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Starplus 616 Flex
Electronic Key System

General Description,
Installation and Maintenance

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SYSTEM ISSUE CONTROL SHEET

ISSUE	DATE	CHANGE
1	JAN 91	First Draft
1	MARCH 94	Corrected Master Pages sent to Goldstar for inclusion in printing master. Corrected Pages: Issue Control Sheet, Pages: 300-8, 500-16, 500-17, 630-14

SECTION 100
INTRODUCTION

100.1 PURPOSE

This manual provides the information necessary to program, install, operate and maintain the Starplus 616 FLEX Key Telephone System.

100.2 REGULATORY INFORMATION (FCC)

The Federal Communications Commission (FCC) has established rules which allow the direct connection of the Starplus 616 FLEX Key Telephone System to the telephone network. Certain actions must be undertaken or understood before the connection of customer provided equipment is completed.

A. Telco Notification

Before connecting the Starplus 616 FLEX Key Telephone System to the telephone network, the local serving telephone company must be given advance notice of intention to use customer provided equipment (CPE) and provided with the following information:

The telephone numbers to be connected to the system.

- The FCC Registration Number located on the Key Service Unit (KSU):
  DLP82V-60903-MF-E
- If no key telephones are programmed to have a pooled group button, use the following FCC Registration Number:
  DLP82V-72088-KF-E
- The Ringer Equivalence Number also located on the Key Service Unit (KSU): **0.4B**
- The USOC jack required for direct interconnection with the telephone network: **RJ11C**

B. Incidence of Harm

If the telephone company determines that the customer provided equipment (CPE) is faulty and possibly causing harm or interruption to the telephone network, it should be disconnected until repair can be effected. If this is not done, the telephone company may temporarily disconnect service.

C. Changes in Service

The local telephone company may make changes in its communications facilities or procedures. If these changes should affect the use of the Starplus 616 FLEX Key Telephone System or compatibility with the network, the telephone company must give written notice to the user to allow uninterrupted service.

D. Maintenance Limitations

Maintenance on the Starplus 616 FLEX Key Telephone System is to be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. If unauthorized alterations or repairs are performed, any remaining warranty may be voided.

E. Notice of Compliance

The Starplus 616 FLEX Key Telephone System complies with rules regarding radiation and radio frequency emission by Class A computing devices. In accordance with FCC Standard 15 (Subpart J) the following information must be supplied to the end user:

WARNING

"This equipment generates and uses R.F. energy, and if not installed and used in accordance with the Instruction Manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference, when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference."

F. Hearing Aid Compatibility

The Starplus 616 FLEX Key Telephone System is Hearing Aid Compatible, as defined in Section 68.316 of Part 68 FCC Rules.

G. UL/CSA Safety Compliance

The Starplus 616 FLEX Key Telephone System has met safety requirements and was found to be in compliance with the United Laboratories (UL) 1459 Second Edition and Canadian Standards Association (CSA).

The Starplus 616 FLEX Key Telephone System is authorized to bear the UL and CSA marks.

100.3 CANADIAN REGULATORY INFORMATION

Department of Communications (DOC)

Certification Number: 676 1856 A

Load Number: 19

Ancilliary Equipment Number: CA21

Canadian Standards Association (CSA)
File Number: LR57228

A. Maintenance Limitations

Maintenance on the Starplus 616 FLEX Key Telephone System is to be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. If unauthorized alterations or repairs are performed, any remaining warranty may be voided.

B. Notice of Compliance

The Starplus 616 FLEX Key Telephone System complies with rules regarding radiation and radio frequency emission by Class A computing devices.The Starplus 616 FLEX Key Telephone system does not exceed the Class A limits for radio noise emissions as set out in the radio interference regulations of the Canadian Department of Communications.

C. Hearing Aid Compatibility

The Starplus 616 FLEX Key Telephone System is Hearing Aid compatible as defined in Section 68.316 of Part 68 FCC Rules.

NOTE

The Canadian Department of Communications (DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company.

The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telecommunications lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

SECTION 200
FEATURE DESCRIPTION

Table 200.1 STARPLUS® Feature Index

FEATURE	PAGE #	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Account Codes	200-3	S	N	N
Alarm Signaling	200-3	S	N	ALARM SYSTEM
All Call Paging	200-3	S	N	N
Attendant Overflow	200-3	S	N	N
Attendant Position	200-3	S	N	N
Attendant Recall	200-3	S	N	N
Automatic Pause Insertion	200-3	S	N	N
Automatic Privacy	200-3	S	N	N
Automatic Selection	200-3	S	N	N
Background Music	200-3	S	N	MUSIC SOURCE
Basic Key Telephone Compatibility	200-3	S	N	N
Battery Back-up (Memory)	200-4	S	N	N
Battery Back-up (System)	200-4	O	N	BATTERY PKG
Busy Lamp Field (BLF)	200-4	S	N	N
Call Announce - Privacy	200-4	S	N	N
Call Forward-Preset	200-4	S	N	N
Call Forward-Station	200-4	S	N	N
Call Pickup (Group)	200-4	S	N	N
Call Transfer	200-4	S	N	N
Calling Station Tone Mode Option	200-4	S	N	N
Camp On (Call Waiting)	200-4	S	N	N
Centrex Compatibility	200-4	S	N	N
Chaining Speed Bins	200-4	S	N	N
CO Line Access	200-5	S	N	N
CO Line Control (Contact)	200-5	S	N	N
CO Line Grouping	200-5	S	N	N
CO Line Queuing	200-5	S	N	N
Common Audible Ringing	200-5	S	N	N
Conference				
A. Add-On Conference	200-5	S	N	N
B. Multi-Line Conference	200-5	S	N	N
Data Base Printout	200-5	S	N	N
Default Button Mapping	200-5	S	N	N
Dial Pulse to Tone Switchover	200-5	S	N	N
Dial Pulse/DTMF Signaling	200-5	S	N	N
Direct Station Select	200-5	S	N	N
Do Not Disturb	200-5	S	N	N
Emergency Transfer	200-6	S	N	SLT's
End To End Signaling	200-6	S	N	N
Executive/Secretary Transfer	200-6	S	N	N
External Paging	200-6	S	N	PAGING EQUIP
Flash	200-6	S	N	N
Flash On Intercom	200-6	S	N	N
Flash with Speed Dial	200-6	S	N	N
Flexible Buttons	200-6	S	N	N
Flexible Station Numbers	200-6	S	N	N

S=Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required.

Table 200.1 STARPLUS® Feature Index (Con't)

FEATURE	PAGE #	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Headset Compatibility	200-6	S	N	N
Headset Operation	200-6	S	N	N
Hearing Aid Compatible	200-6	S	N	N
Hold Provisions				
A. Hold - System	200-7	S	N	N
B. Hold - Exclusive	200-7	S	N	N
C. Hold Preference	200-7	S	N	N
D. Hold Recall Timers	200-7	S	N	N
Intercom Signaling Select	200-7	S	N	N
Internal All Call Page	200-7	S	N	N
Internal Zone Page	200-7	S	N	N
Last Number Redial (LNR)	200-7	S	N	N
LCD Interactive Display	200-7	O	RCU	EXEC PHONE
Loop Button CO Line Access	200-7	S	N	N
Loud Bell Control (Contact)	200-7	S	N	N
Meet Me Page	200-8	S	N	N
Message Waiting	200-8	S	N	N
Message Waiting Reminder Tone	200-8	S	N	N
Music On Hold	200-8	S	N	MUSIC SOURCE
Mute	200-8	S	N	N
Night Service	200-8	S	N	N
Off-Hook Signaling	200-8	S	N	N
On Line Programming	200-8	S	N	N
On-Hook Dialing	200-8	S	N	N
Paging Access Restriction	200-8	S	N	N
Pause Timer	200-8	S	N	N
PBX Dialing Codes	200-8	S	N	N
PBX/Centrex Transfer	200-8	S	N	N
Phone Box	200-8	S	N	PHONE BOX
Pool Button Operation	200-9	S	N	N
Preferred Line Answer	200-9	S	N	N
Private Line	200-9	S	N	N
Real Time Clock Unit	200-9	S	N	N
Reset (Soft) Function	200-9	S	N	N
Ring Time-Out Timer	200-9	S	N	N
SLA Compatibility	200-9	S	N	N
Speakerphone	200-9	S	N	N
Station Class of Service (COS)	200-9	S	N	N
Station Message Detail Recording (SMDR)	200-9	S	SIU, RCU	PRINTER
Station Speed Dial	200-9	S	N	N
System Speed Dial	200-10	S	N	N
Toll Restriction (Table Driven)	200-10	S	N	N
Toll Restriction Override	200-10	S	N	N
Transfer Recall	200-10	S	N	N
Universal Night Answer	200-10	S	N	N
Volume Controls	200-10	S	N	N
Wall Telephone	200-10	S	WALL MT KIT	N

S=Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required.

SECTION 200

FEATURE DESCRIPTION

200.1 ACCOUNT CODES

An account code is the last field within Station Message Detail Recording (SMDR), that provides the ability to track specific calls by entering a non-verified, variable length (up to 8 digits) identifier. Account codes can be entered by the user during a call and can be used with SMDR information for billback purposes.

200.2 ALARM SIGNALING

The system can recognize either an open or closed loop from an external relay and transmit an alarm signal. This signal can be sent to all programmed stations with either a single or repeated tone. The type of alarm tone is selected in system programming.

This feature can be used as an entry door alarm. In addition, the Alarm Reset code can be programmed onto a Flex button which will flash during alarm signaling.

200.3 ALL CALL PAGING

Stations allowed to make pages may make voice paging announcements to all idle stations, phone boxes and external paging ports at the same time.

200.4 ATTENDANT POSITION

Any key telephone station may be assigned as the system attendant. The assigned attendant will receive unattended line recalls and will initiate NIGHT SERVICE.

200.5 ATTENDANT OVERFLOW

System programming allows the attendant station to be programmed so that if the attendant is busy or not there, the call will be automatically forwarded to another predetermined station after a programmed period of time.(Refer to Call Forward-Preset)

200.6 ATTENDANT RECALL

A CO line placed on hold or transferred will initiate the recall timer if the associated timer has been enabled in programming. When the timer expires, the CO line will ring the station that placed it on hold. If not answered, the timer continues and upon expiration again, the attendant station will ring. If still not answered and the timer cycles again, then all telephones programmed with direct access of that CO line will ring and flash the CO line LED at the recall rate. If still unanswered and the recall timer expires again, the CO line will be dropped.

200.7 AUTOMATIC PRIVACY

Privacy is automatically provided on all calls. The system may be programmed to eliminate privacy, allowing another station to join in on existing CO (outside) line conversations.

200.8 AUTOMATIC SELECTION

The user can select an outside line, intercom station or speed dial button or dial a feature & automatically place the phone in the dialing mode without pressing the ON/OFF button or lifting the handset.

The system may be programmed optionally to require the user to lift the handset or press the ON/OFF button before accessing outside CO Lines.

200.9 AUTOMATIC PAUSE INSERTION

If a flash is programmed into system and station speed dial numbers, and last number redial numbers, a pause will automatically be inserted after the flash. A pause will also be automatically inserted after a PBX dialing code has been used & after a pulse to tone switchover is programmed into speed dial numbers.

200.10 BACKGROUND MUSIC

Key telephone & phone box users may receive music over their speaker when an optional music source has been connected to the system. The music can be turned on or off and the volume adjusted at each individual telephone or phone box. The maximum loudness level can be adjusted on the KSU.

Phone boxes that are denied DND in data base programming, can receive music through their speaker or the Attendant can activate BGM at any phone box by dialing a code.

This feature can be allowed or denied on a per station basis by programming.

Background Music enable code can be programmed onto a Flex button. When BGM is enabled, Flex button LED will light.

200.11 BASIC KEY TELEPHONE COMPATIBILITY

The Starplus Basic Electronic telephone will operate on the 616 FLEX system. The Basic key set contains six (6) Flexible buttons, eight (8) "fixed" feature buttons, a 12 key DTMF dial pad and an "HTP" switch. The Basic set provides on-hook dialing and Call Announce on intercom.

The Basic key telephone operates in a similar manner as the Executive and Enhanced key telephones, with the exception of the speakerphone, and Hands-free reply on intercom options. The Basic key set operates the same for incoming intercom calls when in the "H" position as if it were in the "P" position (Call Announce).

200.12 BATTERY BACK-UP (MEMORY)

A long life lithium battery is provided inside the KSU to prevent loss of system programming in the event of a power outage or the system power being turned off. Features such as System and Station Speed dial numbers are also retained during power outages.

200.13 BATTERY BACK-UP (SYSTEM)

An optional Battery Charging System and Batteries (BBU) & cabling can be connected to the KSU to maintain complete system operation in the event of an AC power failure. Calls in progress will continue without interruption when commercial power fails.

200.14 BUSY LAMP FIELD (BLF)

Buttons programmed as station buttons on a telephone also serve as a Busy Lamp Field to display the status of other telephones within the system.

200.15 CALLING STATION TONE MODE OPTION

This feature will provide an easy means for a calling station to override a desired stations "H" (handsfree) or "P" (call announce) intercom switch setting. A dial code has been added that is dialed in front of the extension number to force the tone ringing. Automated Attendants can utilize the Calling Station Tone Mode option. This is useful when using supervised transfer or call screening options requiring ringback tone for proper call handling.

200.16 CALL ANNOUNCE - PRIVACY

Each telephone user can select the way that calls to their phone are voice announced. By selecting the "P" position on the intercom signal switch, the user can receive voice announced intercom calls without the calling party hearing conversations in progress. By selecting the "H" position, the user can reply handsfree to voice announced intercom calls. Basic model telephones cannot use the handsfree (H) mode.

200.17 CALL FORWARD-PRESET

System programming allows incoming outside lines, that are programmed to ring a particular station, to be forwarded to another predetermined station after a programmed period of time. This occurs when the station normally receiving the outside ring is busy or does not answer the call. Preset forward can be chained an unlimited number of times. Each station in the system can have a preset forward station.

200.18 CALL FORWARD-STATION

Each key telephone user may direct intercom calls, transferred outside lines and incoming outside lines to be forwarded to another station in the system. A forwarded call will signal in the TONE mode regardless of the way the intercom signaling switch was set. A station with calls forwarded to it can forward its calls to another station; a call will forward in this manner an unlimited number of times; however the last station in a chain cannot use DND.

200.19 CALL PICKUP (GROUP)

Stations can be placed in one, both or neither of 2 pickup groups. Stations within the same group can pick up tone ringing intercom calls, recalling or transferred CO line calls for another station, and message wait call backs by dialing the pickup code.

200.20 CALL TRANSFER

An outside line can be transferred from one keyset to another. By pressing the STATION button of the desired party, or pressing the TRANS/QUE button and then dialing that 2 digit station number, unscreened or screened transfers with an announcement can be made. The line being transferred rings on the keyset and gives a flash indication to the receiving party's keyset. Several attempts can be made to find someone at different keysets without losing the call. If a line is transferred to a busy station, that station will receive muted ringing.

200.21 CAMP ON (Call Waiting)

A busy station may be alerted that an outside line is on hold and waiting for them by pressing the MSG/CP.ON button. The called station will receive two muted rings, and a flashing CP.ON button if the camp-on initiator is waiting to announce the transfer. The busy party can press the MSG/CP.ON button. This will automatically place on hold any outside line he's currently using and allow him to converse with the camp-on initiator.

200.22 CENTREX COMPATIBILITY

The 616 FLEX system provides features that are Centrex compatable, such as Flash in Speed Dial, the ability to program "*" and "#" digits into Speed dial numbers and other general features that help to enhance a Centrex environment. The 616 FLEX is compatable with Centrex Lines (1ML).

200.23 CHAINING SPEED BINS

Speed dial bins may be chained together by simply pressing one speed bin, then another and another as required.

This is helpful for accessing Long Distant carriers or banking services when Account Codes may be required.

200.24 CO LINE ACCESS

Each telephone can be programmed to be allowed or denied an appearance to individual outside lines or a pool of outside lines. Telephones denied this appearance can have that line transferred to them by another station and the call will appear on the loop button.

Any station may be programmed to ring for any combination of lines during the day and different stations can be programmed to ring on those lines at night.

200.25 CO LINE CONTROL (Contact)

The 616 FLEX system will allow programming of the one (1) control contact to be assigned as either a CO Line Control contact (to control ancillary equipment) or as a Loud Bell Control contact to control a customer provided ringing device to external areas. When programmed as CO Line Control and assigned to a CO line, the corresponding contact will close whenever that CO line is accessed by a station.

200.26 CO LINE GROUPING

CO (outside) lines can be in one of up to 8 groups to separate line types such as local, PBX, Centrex, FX, etc. Stations are then individually assigned access to these lines via either a pooled group key or by a direct line key.

200.27 CO LINE QUEUING

When all outside (CO) lines in a group are busy, stations can be placed on a list awaiting that line to become available. Users are signaled when a line becomes available. If the waiting station is busy when the queued CO line becomes available, the station is placed at the bottom of the queue list. If a station doesn't answer a queue callback within 15 seconds it will be dropped from the queue list.

200.28 CONFERENCE

A. Add-On Conference

Two internal stations can engage in conference with 1 external party or 3 internal parties can set up a conference. There is no limit to the number of add-on conferences, except for the total number of CO lines connected to the system.

B. Multi-Line

One internal station can engage in a conference with 2 external parties. The internal station may place the conference on HOLD by pressing the HOLD button. The two external parties can be placed in an unsupervised conference by the initiator pressing the CONF button.

200.29 COMMON AUDIBLE RINGING (Loud Bell Control)

Incoming CO line ringing can be directed to relay controlled contacts. There is 1 set of dry contacts that can be assigned to stations as Loud Bell Control or to CO lines for CO Line Control.

An external power source and ringing device or other ancillary is required.

200.30 DATA BASE PRINTOUT (Dump)

Through a system programming command, either portions of or a complete data base dump can be printed using the RS-232C connector on the 616 FLEX KSU. This feature requires the Serial Interface Unit (SIU) be installed in the KSU.

200.31 DEFAULT BUTTON MAPPING

The 616 FLEX allows 22 buttons to be flexibly assigned to CO/PBX lines, DSS buttons, Speed Dial, or Feature buttons. However, the system will power up with default button mapping with 16 DSS/BLF buttons and 6 CO Lines.

200.32 DIAL PULSE/DTMF SIGNALING

Each outside line can be individually programmed to provide dial pulse or DTMF tone sending.

200.33 DIAL PULSE TO TONE SWITCHOVER

The signaling on an outside line can be changed from dial pulse to tone (DTMF). This allows lines set for pulse signaling to use common carriers which require DTMF signaling. This feature can be stored and used with speed dial numbers.

200.34 DIRECT STATION SELECT

The user with a flexible button assigned as a DSS button on his key telephone can call an intercom station by simply pressing the appropriate DSS button. The called station is automatically signaled.

200.35 DO NOT DISTURB

Placing a key telephone in DND will eliminate incoming CO line ringing, intercom calls, CO line transfers, All Call Page announcements and Camp-Ons. Pressing the DND button twice while the telephone is ringing will eliminate that ringing. The secretary in an EXECUTIVE/SECRETARY pair can override the Executive DND by using the Camp-On feature. A

station in DND can still use the telephone to make normal outgoing calls. A station can be denied this feature through programming.

200.36 EMERGENCY TRANSFER

In the event of commercial power failure or central processor failure, the system will automatically connect the first 3 outside lines to single line telephones which have been installed for that purpose.

200.37 END TO END SIGNALING

This feature indicates the capability of the system to accept DTMF tones from stations, send them through the public network and have them received at the distant end for computer access, a variety of control functions or inward call completion at a distant switching system.

200.38 EXECUTIVE/SECRETARY TRANSFER

Four pairs of key telephones can be designated as executive/secretary pairs. Whenever the executive phone is in DND or busy, transferred CO lines and intercom calls will be directed to the secretary station. If the secretary station is busy, busy tone will be received by the calling party. There are 3 combinations possible:

- 4 Executive/Secretary pairs
- 1 Executive with 1-4 secretaries
- 1 Secretary for 1-4 Executives

The secretary station can signal the Executive in DND by using the Camp On feature.

200.39 EXTERNAL PAGING

Any station that is allowed access to paging can make voice paging announcements to the external paging port by either dial code or direct button access.

The external page port can be connected to a two way paging system.

200.40 FLASH

The Flash button is used to re-establish dial tone or to transfer a PBX/Centrex call. Flash can be programmed in speed dial for PBX/Centrex feature operation. The Flash duration is programmed on a per CO line basis.

200.41 FLASH ON INTERCOM

This feature allows station users to utilize the Flash button to terminate pages and intercom calls. While connected to a page zone or another internal station, pressing the Flash button will terminate the call and return intercom dial tone.

200.42 FLASH with SPEED DIAL

A flash can be programmed within a speed dial number. When this is done, a pause will automatically be inserted before the remaining speed digits are sent. This provides compatibility with PBX and Centrex environments.

200.43 FLEXIBLE STATION NUMBERS

The intercom number assigned to a station can be changed without moving the telephone. However station circuit 01 always remains the programming station.The ability to move or "SWAP" station intercom numbers is performed in programming by the programming station or by use of a dial code at the Attendant station.

200.44 FLEXIBLE BUTTONS

On the Enhanced/Executive phones there are 6 fixed feature buttons and 22 flexible buttons. The Basic telephone has 6 fixed feature buttons and 6 flexible buttons. The flexible buttons can be programmed in one of the following ways:

- Outside line - automatically access assigned line
- Multi Function Key - the station user may program his/her own phone to have DSS/BLF, speed dial bin, page key, mute button, or other features.
- Pool Key - some or all outside lines can be grouped; pressing this button gives access the highest numbered unused CO line in that group; outgoing dialing only.
- Loop - used to answer transferred call on a line for which a station user does not have a button programmed on his phone.

200.45 HEADSET COMPATIBILITY

The key telephones are designed to allow the connection of a modular headset. The user connects the modular headset to the handset jack on the telephone leaving the handset in place. The ON/OFF button is then used to activate the headset.

200.46 HEARING AID COMPATIBLE

All key telephones are hearing aid compatible in compliance with the FCC Part 68, Section 68.316. This allows the telephone to be used in conjunction with users wearing hearing aids.

200.47 HEADSET OPERATION

Each Electronic key telephone can be individually programmed for Headset operation. When programmed, an industry standard Headset with its' adapter box may be connected to a key telephone for headset use. This allows handset or headset operation by switching the selector switch on the

adapter box. Speakerphone operation is disabled while a station has enabled headset operation.

This feature can be programmed onto a flexible button to indicate and also change the desired mode of operation.

200.48 HOLD PROVISIONS

The following hold conditions are available in the 616 FLEX system:

A. Hold - System

Any call can be placed on hold and retrieved by any station with access to that line.

B. Hold - Exclusive

Any call can be placed on hold and retrieved only by the initiating station.

C. Hold Preference

The system can be programmed to have either system hold or exclusive hold assigned as the hold preference.

D. Hold Recall Timers

Calls placed on hold are capable of being timed to recall. The exclusive and system hold recall timers are separately programmed.

200.49 INTERCOM SIGNALING SELECT

The key telephone user can select the method of receiving intercom calls at their station. A slide switch located on the telephone is used to select the mode. The choices are:

- Tone Ringing (T). A standard tone ring notifies the party of an incoming call. The called station answers by lifting the handset.(Center switch position)
- Privacy (P). The station user receives a tone burst and a voice announcement over the speaker. The microphone is deactivated, providing privacy. The person who is called must lift the handset to get the call or switch the selector to handsfree. (Lower switch position)
- Handsfree (H). The station user, upon hearing a tone burst & voice announcement over the speaker, can reply handsfree ("H" position). (Upper switch position)

(Basic model key telephones do not have this feature and will operate as if the switch were in the "P" position.)

200.50 INTERNAL ALL CALL PAGE

Stations programmed to make pages can make voice announcements to idle stations in both internal zones at the same time. A flexible button can be programmed for one button page operation by the station user.

200.51 INTERNAL ZONE PAGE

Stations programmed to make pages can make voice announcements to idle stations in either one of the 2 internal zones separately. A flexible button can be programmed for one button page operation by the station user.

200.52 LAST NUMBER REDIAL (LNR)

This feature permits the automatic redialing of the last number dialed on an outside line including a number in speed dial. This feature can be used on the same line as originally dialed, on a line within the same group, or on a different line.

200.53 LCD INTERACTIVE DISPLAY (LCD)

The 616 FLEX system supports key telephones that are equipped with a liquid crystal display (LCD) which provides the user with a visual indication of call status. The display is a two-line, forty eight character format. The display is arranged into an upper and lower field. The upper field (24 characters) displays the current activity on the telephone. The lower field (24 characters) is divided into 2 sections (12 characters each), and provides information according to call activity.

200.54 LOOP BUTTON CO LINE ACCESS

A station not having a direct appearance for a CO line transferred to it will receive that CO line under the Loop button. Only one call at a time can be connected to a keyset on the Loop button. If more than one Loop button is programmed on a keyset, the Loop buttons may be conferenced together. If all programmed Loop buttons on a keyset are busy or have a CO call on hold, the party attempting to transfer a CO line to that station will receive busy tone and cannot transfer the call to that station. If a transfer is attempted, the CO line will recall the initiator immediately and the transfer recall timer will start.

When multiple loop buttons appear on a key telephone and multiple CO lines are transferred to that station, the first CO line connects to the highest number flexible button assigned as a Loop button. CO line connection is made from highest to lowest assignment.

200.55 LOUD BELL CONTROL (Contact)

One (1) control contact can be assigned to a station for the purposes of providing External Ringing known as Loud Bell Control. The contact will operate in cadence with the intercom tone ringing or CO ringing of the assigned station. This control contact may be optionally assigned as CO Line Control.

200.56 MEET ME PAGE

Users may answer a page call by going to the nearest telephone, dialing a code and be connected to the calling party. A flexible button can be programmed for one button answer by a station user to a meet me page.

200.57 MESSAGE WAITING

A station user who calls another station and receives ringing, busy tone or DND tone and no answer can activate a "message waiting" lamp at that station to indicate this call. The station user who missed the call can then press his MSG/CP.ON flashing button and ring the party leaving the message. Up to 5 messages may be left at each phone. A station with a message waiting can be reminded at a timed interval with a tone.

200.58 MESSAGE WAITING REMINDER TONE

A station with a message waiting can be reminded at a timed interval with a tone. The tone will periodically repeat until all messages have been answered.

200.59 MUSIC ON HOLD

An optional music source can be connected directly to the system to provide all calls on hold with music.

The same source provides background music.

200.60 MUTE

A flexible button can be programmed to operate as a mute key. During handsfree speakerphone operation, the key telephone microphone can be disabled for stations requiring privacy of transmission or in areas where there are high ambient noise levels.

200.61 NIGHT SERVICE

The attendant places the system in night service by pressing her DND button.* This allows specific phones to ring at night that may or may not ring during the day. A dial code is provided for Universal Night Answer; a direct CO line button appearance or a loop key is required for this feature.

* The attendant does not have the DND feature.

200.62 OFF-HOOK SIGNALING

If a station has been programmed to receive direct outside line ringing and is busy on another call, that station will receive muted ring to indicate another call is ringing in.

200.63 ON-HOOK DIALING

A telephone user can place calls without lifting the handset and can monitor the call while the called party's phone is ringing or on hold. The receiver must be lifted to converse when using a basic key telephone.

200.64 ON LINE PROGRAMMING

Changes to the system data base with the exception of flexible button programming can be made without interrupting normal system operation. Programming is done at station port 01, regardless of Intercom number assigned to it.

200.65 PAGING ACCESS RESTRICTION

Individual stations can be programmed to be allowed or denied the ability to make page announcements.

200.66 PAUSE TIMER

When dialing a speed number, a timed pause in digit sending can be directed into the number before entry. When the TRANS/QUE button is pressed while entering digits into a speed dial bin, it serves as a command to the KSU to provide a timed pause before resuming digit sending. The length of the pause is controlled by the pause timer. Successive entries of the TRANS/QUE button will provide successive timed pauses. Each programmed pause utilizes one of the 16 digit spaces for speed dialing.

When a timed pause is detected during speed dialing, the LCD will display the letter "P" for each pulse. Automatic pauses that occur as a result of detecting a dialed PBX code in last number redial or a Pulse-to-Tone switch-over in speed dial will not display a "P" in the LCD display.

200.67 PBX/CENTREX TRANSFER

When Centrex or PBX Lines are connected to the 616 FLEX system, users may, by using the Flash button, transfer callers to other Centrex or PBX extensions. Additionally, the Flash command may be included within a Speed Bin or programmed onto a Flex button for one button transfer.

200.68 PBX DIALING CODES

Four one or two-digit PBX access codes can be programmed into the system. When an outside line is selected and one of these codes is dialed, toll restriction will be applied beginning with the digit dialed after the code. If one of these codes is not dialed, toll restriction doesn't apply. This allows the dialing of PBX extensions 100, 110, 111, etc. on an outside line. (The line must be assigned as a PBX line.)

200.69 PHONE BOX

A phone box may be substituted for a telephone on a one for one basis. The phone box can be used to receive intercom announcements and also provide handsfree response. There is also a CALL button which will signal all stations programmed to receive

alarm ringing. One of these stations can respond to this signal by pressing the DSS/BLF button or dialing the intercom number of the phone box station. Two way conversation is then possible.

200.70 POOL BUTTON OPERATION

The Pooled Group Key is used primarily to access CO lines that do not appear on a station so that outgoing calls may be made. Pooled Group Keys are associated to CO line groups and may be programmed for use on any of the flexible buttons that do not represent CO line appearances directly. CO lines are accessed in descending order of priority starting with the highest numbered available (not busy) CO line in a CO line group. The CO line in a CO line group is defined as the highest numbered CO line with 6 being the highest.

Stations may have as many POOL keys as there are CO line groups (6). Multiple POOL buttons for the same group are also allowed.

200.71 PREFERRED LINE ANSWER

A station with preferred line answer can answer any assigned ringing outside line, line queues, outside line transfers and transfer recalls by simply lifting the handset or pressing the ON/OFF button. The outside line button doesn't have to be pressed for automatic line answer.

200.72 PRIVATE LINE

A station can be programmed to have a private line. A line designated as a private line can transfer calls to other stations and can be forwarded to another station.

200.73 REAL TIME CLOCK UNIT (RCU)

This hardware option allows the system time and date to continue functioning in case of a power failure.

It also provides the time and date stamp for information used by SMDR and display phones.

200.74 RESET (SOFT) FUNCTION

From time to time, it may be necessary to reset the system to clear meantime errors. As with any computer device, errors can build up and occasionally cause erratic operation. This feature provides a procedure for soft restarting the system without having to remove power from the system. This procedure DOES NOT initialize the system database.

200.75 RING TIME-OUT TIMER

The Ring Time-Out Timer provides an easy means of adjusting the time between ring signals the system will consider as the same call. This helps the system installer to conform the system operation to the Central Office providing the CO lines to the system. The timer is a system-wide timer and will affect all CO lines connected to the system.

