursts will be heard through the speaker at the telephone.