200.76 SLA COMPATIBILITY

A Single Line Adapter (SLA) may be substituted for a key telephone on a one-for-one basis. This allows connectivity of industry standard 2500 type (DTMF) single line telephone, and other devices such as FAX machines, modems, automatic attendant, and Voice Mail systems. There is no limit on the number of 616 FLEX ports that can be programmed to SLA units.

200.77 SPEAKERPHONE

Enhanced & Executive model phones are equipped with a unit that enables the telephone to be used handsfree in two-way conversations on both intercom and outside lines.

200.78 STATION CLASS OF SERVICE (COS)

Each station is assigned a Class of Service which governs that stations dialing privileges. Six uniquely defined Classes of Service are available for assignment to stations on a per station basis. The system provides a flexible means of providing Toll or dialing restrictions through the use of two (2) programmable Allow and Deny Tables.

200.79 STATION MESSAGE DETAIL RECORDING (SMDR)

A hardware option which allows connection to an external RS232C compatible printer or call accounting device. Programming allows the system to track all calls, both incoming and outgoing, local and long distance; or just outgoing long distance calls only. It is also possible to print out data base programming with this module. The system records calls by outside line, number dialed, time of day, date, station that placed the call and duration of the call. The output can be programmed for either a 29 or 80 character format.

Non-verified account codes may also be entered and are included in the call record.

200.80 STATION SPEED DIAL

Each station user can program up to 20 individual speed dial numbers of up to 16 digits in length. These numbers may contain pause commands, flash commands and pulse to tone switchover commands. Each one of these commands takes up digit space. The numbers are dialed by use of the SPEED button and a 2 digit code (00-09, 90-00) or the station user can program a flexible button as a speed button.

Both the asterisk (*) and pound (#) can be programmed into Speed dial numbers and will be dialed as DTMF tones. This makes the speed dial feature compatible with Centrex operation.

200.81 SYSTEM SPEED DIAL

Up to 40 commonly dialed numbers can be programmed into System Speed Dial for use by stations allowed this feature. The numbers can be up to 16 digits in length and may contain pauses, flash commands and pulse to tone switchover commands. Each one of these commands takes up digit space. The numbers are accessed by the SPEED button and a 2 digit code (10-49) or the user can program under a flexible button. The last 20 bins are not monitored by toll restriction. System speed numbers are programmed at the assigned attendant station.

Both the asterisk (*) and pound (#) can be programmed into Speed dial numbers and will be dialed as DTMF tones. This makes the speed dial feature compatible with Centrex operation.

200.82 TOLL RESTRICTION OVERRIDE

An outside line can be programmed to allow toll restricted stations to dial on that line.

200.83 TOLL RESTRICTION (Table Driven)

The system provides a flexible means of providing toll restriction to individual stations. By assigning a "class of service" to each station, long distance calls can be limited at certain stations through entries into the Allow/Deny Tables.

200.84 TRANSFER RECALL

When a CO transfer is completed to another station, the Transfer Recall timer is initiated. If the line is not answered within a specified amount of time, the CO line will recall the initiator of the transfer. If not answered by the transfer initiator within a specified amount of time, the CO line will recall to the Attendant. If still unanswered by the Attendant and the recall timer expires again, the CO line will recall to all stations in the system. If the CO line still goes unanswered and the recall timer expires again, the CO line will be dropped from the system.

200.85 UNIVERSAL NIGHT ANSWER (UNA)

CO lines not marked as a Private Line have Universal Night Answer (UNA), which provides key telephones access to incoming CO calls when the system is in night service by dialing the UNA code.

200.86 VOLUME CONTROLS

Each key telephone user can adjust both speaker and ring volume independently by using the 2 volume controls located on the right side of the keyset.

200.87 WALL TELEPHONE

Any key telephone can be adapted for wall mounting. The wall mount kit must be provided for wall mounting.

SECTION 300
FEATURE OPERATION

300.1 INTRODUCTION

The Starplus 616 FLEX Key Telephone System has a wide variety of features and flexible programming, allowing each telephone user to program his/her telephone to meet his/her own individual needs.

This section of the manual contains the operating instructions for key telephone and includes an illustration of the key telephone used in the 616 FLEX system and description of the keys on the telephones and their functions. It is designed to provide step-by-step instructions for operating the key telephones in the system. Visual and audible cues which accompany the various steps in the operation of the features are also included.

Literature similar to these operating instructions has been prepared for use by the customer in the form of the Starplus 616 FLEX Station User's Guide.

300.2 KEY TELEPHONE STATION FEATURES

Each 616 FLEX Basic, Enhanced or Executive key station provides the following keys, indicators and features:

Handset and Speaker are located at the left side of the front panel. A handset is provided to allow confidential conversation when desired. Lifting the handset from its cradle (going off-hook) disengages the station's built-in speaker.

The speaker is located directly below the center portion of the handset. The station may be operated with the handset on-hook. When this occurs, audio is transmitted to the station user through the station's speaker.

The Starplus Basic key station does not have speakerphone or Handsfree intercom capability.

Outside Calls are announced by a tone signal repeated every 3.2 seconds. The corresponding outside line indicator will flash slowly.

Intercom Calls can be tone ringing or voice announced. If it is voice announced, the receiving station will receive 3 bursts of tone prior to the announcement. If it is a tone ringing call, the receiving station will hear a tone ring every 2.4 seconds.

Flexible Buttons are used to access idle outside lines, provide DSS/BLF for internal stations, access speed dial number and activate features. The Basic Key Station has six (6) flex buttons, and the Enhanced and Executive Key stations both have twenty-two (22) flex buttons. These buttons are programmed by the individual station user.

Hold button enables you to place an outside caller on hold.

On/Off button enables you to make a telephone call without lifting the handset. It turns the telephone on and off when using the speakerphone.

Conference (CONF) button is used to establish and build conference calls.

Trans/Que Button:

- Transfer button: While on a CO call, this button is used to transfer an outside call from one station to another.
- Line Queue: This button allows you to queue onto an outside line when all lines in a group are busy. Your station is placed in queue awaiting a line in the same group to become available.

FWD/DND Button:

- Call Fwd: This button allows you to forward your calls to another station.
- Do Not Disturb: Pressing this button while on hook allows the user to place their telephone into a Do Not Disturb mode to eliminate incoming outside line ringing, intercom calls, transfers and paging announcements. The station in DND can use the telephone to make normal outgoing calls. On Attendant stations, this button becomes the system Night Mode button.

MSG/CP.ON Button:

- Message Wait button allows you to initiate a message waiting indication at stations that are busy, unattended, or in Do Not Disturb.
- Camp-On button enables you to alert a busy party that an outside line is on hold and waiting for them.

Speed (SPD) button provides you with access to speed dialing, save number redial and last number redial.

Flash button is used to terminate an outside call and restore dial tone without having to hang up the handset. It is also used to transfer calls behind a PBX or Centrex within those systems.

Fixed Feature Buttons (bottom row)

Figure 300.1 - STARPLUS® Executive Telephone

Table 300.1 STARPLUS® Numbering Plan

10-25	Station Intercom Numbers
40	Mute (programming flex buttons)
41	Headset Mode Option
42	Phone Box Background Music (Attendant)
5#	Tone Mode Ring Option
55	Universal Night Answer (UNA)
6	Call Pickup
70	Internal All Call Page
71	Internal Page Zone 1
72	Internal Page Zone 2
73	External Page Zone
74	All Call
75	Meet Me Page Answer
8	Background Music
9	Alarm Reset
0	Attendant
*	Pulse-to-Tone Switchover (CO Line or Speed Dial)
#	Last Number Redial (Optionally Preceded by SPEED button)
00-99	Station Speed Dial (Preceded by SPEED button)
10-49	System Speed Dial (Preceded by SPEED button)
90-99	Station Speed Dial (Preceded by SPEED button)
**LOAD	System Program Access
**STAT	Attendant Flexible Station Number Assignment

For some features there is more than one way to use the feature depending on how the telephone is programmed. Both options will be listed.

SYSTEM & STATION FEATURES:

300.3 PLACING AN OUTSIDE CALL (Automatic Line Selection)

1. Press outside line button. (ON/OFF button will light and dial tone is heard)
2. Dial desired party. When called party answers, lift handset to converse or use speakerphone.

300.4 ANSWERING AN OUTSIDE CALL

1. Lift handset.
2. Press slow flashing outside line button. (If your phone has been programmed with Preferred Line Answer, you may answer an outside line by just lifting the handset.)

300.5 SPEAKERPHONE (optional)

1. Press station key of desired party

   OR
2. Press available outside line button and dial desired number. Speakerphone is activated.
3. Press ON/OFF button to end call.

300.6 VOLUME CONTROLS

There are 2 volume control wheels on the right side of the key phone. Rotating the wheel toward you will decrease the volume.

- Front wheel - Controls voice, background music and speakerphone.
- Back wheel - Controls tone ringing volume

300.7 MUTE BUTTON (optional)

Provides privacy during speakerphone or handset operation by disabling the microphone.

1. Press the programmed mute button*, while off hook to activate. (LED lights)
2. Press the programmed mute button again to deactivate. (LED extinguishes)

*A flexible button MUST be programmed to operate this feature.

300.8 BACKGROUND MUSIC (optional)

To activate Background Music:

1. Dial [8] on the dial pad (music is heard).

   OR

2. Press programmed flex button. (music is heard)

To de-activate Background Music:

1. Dial [8] again and music is discontinued.

   OR

2. Press programmed flex button again and music is discontinued.

When you pick up the handset or press the ON/OFF button, music is discontinued automatically.

300.9 PLACING OUTSIDE LINE ON HOLD

- ☐ If your system is programmed to have exclusive hold preferred, press HOLD button once for exclusive hold and twice for system hold.
- ☐ If your system is programmed to have system hold preferred, press HOLD button once for system hold and twice for exclusive hold.

300.10 ANSWERING A RECALL

When an outside line has remained on hold for an extended period of time, you will be reminded with a recalling ring.

1. Press outside line button flashing at very fast rate.
2. Lift handset to converse.

300.11 FLASH

Disconnects present outside line and reseizes outside line dial tone.

While connected to an outside line (PBX or Centrex:

1. Press FLASH button.

300.12 PBX/CENTREX TRANSFER

While connected to an outside line (PBX or Centrex):

1. Press FLASH button. PBX/Centrex transfer dial tone is heard.
2. Dial destination station number.
3. Hang up to complete transfer.

The CO line Flash Timer must be programmed for proper PBX/Centrex transfer operation.

300.13 CALL PICK-UP

You must be in the same pick-up group as the ringing telephone to pick up the call. Tone ringing intercom calls only can be picked up.

You hear an unattended phone ringing:

1. Dial a [6] on the dial pad.

   OR

2. Press programmed flex button.

You will be connected to the calling party.

1. Converse Handsfree or lift handset for privacy.
2. Hang up to end call.

300.14 CALLING TONE MODE OPTION

Allows a calling station to override a called stations' H or P intercom switch settings.

When placing a call to a station and Tone ringing is desired:

1. Dial [5#].
2. Dial the two-digit station extension. (call tone rings station)

300.15 PLACING AN INTERCOM CALL

At your station:

1. Press the station button of the party you wish to call (if programmed at your phone).

   OR

2. Lift handset and dial station number (10-25).

You will hear:

- Ringing if called station is in "T" answering mode.
- 3 bursts of tone if called station is in "H" or "P" position.

3. Lift handset or use speakerphone when tone bursts stop.
4. Hang up to end call.

300.16 ANSWERING AN INTERCOM CALL

With your intercom signal switch in the:

- **T mode**, you will hear repeated intercom tone ringing & your HOLD button will slow flash. Lift handset or press ON/OFF button to answer. Hang up or press ON/OFF button to end call.(Center switch position)
- **P mode**, you will hear 3 bursts of tone & a one way announcement. The HOLD button will slow flash. Lift handset or press ON/OFF button to reply. Hang up to end call.(Lower switch position)

– **H mode**, you will hear 3 bursts of tone and an announcement. Reply handsfree or lift handset for privacy. Hang up or press ON/OFF button to end call.(Upper switch position)

NOTE

If you have a programmed station button for the calling party, that button will flash. If you receive a call from a phone box, you must press that station button to answer the call.

300.17 CAMP ON

You call a station that is busy and wish to alert them to your call,

1. Press the MSG/CP.ON button twice. Called station will receive two bursts of ringing.
2. Wait for their response.

NOTE

If a station is in DND, only the attendant can camp-on.

300.18 ANSWERING A CAMP ON

If you are on a connected call, hear 2 bursts of muted ringing and your MSG/CP.ON button is flashing, you have a call waiting for you. To answer:

1. Press the MSG/CP.ON button. Any outside line you are connected to will be placed on hold. Intercom calls will be disconnected.
2. You may converse with the station placing the call.

300.19 LEAVING A MESSAGE WAITING INDICATION

Up to 5 messages can be left at any one key telephone.

If you dial a station that is busy, unattended or in DND, you can leave a callback message indication.

1. Press the MSG/CP.ON button once. Called party's MSG button will slow flash.
2. Hang up.

300.20 ANSWERING A MESSAGE WAITING INDICATION

The first message left will be the first one called.

If your MSG/CP.ON button is flashing at a slow rate, you have a message waiting for you.

1. Lift handset.
2. Press flashing MSG/CP.ON button. Station that left message will be signaled with tone ringing.

If called station doesn't answer:

1. Press MSG button once to leave message.

300.21 CALL TRANSFER

- ☐ Outside lines can be transferred from one phone to another within the system.
- ☐ The transfer can be either screened (announced) or unscreened to either an idle or busy station.

300.22 SCREENED TRANSFER

While connected to an outside line:

1. Press station button where call is to be transferred (if programmed on your phone)

   OR

2. Press TRANS button and dial station number (10-25). The called extension signals according to the intercom signal switch position.
3. When that extension answers, announce the transfer.
4. Hang up to complete transfer.

300.23 UNSCREENED TRANSFER

Once the called extension begins to signal

1. Hang up to transfer the call. (Recall timer starts.)

300.24 TRANSFER SEARCH

When attempting to locate a party:

1. Press a station button to signal a station. If the party is not located, press another station button to continue the search.

   OR

2. Press the TRANS button and dial the station number. If the party is not located, press the TRANS button again & dial another station to continue the search.
3. When the called party answers, hang up to complete the transfer.

300.25 ANSWERING A SCREENED TRANSFER

Your intercom will be signaling according to the intercom signal switch position.

1. Answer the intercom and receive transfer notice.
2. Press the outside line button or loop button flashing on hold.

300.26 EXECUTIVE/SECRETARY TRANSFER

- ☐ If you are designated the EXECUTIVE station & your phone is busy or in DND, all calls will be routed to the SECRETARY station.
- ☐ If you are the designated SECRETARY station, you can signal the EXECUTIVE that is busy or in DND by using the Camp On feature.

300.27 CONFERENCE COMBINATIONS

- ☐ Add on Conference = 2 internal and 1 external or 3 party internal
- ☐ Multi-Line Conference = 1 internal and 2 external

300.28 ESTABLISHING A CONFERENCE

A maximum of 3 parties can be included in a conference. Internal party must lift handset.

1. Lift handset.
2. Select intercom station or dial desired outside party.
3. When called party answers, press CONF button.
4. Add next conference party by selecting another outside line or intercom station.
5. When party answers, press CONF button. All parties are connected.

300.29 EXITING A CONFERENCE (Controller only)

There are 3 methods of exiting a conference:

1. Press the ON/OFF button to ON and replace handset (to monitor a conference).

   OR

2. Press HOLD button to place outside parties on hold. (Hold timer starts). Note: If one of the 2 parties is internal, that party will be dropped.

   OR

3. Press CONF to leave the other conference parties still connected in an unsupervised conference. CONF button will flash and timer will start. There will be a warning tone before the other parties are dropped.

300.30 RE-ENTERING A CONFERENCE

There are 3 methods of re-entering a conference:

When the controller re-enters the conference, the disconnect timer is reset.

1. Lift handset to re-enter a monitored conference.

   OR

2. To re-enter a conference placed on hold, repeat steps for establishing a conference.

   OR

3. To re-enter an unsupervised conference, lift handset and press flashing CONF button (add-on). CONF button lights steady and you hear confirmation tone.

300.31 TERMINATING A CONFERENCE

While actively in the conference:

1. Replace handset or push ON/OFF button to off. You must be actively in the conference.

300.32 ACTIVATING DO NOT DISTURB

There are 2 methods of going into Do Not Disturb,if you have been given the ability to do so in programming.

Method 1: While station is idle:

1. Press the FWD/DND button (DO NOT lift handset). FWD/DND button lights steady.

Method 2: While on a CO call:

1. You can stop the muted ringing by pressing the FWD/DND button twice. DND button LED lights steady.

300.33 REMOVING DO NOT DISTURB

1. Remain on-hook.
2. Press FWD/DND button. FWD/DND button LED will extinguish.

300.34 QUEUING

A station can queue only 1 line at a time.

You see that a particular outside line is busy and wish to be placed on a list waiting for that line to become available.

1. Lift handset.
2. Press desired busy outside line button.
3. Press TRANS/QUE button.
4. Hang up.

300.35 TO CANCEL A QUEUE

1. Lift handset or press ON/OFF button.
2. Press TRANS/QUE button. Dial tone will be heard.

300.36 ANSWERING A QUEUE

You hear ringing and an outside line of the line group you queued is slow flashing.

1. Lift handset.
2. Press flashing outside line button to answer. (If your station has been programmed for Preferred Line Answer, you will have the line automatically upon lifting the handset.)

300.37 STORING STATION SPEED NUMBERS

1. Lift handset or press ON/OFF button (optionally)
2. Press SPD button.
3. Press asterisk (*) key once.
4. Dial two-digit speed bin location.
   - 00-09= Station speed numbers;
   - 90-99= Station speed numbers.
5. Select desired outside line or one will be chosen automatically.(up to 16 digits)
6. Dial telephone number.(0-9, *, #)
   - [*] DP to DTMF switchover. (for first occurrence only. Subsequent '*' dialed will cause the DTMF digit '*' to be dialed.
   - TRANS/QUE button= inserts a pause during number storage.
   - FLASH key= inserts a flash into the speed number.
   - CONF button= "No Display".
7. Press HOLD button to enter the number. Confirmation tone is heard.
8. Hang up.

300.38 DIALING A SPEED NUMBER

If no outside line has been specified in programming, one will be chosen automatically or you can choose one now.

1. Press SPD button

Then:

2. Dial two-digit speed bin location.
   - 00-09= Station speed numbers.
   - 10-49= System speed numbers.
   - 90-99= Station speed numbers.

   OR
   Press programmed speed bin button.
3. When called party answers, lift handset or use speakerphone.

300.39 LAST NUMBER REDIAL

There are 3 methods of using Last Number Redial.

Method 1: (DO NOT select a CO Line)

1. Press pound (#) key. The last number dialed over an outside line will be automatically be redialed.The system will automatically select the original line used to place the call and redial the number.

Method 2: (Select a CO Line)

1. Select the desired CO Line.
2. Press SPD button.
3. Press pound (#) key. The last number dialed over an outside line will be redialed on selected CO line.

Method 3: (Programmed LNR flex button)

1. Press programmed LNR flex button. The system will automatically select the original line used to place the call or the line chosen and redial the number.

300.40 PAGING

Stations off-hook or in DND will not hear the page.

1. Lift handset or press ON/OFF button. (optional)
2. Dial 2-digit paging code
   - 70 Internal All Call
   - 71 Internal Zone 1
   - 72 Internal Zone 2
   - 73 External Zone
   - 74 All Call

   OR
   Press programmed flex button.
3. Speak in normal tone of voice to deliver message.
4. Hang up.

300.41 MEET ME PAGE

You wish to have another party call you.

1. Dial [74] on the dial pad

   OR
2. Press programmed flex button.
3. Request that party meet you on the page.
4. DO NOT hang up; wait for the requested party to answer.

300.42 ANSWERING A MEET ME PAGE

1. Go to the nearest keyphone:
2. Dial [75]

   OR
3. Press programmed flex button.
4. You will be connected to the party that paged you.

300.43 CALL FORWARDING (Station)

If you have been given the ability to forward your calls:

1. Lift handset or press ON/OFF button.
2. Press FWD/DND button.

Then:

3. Press station button.

   OR

4. Dial intercom number, within 5 seconds, where your calls are to be forwarded. (FWD/DND button will flash and dial tone returns)
5. Hang up.

300.44 TO REMOVE CALL FORWARDING

1. Lift handset or press ON/OFF button.
2. Press FWD/DND button.

Then:

3. Press your own station button

   OR

4. Dial your own intercom number.(FWD/DND button LED extinguishes)
5. Hang up.

300.45 ALARM

If you hear alarm signals on your telephone.

To reset the alarm condition:

1. Dial [9] on the dial pad.

   OR

2. Press programmed flex button.

300.46 USING ACCOUNT CODES

You are on an existing call.

1. Press FWD/DND button.
2. Dial account code up to 8 digits. (The other party will not hear the digits being dialed.)

NOTE

If the account code is less than 8 digits, dial an '*' to end account code entry. Account code must be entered during the call.

300.47 FLEXIBLE BUTTON PROGRAMMING

Allows a user to utilize a feature by programming it onto a flex button. Buttons MUST be designated as multi-function by the system administrator and may be programmed by the user. The feature can then be activated without lifting the handset by pressing the ON/OFF button.

1. Press asterisk (*) once.
2. Press button to be programmed.
3. Dial desired feature access code from the feature code table below.
4. Press the HOLD button to complete the process.

NOTE: The speed bin must be programmed with a number before a flexible button can be assigned as a speed button.

FLEXIBLE BUTTON PROGRAMMING CODES

Feature	Code
DSS/BLF	10-25
Music	8
Alarm Reset	9
Speed Bin	SPD plus 2 digit number
- Station speed bin	00-09
- System speed bins	10-49
- Station speed bins	90-99
Mute	40

Feature	Code
Headset Option	41
Paging:	
Internal All Call	70
Internal Zone 1	71
Internal Zone 2	72
External Zone	73
System All Call	74
Meet Me Page	75
Last Number Redial	SPD+#

NOTE: The speed bin must be programmed with a number before a flexible button can be assigned as a speed button.

300.48 PHONE BOX SIGNALING

If you hear signals on your telephone, it may be a signal from a phone box.

1. Press station button programmed for that phone box.
2. Lift handset or use speakerphone to converse.
3. Hang up to end call.

If no station button has been programmed, you may dial the phone box intercom number to answer the call.

300.49 UNIVERSAL NIGHT ANSWER (UNA)

You hear an outside line ringing at another station and wish to answer it:

1. Lift handset.
2. Dial [55] on the dial pad.

   OR
3. Press programmed flex button.
4. You will be connected to the ringing outside line.

300.50 HEADSET MODE

If you wish to use a headset and have been given the ability to do so in programming.

To activate Headset mode:

– Dial [41] on the dial pad.

OR

– Press programmed flex button. LED will light steady.

While Headset mode is active, the ON/OFF button will activate the headset and disable speakerphone operation.

To de-activate Headset mode:

– Dial [41] on the dial pad.

OR

– Press programmed flex button. LED will extinguish.

ATTENDANT FEATURES:

300.51 NIGHT SERVICE

At Attendant station:

1. Press FWD/DND button at that station.(FWD/DND LED lights steady)
2. Press FWD/DND button again to remove Night Service.

NOTE

Attendant does not have DND feature.

300.52 SETTING SYSTEM TIME AND DATE

At programmed Attendant station:

1. Lift handset or press ON/OFF button.
2. Press SPD button.
3. Press asterisk (*) once.
4. Dial [50].
5. Enter date & time as follows:

   YYMMDDHHMM

   - YY = year 80-99

   - MM = month 01-12

   - DD = day 01-31

   - HH = hour 00-23

   - MM = minute 00-59
6. Press HOLD button to enter data.

300.53 STORING SYSTEM SPEED NUMBERS

1. Lift handset or press ON/OFF button (optionally)
2. Press SPD button.
3. Press asterisk (*) key once.
4. Dial two-digit speed bin location.
   -10-49 = System speed numbers
5. Select desired outside line or one will be chosen automatically.(up to 16 digits)
6. Dial telephone number.(0-9, *, #)
   - [*] DP to DTMF switchover. (for first occurrence only. Subsequent '*' dialed will cause the DTMF digit '*' to be dialed.
   - TRANS/QUE button= inserts a pause during number storage.
   - FLASH key= inserts a flash into the speed number.
   - CONF button= "No Display".
7. Press HOLD button to enter the number. Confirmation tone is heard.
8. Hang up.

Note: System speed numbers can only be entered at the Attendant station.

300.54 ATTENDANT ACTIVATION OF BACKGROUND MUSIC AT A PHONE BOX

The Attendant may control (turn ON and OFF) background music at a phone box station.

To control background music at a specific phone box:

1. Dial [42] on the dial pad.
2. Then dial the two-digit station number (10-25) of the desired phone box.
3. Dial either:

   – [0] to turn BGM off.

   OR

   – [1] to turn BGM on.

300.55 ATTENDANT OVERRIDE (Camp-on)

If the Attendant calls a station that is either Busy or in DND and wishes to alert them of a call:

1. Press the MSG/CP.ON button twice. Called station will receive 2 bursts of ringing.
2. Wait for their response.

300.56 FLEXIBLE STATION NUMBERS

This feature allows the Attendant to SWAP an individual stations' programmed data including speed dial and intercom number with another active station in the system.

This feature requires the user to know the "PORT" of the station requesting to be changed (The LCD will provide this information).

Remember: Ports NEVER change, but station intercom numbers DO.

Note: The stations affected must be idle before changes made in station numbers will take effect.

At Attendant station:

1. Enter [**STAT] on the dial pad. Confirmation tone is heard.
2. Enter [*04] on the dial pad. (LCD shown will be displayed)

3.

FLEXIBLE NUMBER ASSIGN PORT 01 - STA 10

Press the PORT* button of the station whose intercom number is to be changed (LED will flash).

*Port = the sequence in which the telephones are connected to the main switching unit. The LCD display will indicate the intercom number associated to each port. To view stations, press a PORT button, then its assigned intercom button.

	PORT 01		PORT 02		PORT 03		PORT 04
	PORT 05		PORT 06		PORT 07		PORT 08
	PORT 09		PORT 10		PORT 11		PORT 12
	PORT 13		PORT 14		PORT 15		PORT 16

Port Button Mapping

4. Press the station button of the intercom number it is to be changed to. Confirmation tone will be heard. LCD will now update to show new assignment.

	STA 10		STA 11		STA 12		STA 13
	STA 14		STA 15		STA 16		STA 17
	STA 18		STA 19		STA 20		STA 21
	STA 22		STA 23		STA 24		STA 25

Station Button Mapping

5. Make sure ALL ports are assigned an intercom number. (ie: a minimum of 2 ports must be changed.)
   Example: Assign Port 01 to Intercom number 12, then assign Port 03 to Intercom number 10
6. Repeat Steps 3 & 4 to assign additional stations.
7. Press the HOLD button after all changes have been made. Confirmation tone will be heard.
8. Press ON/OFF button OFF to end sequence.

NOTE

The Attendant Station may NOT enter the Flexible Station Number programming [**STAT] if the Programming Station (PORT 01) is actively in a programming section and vice versa.

310.1 LCD DISPLAYS

The display is arranged into an upper and lower field. The upper field displays the current activity of the telephone. The lower field is divided into two sections. The left section of the lower field displays the date, speed bin number, connected intercom station or outside line number. The right section of the lower field displays the current time or elapsed time on an outside call. This table shows what will appear on the LCD display based on the function performed.LCD displays are seen on Executive Display phones and require a RCU to be installed in the system

Table 310.1 Liquid Crystal Display (LCD)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Idle Station	*** XX *** MM/DD/YY HH:MM am	
Manually Dialing Outgoing Calls	18005551212 LINE XX HH:MM am	
Recalling Line from Hold	LINE RECALLING LINE XX HH:MM am	
Recalling Line from Another Station	RECALL FROM XX LINE XX HH:MM am	
Connected to an Incoming CO Line		*** XX *** LINE XX 00:00:10
Intercom Call	CALL TO XX MM/DD/YY HH:MM am	CALL FROM XX MM/DD/YY HH:MM am
Camp-on		CAMP-ON FROM XX MM/DD/YY HH:MM am

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Conference	CONFERENCE MM/DD/YY HH:MM am	CONFERENCE MM/DD/YY HH:MM am
Internal Page	INTERNAL PAGE ZONE 1 HH:MM am	PAGE FROM XX MM/DD/YY HH:MM am
External Page	EXTERNAL PAGE MM/DD/YY HH:MM am	
All Call Page	ALL CALL PAGE MM/DD/YY HH:MM am	PAGE FROM XX MM/DD/YY HH:MM am
Message Waiting		MSG: XX XX XX XX XX MM/DD/YY HH:MM am
Reply to a Message Waiting (Call Back)	CALL TO XX MM/DD/YY HH:MM am	CALLBACK FROM STA XX MM/DD/YY HH:MM am
Station Call Forward (Originating Station)	* * * FORWARD TO XX * * * MM/DD/YY HH:MM am	
Forwarded Call	FORWARD TO XX FROM XX MM/DD/YY HH:MM am	STA XX FORWARD FROM XX MM/DD/YY HH:MM am
Preset Forward		FORWARD FROM XX LINE XX HH:MM am

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
CO Line Queuing	QUEUED ON LINE LINE XX HH:MM am QUEUE CALL BACK LINE XX HH:MM am	
Outside Line Transfer		TRANSFER FROM XX LINE XX HH:MM am
Programmed Flash Command (F)	F*12 STA SPEED 15 HH:MM:SS	
Programmed Pause Command (P)	950777P1234567 SPEED 10 HH:MM:SS	
Programmed Pulse-To-Tone Switchover (*)	950777*1234567 SPEED 10 HH:MM:SS	
Call Pickup	CALL FROM XX TO XX MM/DD/YY HH:MM am	PICKUP FROM XX MM/DD/YY HH:MM am PICKUP FROM XX LINE XX HH:MM:SS
Ringing CO Lines		LINE RINGING LINE XX HH:MM am

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Display Security Feature	NO DISPLAY LINE XX HH:MM:SS	
Station Receiving Alarm Signaling	ALARM MM/DD/YY HH:MM am	
Do Not Disturb	DO NOT DISTURB STA XX MM/DD/YY HH:MM am	STA IN DO NOT DISTURB MM/DD/YY HH:MM am

SECTION 400
SYSTEM CONFIGURATION

400.1 TECHNOLOGY

The STARPLUS 616 FLEX Key Telephone System is a microprocessor controlled, solid state electronic switch which distributes communications in a non-blocking format. All control, switching and interface circuitry is condensed onto a single printed circuit board (PCB) located inside the key service unit (KSU).

Switching is accomplished through a solid state crosspoint matrix that provides voice path connections for six (6) central office lines, sixteen (16) key telephones and six (6) intercom channels.

The central microprocessor is a Z-80 and controls the crosspoints and central office line relays. It also controls communications between slave microprocessors located in each key telephone.

The 616 FLEX KSU contains all system memory which is composed of 96K of Read Only Memory (ROM) and 16K of Random Access Memory (RAM). The RAM is subdivided so that 3K is used as CPU working area and 3K is used for customer data base. The customer data base memory is protected from loss by a long life lithium battery. A Program Module contains the operating instructions for the system. This module can be easily removed and replaced which allows for upgrading software features.

The system power is regulated by a switching power supply. This technology provides high efficiency with low heat. A shielded transformer converts the 117 VAC into logic voltages on a separate power supply PCB, mounted within the KSU cabinet. Each key telephone contains a microprocessor and circuitry to monitor button activity and control lamp (LED) indications.

Basic, Enhanced and Executive model telephones all have a built-in speaker which permits voice or tone calling to the station. In addition, the Enhanced and Executive model telephones have built-in speakerphones for Handsfree two-way communications. (Basic model telephones DO NOT have speakerphone or Handsfree capability.) All Starplus model telephones have a Busy Lamp Field (BLF) to monitor station activity in the system.

Basic, Enhanced and Executive model key telephone sets are all equipped with eight (8) function buttons and six (6) CO line buttons. In addition Enhanced and Executive model phones are equipped with sixteen (16) Direct Station Selection (DSS) buttons and the Executive telephone is equipped with an LCD as standard equipment. A three-position slide switch is provided for easy selection of INTERCOM signaling modes, along with separate tone ringing and voice volume controls.

For emergency applications, a stand-alone battery assembly such as the Starplus Battery Back-up Unit (BBU) may be connected to the battery input terminals on the 616 FLEX KSU. This retains system power in the event of commercial power failure.

The system offers automatic cut-thru of central office lines to optionally provided single line telephones. These instruments can make and receive calls during a commercial AC power outage or following a CPU failure.

400.2 SYSTEM CAPACITY

The STARPLUS 616 FLEX Key Service Unit (KSU) is housed in a wall mountable cabinet that contains the Key Service Board (KSB), power supply and pre-wired connectors for station and CO line interface. The system comes fully configured for 6 CO lines, 16 key telephones and 6 intercom channels. One external page port provides two-way external paging capability. One Loud Bell Control port offers programmable external signaling. One Music-On-Hold input allows connection of an external music source for MOH and background music.

Separate MOH and background music adjustments are provided on the KSU. One alarm input allows connection of an external alarm or other sensing device. Low cost phone boxes may be substituted for key telephones on a one-for-one basis.

The system contains the necessary interface circuitry to enable complete system battery backup operation. In the event of commercial AC power interruption, an optional 24 volt DC Battery Back-up Unit, such as the Starplus Battery Back-up Unit (BBU) will ensure uninterrupted system operation. The Battery Back-up Unit (BBU) and batteries must be provided separately.

400.3 SYSTEM COMPONENTS

The following are the components that make up the STARPLUS 616 FLEX Key Telephone System:

- The Basic KSU or the Enhanced KSU
- The Key Telephones (Basic, Enhanced or Executive)
- Wall Mount Kit
- Phone Box
- Program Module
- Serial Interface Unit (SIU)
- Real Time Clock Unit (RCU)
- Single Line Station Adapter (SLA)
- Battery Back-up System (BBU)

A. 616 FLEX Basic KSU

The KSU is a sealed, self contained unit that has no user- serviceable parts inside. All connections to Stations, CO Lines and Auxiliary equipment are made externally through amphenol-type plugs and standard modular jack connections. A Program Module (I) allows easy expansion of software features.

B. Basic Model Key Telephone

Is a fully modular, multi-line keyset with voice and tone ringing volume controls. Contains 6 central office line buttons, 8 functions buttons, a dial pad and an intercom mode selection switch. All buttons are of the non locking type with easy to see LED's for quick identification. This model does NOT have speakerphone or Handsfree capability.

C. Enhanced Model Key Telephone

Identical to the Basic Key Telephone with the addition of 16 Direct Station Select buttons and a speakerphone to provide full handsfree operation.

D. Executive Model Key Telephone

Identical to the Enhanced Key Telephone with the addition of an interactive LED display. Displayed features include calls to and from other extensions, number dialed, line used, camp-on, etc. A Real Time Clock Unit (RCU) must be installed in the system to support time and date in LCD displays.

E. Wall Mount Kit

Provides an attractive modular means of attaching the StarPlus key telephone to any vertical surface.

F. Phone Box

Allows handsfree conversations to and from locations that do not need dialing privileges. Phone boxes may be substituted for key stations on a one-for-one basis.

G. Program Module

This plug-in unit provides the basic operational instructions for the system.

This module also provides for all system features including SMDR, RCU operation and supports Executive (display) telephones.

H. Serial Interface Unit (SIU)

This optional unit must be installed in the KSU when features such as SMDR or Data Base Printout are desired. The SIU contains a female, 25 pin, RS232C (DCE) connector for connection to a printer, terminal or some other receiving device. An RCU is also required if a Time and Date Stamp is desired on the SMDR record.

I. Real Time Clock Unit (RCU)

This optional unit must be installed in the KSU to provide Executive LCD display keysets with a Time and Date display. The RCU contains a long life lithium battery so that the time and date is protected from commercial power failure to the system and continues to function.

It also provides the time and date stamp for information used by SMDR and display phones.

J. Single Line Station Adapter (SLA)

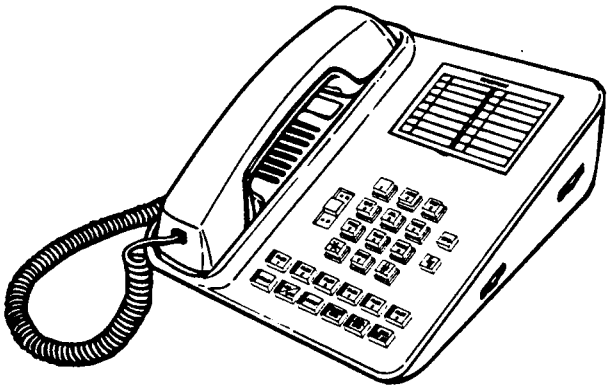
The Single Line Station Adapter (SLA) is a device which acts as a command translator and hardware interface for two (2) DTMF single line telephones (2500 type) or compatible devices (cordless phone, fax machines, modems etc...). This allows connection of these devices to the Starplus family of "flatpack" key systems.

There is NO limit to the number of SLA adapters that can be installed behind any one system.

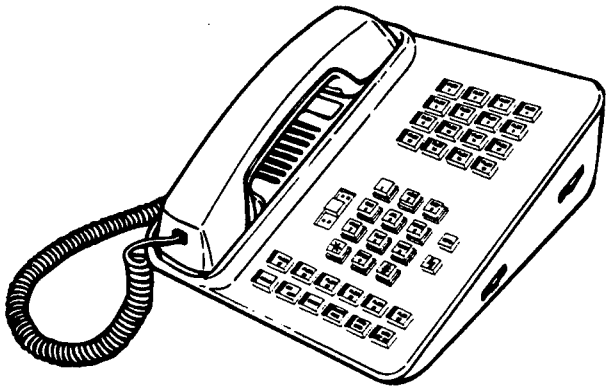
The SLA adapter is **not** designed to directly support off-premise extensions (OPX) applications. If an OPX is desired on a Starplus "flatpack" KSU, additional customer provided equipment, with an FCC registered interface is required.

K. Battery Back-up Unit (BBU)

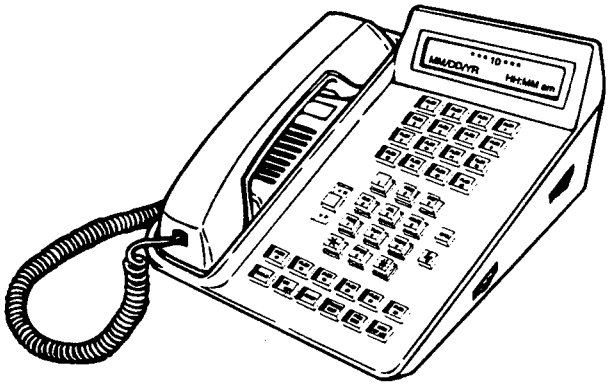
This optional Battery Charging Unit (BBU) and cabling can be directly connected to the 616 FLEX KSU to maintain complete system operation in the event of an AC power failure. (Batteries must also be provided separately as they are not included with the BBU.) Calls in progress will continue without interruption when commercial power fails. The BBU will maintain complete system operation during a power outage for up to 24 hours depending on system configuration, and battery size.



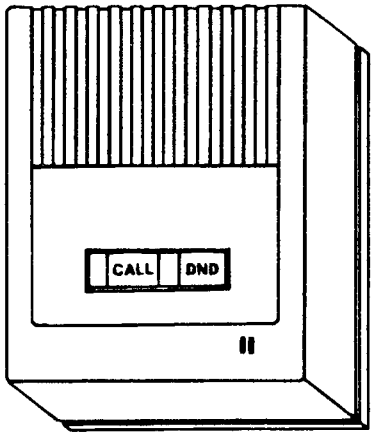
Basic Model



Enhanced Model



Executive Model



Phone Box

Single Line Station Adapter (SLA)

Figure 400.1 - STARPLUS® Station Apparatus

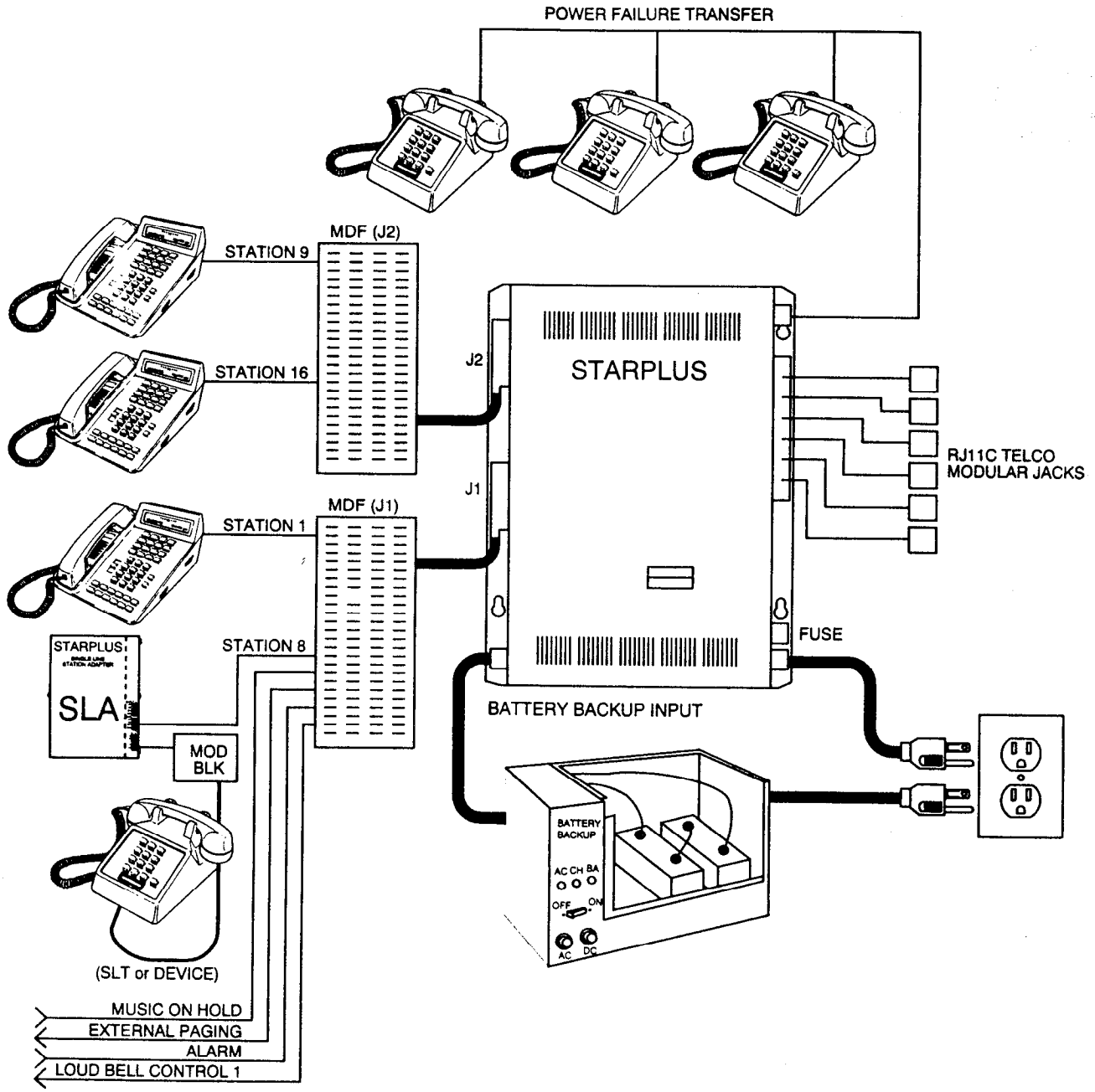


Figure 400.2 - STARPLUS® 616 FLEX System

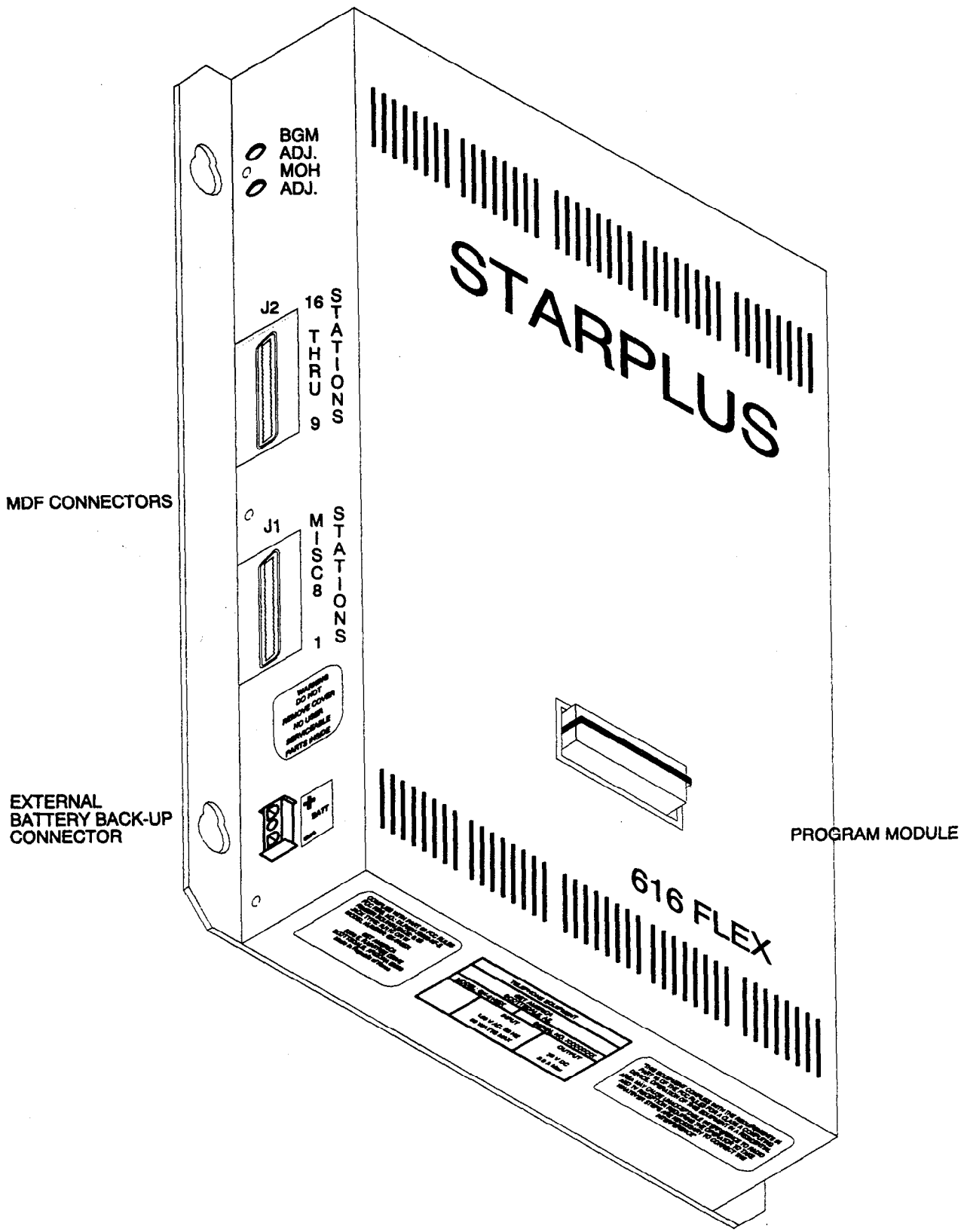


Figure 400.3 - Key Service Unit - Left Side

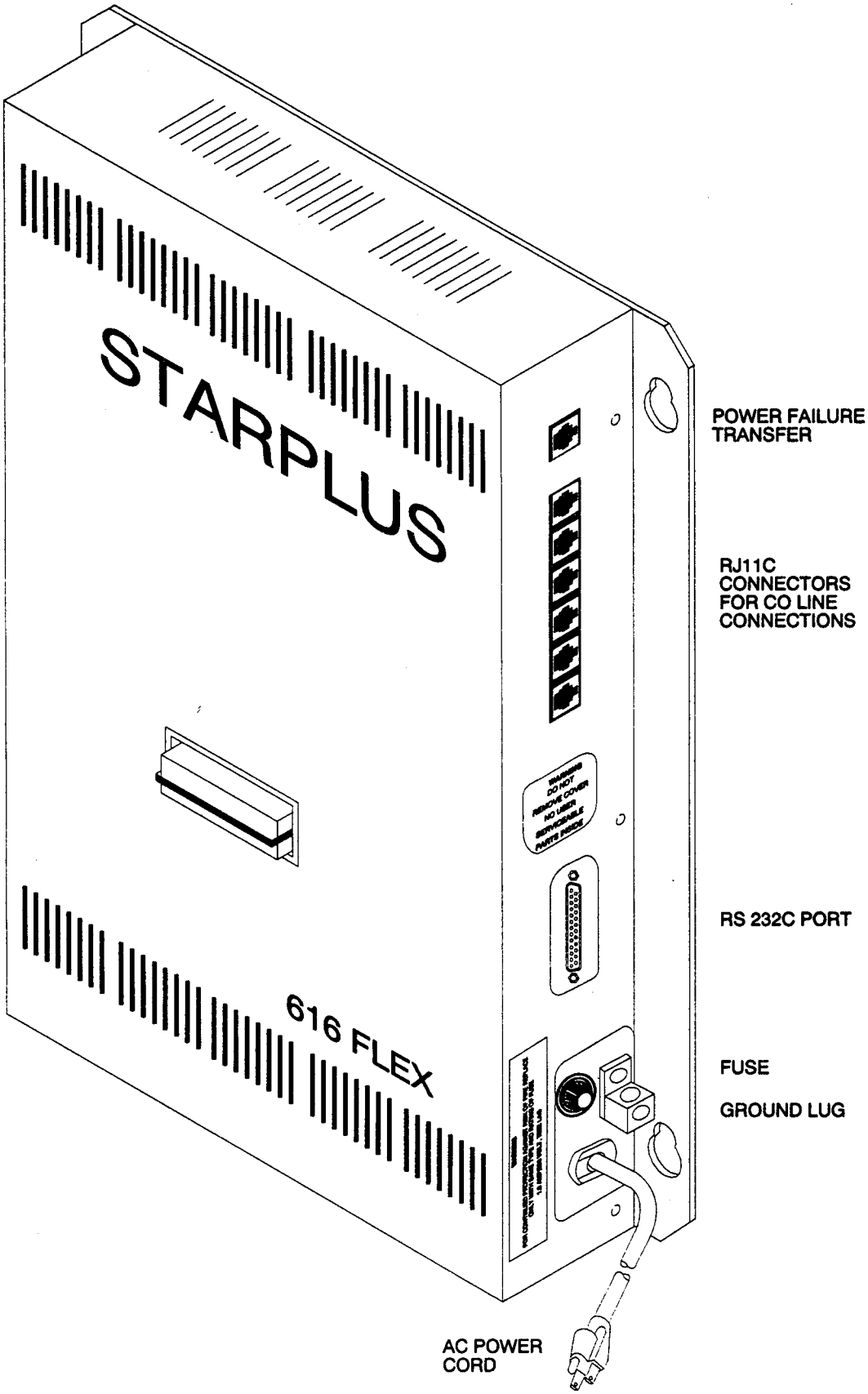


Figure 400.4 - Key Service Unit - Right Side

Table 400.1 System Capacity

Ports:	
CO(Loop Start)	6 max.
Key Telephone Stations	16 max
Single Line Telephones	15 max (via 8 single line Station Adapters)
Attendants:	1 station can be designated as an Attendant.
Phone Boxes:	Up to 15 phone boxes can be operated on the system. (Each phone box reduces station capacity by 1)
SMDR Ports:	1 RS-232C port located on the right side of the KSU.
Page Zones:	
Internal:	2 internal page zones
External:	1 external page zone (two-way talk path)

Table 400.2 Electrical Specifications

AC Input to Power Supply	117V ac ± 10%, 60 Hz single phase
Power Consumption	90 watts
Power Supply Fuse - AC input	1A, 250V Time Lag
Music Source (input)	Input at 2K ohms impedance from music source
Contact Rating	
External Page Control	1.0A, 24V dc
Loud Bell Control	1.0A, 24V dc
Alarm	1.0A, 24V dc
External Page Port	
Output Impedance	600 ohms @ 0 dBm
Output Power	5mW Maximum
UL File Number:	42U5

Table 400.3 Environmental Specifications

Operating Temperature	32° F to 104° F
Recommended Operating Temperature	60° F to 80° F
Relative Humidity	5% to 90% non-condensing
Heat Dissipation (BTU's)	307 BTU's Maximum

Table 400.4 Loop Limits

Electronic Telephone: (including Phone Box)	800 feet of 26 AWG Cable 1000 feet of 24 AWG Cable 1500 feet of 22 AWG Cable

Table 400.5 Dialing Specifications

DTMF Dialing	
Frequency Deviation	±1.5%
Rise Time	5mS
Duration of DTMF Signal	75mS minimum
Interdigit Time	75mS minimum
PULSE Dialing (programmable)	
Pulse Dialing Rate	10 or 20 pps.
Pulse Break/Make Duration	60/40 or 66/33
Dialing Memory	
System Speed Dialing	40 numbers (16 digits)
Station Speed Dialing (per station)	20 numbers (16 digits)
Last Number Redial	32 digits, last number dialed on CO line
CO Type	Loop Start

Table 400.6 FCC Registration Numbers

FCC Registration Number located on the Key Service Unit (KSU):	DLP82V-60903-MF-E
If no key telephones are programmed to have a pooled group button, use the following FCC Registration Number:	DLP82V-72088-KF-E

Table 400.7 Dimensions and Weight

KEY SERVICE UNIT	
Height	17.8"
Width	23"
Depth	13.3"
Weight	60 lbs. (unloaded)
PHONE BOX	
Height	1.75"
Width	5.5"
Depth	4"
Weight	1 lb.
SINGLE LINE STATION ADAPTER (SLA)	
Height	8.0"
Width	5 6/8"
Depth	1 7/8"
Weight	3 lbs.
Basic Key Telephone	
Height	3.0"
Width	4.0"
Depth	9.0"
Weight	2.5 lbs.
Enhanced Key Telephone	
Height	3.0"
Width	4.0"
Depth	9.0"
Weight	2.5 lbs.
Executive Key Telephone	
Height	3.0"
Width	4.0"
Depth	9.0"
Weight	3 lbs.

Table 400.8 Miscellaneous Specifications

Memory:	
Random Access Memory (RAM):	32K
Read-Only-Memory (ROM)	96K
Telephone Transmitter:	Electret mic compatible.
Talk Paths:	
CO/PBX paths:	6 CO/PBX talk paths (non-blocking)
Intercom Paths:	6 talk paths
Music Channels:	1 channel provides music-on-hold and background music
Account Codes:	
Number of digits per code:	up to 8 unverified digits
Number of Account Codes:	unlimited (non verified)
Speed Dialing Capacity:	360 Total Bins in System:
System Speed	- 40 bins per system
Station Speed	- 20 bins per system

Table 400.9 Key Telephone Audible Signals

TYPE OF SIGNAL	FREQUENCY	SIGNAL DURATION
Key Telephone Signals:		
Incoming CO Line	1215/1471	0.5s on/2.5s off; repeated
Intercom Tone Ringing	1215/1471	0.5s on/0.5s off/0.5s on/1.5s off
Intercom Call Announce (H-P-OHVA)	935	0.2s on/0.2s off (3 bursts)
Transferred CO Line	1215/1471	0.5s on/2.5s off
CO Line Recall	1215/1471	0.5s on/2.5s off
Message Wait Call Back	1215/1471	0.5s on/0.5s off/0.5s on/1.5s off
Message Wait Reminder Tone	771	0.5s on (timed per programming)
CO Queue Call Back	1215/1471	0.5s on/0.5s off; repeated
Camp-on	935	0.5s on (burst)
Alarm Tone		
Repeated	701/857	.25s on/.25s off; repeated
Single	701/857	1.0s on (once)
Loud Bell Control		
CO Ringing/Transferred CO Lines		0.5s closed/2.5s open; repeated
Intercom Ringing		0.5s closed/0.5s open/0.5s closed 1.5s open; repeated
From Door (phone) Box	701/857	1.0s on (once)
Key Telephone Confidence Tones:		
Intercom Ringback	1215/1471	0.5s on/0.5s off/0.5s on/1.5s off
Call Announce	935	0.2s on/0.25s off (3 bursts)
Busy Tone	701	0.5s on/0.5s off, repeated
Error Tone	701	0.25s on/0.25s off, repeated
Intercom Dial Tone	701	Continuous
DND Tone	701	0.2s on/0.2s off; repeated 3 times, pause, repeat
Paging Confirmation Tone	935	1.0 sec burst
Conference Time-out Warning Tone	701	0.2s on/0.2s off; 3 birsts
Programming Confirmation Tone	1471	1.5s on (burst)
Programming Error Tone	1471	0.25s on/0.25s off; repeated 6 times
Door (phone) Box Caller	701/857	1.0s burst (once)
Camp-on	735	0.5s burst

Table 400.10 Visual Signals - DSS/BLF Buttons

TYPE OF SIGNAL	INDICATOR FLASH RATES
Off-Hook/Busy (All Stations)	Steady
Incoming Intercom Ring (Destination)	240 ipm flutter
Call Announce (Destination)	240 ipm flutter
Message Waiting Call Back (Destination)	240 ipm flutter
Do Not Disturb (All Stations)	Steady
Door Box Calling (Assigned Stations)	30 ipm flash
Camp On	60 ipm flash

Table 400.11 Visual Signals - CO Line Buttons

TYPE OF SIGNAL	INDICATOR FLASH RATES
Incoming CO Ring	30 ipm flash
Transferred CO Ring	240 ipm flash
Recall	480 ipm flash
Queued Line	30 ipm flash
Exclusive Hold	240 ipm flash
System Hold	60 ipm flash
I-Hold (only when hold preference is system)	30 ipm double flash
In Use	Steady

Table 400.12 Visual Signals - Function Buttons

TYPE OF SIGNAL	INDICATOR FLASH RATES
Fixed Feature Buttons:	
HOLD Button (all intercom channells busy)	Steady
ON/OFF Button	
speakerphone on/off-hook dialing	Steady
off-hook dialing	Steady
CONF button	
active	Steady
unsupervised	60 ipm flash
TRANS/QUE button	
Line Queue (active)	Steady
FWD/DND button	
Call Forward (active)	240 ipm flash
DND (active)	Steady
Both active	30 ipm double flash
MSG/CP ON button	
Message Waiting (active)	15 ipm flash
Camp On (active)	60 ipm flash
Flexible Feature Buttons:	
Mute (active)	Steady
Music (active)	Steady

SECTION 500
SYSTEM INSTALLATION INSTRUCTIONS

500.1 SITE PLANNING

The STARPLUS 616 FLEX Electronic Key Telephone System, like most electronic office equipment, should not be subjected to harsh environmental conditions. To assure easy servicing and reliable operation, several factors must be considered when planning the system installation. Always consider the following BEFORE installing the KSU and wiring:

A. The KSU is designed for wall-mounting only.

B. The internal power supply operates with 117 VAC, 60 Hz, single-phase electricity. A 3-wire (parallel blade with ground) receptacle must be provided on a dedicated, separately fused 15 AMP circuit.

C. Location(s) of telephone conduits or cable runs.

D. The KSU should be within 25 feet of the telephone company (TELCO) RJ11C. The KSU should be centrally located and assurances should be made to stay within prescribed cable lengths.
   - 800 ft. 26 AWG Twisted pair Cable
   - 1000 ft. 24 AWG Twisted pair Cable
   - 1500 ft. 22 AWG Twisted pair Cable

E. A well ventilated area having a recommended temperature range of 60 to 80 degrees Fahrenheit, and a humidity range of 5 to 95% (non condensing).

F. Accessibility of KSU for servicing and lighting.

G. Protection from flooding, flammable materials, excessive dust and vibration.

H. Proximity of radio transmitting equipment, arc-welding devices, copying machines and other electrical equipment that are capable of generating electrical interferences.

I. Access to a good earth ground such as a metallic COLD water pipe. Inspect the pipe for non-metallic joints.

500.2 UNPACKING THE 616 FLEX KSU

Remove the KSU from the shipping carton and place it on a level working surface, face up. Inspect the KSU for physical damage. The KSU has no serviceable parts.

500.3 KSU GROUNDING

To ensure that the system will operate properly, a good earth ground is recommended. The Telco protector ground terminal or a metallic COLD water pipe will usually provide a reliable ground path. If cold water pipe is used, carefully check that the pipe does not contain insulated joints that could isolate the ground. In the absence of the cold water pipe, a ground rod or other source may be used. A No. 8 AWG copper wire should be used between the ground source and the KSU.

THE GROUND WIRE SHOULD BE KEPT AS SHORT AS POSSIBLE AND CAN BE CONNECTED TO THE GROUND LUG LOCATED ON THE SIDE OF THE KSU. (Figure 400.4)

500.4 KSU INSTALLATION

The KSU is designed for wall mounting only. The KSU should NOT be mounted directly on a masonry surface.

If the KSU is to be mounted on a masonry surface, a wooden backboard of sufficient size should be attached to the wall and the KSU mounted on the backboard.

A. Mount the KSU on the backboard using four fasteners. (The fasteners should be selected carefully so as to be capable of supporting the KSU.) (Refer to Figure 500.1 for KSU dimensions.)

B. Install the ground using an insulated 8 AWG copper wire. Attach one end to the grounding lug on the side of the KSU cabinet and fasten the other end to a good earth ground (Refer to Figure 400.2 KSU layout).

C. The KSU power supply is located within the KSU. Because the KSU is a sealed unit, all electrical connections are provided externally. The power cord exits the KSU on the right side. Also on the right side is a fuse holder that contains a 0.7 Amp. slow- blow fuse. Power for the system is distributed internally.

D. The power cord should not be used with a 3-wire-2-wire plug adapter. A power line surge protector should be used to protect the power supply from electrical surges. The surge protector should be installed in accordance with the manufacturer's instructions and applicable local electrical codes.

WARNING

DO NOT PLUG IN THE POWER CORD AT THIS TIME

500.5 KSU CABLING

Two (2) Amphenol-type connectors are provided on the left side of the KSU (Refer to Figure 400.3).

On the right edge of the front surface are the RJ11C connectors which are for CO lines. On the left side surface of the 616 FLEX KSU are two connectors marked J-1 and J-2. The J-1 connector is located just below the J-2 connector. J-1 and J-2 require 90 degree male ended plug cables for proper attachment.

When connecting cable tails to the KSU, make sure the designation on the AMP hood matches the designation at the connector's input on the KSU.

After plugging in the required cables, a "horse shoe" fastener should be placed around the mated AMP connectors to secure the cable to the KSU connector.

Verify that the wires are properly cross-connected. Observe the telephone standard wiring color codes whenever possible. Some points to be aware of while running the key telephone cabling are:

Cabling should be routed to avoid fluorescent light fixtures, electric motors and generators, welding equipment and radio transmitters. Additionally, care should be taken to avoid hot locations such as steam pipes and furnaces, and areas where wiring is subject to abrasion.

CAUTION

It is NOT recommended that power be applied to the system during the cable termination process.

500.6 LIGHTNING PROTECTION

The 616 FLEX should have central office lines protected with proper lightning surge arrestors. The central office lines are exposed to damaging surges induced by direct or non-direct lightning strikes.

The protection should contain a complement of 3-element gas discharge tubes which ground high potential surges, and associated circuits to absorb and filter lower-level surge potentials. Care should be taken to ensure that not more than one set of protectors be installed on central office lines at installation premises. Improper installation of line protection can present a serious safety hazard.

500.7 KEY TELEPHONE INSTALLATION

A maximum of sixteen (16) key telephones may be installed with the 616 FLEX Key System. Each key telephone requires 2 pair (4 wires) for proper wiring. It is recommended that 3 pair twisted pair cable be used to connect the telephones to the system on a "home run" basis. The telephone end of the cable should be terminated on a modular jack. At the MDF end of the home run, the cable should be terminated on a separate station connecting block (66M1-50) for cross connection to the "J" cables. This method of cabling will allow for easy isolation of station equipment during trouble shooting procedures.

500.8 WALL MOUNT KIT INSTALLATION

All connections to the Key Telephones are fully modular. To wall mount the Key Telephone, it is necessary to have one Wall Mount Kit and one (1) 630-A type modular wall mount jack assembly equipped with two mounting lugs.

A. Remove the mounting cord from the telephone. This cord will no longer be needed.

B. Substitute the short modular cord on the wall mount baseplate for the mounting cord removed in A above.

C. Rotate the plastic number retainer upwards to expose the screw underneath. Remove the screw and slide the cover plate under the number retainer towards the hookswitch.

D. Replace the cover plate with the handset retainer tab that is mounted in the wall mount base plate, and secure with the screw from C above.

E. Rotate the plastic number retainer downwards and snap into place.

F. Align the mounting tab on the outer edges of the wall mount base with the holes on the key telephone base. Snap shut and fasten with the screw.

G. The telephone can now be mounted to the wall by mating the two keyhole slots on the baseplate with the lugs on the modular cover assembly. Check to make sure that the modular connector on the baseplate has a firm connection with the connection on the wall jack. (Figure 500.3)

500.9 PHONE BOX INSTALLATION

The 616 FLEX Phone Box can make calls to preassigned stations as well as receive intercom calls. The unit should be located in weather protected areas where paging or monitoring is required.

The Phone Box consists of a top housing and bottom mounting plate. The top housing has a speaker, microphone, wire terminals and electronic circuitry. The housings are separated by inserting a thin, flat-edged tool at the bottom rim of the assembly. By pressing inward on the recessed retaining tab, the assembly will open.

The connection of the Phone Box(es) to the KSU is identical to that of the key telephone. Refer to Figure 500.8

The bottom plate of the Phone Box assembly is fastened to the wall by mounting with customer supplied No. 8 or larger pan head screws. The cable is routed through the cable-entry holes provided on the bottom plate and is connected to the screw terminal strip on the upper housing. Four (4) screw terminals are identified by wire color on the silk-screened printed circuit board to correspond with the wiring sequence at the punchdown connector at the MDF.

The slack wiring should be pulled back through the bottom mounting plate and the top housing snapped shut. Refer to Sec. 630.21 Phone Box programming.

500.10 EXTERNAL MUSIC SOURCE

MUSIC-ON-HOLD, as well as BACKGROUND MUSIC can be connected using a customer provided tuner, tape deck, etc. Separate Music-on-Hold and background music volume adjustments are provided on the KSU. Refer to Figure 400.3) Background Music (BGM) levels are also adjustable at each key telephone set. Connections are made on the J-1 connector, the MOH pair. Refer to Table 500.1

If background music is desired, refer to System Features, Sec. 630.1 and enable background music.

500.11 ALARM INSTALLATION

The 616 FLEX system may be used to transmit an alarm signal to each station (except phone boxes) in the system. When activated by an external alarm system, a continuous tone is transmitted to the station speakers. Leads from the external alarm are connected to the 616 terminals ALMT and ALMR Refer to Figure 500.5. Refer to System Features, Sec. 630.1 for programming Alarm states.

After the alarm has sounded, the system must be reset by first clearing the alarm condition on the external system and then lifting the handset at any station programmed to receive alarm and dialing 9.

500.12 BATTERY BACK-UP

The STARPLUS 616 FLEX can be fully supported for complete operation during a power failure. An externally provided 24 VDC battery package (gel type) and float charger is required such as the Starplus BBU and batteries. A convenient plug for battery connection is located on the left side of the KSU. Refer to Figure 400.3. Table 500.1 provides examples of recommended battery sizes for 2, 4 and 8 hour back-up at various system sizes.

500.13 BATTERY BACK UP UNIT (BBU)

A. Introduction

The BBU houses two 12 V batteries connected in series which provide 24 V of DC power. The BBU also contains an AC input cord which provides charging power when the batteries are not in use. Batteries are NOT included.

A 10" 14 gauge jumper wire is provided for interconnection of the two 12 V batteries. Four adapter wires (approx. 2") are provided for matching the exact battery terminal size. A plastic tie wrap is provided for securing the batteries once installed.

The BBU will interface batteries with 187 or 250 size male faston-type tab connectors. A plastic tiewrap is provided for securing the batteries once installed.

Any UL recognized battery may be used with the BBU, gel type batteries are recommended. The larger ampere hour the battery, the longer it will take to recharge.

B. Description

Capacity

The following table shows the approximate times for a fully charged supply to reach 90% voltage under different load conditions.

Table 500.1 Battery Charge Time

Battery Amp	Battery Amp	
	3 x 8	6 x 16
7 AH	5 HRS	2.5 HRS
14 AH	10 HRS	5 HRS
40 AH	24 HRS	14 HRS

Dimensions

8" high, 13.5" wide, 7.75" deep

Weight without batteries: 11 lb.

Specifications

- Output fused at 4.0 A, 250 V
- Current limited, constant voltage charger
- Gel type batteries
- Charger float voltage is 27.6 V
- Cut off voltage point is 21 V

Power Requirements

Input 117 VAC, 60 Hz

Fused at 0.5 A, 250 V

Environment

Temperature: 0 - 50 C (32 - 104 F)

Humidity: 0 - 95%

C. Installation

Introduction

These instructions cover installation procedures for the BBU. Refer to Figure 500.6 for the location of the input socket. The input socket of the key system must be a female Mate-N-Lok type connector.

Installation Checklist

The following items are required to install the BBU:

- 1 BBU with wire kit (5 wires) and tie wrap
- 4 No. 12 panhead screws (if wall mounted)
- Screwdriver
- Backboard or wall shelf if applicable

Mounting

The BBU must be located within 6' of an AC receptacle and 2' of the KSU.

The BBU can be placed on a wall shelf or it can be wall mounted.

To wall mount the BBU:

A. The BBU is designed to be mounted on a backboard, either the backboard the KSU is mounted on or one specifically for the BBU.

B. Mark for screw placement, either by measuring (the 2 top keyhole mounting slots are 8 3/4" on center) or by placing the BBU against the backboard (before installing batteries) and marking the location of the 2 slots.

C. Partially insert 2 No. 12 panhead sheet metal screws into the backboard.

D. Suspend the BBU on these 2 screws. The large section of the keyhole will allow the unit to easily pass over the screwhead.

E. Slowly lower the BBU so the small section of the keyhole is directly behind the screwhead.

F. Tighten each screw so the unit fits snugly against the backboard.

G. Insert 2 more screws into the bottom of the BBU where 2 more keyhole mounting slots are located.

WARNING

Before connecting the batteries, ensure the BBU is unplugged from the AC outlet and the ON/OFF switch on the BBU is turned off.

Connections

H. Remove the BBU cover by turning the 4 screw locks and lifting the cover.

I. Install the two 12 V DC batteries in the battery compartment. Thread the plastic tie wrap through the vent holes in the side of the battery compartment and fasten around both batteries. Cinch the tie wrap tight.

J. Connect one of the adapter wires to the black 10" jumper wire. Now install this jumper wire assembly between the NEG (-) terminal of battery 1 and the POS (+) terminal of battery 2.

K. Connect another adapter wire to the BBU red battery wire. Now connect this wire to the POS (+) terminal of battery 1.

L. Connect the BBU black battery wire to the NEG (-) terminal of Battery 2.

M. Make sure the key system being connected is turned on. Then connect the BBU DC output cable to the battery input of the key system KSU.

N. Make sure the BBU power switch is in the OFF position. Then plug in the AC power cord.

O. Turn the power switch on the BBU to ON.

Grounding

To ensure that the BBU will operate properly, a good earth ground is recommended. A metallic COLD water pipe will usually provide a reliable ground path. Carefully check that the pipe does not contain insulated joints that could isolate the ground. In the absence of the cold water pipe, a ground rod or other source may be used. A No. 8 AWG copper wire should be used between the ground source and the BBU. A ground lug is provided on the lower-left side of the BBU.

The ground wire should be kept as short as possible and can be connected to the ground lug located on the bottom of the 616 KSU. Installation of the BBU is now complete.

D. General Information

There is a "power on" LED which is lit when the supply is connected to the AC power source. There is also a "battery" LED which is lit when the battery back up is in use. The BBU is a filtered battery back up power supply. Both input and output are fuse protected. The charger circuit is floating with respect to ground. The charging circuit provides a constant voltage and is current limited to 350 milli-amps to the 2 gel cells.

E. Maintenance

In order to ensure proper operation of the battery supply, the following operation should be performed once a month:

A. Unplug the key system and the battery back up unit from the AC power to allow operation from the batteries for 15 minutes.

B. Plug the key system and BBU power cord back into the AC outlet.

F. Troubleshooting

When trouble is reported, verify that AC power is being supplied to the unit and that there are no blown fuses. Check the LED'S TO SEE IF THEY are lit.

Assistance in troubleshooting is available from the factory. When calling you should have a VOM and a test set available and be calling from the job site.

500.14 EXTERNAL PAGING

An amplifier for external paging can be connected to the 616 FLEX Key telephone system. Any telephone in the system can access this paging equipment by using a dial code. There is one External Paging Zone (without amplifier) provided in the 616 FLEX system.

The output impedance of the paging zone is 600 Ohms. The low level voice signal output is specified at 5 milliwatts. Dry contact control is provided to switch on the external amplifier equipment or to momentarily remove background music, if externally supplied to the paging device. All connections are made on the J-1 punchdown connector. The voice output from the key telephone system is provided on the EPVT and EPVR pair. The "make" contacts are identified as pair EPCTL. The paging port can be connected to a two way paging system.

500.15 LOUD BELL CONTROL/CO LINE CONTROL

The STARPLUS 616 FLEX system provides relay contact closure to activate external signaling equipment during incoming CO line ringing. The station or CO line that is to signal is selected by programming. Refer to System Configuration, Sec. 630.4.

There is one (1) control contact which can be assigned to any station or CO line. Locate the control contact on the terminals of the connecting block. Two wires are connected to these terminals and routed to customer provided signaling equipment. Refer to Figure 500.5.

500.16 EMERGENCY TRANSFER

In the event of a commercial AC power interruption, the first 3 CO/PBX lines will automatically transfer to single line telephones (if installed) for emergency communications. These SLTs should be equipment with ringers. They can be DTMF type instruments or rotary dial. Connection is made on the modular connector located directly on the right side of the KSU. Refer to Figure 500.4

500.17 HEADSET INSTALLATION

The STARPLUS 616 FLEX Key telephone has been designed to operate with industry standard modular headset adapters and operator headsets. To modify a key telephone to use an external headset:

A. Plug the headset adapter cord into the vacant headset jack on the key telephone base.

B. Plug the telephone handset cord into the headset adapter box where indicated by the headset manufacturer's instructions.

C. Turn to the programming section of this manual. Enable the headset option for that particular station.

Speakerphone operation is automatically disabled and such features as On-Hook Dialing and Hands-free speakerphone become inoperable. However, incoming page/voice announcements, tone ringing and background music will still be heard over the key telephone speaker when the station has activated the headset mode.

500.18 REAL TIME CLOCK UNIT (RCU) INSTALLATION

A. Turn OFF power to KSU by unplugging from AC outlet.

B. Remove the KSU Program Module.

C. Remove the six (6) screws retaining the KSU cover. Remove the cover.

D. Open the R.C.U. box and verify the following contents are enclosed:

- 1 each R.C.U. module
- 1 each Battery
- 1 each Plastic Beaded Tiewrap

E. Locate the battery. The end with the color ring is negative. Install the battery into the battery socket of the R.C.U. being careful to match the polarity of the battery with the polarity of the socket.

F. Push the beaded tiewrap through the hole in the R.C.U. next to the battery. Pull the tiewrap around the battery and through the cinch end to secure the battery.

G. Refer to Figure 500.7. Locate the R.C.U. socket (G22) and note the top (notched end) of the socket.

H. Hold the R.C.U. so that the battery socket end is facing toward you (battery on the bottom of the R.C.U.) and away from the top of the R.C.U. socket.

I. Insert the pins on the bottom of the R.C.U. into the R.C.U. socket (G22) being careful to align all of the pins with the socket. Apply pressure in the middle of the R.C.U. (not the ends) to avoid breakage while seating the R.C.U. into the socket. Replace KSU cover. R.C.U. installation is now complete.

500.19 SERIAL INTERFACE UNIT (SIU) MODULE INSTALLATION

A. Turn OFF the KSU power by removing the plug from the AC outlet.

B. Remove the Program Module from the KSU.

C. Unscrew the six (6) screws holding the KSU cover and remove the cover.

D. Open the SMDR module box and verify the following components are included:

- 1 each S.I.U. Printed Circuit Board (PCB)
- 1 each 16-conductor Ribbon Cable

E. Push the ribbon cable into the socket on the underside (solder side) of the S.I.U. board. Make sure the contact "fingers" of the cable align with the contacts of the connector.

F. Hold the S.I.U. so that the ribbon cable is on the right, bottom side with the Ribbon Cable extending downwards. Gently push the free end of the ribbon cable into the S.I.U. socket (CN 1) on the KSU.

G. Remove the RS232 mounting hole screws and cover on the right hand side of the KSU. Install the SIU into the mounting hole and secure with the 2 screws.

H. Replace the KSU cover.

Any RS232C compatible printer may now be connected to the RS232C port on the 616 FLEX KSU.

500.20 PRINTER INSTALLATION

Figure 500.2 illustrates the standard pin configuration used with the STARPLUS 616 FLEX system in connecting display devices. An RS-232C type connector is provided on the right side of the KSU for quick connection on an 80 character printer or other receiving device. The 29 and 80 character format is programmable in the customer data base. The receive transmission speed of the connected terminal can be set at either 300 baud or 1200 baud to match the programmable data output speed of the key system. The output speed is set in the customer data base programming. Refer to your printer installation instructions for further information on connecting a printer or display device.

A. Station Message Detail Recording

The SMDR feature provides a detailed record of all outgoing and/or incoming, all calls or long distance only calls exceeding 30 seconds. This feature is enabled in customer data base programming. If the SMDR feature is enabled, information begins recording when the call starts and terminates when the call ends. If the call was longer than 30 seconds, the information is queued for printing.

The SMDR feature will retain a queue of the last 16 "requests". This ensures that the most recent records are retained in the event of terminal failure (i.e. paper alarm, disconnected, etc.). If using a printer to display the customer database, call records will continue to print in between the display of the database. A header detailing the SMDR information prints out after every 66 records.

500.21 SINGLE LINE STATION ADAPTER (SLA)

A. Site Planning and Unpacking

The SLA adapter is housed in a self contained wall mounted enclosure that houses all the necessary circuitry and programmed instructions for complete operation of a SLT or compatible device to a Starplus "flatpack" type (308EX, 616EX, 616 FLEX, or 1224EX) Key service unit. Refer to Figure 500.10 for a typical installation layout.

B. Option Strap

For proper operation, the SLA option strap must be set to correspond to the system in which the SLA is intended to operate. To set this option the cover must be removed. Loosen the two screws (one on each side) and lift off the cover. When installing the SLA behind the 616 FLEX, a SW1 setting of '2' (SP 616) or '3' (SP1224) will provide proper operation. SW1 setting '2' will allow button mapping of buttons 17-22 (codes 81-86 only). SW1 setting '3' will allow access to buttons 17-22 (codes 81-86) and buttons 1-6 (codes 87-92) for use with some applications. (Refer to Figure 500.11). Do not replace the cover until the unit is mounted on the wall.

C. Wall Mounting the SLA

Locate a suitable area for wall mounting the SLA that is within 100 ft of the KSU and is in close proximity to the MDF. Mount the SLA to the wall, using the SLA as a guide mark the wall in the location of the two snowman holes. Drill two holes in the backboard and drive the mounting screws into each drilled hole, leaving the screw heads approximately 3/16" from the wall. Align the snowman holes on the back of the SLA with the screws and slide the SLA on the wall. Tighten the screws to secure the SLA to the

wall. Replace the cover removed above. Refer to Figure 500.9 for size and dimensions.

D. Wiring

The SLA is designed with screw terminals to make connection to the KSU via the MDF simple. This can be done right at the MDF using cross connect wire to make connection between the punch down blocks and the SLA. Before attempting to make connections remove the plastic safety strip from the terminals. Refer to Figure 500.12 for wiring connections.

CAUTION

The installer should exercise caution when connecting a SLA while system power is ON. Also the proper polarity of the wired connections must be maintained for proper operation.

KSU Station (input)

Using Cross connect wire connect from the station block (J1 or J2) to the "INPUT 1" or "INPUT 2". Connect all four (4) leads from a station circuit (VT, VR, DT, and DR leads) to the corresponding input screw terminal. When connecting the leads into the SLA, strip 1/4 of an inch of wire before inserting into the screw terminal.

The SLA communicates to the KSU on the INPUT 1 port only, therefore when installing only one port the SLA Input 1 connector must be used. When installing both SLA ports KSU "sister" station ports must be used i.e. KSU station port 03 and 04 or 05 and 06 or 07 and 08 etc...). It is not recommended that KSU station port 01 be used for SLA applications, as this port serves as the system programming port.

Single Line Telephone wiring (output)

From the SLA adapter cross connect the SL leads (Tip and Ring) to the station block where the home run cable of the SLT device is terminated.

E. SLA Programming

It is necessary to program the system for proper SLA operation. Refer to Station Configuration, Station ID, Sec. 610.8 for programming procedures.

500.22 POWER-UP AND INSTALLATION CHECKLIST

Prior to actual power-up and initialization, the key system should be checked over to avoid start up delays or improper loading. A step-by-step checklist is provided for this purpose:

A. Ensure that the KSU is properly grounded according to the instructions in Sec. 500.3.

B. Inspect the MDF for shorted wiring or improper polarity that would affect the Key telephones.

C. Make sure that plug-ended MDF cables to the KSU are secure and are plugged into the correct position.

D. Make sure the Program Module is seated firmly in its socket.

E. Plug the AC power cord into the dedicated 117 VAC outlet.

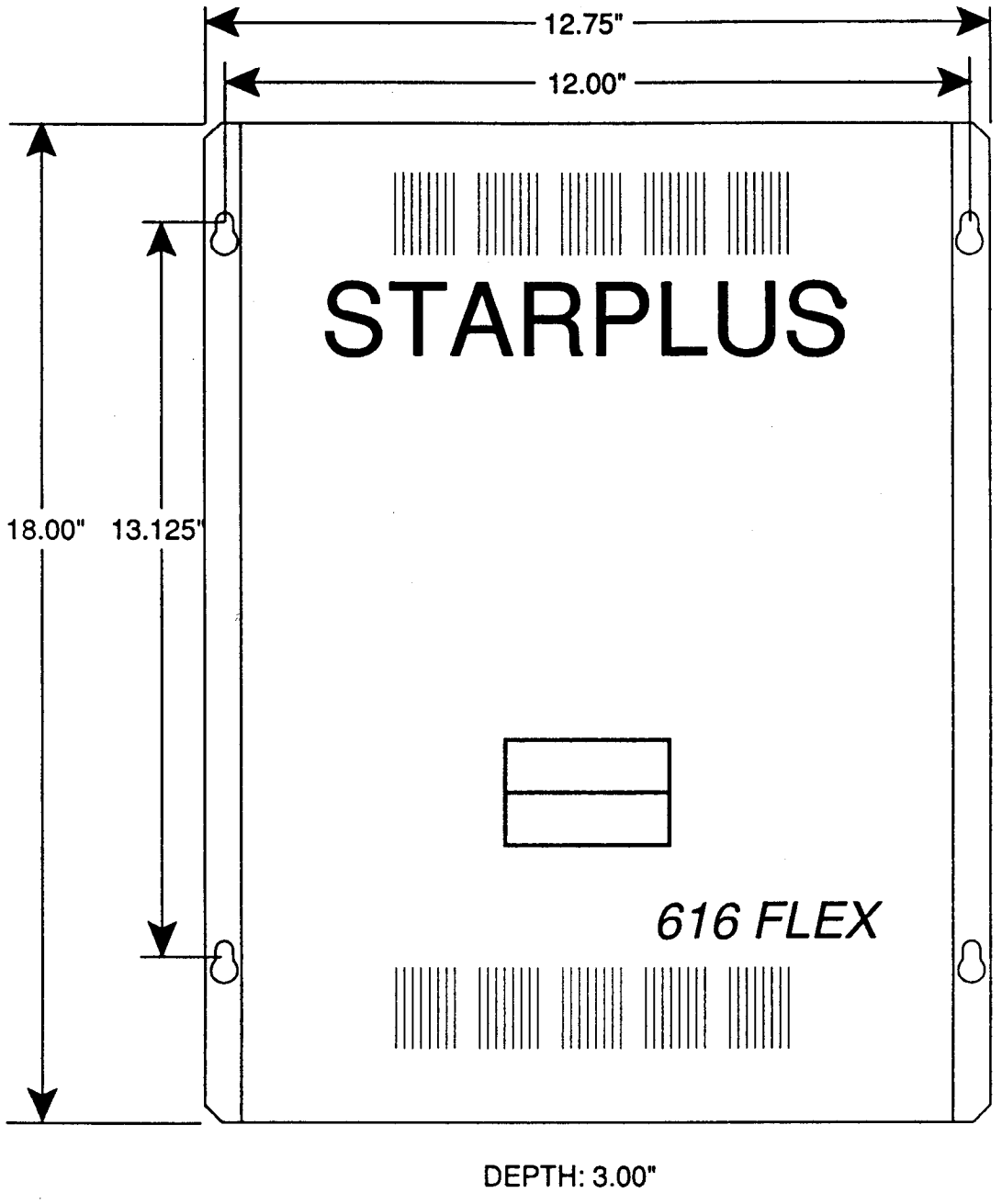
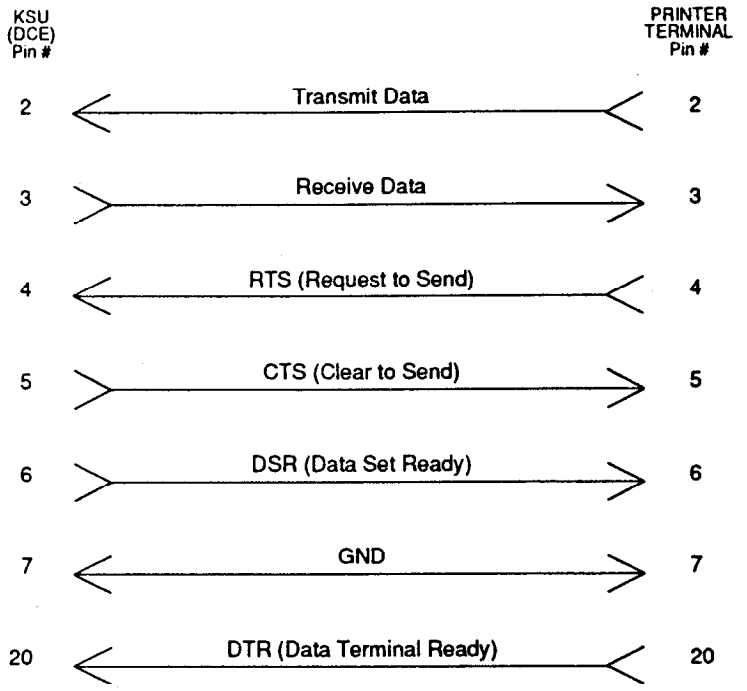


Figure 500.1 - KSU Mounting Dimensions



RS-232C PINOUT
Data Communication Requirements are:
A) Serial Port Compatible
B) ASCII Code Compatible
C) 8 Data Bits and 1 Stop Bit
D) No Parity

Figure 500.2 - RS232C Connections

Table 500.2 SMDR Printout

The SMDR feature provides detailed records of all outgoing and/or incoming, long distance only or all calls exceeding 30 seconds. This feature is enabled or disabled in system programming. By default, SMDR is not enabled and is set to record long distance calls only. A printout format of 80 characters maximum or 29 character maximum may be selected in system programming. The standard format is 69 characters on a single line. A 29 character format will generate 3 lines per message. If the SMDR feature is enabled, the system starts collecting information about the call as soon as it starts and terminates when the call ends. If the call was longer then 30 seconds, the following information is printed:

29 character format selected

```
AA BB HH:MM:SS HH:MM MM/DD/YY
CC.....CC
DD....DD

10 01 00:01:58 14:04 11/20/90
123456789012345678901234
12345678
```

80 character format selected

```
STA CO TOTAL START   DATE       DIALED                    ACCOUNT
10 01 00:01:58 14:04 11/20/90 123456789012345678901234:12345678

AA BB HH:MM:SS HH:MM MM/DD/YY CC.....CC:DD....DD
```

- AA = The two digit originating station field (10 through 25)
- BB = The two digit field identifying the accessed CO line (01 through 06)
- HH:MM:SS = The call duration field showing the hours, minutes and seconds.
- HH:MM: = The time of call origin. Shown in hours, and minutes.
- MM/DD/YY = The date of call origin. Shown as Month, Day and Year.
- CC....CC = The dialed telephone number (up to 24 digits)
- DD....DD = The Account Code number (up to 8 digits)

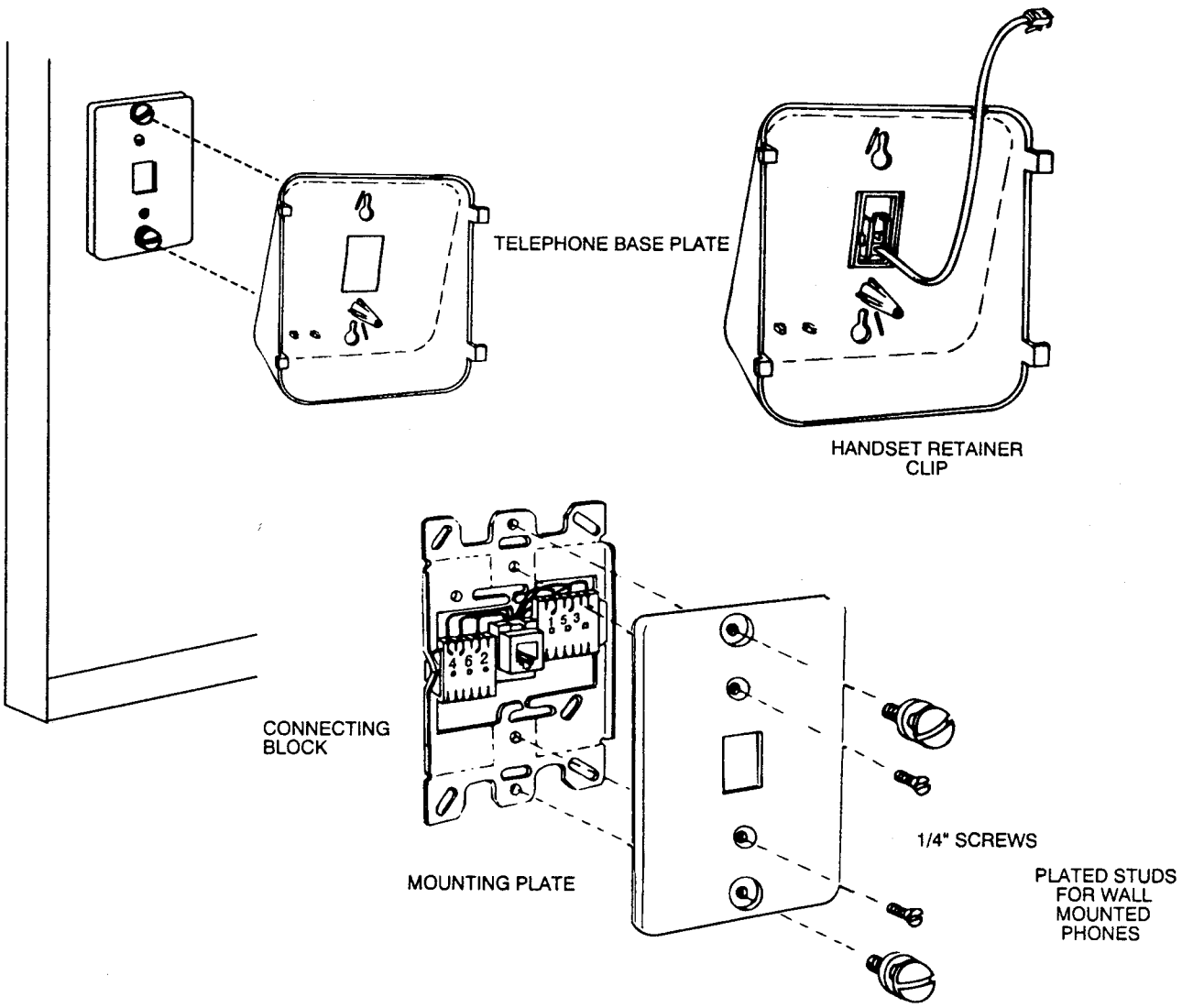
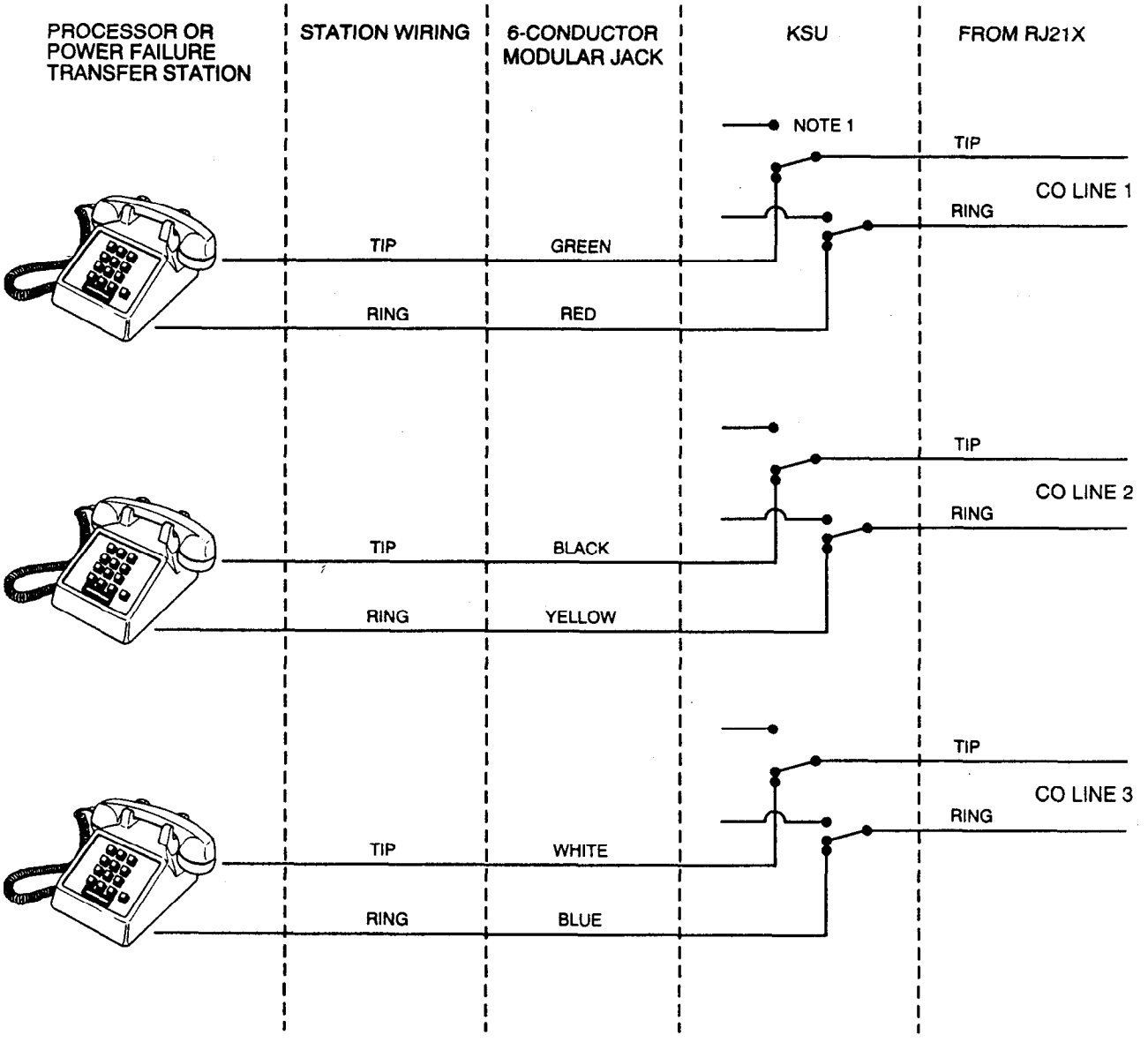


Figure 500.3 - Wall Mounting the Key Telephone



NOTE 1: Contacts are shown in power failure mode.

Figure 500.4 - Processor or Power Failure Transfer

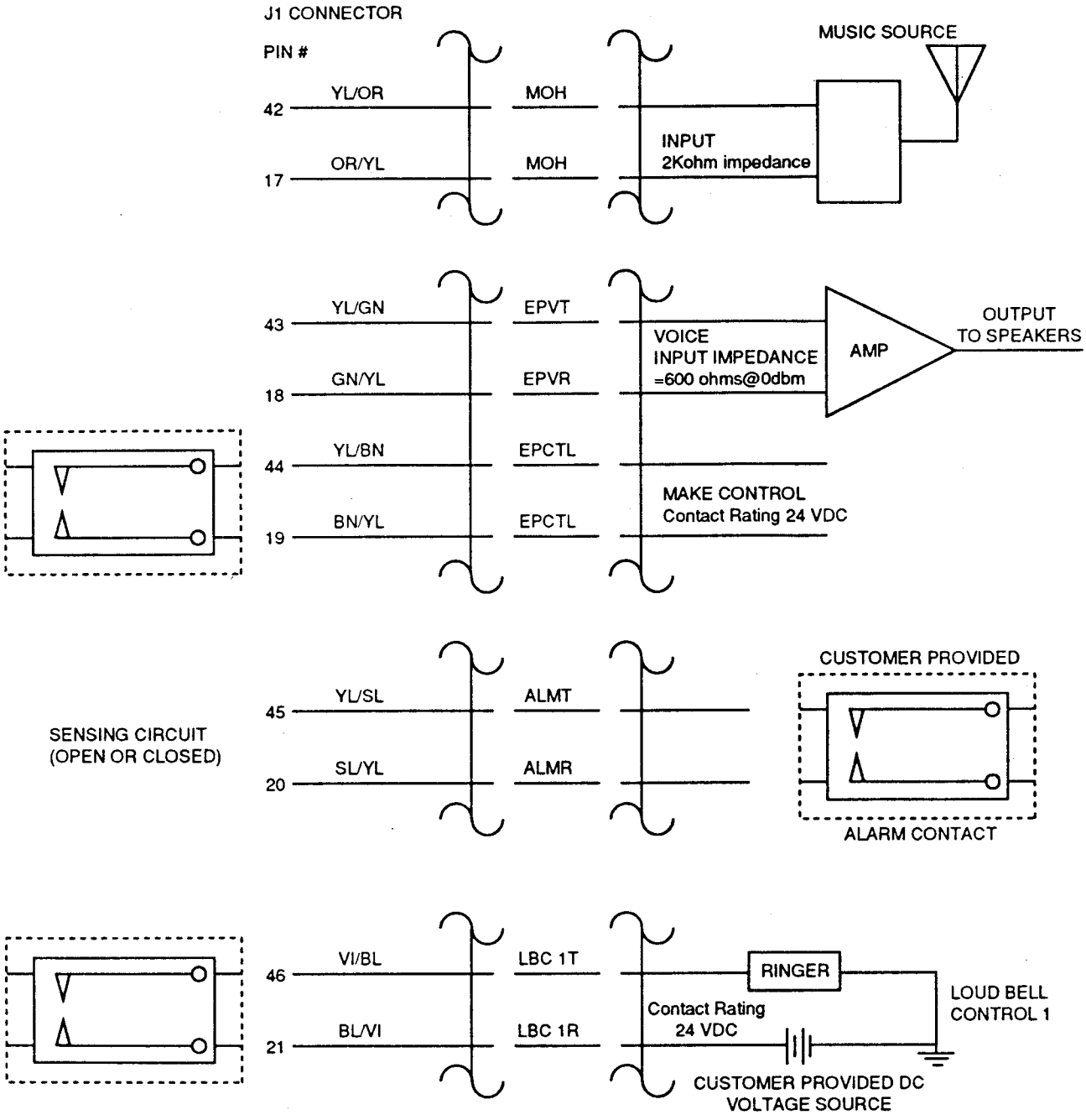
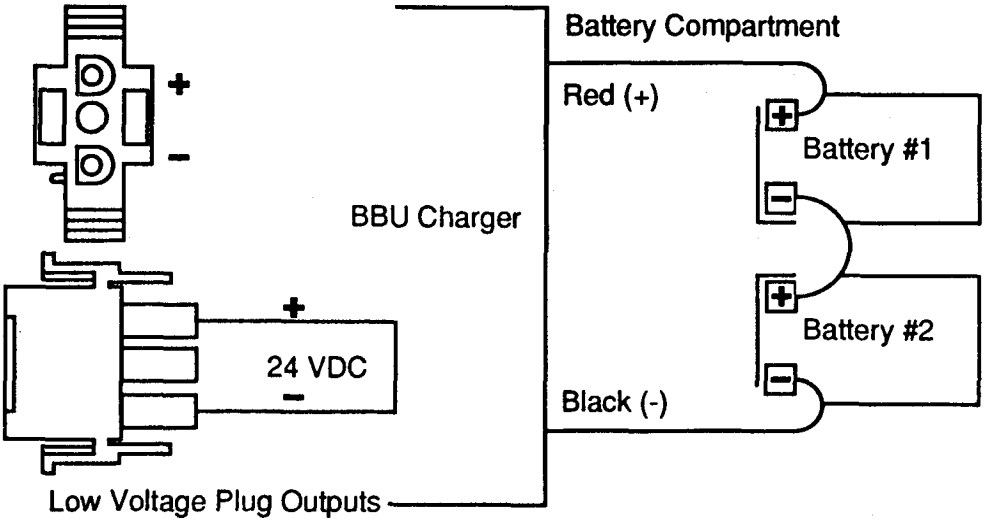


Figure 500.5 - External Connections



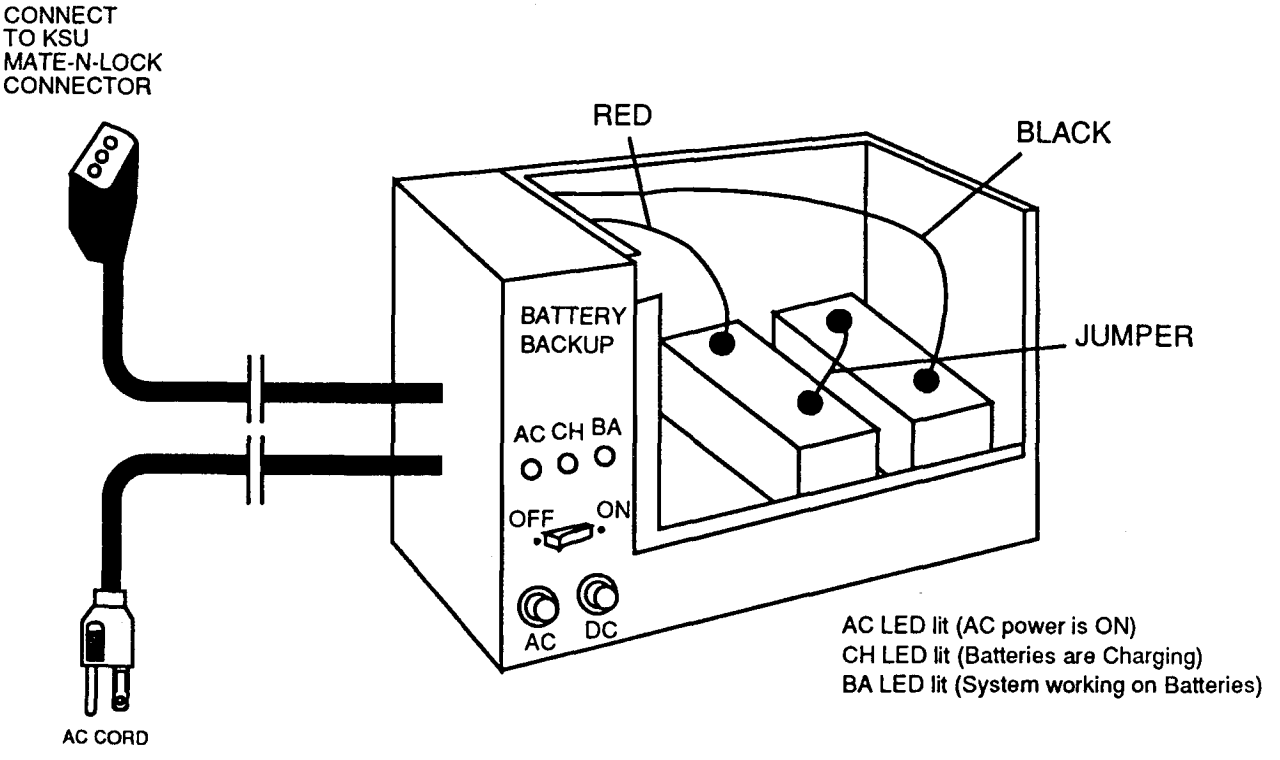
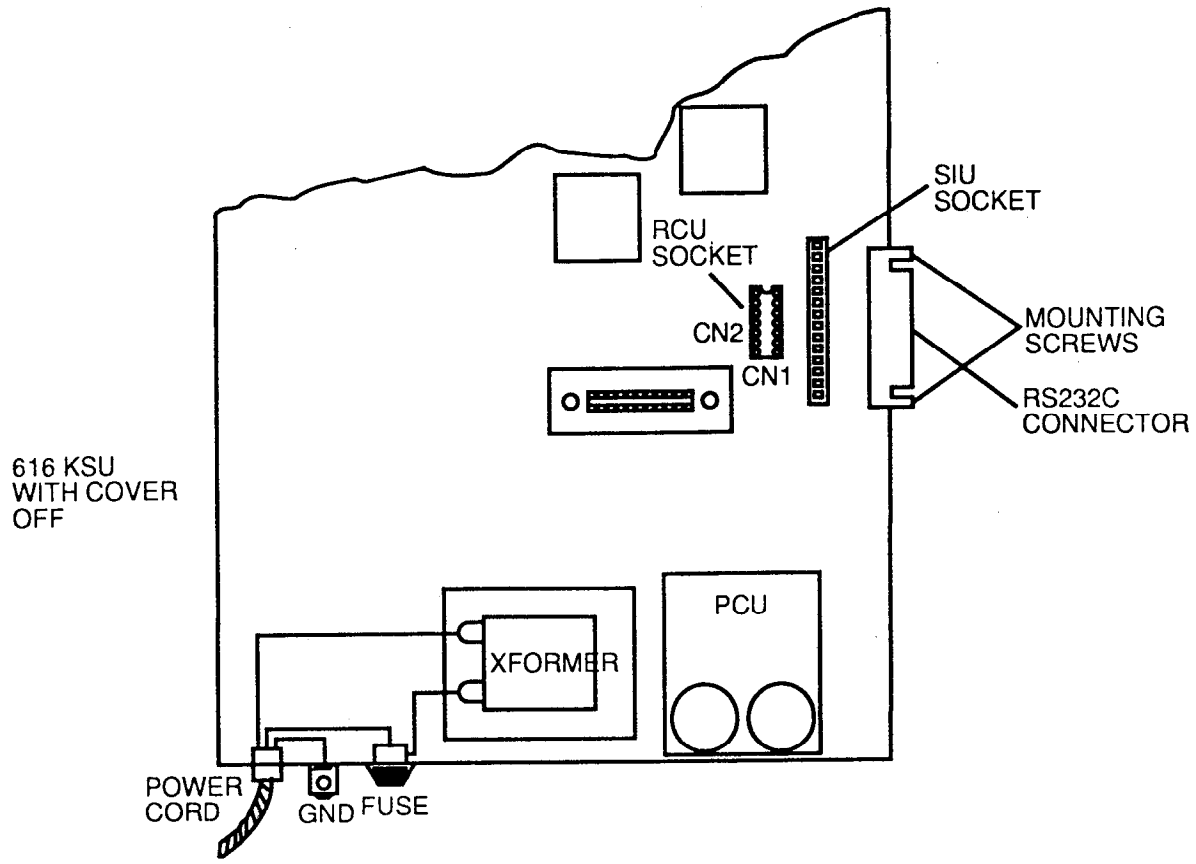


Figure 500.6 - Battery Backup Unit (BBU) Installation



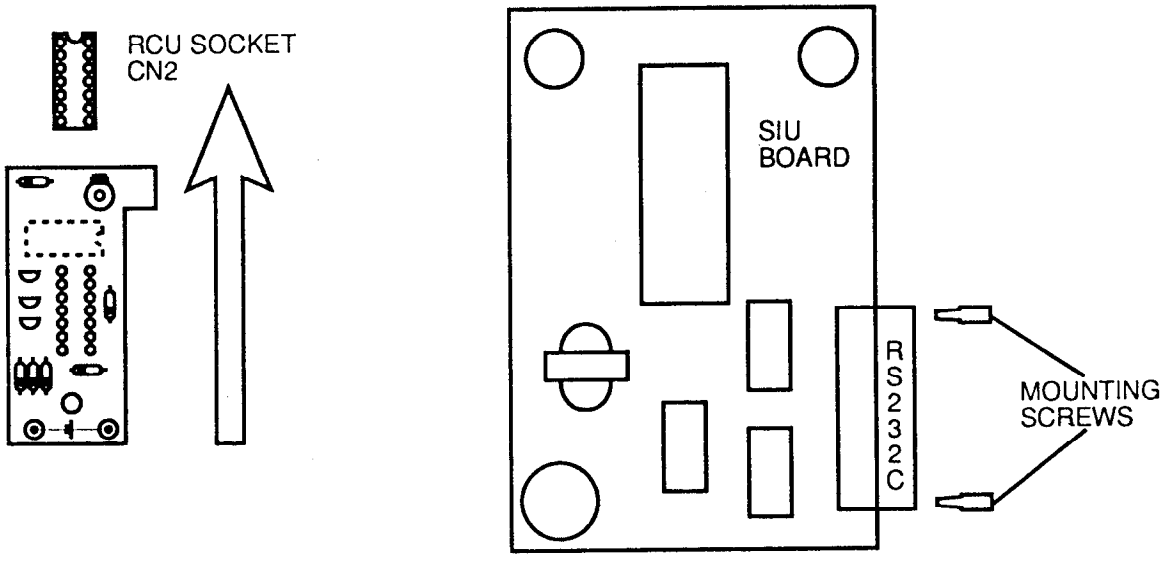


Figure 500.7 - RCU & SIU Installation

Table 500.3 J-1 Connecting Block Layout

Station #	Telephone Line Cord	2 pair twisted Station Cable	Function	MDF Cable	Connector Pin #
Port 01	GREEN	WH/BL	VT 1	WH/BL	26
	RED	BL/WH	VR 1	BL/WH	1
	BLACK	WH/OR	DT 1	WH/OR	27
Station 10	YELLOW	OR/WH	DR 1	OR/WH	2
Port 02	GREEN	WH/BL	VT 2	WH/GN	28
	RED	BL/WH	VR 2	GN/WH	3
	BLACK	WH/OR	DT 2	WH/BN	29
Station 11	YELLOW	OR/WH	DR 2	BN/WH	4
Port 03	GREEN	WH/BL	VT 3	WH/SL	30
	RED	BL/WH	VR 3	SL/WH	5
	BLACK	WH/OR	DT 3	RD/BL	31
Station 12	YELLOW	OR/WH	DR 3	BL/RD	6
Port 04	GREEN	WH/BL	VT 4	RD/OR	32
	RED	BL/WH	VR 4	OR/RD	7
	BLACK	WH/OR	DT 4	RD/GN	33
Station 13	YELLOW	OR/WH	DR 4	GN/RD	8
Port 05	GREEN	WH/BL	VT 5	RD/BN	34
	RED	BL/WH	VR 5	BN/RD	9
	BLACK	WH/OR	DT 5	RD/SL	35
Station 14	YELLOW	OR/WH	DR 5	SL/RD	10
Port 06	GREEN	WH/BL	VT 6	BK/BL	36
	RED	BL/WH	VR6	BL/BK	11
	BLACK	WH/OR	DT 6	BK/OR	37
Station 15	YELLOW	OR/WH	DR 6	OR/BK	12
Port 07	GREEN	WH/BL	VT 7	BK/GN	38
	RED	BL/WH	VR 7	GN/BK	13
	BLACK	WH/OR	DT 7	BK/BN	39
Station 16	YELLOW	OR/WH	DR 7	BN/BK	14
Port 08	GREEN	WH/BL	VT 8	BK/SL	40
	RED	BL/WH	VR 8	SL/BK	15
	BLACK	WH/OR	DT 8	YL/BL	41
Station 17	YELLOW	OR/WH	DR 8	BL/YL	16
MUSIC-ON-HOLD			MOH	YL/OR	42
			MOH	OR/YL	17
EXTERNAL PAGE (VOICE)			EPVT	YL/GN	43
			EPVR	GN/YL	18
EXTERNAL PAGE (DRY CONTACT)			EPCTL	YL/BN	44
			EPCTL	BN/YL	19
ALARM			ALMT	YL/SL	45
			ALMR	SL/YL	20
LOUD BELL CONTROL CONTACT			LBC1T	VI/BL	46
			LBC1R	BL/VI	21

Table 500.4 J-2 Connecting Block Layout

Station #	Telephone Line Cord	2 pair twisted Station Cable	Function	MDF Cable	Connector Pin #
Port 09	GREEN	WH/BL	VT 1	WH/BL	26
	RED	BL/WH	VR 1	BL/WH	1
Station 18	BLACK	WH/OR	DT 1	WH/OR	27
	YELLOW	OR/WH	DR 1	OR/WH	2
Port 10	GREEN	WH/BL	VT 2	WH/GN	28
	RED	BL/WH	VR 2	GN/WH	3
Station 19	BLACK	WH/OR	DT 2	WH/BN	29
	YELLOW	OR/WH	DR 2	BN/WH	4
Port 11	GREEN	WH/BL	VT 3	WH/SL	30
	RED	BL/WH	VR 3	SL/WH	5
Station 20	BLACK	WH/OR	DT 3	RD/BL	31
	YELLOW	OR/WH	DR 3	BL/RD	6
Port 12	GREEN	WH/BL	VT 4	RD/OR	32
	RED	BL/WH	VR 4	OR/RD	7
Station 21	BLACK	WH/OR	DT 4	RD/GN	33
	YELLOW	OR/WH	DR 4	GN/RD	8
Port 13	GREEN	WH/BL	VT 5	RD/BN	34
	RED	BL/WH	VR 5	BN/RD	9
Station 22	BLACK	WH/OR	DT 5	RD/SL	35
	YELLOW	OR/WH	DR 5	SL/RD	10
Port 14	GREEN	WH/BL	VT 6	BK/BL	36
	RED	BL/WH	VR6	BL/BK	11
Station 23	BLACK	WH/OR	DT 6	BK/OR	37
	YELLOW	OR/WH	DR 6	OR/BK	12
Port 15	GREEN	WH/BL	VT 7	BK/GN	38
	RED	BL/WH	VR 7	GN/BK	13
Station 24	BLACK	WH/OR	DT 7	BK/BN	39
	YELLOW	OR/WH	DR 7	BN/BK	14
Port 16	GREEN	WH/BL	VT 8	BK/SL	40
	RED	BL/WH	VR 8	SL/BK	15
Station 25	BLACK	WH/OR	DT 8	YL/BL	41
	YELLOW	OR/WH	DR 8	BL/YL	16

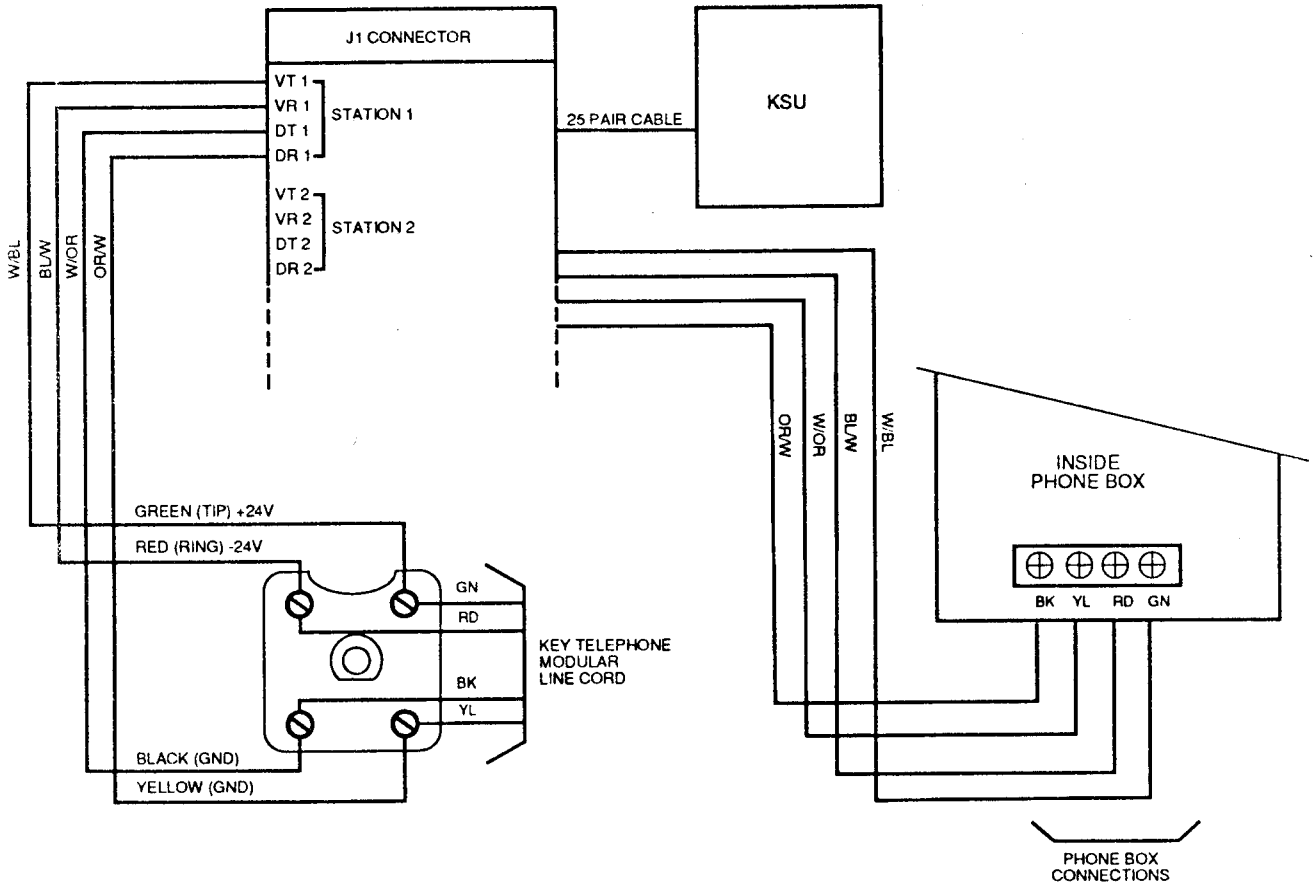


Figure 500.8 - Key Telephone Wiring

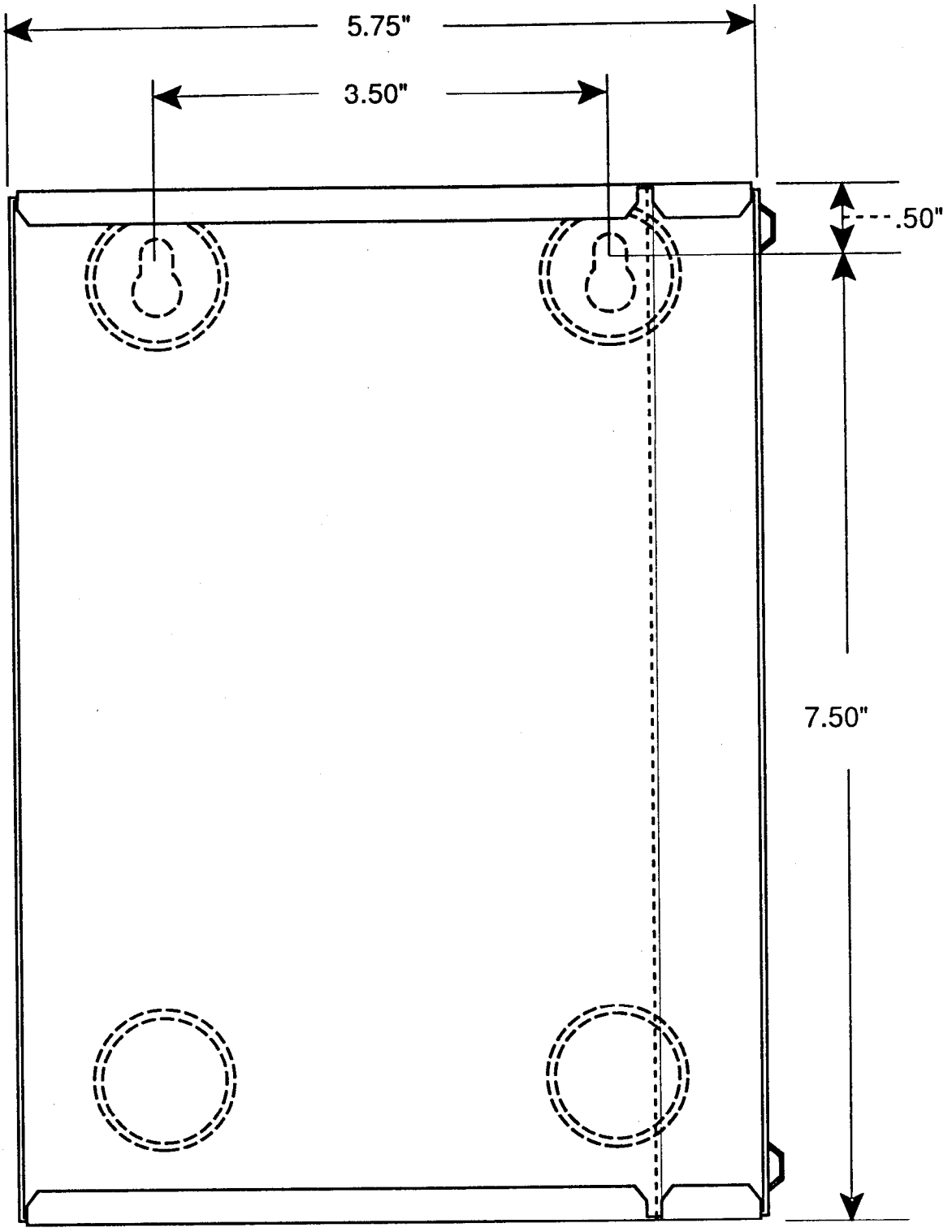


Figure 500.9 - SLA Mounting Dimensions

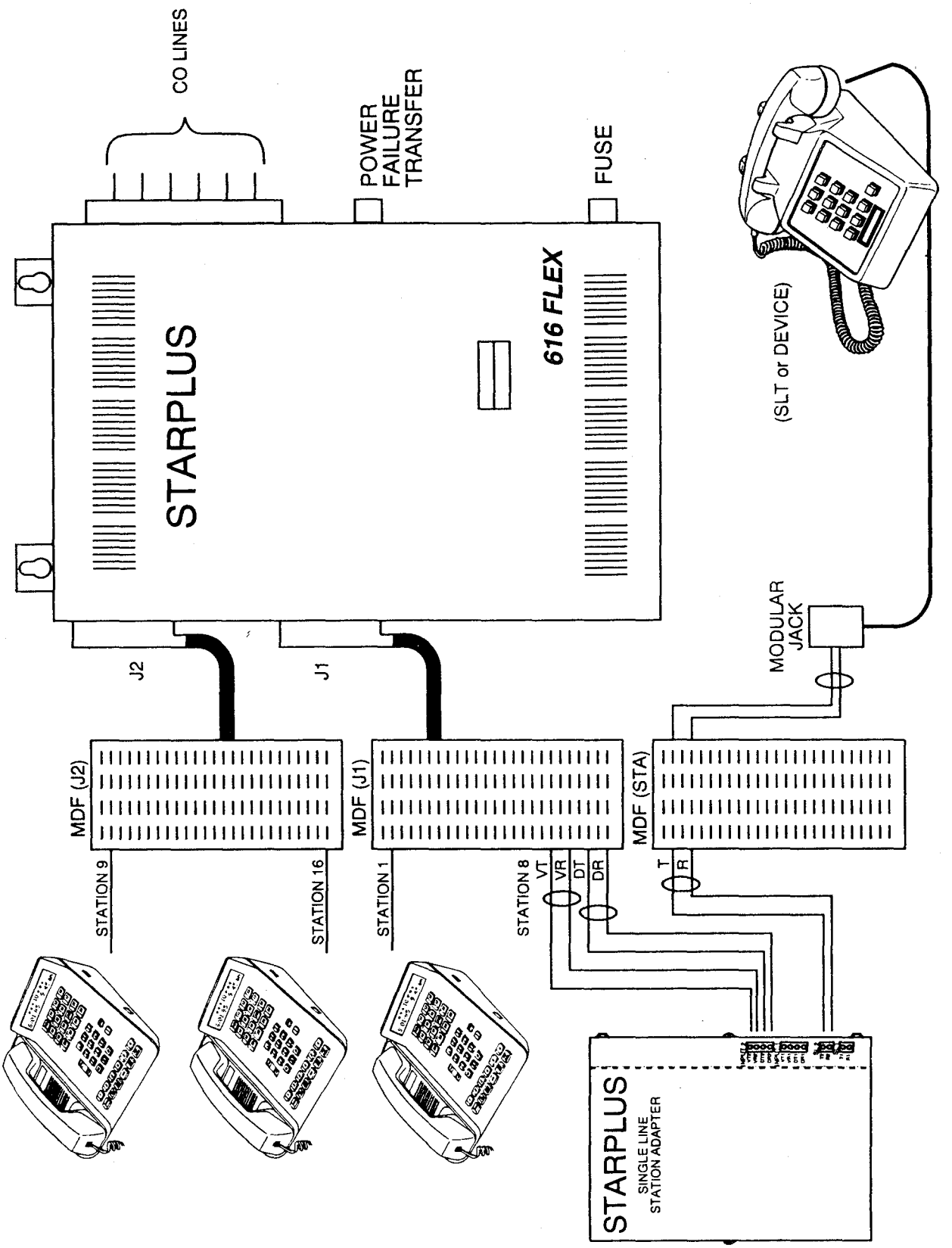


Figure 500.10 - Typical SLA Layout

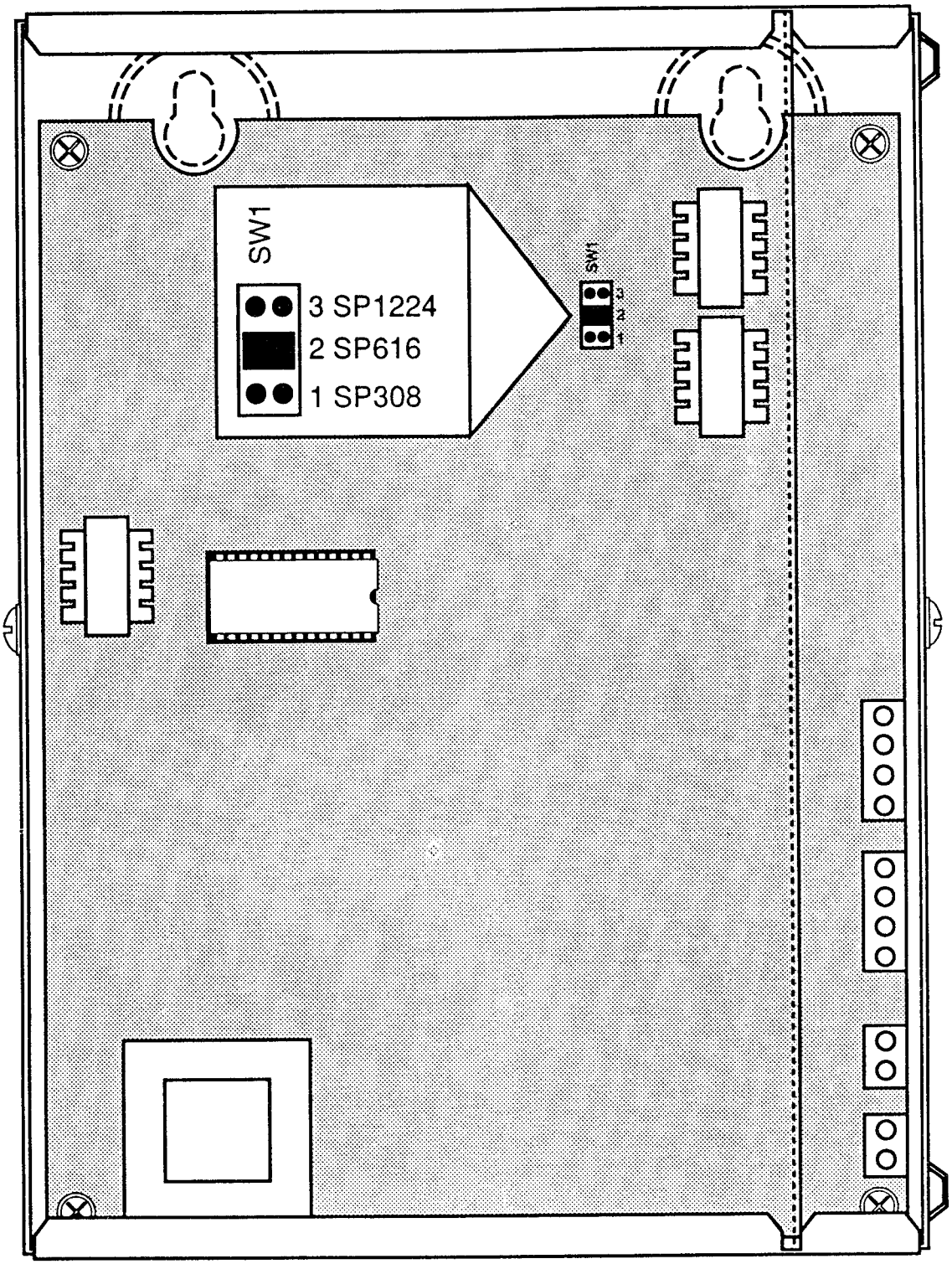


Figure 500.11 - SLA Strap Options

KSU "SISTER" STATION PORTS			
PAIRED STATION PORTS	PAIRED STATION NUMBERS	PAIRED STATION PORTS	PAIRED STATION NUMBERS
PORT 01 PORT 02	STA 10 STA 11	PORT 09 PORT 10	STA 18 STA 19
PORT 03 PORT 04	STA 12 STA 13	PORT 11 PORT 12	STA 20 STA 21
PORT 05 PORT 06	STA 14 STA 15	PORT 13 PORT 14	STA 22 STA 23
PORT 07 PORT 08	STA 16 STA 17	PORT 15 PORT 16	STA 24 STA 25

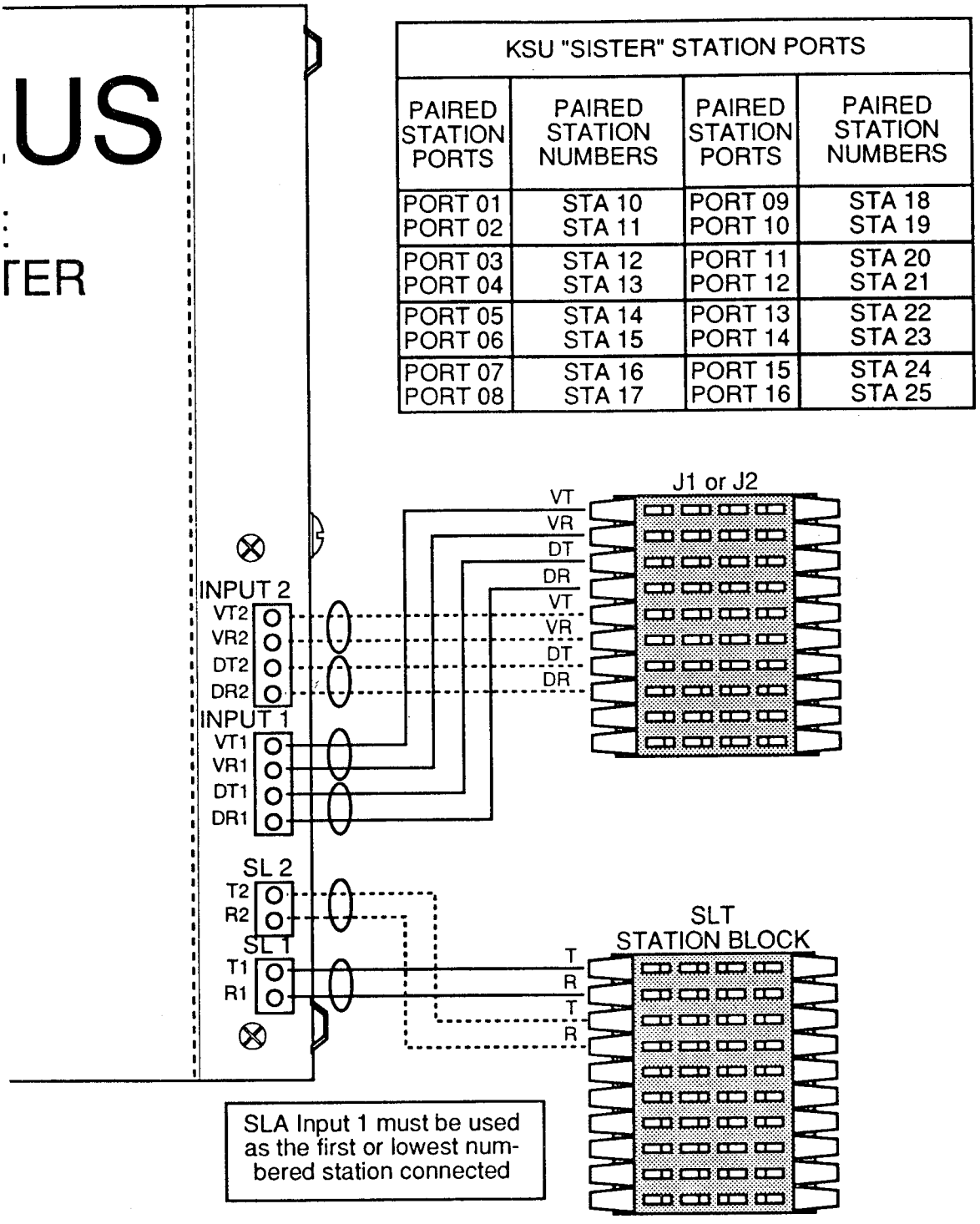


Figure 500.12 - SLA Cross-Connect Wiring

SECTION 600
CUSTOMER DATA BASE PROGRAMMING

600.1 INTRODUCTION

The STARPLUS 616 FLEX Key Telephone System can be programmed to meet each customer's individual needs. All programming is done at Station 10 (Port 01) using the Enhanced or Executive model key telephone as the programming instrument.

A BASIC model telephone cannot be used.

Displays have been incorporated to aid in programming, therefore it is strongly recommended that the Executive telephone be used to make programming easier.

NOTE

It is not required to have an RCU installed in the system to view the programming displays

When the program mode is entered, the key telephone being used no longer operates as a telephone but as a programming instrument with all of the buttons redefined. The keys of the dial pad are used to enter data fields (program codes) associated with system, station and CO line features. CO line buttons and station buttons are used to determine CO line access, assign class of service, determine station features, indicate stations, line group numbers, CO line configuration, system features, toll tables, etc.

At the time the system is installed it must be initialized to load default data into memory. See Table 600.1 for default data. If this pre-programming suits the customer, initialization is all that is needed.

Any time data is to be changed, the program mode must be entered and then the individual data field (program code). A data field can be entered to determine current programming or to change a specific feature within that field.

During programming, the other key telephones in the system operate normally. If a data field is entered but nothing is changed, or changed but not entered into memory (pressing HOLD), the previous data will remain intact upon leaving that data field. Data fields can be entered at random.

In many of the data fields, programming is sequential, i.e. upon completing the programming of one CO line or one station, the next line or station will automatically light up for programming. If no changes are to be made in the next line or station, simply exit the data field by either leaving the program mode (pressing the ON/OFF button to OFF) or entering another data field. This is done by pressing the asterisk (*) and entering that program code.

When programming features, tones are provided to help the programmer determine if a correct or incorrect entry has been made. A solid one second tone indicates the data was accepted. An interrupted tone means an error was made. When this occurs, re-enter the data field and try again. Until new data is entered and accepted, the system will continue to operate under default or previously entered values.

When the hold button is pressed to enter data, that data will be stored in a temporary buffer area. Data is not entered into system memory and has no effect on telephone operation until the program mode is exited. This is done by pressing the ON/OFF button to OFF. Then the data in the temporary buffer is copied into permanent memory. It is at this point that programming affects telephone operation. Until the programming mode has been exited, the system will operate under default or previously programmed data.

Some features must have more than one data field programmed for that feature to work. Where this is the case, it will be stated in the instructions.

600.2 CUSTOMER DATA WORKSHEETS

Before any attempt at programming is made, it is strongly recommended that customer data worksheets be prepared. These worksheets should become part of the permanent record of customer programming. Refer to the following sections when preparing the worksheets.

600.3 DATA BASE FIELDS

The data fields are used to set system timers, determine central office line features and key telephone features. Table 600.1 lists the default values, which are pre-programmed into the system, and the data fields (program codes). When entering CO line data and station data, be sure to enter the exact number of digits specified. The data fields and features are further described in the following paragraphs.

600.4 PROGRAM MODE ENTRY

Programming is always done at station port 01 using either the Enhanced or Executive key telephone. The Basic Telephone cannot be used for programming. Programming is always done at this station regardless of the class of service or intercom number assigned to this station or which station has been

Table 600.1 - Data Fields and Default Values

Field Description	Data Field	Sub Field	Default Entry
Station Configuration			
Station Class of Service	01		All stations set at COS 1
Station Features 1:	02		
Do Not Disturb		1	Allowed at all stations
System Speed Dial Access		2	Access allowed at all Stations
Alarm/Phone Box Signaling		3	No stations assigned
Preferred Line Answer		4	Disabled at all stations
Call Forwarding		5	Allowed at all stations
Auto Select		6	Enabled at all stations
Station Features 2:	03		
Headset		1	Disabled at all stations
Paging Access		2	Allowed at all stations
Flexible Station Numbers	04		Sequential, Sta 10 on DSS button 1
Flexible Button Assignment	05		Buttons 1-16=Stations 10-25 Buttons 17-22=CO Lines 1-6
Station Page Groups	06		All stations in Group 1
Station Pickup Groups	07		All stations in Group 1
Telephone ID:	08		
Basic Telephones		1	None Assigned
Single Line Adapter (SLA)		2	None Assigned
CO Line Configuration			
CO Line Groups	11		All CO lines in Group 1
CO Line Settings:	12		
Line Type		1	All lines assigned as CO lines
Line Signaling		2	All CO lines set at DTMF
Toll Override		3	Disabled for all CO lines
Private Line		4	None assigned
CO Line Ringing - Day	13		All ring at attendant station (10)
CO Line Ringing - Night	14		All ring at attendant station (10)
Flash Timer	15		2 seconds
CO Ring Detect	16		300 msec.
Dial Pulse	17		60/40, 10 pps
Ring Time-out Timer	18		5.0 seconds
System Configuration			
System Features:	21		
CO Line Queuing		1	Allowed at all stations
Hold Preference		2	Primary hold is system
Alarm Detection		3	Closed loop
Alarm Signaling		4	Continuous tone
Automatic Privacy		5	Enabled at all stations
Alarm Enable		6	Disabled
BGM Enable		7	Disabled
Timers:			
Exclusive Hold Recall	22		60 seconds
System Hold Recall	23		60 seconds
Transfer Recall Timer	24		30 seconds
Message Reminder Tone	25		Disabled (00)
Pause Timer	26		2 seconds
Executive/Secretary Pairs	27		None assigned
Loud Bell Control/A-Lead	28		None assigned
PBX Dial Codes	31		None assigned
Attendant Position	32		Station 10 is attendant
Preset Forward Ring Timer	33		30 seconds
Preset Call Forward	34		None assigned
Conference Timer	35		15 minutes
Station Message Detail Recording	36		Enabled for all lines
SMDR/Baud Rate/Print Format	37		All call/ 300 baud/29 char.
Toll Table - Allow A	41		None assigned
Toll Table - Deny A	42		None assigned
Toll Table - Allow B	43		None assigned
Toll Table - Deny B	44		None assigned

assigned as the attendant.

To enter the program mode, the programmer must first verify that the key telephone is properly connected to station port 01.

1. Press ON/OFF button to ON (button lights & intercom dial tone is heard).
2. On the dial pad, press the asterisk (*) twice.
3. On the dial pad, enter [5-6-2-3] (LOAD). Confirmation tone is heard. Dial tone is removed.
4. The HOLD button & the ON/OFF button will be lit.

NOTE

The programming mode may not be entered if the Attendant Station is currently active in the Flexible Station Numbering mode [**STAT].

The system is ready to program (other key telephones connected to the system continue to operate normally).

** **Initialize here if necessary.** (See Section Below)

5. Press the asterisk (*) once.
6. Dial the two-digit program code for the desired data field.
7. Enter customer data.
8. To load the entered data, press the HOLD button. A burst of one second confirmation tone should be heard. If an interrupted (error) tone is heard, re-enter the data starting with step 5.
9. Repeat from step 5 until all data has been stored.

To exit the program mode, press the ON/OFF button (light will extinguish). All new data now becomes effective and operational.

600.5 INITIALIZATION

The system has been pre-programmed with certain features which are called default data. These features are loaded into memory when the system is initialized. The system should be initialized when installed or at any time the data base has been corrupted.

WARNING

Proper Initialization is required when installing a new system.

To initialize the system and set all parameters to their default values:

1. Enter the programming mode. (Refer to steps 1-4, Sec. 600.4).
2. Press the asterisk (*) once.
3. On the dial pad, enter the numbers [4-6-4-8] (INIT).
4. Press the HOLD button. Confirmation tone is heard. Default data is now loaded.

To default only portions of the database, use the following program codes instead of the initialization code (*4648).

*00 for station data only.

*10 for CO line data only.

*20 for system data only.

*30 for flexible buttons only.

*40 for toll tables only.

To load default data into system memory, leave the Programming mode (press ON/OFF button to OFF).

600.6 RESET FUNCTION

From time to time, it may be necessary to reset the system to clear meantime errors. As with any computer device, errors can build up and occasionally cause erratic operation. This procedures DOES NOT initialize the system data base. To clear accumulated errors and reset the system:

1. Enter the Program mode.
2. Press the asterisk (*) once.
3. Dial [7-3-7-8] (REST) on the dial pad.
4. Press the HOLD button. Confirmation tone is heard, then the system will perform a reset.

NOTE

The programming station will return to normal keyset operation after the reset.

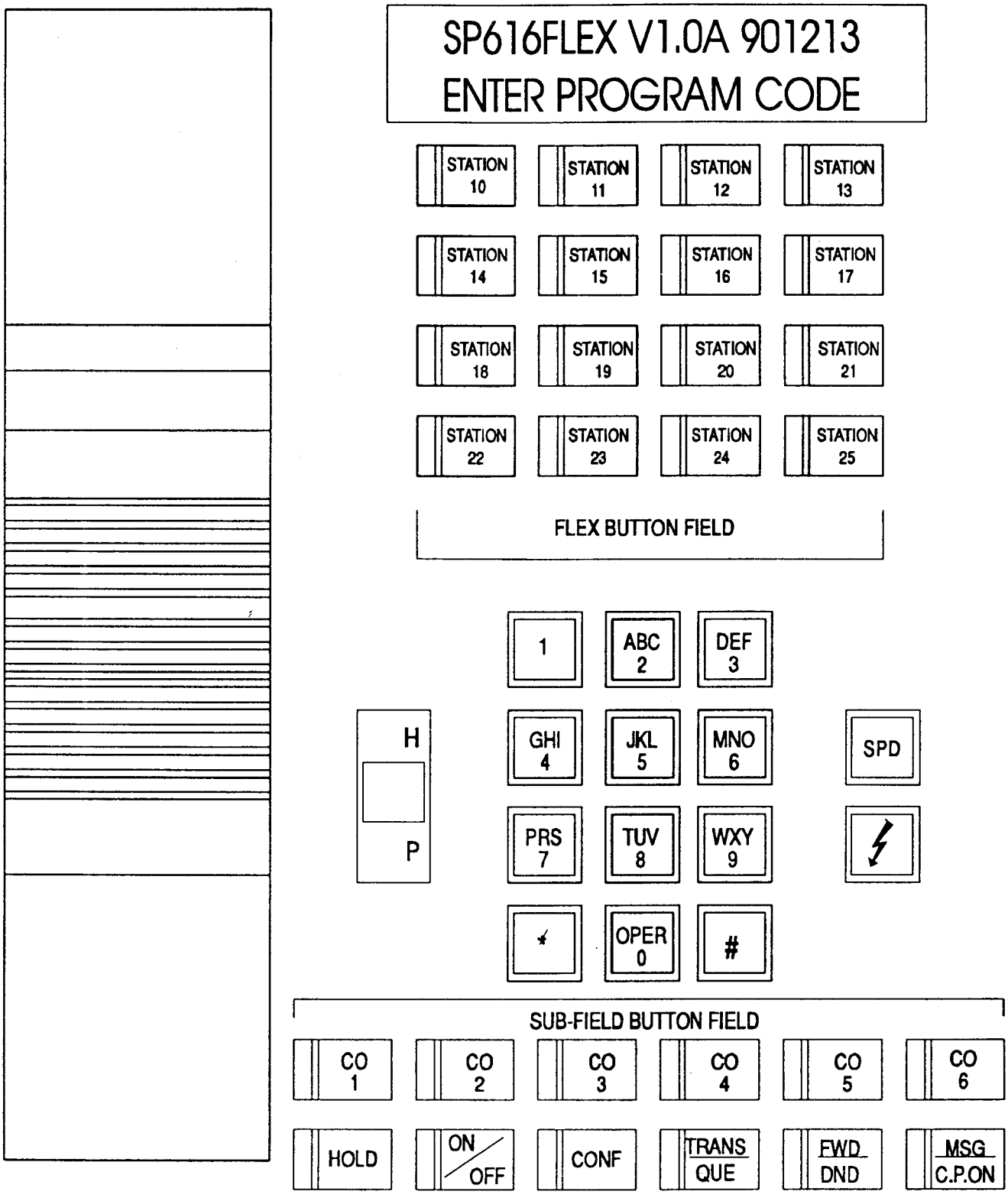


Figure 600.1 - 616 FLEX Default Button Mapping

SECTION 610
STATION CONFIGURATION

610.1 STATION CLASS OF SERVICE

PROGRAMMING STEPS

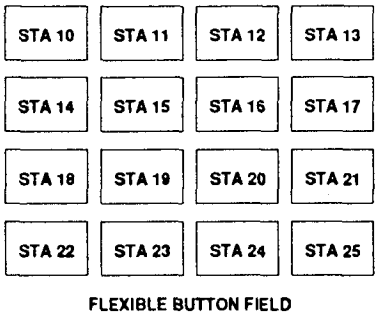
Make sure you have entered the programming mode (Sec. 600.4).

If you wish to change the Class of Service of a station, dial an (*) asterisk & [01] on the dial pad.

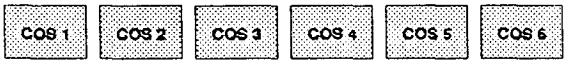
If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD STA CLASS OF SERVICE

1. Press the button of the station to be assigned a class of service.
2. Then press appropriate button for the class of service being assigned to that station - see below. By default all stations are assigned Class of Service 1 (unrestricted).
3. When all changes have been made, press the HOLD button. The next station button will light for programming.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

Each station must be assigned a class of service which determines the type of calls a station may make. There are 2 Toll Restriction tables labeled A and B in which you may enter long distance numbers to be allowed or denied (Refer to Section 630.13).

- Class 1 = Unrestricted
- Class 2 = Follows entries in Allow & Deny Table A
- Class 3 = Follows entries in Allow & Deny Table B
- Class 4 = Allows 7 digits maximum, denies "0" or "1" as the first digit dialed
- Class 5 = Intercom & paging only
- Class 6 = Receive only/Phone Box (no dialing)

Tables A & B must be programmed in order for COS2 and COS3 to function.

Default: All Stations are assigned COS1(LED ON)

Related Programming:

When a CO line is marked PBX, COS restrictions apply to the station only if one of 4 PBX Codes are dialed first, Refer to Sec. 630.5.

Stations must be programmed to receive phone box/alarm signaling, Refer to Sec. 610.2; and must also be programmed with the corresponding station button of the phone box, Refer to Sec 610.5

610.2 STATION FEATURES 1

PROGRAMMING STEPS

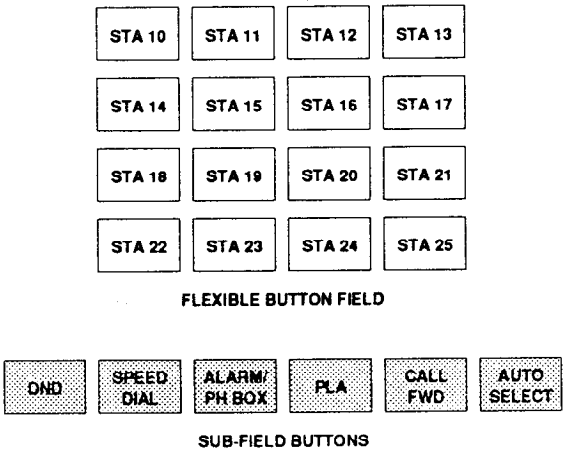
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first (Sec. 600.4).

If station features are to be changed, dial an asterisk (*) and [02] on the dial pad.

If you have a display phone, you will see the following:

```
SP 616 FLEX VX.XX YYMMDD
STATION FEATURES 1
```

1. Press the button of the station to be programmed.
2. Toggle the following program buttons ON or OFF, depending on what features that station is to be given.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
3. When all changes have been made, press the HOLD button. The next station button will light for programming.



DESCRIPTION

Station features are described as follows:

Do Not Disturb (DND)

A yes entry (LED on) indicates this station is allowed the Do Not Disturb feature. The programmed Attendant cannot have DND.

Default: Do Not Disturb is enabled at all Stations (LED ON)

Speed Dial (System)

A yes entry (LED on) indicates this station is allowed access to system speed dial numbers. The last 20 numbers (bins 30-49) are not monitored by toll restriction. Refer to toll restriction tables, Sec. 630.13, and programming system speed numbers, Sec. 630.19.

Default: Speed Dial access is enabled at all Stations (LED ON)

Alarm/Phone Box Signaling

The system can transmit an alarm signal to all available (non-busy) keysets which have been programmed to receive an audible signal. The LED on indicates the alarm is enabled; if unlit it is disabled. In the event of an alarm condition, the system must be reset by first clearing the alarm condition on the external system and then dialing the alarm reset code on the dial pad.

These stations will also receive an alert tone from a phone box.

NOTE: A STATION BUTTON MUST BE ASSIGNED TO PHONES RECEIVING PHONE BOX RINGING, Refer to Sec. 610.5

Related Programming:

Refer to Sec. 630.1 to enable alarm signaling and to program alarm detection & signaling.

Default: Alarm/Phone Box Signaling is disabled at all Stations (LED OFF)

Preferred Line Answer

Stations can be given the ability to answer incoming outside line calls, transferred & recalling lines and line queues by simply going off-hook.

Default: Preferred Line Answer is disabled at all Stations (LED OFF)

610.2 STATION FEATURES 1 (Cont'd)

PROGRAMMING STEPS

DESCRIPTION

Call Forward (Station)

Stations can be allowed or denied the ability to have incoming, intercom and transferred outside lines forwarded to another station.

Default: Station Call Forward is enabled at all Stations (LED ON)

Auto Select

This feature allows a user to press an idle CO line button and have that line automatically seized and dial tone received through the speaker. The user can then dial manually or select a station or speed number.

Default: Auto Select is enabled at all Stations (LED ON)

Related Programming:

Refer to Flexible Button Programming, Sec. 610.5.

610.3 STATION FEATURES 2

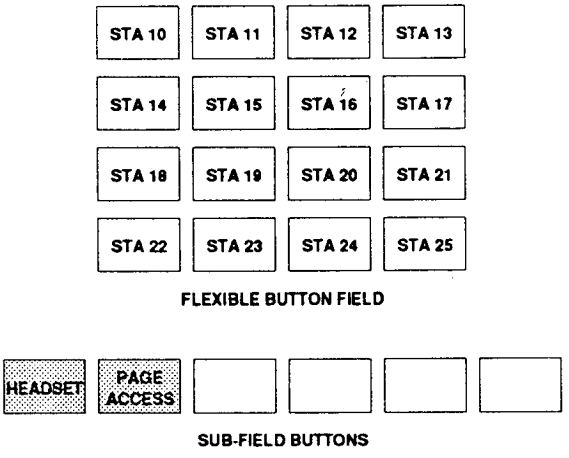
PROGRAMMING STEPS

To program further station features, dial an asterisk (*) and [03] on the dial pad.

If you have a display phone, you will see the following display:

```
SP 616 FLEX VX.XX YYMMDD
STATION FEATURES 2
```

1. Press the button of the station to be programmed.
2. Then toggle the following program buttons ON or OFF, depending on what features that station is to be given.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
3. When all changes have been made, press the HOLD button. The next station button will light for programming.



DESCRIPTION

Additional station features are described as follows:

Headset

This feature allows a station user to enable headset mode at the station by dialing a code [41] or pressing a programmed flex button.

Default: Headset operation is disabled at all Stations (LED OFF)

Paging Access Restriction

Stations can be denied the ability to make page announcements. If a station is to be denied paging access, do not use Class of Service 6 to accomplish this.

Default: By default, all stations are allowed to access paging resources. (LED ON)

610.4 FLEXIBLE STATION NUMBERS

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If station intercom numbers are to be changed, dial an asterisk (*) and [04] on the dial pad.

If you have a display phone, you will see the following:

FLEXIBLE NUMBER ASSIGN
PORT 01 - STA 10

1. Press the PORT* button of the station whose intercom number is to be changed (LED will flash).
   *Port = the sequence in which the telephones are connected to the main switching unit. The LCD display will indicate the intercom number associated to each port. To view stations, press a PORT button, then its assigned intercom button.

	PORT 01		PORT 02		PORT 03		PORT 04
	PORT 05		PORT 06		PORT 07		PORT 08
	PORT 09		PORT 10		PORT 11		PORT 12
	PORT 13		PORT 14		PORT 15		PORT 16

Port Button Mapping

2. Press the station button of the intercom number it is to be changed to. Confirmation tone will be heard. The LCD display will now update to show the new assignment.

	STA 10		STA 11		STA 12		STA 13
	STA 14		STA 15		STA 16		STA 17
	STA 18		STA 19		STA 20		STA 21
	STA 22		STA 23		STA 24		STA 25

Station Button Mapping

3. Make sure ALL ports are assigned an intercom number. (ie: a minimum of 2 ports must be changed.)
   Example: Assign Port 01 to Intercom number 12. Then assign Port 03 to Intercom number 10.
4. Repeat steps 1 & 2 to assign additional stations.
5. Press the HOLD button after all changes have been made. Confirmation tone will be heard.
6. Press ON/OFF button OFF to end sequence.

DESCRIPTION

This feature allows one person to move from one station to another without changing phones and yet take all their individual station data including intercom number with them. This feature can also be programmed by the Attendant Station. Refer to Sec. 300.56 for programming instructions.

However, Station 10 (Port 01) always remains the programming port regardless of the intercom number assigned to it.

The system does not allow duplicate or unassigned numbers. If this happens, error tone will be heard when entering the data.

For example, if a station with an intercom number of 16 is moved to where station intercom number 10 was; then station intercom number 10 must be moved somewhere. 10 could be moved to where 23 was and 23 moved to where 16 was. This way all circuits have a unique intercom number.

This feature requires the user to know the "PORT" of the station requesting to be changed (The LCD will provide this information). Remember: Ports NEVER change, but station intercom numbers DO. ONLY one station can be in programming or Attendant changing stations at any one time.

NOTE: The entire system must be idle before changes made in station numbers will take effect.

Default: By default Port 1 is assigned Intercom Number 10, Port 2 is assigned Intercom Number 11, etc.

610.5 FLEXIBLE BUTTONS

PROGRAMMING STEPS

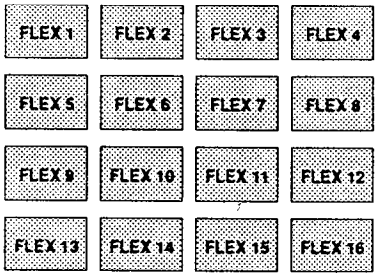
If you are in the programming mode, continue using program codes. If you are starting to program here, enter the program mode first.

To program your flexible buttons, dial an asterisk (*) and [05] on the dial pad.

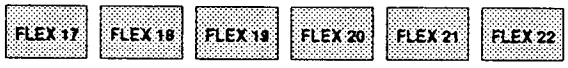
If you have a display phone, you will see the following:

FLEX BUTTON ASSIGNMENT
ENTER STATION NO.

1. Dial the two-digit station number (10-25) on the dial pad.
2. Press any button which you want to change. See the following program buttons:



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

Each flexible button may be given a general assignment such as multi function button, station button, CO line button, loop key or pool key.

Multi function buttons are programmed by each individual user to be a DSS (station) button, speed dial button, page button or mute button.

A multi function button can be programmed in the system data base as a station button. After entering a "1", enter the station number desired, and press HOLD. The station user can erase this programming.

When programming a button as a CO line button, the line number must also be specified.

When programming a button as a CO line button, refer to CO line ringing (Sec. 620.3. By default, Station 10 will ring on a line. However, if Station 10 is not given button access to a line, another station must be programmed to ring on that line.

When programming a pool button, the line group number must also be entered.

Default: By default, flexible buttons are assigned as follows:

BASIC Telephone:
Buttons 1-6 = CO lines 1-6

ENHANCED/EXECUTIVE Telephone:
Buttons 1-16 = Stations 10-25;
Buttons 17-22 = CO lines 1-6

610.5 FLEXIBLE BUTTONS (Cont'd)

PROGRAMMING STEPS

You will see a display like the following:

```
FLEX BUTTON ASSIGNMENT
STA 10 FLEX 01: DSS 10
```

3. Dial the desired code to assign button function.
   - 1 = multi (user programmable)
   - 1XX = DSS/BLF (XX= Stations 10-25)
   - 2X = CO line (X is a one-digit line number)
   - 3 = Loop Button
   - 4X = pooled group (X is a one-digit line group number)
4. When all changes have been made, press the HOLD button. Confirmation tone will be heard.

The next sequential button will light for programming or press the next button to be programmed. Display will now update such as in the following examples:

```
FLEX BUTTON ASSIGNMENT
STA 10 FLEX 02: CO 4
```

Continue programming buttons until the station is completed, then go back, redial the program code, and dial the next station number to program that station's buttons.

```
FLEX BUTTON ASSIGNMENT
STA 10 FLEX 09: DSS 22
```

NOTE: To program the flexible buttons on a Basic Telephone, refer to Sec. 610.8.

DESCRIPTION

When programming a button as a pooled group button, refer to CO line group programming. Pooled group numbers match CO line group numbers.

Stations should be given a loop button so they can receive a transferred call on a line for which they have no button access.

A DSS button MUST be assigned to stations receiving phone box ringing.

610.6 STATION PAGE GROUPS

PROGRAMMING STEPS

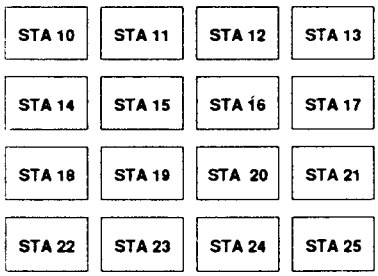
If you are in the programming mode, continue using the program codes. If you are starting programming here, enter the program mode first.

If page groups are to be changed, dial an asterisk (*) and [06] on the dial pad.

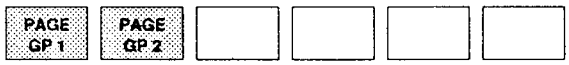
If you have a display phone, you will see the following:

```
SP 616 FLEX VX XX YYMMDD
STATION PAGE GROUPS
```

1. Press the station button of the station to be changed.
2. Toggle the program button ON or OFF for the desired page group.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
3. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

Each station can be assigned to page groups for the purpose of receiving page announcements.

There are 2 page groups. Stations can be assigned to either one or both of the groups or not be assigned to a group at all and thereby receive no pages.

Stations not assigned to a page group can still make page announcements if allowed in station programming, Sec. 610.3. Stations can be assigned to a page group but not allowed to make pages (Refer to Station Configuration, Station Features 1, Sec. 610.3.)

Default: All Stations are assigned to Page Zone 1 (LED ON). Page Zone 2 is disabled at all stations (LED OFF)

610.7 STATION PICKUP GROUPS

PROGRAMMING STEPS

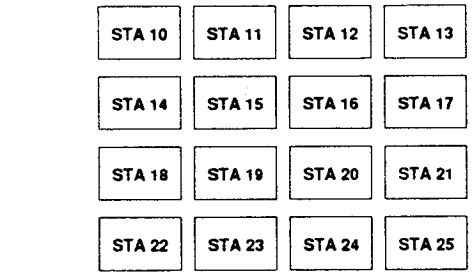
If you are in the programming mode, continue using the program codes. If you are starting programming here, enter the program mode first.

If pickup groups are to be changed, dial an asterisk (*) and [07] on the dial pad.

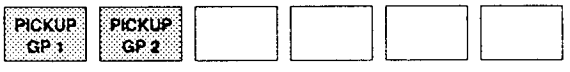
If you have a display phone, you will see the following:

```
SP 616 FLEX VX.XX YYMMDD
STATION PICKUP GROUPS
```

1. Press the station button of the station to be changed.
2. Toggle the program button ON or OFF for the desired pickup group.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
3. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

Each station can be assigned to pickup groups in order to pick up tone ringing calls at another station in the same group. Incoming CO line calls are excluded.

There are 2 pickup groups. Stations can be assigned to either one or both of the groups or not be assigned to a group at all and be unable to pickup calls ringing at other stations or have calls picked up from their station.

Default: All Stations are assigned to Pickup Group 1 (LED ON). Pickup Group 2 is disabled at all stations (LED OFF)

610.8 STATION ID

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

Dial an asterisk (*) and [08] on the dial pad.

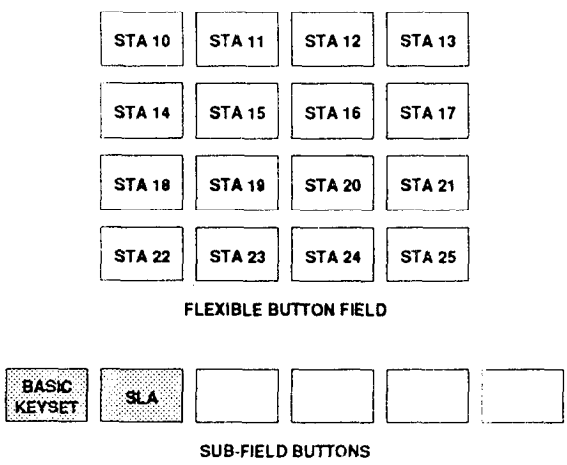
If you have a display phone, you will see the following:

KEYSET ID ASSIGNMENT PRESS FLEX BUTTON

1. Press the Station button of the station being assigned a Basic telephone or an SLA port.
2. Press the Sub-Field button indicated below to the appropriate type of station.
3. Press the HOLD button. Confirmation tone will be heard and the display will now update.

STA NO ID XX BASIC

STA NO ID XX SLA



DESCRIPTION

When connecting either Basic key telephones or a Single Line Telephone via a Single Line Station Adapter (SLA) to the 616 FLEX, it is necessary to program which stations or ports are being used for these station instruments.

This allows the system software to correctly identify and process data to and from basic sets and single line adapters (SLA's).

This procedure is also useful in aiding troubleshooting the system. The display will indicate whether a station is correctly connected to the system by displaying the station type. Enhanced and Executive stations are automatically detected and displayed. Basic stations and SLA stations MUST be programmed as such. If the system is not receiving a proper data signal from a station port (i.e. station not connected), the display will show the port as being disconnected.

To unassign a Port/Station as a Basic or SLA type of station, toggle off the Sub-Field button and press HOLD.

NOTE:

When installing two (2) SLT's to a Single Line Station Adapter (SLA), it is necessary to assign both "sister" ports/stations as SLA stations. Refer to Flexible Button Programming, Sec. 610.5 for programming flexible buttons and to determine the function of these buttons.

Default: All station ports are assigned as either Enhanced or Executive key telephones upon system initialization. Refer to Figure 600.1 for default button mapping.

SECTION 620
CO LINE CONFIGURATION

620.1 CO LINE GROUPS

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

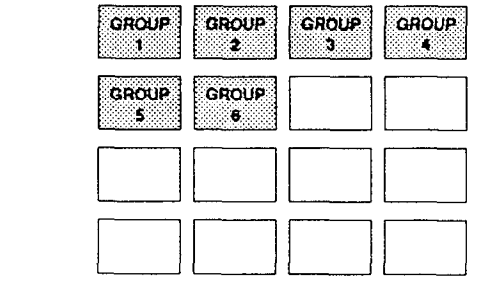
To assign CO line groups, dial an asterisk (*) and [11] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX XX YYMMDD
CO LINE GROUPS

1. Press the CO line as indicated in the program buttons below.
2. Then press the button for the CO line group into which that CO line is to be placed.
3. When all changes have been made, press the HOLD button.

Continue programming CO lines until they have all been placed in a group.



DESCRIPTION

Six (6) line groups are available for CO line assignment. Trunk Groups should be assigned according to type (local, FX, WATS, etc.).

Line grouping affects queuing; if you queue on a line, any line in that same group may be made available to you.

Line groups are used primarily for flexible buttons assigned as pooled group buttons, Sec. 610.5

Default: All CO Lines are assigned to Group 1.

620.2 CO LINE SETTINGS

PROGRAMMING STEPS

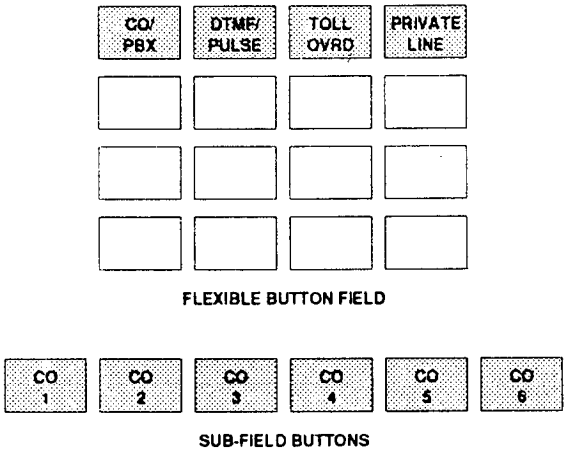
If you are in the programming mode, continue using program codes. If you are starting to program here, enter the program mode first.

If any CO line features are to be changed, dial an asterisk (*) and [12] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
CO LINE SETTINGS

1. Press the CO line button of the line to be programmed.
2. Toggle the program buttons ON or OFF, depending on the CO Line features desired.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
3. When all changes have been made, press the HOLD button. The next CO Line button will light for programming.



DESCRIPTION

The CO Line/PBX features are described as follows:

Line Type (CO/PBX)

Each individual outside line can be programmed to be either a CO line or a PBX line. This should also be used for identifying Centrex lines.

When marked PBX, a one or two digit dialing code may be entered after which toll restriction, Sec. 630.5, is applied to the next dialed digit.

Default: All lines are CO Lines (LED ON)

Related Programming:

When programming line type, Refer to CO line group programming, Sec. 620.1; Flexible button programming, Sec. 610.5; CO line ringing, Sec. 620.3; Flash timer, Sec. 620.4; and recall timers, Sec. 630.2. When marked PBX, a one or two-digit dial code may be entered after which toll restriction, Sec. 630.5, is applied to the next dialed digit.

Signaling (DTMF/Pulse)

Each individual line can also be programmed as either DTMF (tone) or dial pulse.

Default: All lines are set for DTMF (LED ON)

Related Programming:

When a line is assigned as dial pulse, you can program the break/make ratio and dial speed to match the serving central office, Sec. 620.6. Refer also to the ring detect timer, Sec. 620.5.

Toll Restriction Override

An outside line may be marked for Toll Override which allows even restricted stations to dial on this line.

This feature allows you to give a station a restrictive COS and also give them a line they can make long distance calls over. This feature also affects system speed dial by allowing certain speed numbers to be programmed on a specific line.

Default: By default, no lines are marked for toll override (LED OFF).

Related Programming:

To assign a Class of Service (COS) to stations, Refer to Sec. 610.1.

620.2 CO LINE SETTINGS (Cont'd)

PROGRAMMING STEPS

DESCRIPTION

Private Line

A line can be marked as a private line. A private line cannot be picked up with Universal Night Answer and will not preset call forward.

The same station can have other CO (outside) lines that are not marked private which can be programmed to preset forward.

A private line is also created by programming flexible button assignments so that the private line appears at one station only.

Default: By default, Private lines is disabled for all lines (LED OFF)

Related Programming:

To restrict other stations from accessing the private line, consideration must also be given to Pool button & CO line group assignments. Assign the private line to a separate CO line Group. Refer to Flexible button programming, Sec. 610.5

620.3 CO LINE RINGING

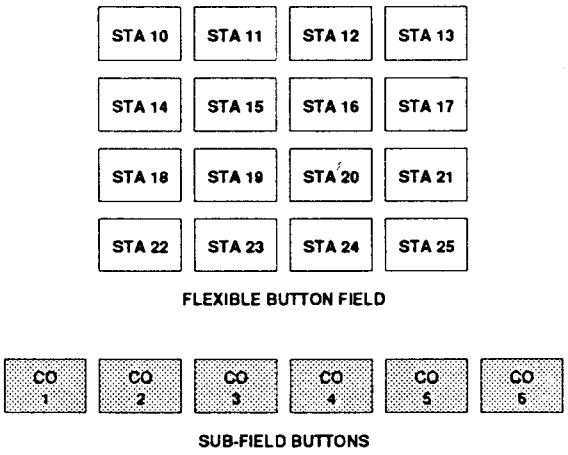
PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

Dial an asterisk (*) and [13] on the dial pad for day ringing stations (14 for night ringing stations).

If you have a display phone, you will see the following:

1. Press outside line that is to be programmed.
2. Then press station buttons for stations that are to ring on that line (each button will light).
3. When all stations have been entered, press the HOLD button to enter data. The next CO Line will light for programming.



DESCRIPTION

Telephones can be assigned to receive incoming outside line ringing during the day and/or during the night.

Telephones that ring during the day do not automatically ring at night. They require night ringing programming.

Any number of phones can be assigned to ring during the day and/or during the night.

Program Code 14 operates the same as Program Code 13 and is used to assign night ringing stations.

Default: By default, all lines ring at Station 10 in both day & night mode.

Related Programming:

At least one station should be programmed to ring on a line. Refer to Flexible Button Programming, Sec. 610.5. Make sure that any station programmed for Loud Bell Control is assigned ringing for that line.

620.4 FLASH TIMER

PROGRAMMING STEPS

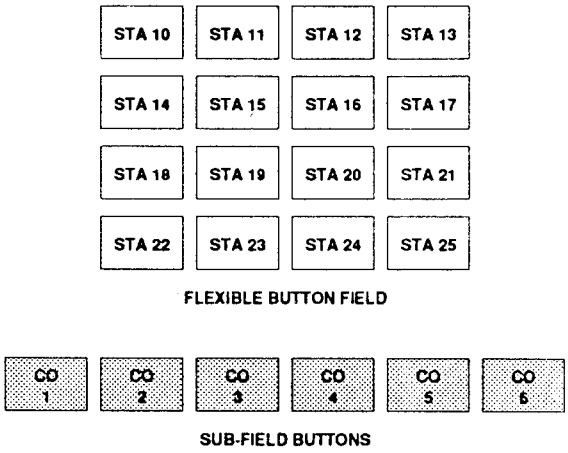
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If the flash timer is to be changed, dial an asterisk (*) and [15] on the dial pad.

If you have a display phone, you will see the following:

FLASH TIMER CO 1: 2.0 SECONDS

1. Press the CO line which is to be programmed (see following program buttons).
2. Enter the two-digit timer value on the dial pad (01-99) which corresponds to 0.1 to 9.9 seconds.
3. When all changes have been made, press the HOLD button. The next CO Line will automatically be presented for programming.



DESCRIPTION

Flash is a programmable opening on a line for signaling. When using an outside line, flash allows a user to obtain new dial tone without losing the line. This is particularly useful behind a PBX or Centrex. Refer to CO Line Settings, Sec. 620.2; Line Type).

Each CO line is individually programmed for a flash time. The flash timer is programmed on a per line basis.

Default: By default, the Flash Timer is set at 2.0 seconds on all lines.

620.5 CO RING DETECT

PROGRAMMING STEPS

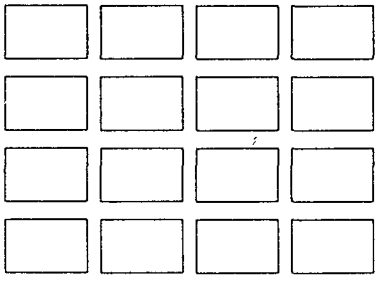
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If CO Ring Detect timer is to be changed, dial an asterisk (*) and [16] on the dial pad.

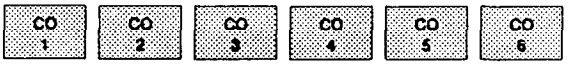
If you have a display phone, you will see the following:

```
CO RING DETECT
CO 01: 300 MSEC
```

1. Press CO line button for which timer will work.
2. Enter the one-digit timer value on the dial pad (2-9) which corresponds to 200 to 900 milliseconds.
3. When all changes have been made, press the HOLD button. The next CO Line will automatically be presented for programming.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

The duration of the ringing signal from the CO or PBX is matched with ringing detection circuitry in the KSU. The ring detect can range from 200 - 900 milliseconds divided into 100 msec. increments.

Default: Default value for each line is 300 msec. Ring detect time is programmed on a per CO line basis.

Related Programming:

When programming the CO Ring Detect timer, Refer to CO line Settings, Alarm Signaling, Sec. 620.2; and CO Line ringing programming, Sec. 620.3.

620.6 DIAL PULSE

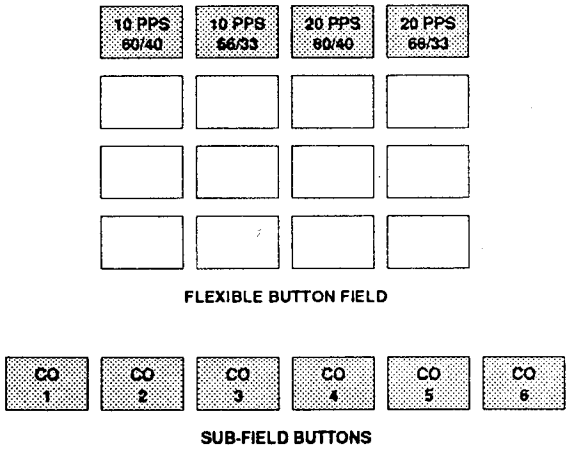
PROGRAMMING STEPS

If pulses per second (pps) and break/make ratios need to be changed, press the (*) & dial [17] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
CO DIAL PULSE

1. Press CO line button for line which is to be assigned dial pulse.
2. Then press the appropriate program button.
3. When all changes have been made, press the HOLD button. The next CO Line will automatically be presented for programming.



DESCRIPTION

Each CO (outside) line can send dial pulse signals to the receiving central office. The break/make ratio and pulses per second are programmable.

Default: Default is 10 pps and 60/40 break/make ratio. Default assigns all CO lines as DTMF.

Related Programming:

This program code is only used when an outside (CO) line has been programmed for dial pulse. Refer to CO Line Settings, Alarm Signaling, Sec. 620.2.

When used in Canada, DOC regulations do NOT allow dial pulse signaling speed to exceed 11 pps with a minimum of 33 msec. make interval and 54-68 msec. break interval. These requirements are met when the system database is initialized.

620.7 RING TIME-OUT TIMER

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If the Ring Time-out Timer needs to be changed, dial an asterisk (*) and [18] on the dial pad.

If you have a display phone, you will see the following:

RING STOP TIMER 5.0 SECONDS

1. Enter the two-digit timer value on the dial pad (40-99) which corresponds to 4.0 to 9.9 seconds.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.

DESCRIPTION

This feature is used to assign the Ring Time-out time the system will use for detecting the end of a valid ring cycle.

Default: By default, the Ring Time-out timer is set at 5.0 seconds.

Related Programming:

SECTION 630
SYSTEM CONFIGURATION

630.1 SYSTEM FEATURES

PROGRAMMING STEPS

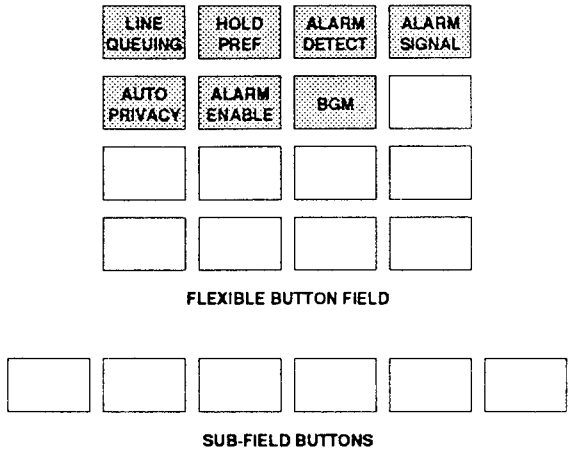
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

To change any system feature, dial an asterisk (*) and [21] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
SYSTEM FEATURES

1. Toggle the program buttons ON or OFF, depending on the desired features.
   - If LED is ON, feature is enabled
   - If LED is OFF, feature is disabled
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



DESCRIPTION

The System Configuration features are as follows:

Line Queuing

If this button is lit, CO line queuing is allowed on a system basis. Stations queuing a line are recalled according to the line group requested.

Default: By default, Queuing is allowed at all stations (LED ON)

Related Programming:

Refer to CO line group programming since queuing follows line groups, not individual lines, Sec. 620.1. Also, refer to Flexible button programming for access to individual lines or groups of lines, Sec. 610.5.

Hold Preference

The system can be programmed to have either exclusive hold or system hold preferred. If exclusive hold is preferred, the HOLD button is pressed once for exclusive hold and twice for system hold when placing a call on hold. For system hold this is reversed.

Transfer and conference calls are always placed on exclusive hold.

Default: By default, Hold Preference is defaulted to system hold (LED ON).

Related Programming:

Refer to system timer programming for recall times for both system and exclusive hold.

Alarm Detection

This feature determines the type of alarm signal received from an external source. If the LED is lit, it means the system will detect a closed loop, unlit means the system will detect an open loop.

Default: By default, Alarm Detection is defaulted to closed loop (LED ON).

Related Programming:

Refer to Station Configuration, Station Features 1, Sec. 610.2, alarm/phone box signaling to determine who will receive alarm signals. Also refer to signaling and alarm enable/disable in this section.

Note: A flex button can be assigned for monitoring the alarm.

630.1 SYSTEM FEATURES (Cont'd)

PROGRAMMING STEPS

DESCRIPTION

Alarm Signaling

This feature determines the type of signaling received by the stations.

If the LED is lit, it means a .25s on/.25s off warble tone repeated continuously will be given;

If the LED is unlit, it means a single burst of tone ring (once) will be given. Phone Box ringing is also affected by this feature.

Default: By default, Alarm Signaling is defaulted to a repeated tone (LED ON).

Related Programming:

Refer to Station Configuration, Station Features 1, Sec. 610.2, Phone Box/Alarm Ringing; Also refer to Alarm Enable/Disable.

Automatic Privacy

Privacy is automatically provided on all communications in the system. If desired, the system may be programmed to eliminate privacy, allowing any station to join in on existing CO line conversations.

A yes entry (LED lit) means that privacy is automatically provided. To eliminate privacy, toggle the button so the LED extinguishes.

If privacy is eliminated, only one other station may join in on an existing conversation.

Default: By default, Privacy is enabled at all stations (LED ON).

Related Programming:

Alarm Enable/Disable

A yes entry (LED lit) means the system is programmed for alarm. Stations must then be programmed to receive the alarm signal, Sec. 630.1. You must also choose alarm signaling and alarm detection, Sec. 630.1.

Default: By default, the Alarm feature is disabled (LED OFF).

Related Programming:

Refer to Station Configuration, Station Features 1, Sec. 610.2, Phone Box/Alarm signaling; Also refer to Alarm Signaling.

Background Music (BGM)

This feature must be enabled if background music is supplied to the system.

Default: By default, Background music is disabled at all stations (LED OFF). Refer to Sec. 500.10

630.2 TIMERS

PROGRAMMING STEPS

If you are in the program mode, continue using the program codes. If you are starting to program here, enter the program mode first.

A. Exclusive Hold Recall

To change this timer, dial an (*) asterisk and [22] on the dial pad.

If you have a display phone, you will see the following:

```
EXCLUSIVE HOLD RECALL
060 SECONDS
```

1. Enter the three-digit timer value on the dial pad (000-255) which corresponds to 000 to 255 seconds. An entry to 000 will disable the timer.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.

DESCRIPTION

This reflects the time before an outside line placed on exclusive hold will recall the initiating station. If the call is unanswered for an additional equal amount of time, it will recall the attendant and if unanswered by the attendant will recall all phones in the system.

Default: By default, the Exclusive Hold Recall Timer is set at 060 seconds.

Disable: An entry to 000 will disable the timer.

B. System Hold Recall

To change this timer, dial an (*) asterisk and [23] on the dial pad.

If you have a display phone, you will see the following:

```
SYSTEM HOLD RECALL
060 SECONDS
```

1. Enter the three-digit timer value on the dial pad (000-255) which corresponds to 000 to 255 seconds. An entry to 000 will disable the timer.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.

This timer reflects the amount of time before an outside line placed on system hold will recall the initiating station. If the call is unanswered for an additional equal amount of time, it will recall the attendant and if unanswered by the attendant will recall all phones in the system.

Default: By default, the System Hold Recall Timer is set at 060 seconds.

Disable: An entry to 000 will disable the timer.

630.2 TIMERS (Cont'd)

PROGRAMMING STEPS	DESCRIPTION
C. Transfer Recall To change this timer, dial an (*) asterisk and [24] on the dial pad. If you have a display phone, you will see the following: TRANSFER RECALL TIMER 030 SECONDS 1. Enter the three-digit timer value on the dial pad (000-255) which corresponds to 000 to 255 seconds. An entry to 000 will disable the timer. 2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.	This timer reflects the amount of time before an unanswered transfer is recalled to the station that initiated it. If the call is still unanswered for an additional equal amount of time, it will recall the attendant and if unanswered by the attendant will recall all phones in the system. **Default:** By default, the Transfer Recall Timer is set at 030 seconds. **Disable:** An entry to 000 will disable the timer.
D. Message Wait Reminder Tone To change this timer, dial an (*) asterisk and [25] on the dial pad. If you have a display phone, you will see the following: MSG REMINDER TONE TIMER 00 MINUTES 1. Enter the two-digit timer value on the dial pad (00-99) which corresponds to 00 to 99 seconds. An entry to 00 will disable the timer. 2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.	A station with a message waiting can be reminded at a timed interval with a tone. The tone will continue until all messages have been answered. The interval can be programmed between 00 and 99 minutes. This feature can also be utilized to provide an audible message wait signal to an SLT connected to the system via an SLA adapter. Keep in mind that this feature affects all the stations connected to the system. **Default:** By default, the Message Wait Reminder Tone Timer is set at 00 minutes. **Disable:** An entry to 00 will disable the timer.

630.2 TIMERS (Cont'd)

PROGRAMMING STEPS

E. Pause Timer

To change this timer, dial an (*) asterisk and [26] on the dial pad.

If you have a display phone, you will see the following:

1. Enter the one-digit timer value on the dial pad (1-9) which corresponds to 1 to 9 seconds.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard and the display will now update.

DESCRIPTION

When dialing a speed number, a timed pause in digit sending can be inserted into the number. The length of the pause is controlled by the pause timer and can be from 1 to 9 seconds.

The length of the pause is important in both system and station speed dial numbers.

Default: By default, the Pause Timer is set at 2 seconds.

630.3 EXECUTIVE/SECRETARY ASSIGNMENTS

PROGRAMMING STEPS

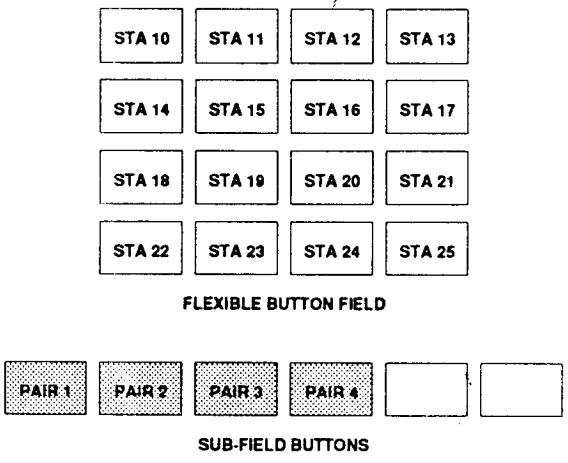
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

To program Executive/Secretary assignments, dial an asterisk (*) and [27] on the dial pad.

If you have a display phone, you will see the following:

```
EXECUTIVE/SECRETARY
XX/XX  XX/XX  XX/XX  XX/XX
```

1. Press button for desired executive/secretary pair assignment.
2. Press the station button to select the desired executive station (LED lights steady).
3. Press the station button to select the desired secretary station (LED flashes).
4. When all changes have been made, press the HOLD button. Confirmation tone will be heard. Select the next Executive/Secretary pair for programming.



DESCRIPTION

There are 4 sets of Executive/Secretary pairs available for assignment. When the Executive is busy or in DND, intercom calls and transferred calls will be automatically routed to the designated secretary(ies).

One executive can go to 4 secretaries, 1 secretary can answer for 4 executive or 1 executive can be assigned 1 secretary, etc.

To delete an Executive/Secretary assignment, press the Executive DSS button twice, and press HOLD button. Confirmation tone is heard and the display will clear itself of the assignment.

Default: By default, there are no Executive/Secretary pairs assigned.

630.4 LOUD BELL/CO LINE CONTROL

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

To program Loud Bell Control/CO Line Control Assignments, dial an asterisk (*) and [28] on the dial pad.

If you have a display phone, you will see the following:

CONTROL CONTACT
LBC: STA XX

CONTROL CONTACT
CO LINE: CO XX

1. LBC button LED is lit. Press CO line button to program CO Line contact.
2. Press the button of the contact to be programmed.
3. Press the LBC or CO Line button to indicate which is being programmed.
4. Then press station (LBC) or CO line (CO Line Control) button to be assigned.
5. When all changes have been made, press the HOLD button. Confirmation tone will be heard.

DESCRIPTION

One set of contacts are available to be assigned either as Loud Bell Control or as CO Line control.

A Loud Bell contact can be assigned to any station and will follow the ringing assignments of the assigned station including tone ringing intercom, recalling and transferred CO lines.

A CO Line Control contact can be assigned to any CO line. When assigned as CO Line Control, the contact will be 'closed' for the duration of the CO Line connection.

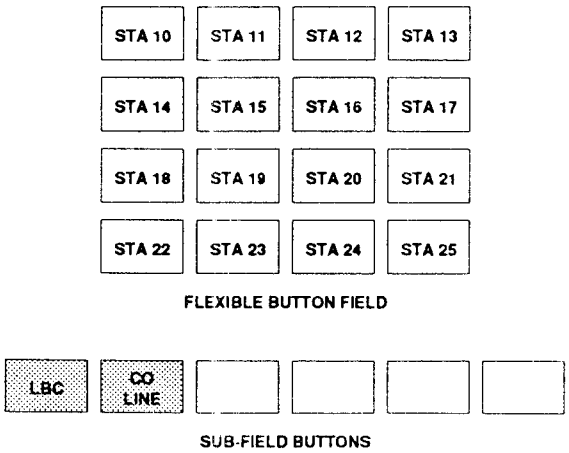
To remove an LBC or CO Line Control assignment, toggle OFF the station or CO line and press HOLD. Confirmation tone will be heard.

Default: By default, there are none assigned.

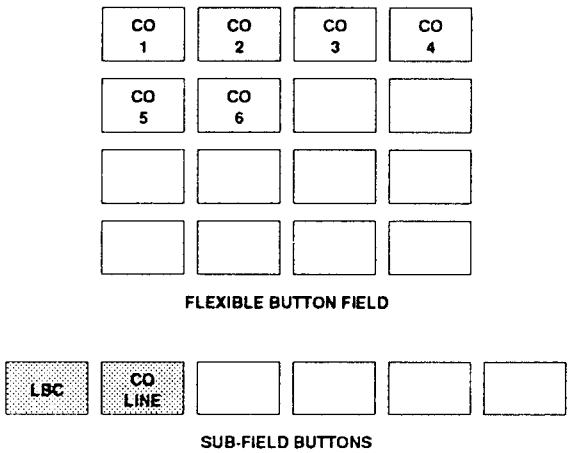
Related Programming:

Remember to assign ringing to any station programmed for Loud Bell Control, Sec. 620.3. Also a station programmed for CO Line Control indication, must be given that CO line appearance, Sec. 610.5.

LOUD BELL CONTROL



CO LINE CONTROL



630.5 PBX DIALING CODES

PROGRAMMING STEPS

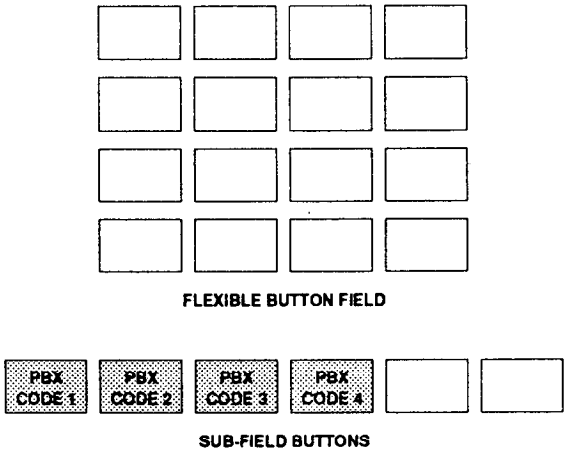
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

To enter PBX Dialing codes, dial an asterisk (*) and [31] on the dial pad.

If you have a display phone, you will see the following:

```
PBX CODES #1 #2 #3 #4
      XX XX XX XX
```

1. Press the program button to assign the first code.
2. Enter the one or two-digit number on the dial pad.
   - The digit [*] and [#] can be entered as part of PBX or Centrex codes:
     - The digit [*] is entered by dialing the digit [*] on the dial pad during entry.
     - The digit [#] is entered by dialing the digit [#] on the dial pad during entry.
3. When all changes have been made, press the HOLD button. The next Sub-Field button must be pressed for the next PBX code to be programmed.



DESCRIPTION

Four (4) one or two-digit PBX access codes can be entered into system memory. When dialed they signal the system that an access code is being dialed and that toll restriction is to be applied at the next dialed digit.

If one of the codes is not dialed, toll restriction does not apply. This allows dialing of PBX extensions 100, 110, 111, etc.

NOTE: To delete an entry, the HOLD button must be pressed twice. If viewing the PBX codes, the HOLD button must be pressed before leaving the program code.

Default: By default, no PBX codes have been assigned.

Related Programming:

In order to use this feature, lines must be programmed as PBX lines (Sec. 620.2) before these codes will apply.

630.6 ATTENDANT POSITION

PROGRAMMING STEPS

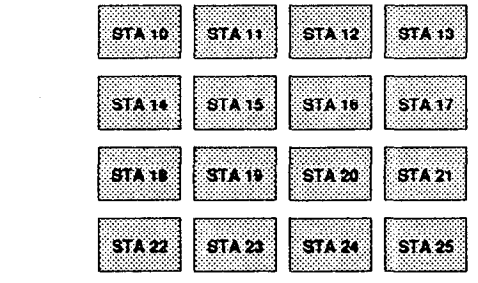
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to change the attendant position, dial an asterisk (*) and [32] on the dial pad.

If you have a display phone, you will see the following:

```
SP 616 FLEX VX.XX YYMMDD
ATTENDANT STA: 10
```

1. Press the station button of the station to be assigned as the system attendant. (LED will light steady)
2. Press the HOLD button. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD

SUB-FIELD BUTTONS

DESCRIPTION

One station must be assigned as the attendant for CO line recalls and placing the system into night service by pressing the DND button. Therefore the attendant position does not have the Do Not Disturb feature.

System speed numbers as well as system date and time are entered at the attendant station. The attendant can override stations in DND with the Camp On feature.

Default: By default, Station 10 is assigned as the attendant position.

Related Programming:

Refer to Station Configuration, Station Features 1, Do Not Disturb, Sec. 610.2; System Configuration, Timers, Recall Timers, Sec. 630.2; and CO Line Configuration, CO line ringing assignments, Sec. 620.3.

630.7 PRESET FORWARD RING TIMER

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to set this timer, dial an asterisk (*) and [33] on the dial pad.

If you have a display phone, you will see the following:

1. Enter the two-digit timer value on the dial pad (01-99) which corresponds to 01 to 99 seconds.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.

DESCRIPTION

This timer determines the amount of time a call will ring into a station before automatically forwarding to the predetermined station.

Default: By default, the Preset Forward Ring Timer is set at 30 seconds.

Disable: An entry of 00 will disable the timer. If the timer is disabled, the preset forward will NOT work, and the call will not forward.

Related Programming:

Refer to Preset Call Forward programming, Sec. 630.8.

630.8 PRESET CALL FORWARD

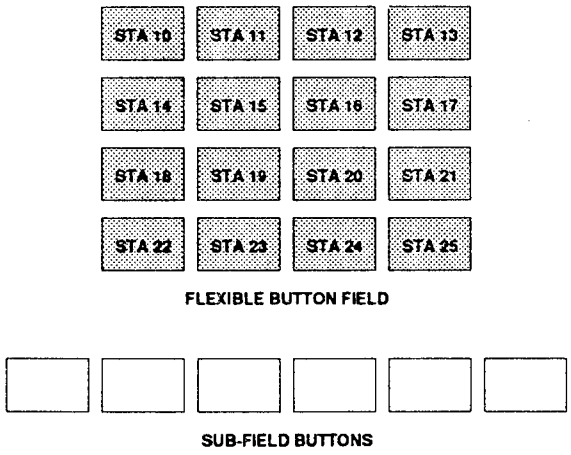
PROGRAMMING STEPS

If you wish to assign a preset forward position to a station, dial an (*) asterisk and [34] on the dial pad.

If you have a display phone, you will see the following:

PRESET FWD STA ASSIGN
STA 10 TO STA XX

1. Press the station button for the station being given a preset forward position.
2. Then press the station button of the station which is to receive the forwarded ringing.
3. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



DESCRIPTION

Ringing CO lines can be forwarded to another predetermined station if the original station is busy or does not answer. These lines will ring for a programmed period of time before forwarding. During this time the busy station will hear muted ringing.

An unlimited number of assignments can be made but an individual station can have only one preset forward assignment. A station may receive an unlimited number of forwards.

To remove an assignment, first press the station with the preset forward assignment, then press that station a second time and press HOLD.

Default: By default, no stations are assigned a preset forward station.

Related Programming:

Refer to Flexible Button programming, Sec. 610.5. If a station has a preset forward to another station, that station must be programmed to have access to the forwarded line. Also that station must be programmed to ring on that line, Sec. 620.3.

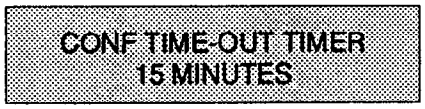
630.9 CONFERENCE TIMER

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to change the conference timer, dial an asterisk (*) and [35] on the dial pad.

If you have a display phone, you will see the following:



1. Enter the two-digit timer value on the dial pad (01-99) which corresponds to 01 to 99 minutes.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.

DESCRIPTION

This timer reflects the amount of time a conference circuit will remain active if the initiator of the conference is no longer in a multi line conference.

The Time-out clock is automatically reset to zero whenever the conference initiator re-enters the conference.

A warning tone will be presented to the remaining users 15 seconds prior to shutdown.

Default: By default, the Conference Timer is set at 15 minutes.

Disable: An entry of 00 will disable the timer.

630.10 STATION MESSAGE DETAILED RECORDING (SMDR)

PROGRAMMING STEPS

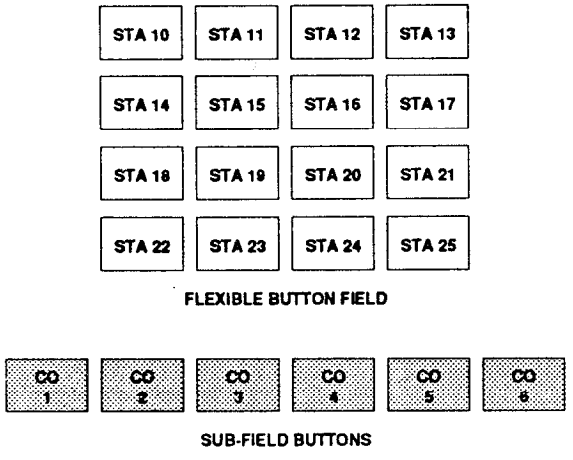
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to disable SMDR, dial an asterisk (*) and [36] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
SMDR LINE ENABLE

1. Press CO line(s) for which SMDR is to be disabled or enabled.
   - If LED is ON, CO line(s) is enabled for SMDR recording.
   - If LED is OFF, CO line(s) is disabled for SMDR recording.
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



DESCRIPTION

Station Message Detail Recording is an optional feature that allows customers to keep track of either all calls or only long distance calls both incoming and outgoing by CO line, number dialed, time of day, date, station that placed the call, duration of call and account code if used.

A Real Time Clock Unit (RCU) and Serial Interface Unit (SIU) must be installed for this feature to work. Refer to Sec. 500.18 and Sec. 500.19 for additional information.

Default: By default, all CO (outside) lines are enabled (LED ON) for SMDR recording.

Related Programming:

SMDR Format (*37): All Calls/LD only (*37); Baud Rate (*37).

630.10 SMDR (Cont'd)

PROGRAMMING STEPS

If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

A. SMDR All Call/Long Distance

To determine what calls are to be recorded, baud rate and print format, dial an asterisk (*) and [37] on the dial pad.

If you have a display phone, you will see the following:

1. Press the Sub-Field button to determine if all calls are to be recorded or just long distance calls.
   - If LED is OFF, Long Distance is enabled
   - If LED is ON, All Calls is enabled

B. SMDR Baud Rate

1. Press the Sub-Field button to determine the baud rate.
   - If LED is OFF, 1200 Baud is enabled
   - If LED is ON, 300 Baud is enabled

C. SMDR Print Format

1. Press the Sub-Field button to determine the print format.
   - If LED is ON, 80 Character print format is enabled
   - If LED is OFF, 29 Character format is enabled
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.

SUB-FIELD BUTTONS

DESCRIPTION

Station Message Detail Recording is an optional feature that allows customers to keep track of either all calls or only long distance calls both incoming and outgoing by CO line, number dialed, time of day, date, station that placed the call, duration of call and account code if used.

SMDR can be programmed to record all calls, both incoming and outgoing or it can be programmed to record only outgoing long distance.

Long distance calls are calls of over 7 digits or calls that begin with a "0" or a "1".

A Real Time Clock Unit (RCU) and Serial Interface Unit (SIU) must be installed for this feature to work. Refer to Sec. 500.18 and 500.19 for additional information.

Default: By default, All Calls are recorded (LED ON).

Related Programming:

The baud rate can be set at 300 or 1200 baud.

Default: By default, the Baud Rate is set at 300 Baud (LED ON).

Print format can be set at either 29 characters or 80 characters.

Default: By default, the print format is 29 characters (LED OFF)

630.11 DATA BASE PRINTOUT

PROGRAMMING STEPS

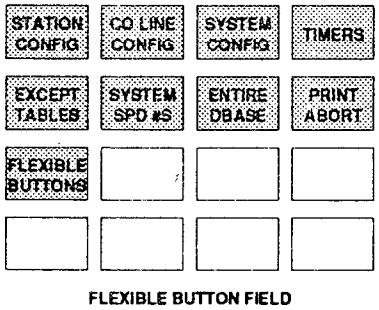
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to print out a copy of the data base, or any part of the data base, dial an asterisk (*) and [38] on the dial pad.

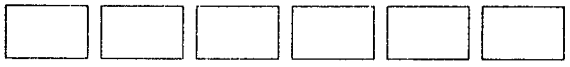
If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD DATA BASE PRINTOUT

1. Press one of the following program buttons depending on what information is needed in the printout.
2. Press the HOLD button to begin printing. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

This feature requires the Serial Interface Unit (SIU) be installed in the KSU. Refer to Sec. 500.19 for installation instructions.

A printer must be connected to the RS-232C port of the KSU for a data base printout.

Refer to Section 640 for Data Base printout examples and definitions.

630.12 SYSTEM TIME & DATE FORMAT

PROGRAMMING STEPS

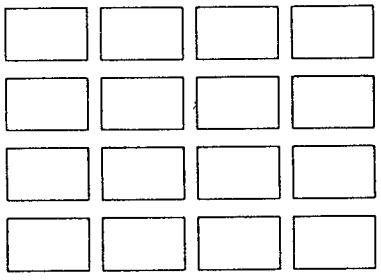
If you are in the programming mode, continue using the program codes. If you are starting to program here, enter the program mode first.

If you wish to change the format of the LCD display, dial an asterisk (*) and [39] on the dial pad.

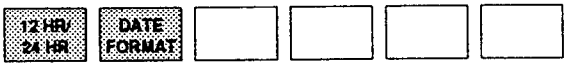
If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
DATE/TIME FORMAT

1. Press the desired program button to determine the display format.
   - If LED(s) is on, 12 hr, MM/DD/YY format is enabled
   - If LED(s) is off, 24 hr, DD/MM/YY format is enabled
2. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

This program controls the LCD display format of the time and date.

This feature requires that a Real Time Clock Unit (RCU) be installed. Refer to Sec. 500.18 or installation instructions.

The actual time and date is programmed at the attendant station.

Default: By default, the time is set at the 12 hour clock with a range of 1-12 (LED ON).

This feature can be changed so the range is 00 through 24 (military time).

Default: By default the date will read month/day/year (LED ON). The date can be changed to read day/month/year.

630.13 TOLL RESTRICTION TABLES

PROGRAMMING STEPS

Make sure you have entered the programming mode.

To enter numbers into the toll tables, press the asterisk (*) and dial the following:

Allow Table A = 41

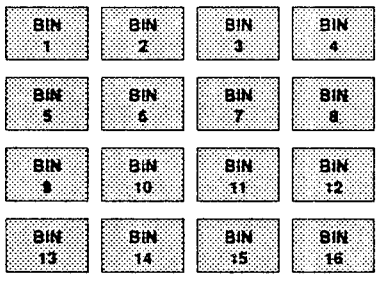
Deny Table A = 42

Allow Table B = 43

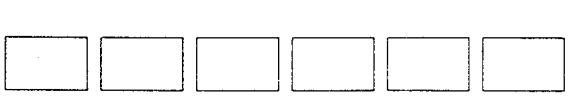
Deny Table B = 44

If you have a display phone, you will see the following:

1. Press desired bin number location. See the following program buttons:
2. Dial the allow/deny number including don't cares (8 digits maximum).
   - The digit [*] and [#] can be entered as "restrictive" or "allowed digits. These digits are entered into the Allow/Deny tables in the following manner:
     The digit [*] is entered by dialing the digit [*] on the dial pad during entry.
     The digit [#] is entered by dialing the digit [#] on the dial pad during entry.
3. When all changes have been made, press the HOLD button. Confirmation tone will be heard.



FLEXIBLE BUTTON FIELD



SUB-FIELD BUTTONS

DESCRIPTION

The Allow/Deny tables are organized into 2 sets of tables to allow the 616 FLEX Key Telephone System to support 2 different toll plans at one installed site.

Allow/Deny Table A is referenced whenever a station is assigned Class of Service 2.

Allow/Deny Table B is referenced whenever a station is assigned Class of Service 3.

Each table may contain up to 16 numbers of up to 8 digits each. Any number of digits up to 8 maximum may be entered. Less than 8 digits may be entered. For example, the programmer needs only to dial "0" and press HOLD to program operator restriction.

Allow and Deny Table Rules:

The following 4 rules should be remembered when setting up the Allow/Deny tables.

1. If nothing is assigned in either the allow or deny table, no restriction is applied.
2. If entries are made in the allow table and only there, then only the numbers in the table are allowed. All other numbers will be denied (Allow Only Restriction).
3. If entries are made in the deny table and only there, then only the numbers in the table are denied (Deny Only).
4. If there are entries in both tables, the allow table is searched first and if the dialed number is found, it is allowed. If it is not found in the allow table, the deny table is searched. If the number is found there, it is denied; if it is not found there, it is allowed.

Exchange Codes can be blocked by specific entries in the Deny lists or allowed by specific entries in the Allow lists.

When the FWD/DND button is used, it enters a don't care character. This will allow or deny any digit 0-9 in that location.

The pound (#) and asterisk (*) can be used as Allow/Deny digits.

Note: When viewing a bin but not entering or changing anything in that bin, press the button corresponding to the bin.

630.13 TOLL RESTRICTION TABLES (Cont'd)

PROGRAMMING STEPS

DESCRIPTION

To delete an entry, the HOLD button must be pressed twice.

If viewing allow/deny entries, the HOLD button must be pressed before leaving the program code.

The Allow/Deny tables are reserved for COS 2 and 3 respectively. A CO line marked Toll Restriction Override is not subject to restriction of COS 2, 3 or 4.

Default:

Related Programming:

Refer to Station Configuration, Sec. 610.1, Station Class of Service (COS).

When a CO line is marked PBX, COS restrictions apply to the station only if one of 4 PBX codes are dialed first. Refer to CO Line Settings, Sec. 620.3, Line Type; and PBX Dialing Codes, Sec. 630.5.

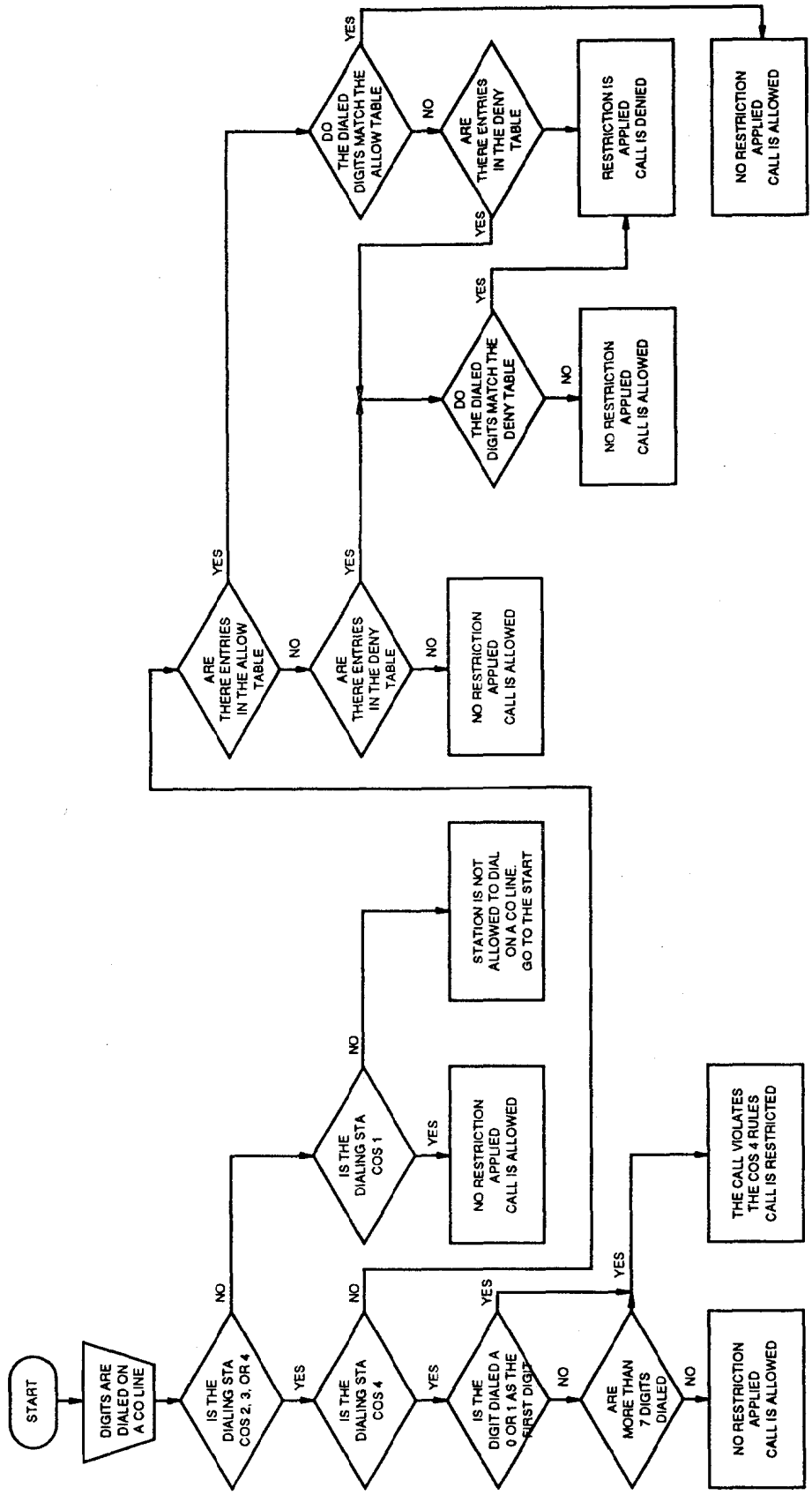


Figure 630.1 - Toll Restriction Flowchart

630.14 STATION SPEED DIAL

Each telephone has 20 unique speed dial numbers. These numbers are entered and stored by the user and can be recalled by the user at any time.

- The asterisk (*) is used to program a pulse-to-tone switchover. Subsequent '*' dialed will cause the DTMF digit '*' to be dialed.
- The TRANS/QUE button is used to program a pause
- The FLASH button is used to program a flash command.
- To program a "No Display", press the CONF button.
- The asterisk (*) and pound (#) can be programmed as digits.

To program a station speed number:

1. Press SPD button.
2. Press the asterisk (*).
3. Enter speed bin number (00-09, 90-99).
4. Press outside line button if desired.
5. Enter telephone number.
6. Press HOLD button to enter the data.

To program additional numbers, repeat programming from step 2.

630.15 PULSE-TO-TONE SWITCHOVER

The user can command the system to change the signaling on a CO line from dial pulse to DTMF tone thereby allowing the use of common carriers behind a dial pulse line.

This can be done either manually or programmed into a speed dial number.

To manually command a switchover, the user, while connected to an outside line, dials an asterisk (*). The switchover occurs and the succeeding digits are sent DTMF.

When using speed dial numbers, the asterisk (*) is stored and sent with the number. The system will automatically insert a pause and then switch over to DTMF sending for the remaining digits.

630.16 FLASH WITH SPEED DIAL

During the dialing of a station or system speed number, a flash can be programmed into the number. A pause will automatically be inserted after the flash before the remaining digits are sent.

When programming a speed number, pressing the FLASH button will program a flash command. This is counted as a digit. The flash length and pause following are determined by programming.

630.17 NUMBERING PLAN

10-25	Intercom Numbers
40	Mute (Flex button)
41	Headset/Handset mode
42	Attn Phone Box BGM Enable/Disable
5#	Calling Station Tone Mode Option
55	Universal Night Answer
6	Call Pickup
70	Internal All Call Page
71	Internal Zone 1 Page
72	Internal Zone 2 Page
73	External Zone Page
74	All Call Page
75	Meet Me Page Answer
8	Music
9	Alarm Reset
0	Attendant
*	Pulse-To-Tone Switchover (CO line or Speed Dial
#	Last Number Redial
00-99	Station Speed Dial (Preceded by SPD button)
10-49	System Speed Dial (Preceded by SPD button)
90-99	Station Speed Dial (Preceded by SPD button)

NOTE: The speed bin must be programmed with a number before a flexible button can be assigned as a speed button.

630.18 NIGHT SERVICE

The 616 FLEX Key Telephone System is placed into Night Service by the Attendant pressing the DND button at her key telephone.

To remove Night Service, the Attendant reverses the procedure. When the system is in Night Service, stations marked to ring at night will function according to access and ring assignments programmed in Sec. 620.2.

630.19 SYSTEM SPEED DIAL

System speed dial numbers can be entered into the data base at the designated attendant station.

A CO line can be programmed into a speed number. There can be 16 digits in the number including pause, pulse to tone switchover and flash commands.

- The asterisk (*) is used to program a pulse-to-tone switchover. Subsequent '*' dialed will cause the DTMF digit '*' to be dialed.
- The TRANS/QUE to insert a pause command
- The Flash button to program a flash command.
- To program a "No Display", press the CONF button.
- The asterisk (*) and pound (#) can be programmed as digits.

Speed bins 10-29 are subject to the class of service and line access restrictions assigned to the station that uses the number. Speed bins 30-49 will not be monitored by toll restriction.

To program system speed numbers:

1. At the attendant station, press SPD button.
2. Dial an asterisk (*).
3. Dial speed bin location (10-49).
4. Press specific CO line if desired.
5. Dial telephone number including pauses, flash commands & pulse to tone switchover.
6. Press HOLD button to enter the data.

To continue programming additional numbers, repeat from step 2.

630.20 SETTING SYSTEM TIME & DATE

System date and time can be set only from the attendant station and must be done in the following manner:

1. Press SPEED button.
2. Dial an asterisk (*).
3. Dial "50".
4. Enter date & time as follows:

   YYMMDDHHMM

   - YY = year 80-99
   - MM = month 01-2
   - DD = day 01-31
   - HH = hour 00-23
   - MM = minute 00-59
5. Press HOLD button to enter the data.

630.21 PHONE BOX PROGRAMMING

The following program parameters should be considered where Phone Box operation is desired.

1. Program Station Class of Service to COS 6 for the desired phone box station. Refer to Station Configuration, Sec. 610.1.
2. Assign Alarm/Phone Box signaling to stations to receive phone box signaling. Refer to Station Features 1, Sec. 610.2.
3. Program the type of Alarm/Phone Box signaling is desired:

   The options are:

   – A Continuously repeated warble tone of .25s on/.25s off
   – A Single burst of tone ring (once)

Refer to System Configuration, System Features Sec. 630.1.

For stations being programmed to receive Alarm/Phone Box signaling, it is recommended a DSS/BLF button be assigned to the Phone Box station. Refer to Station Configuration, Flexible Buttons, Sec. 610.5.

630.22 SINGLE LINE STATION ADAPTER (SLA) PROGRAMMING

The SLA stations are programmed in the same manner a key telephone is programmed in the system data base admin. Attributes such as Station COS, feature access, CO Line Ringing, Pick Up group, etc... can be assigned to a single line station connected to the SLA adapter. Refer to Table 630.1 for a complete list of Program Codes that can affect SLA operation. Also refer to the systems manual for complete programming procedures and station attributes that can apply to SLA station ports. The following are some of the parameters that require special attention for stations connected to a SLA.

A. Preferred Line Answer (PLA)

For proper operation of a single line telephone or device connected to a SLA, Preferred Line Answer (PLA) **must** be enabled in Data base admin for each SLA port that is connected. This is performed in program code 02, Sub-Field 4. Refer to Station Configuration, System Features 1, Sec. 610.2 for the complete programming procedures to enable Preferred Line Answer (PLA) for the SLA station ports.

B. CO Ringing

Direct CO ringing is allowed to a SLA device. Ringing assignments may be for Day ringing and/or night ringing. Ringing assignments are programmed in the Station Configuration, CO Ringing, program code 13, and 14. Refer to Sec. 620.3 for complete

programming procedures for entering CO ringing assignments. If the SLA is programmed to receive incoming ringing for more than one line and the SLA is busy when a CO line rings in, no signal will be presented to the SLT.

C. Receiving an Audible Message Waiting Signal

An SLA may receive an audible Message waiting signal in the form of the "system wide" Message wait Reminder tone. This tone must be enabled in the system data base program code 25. When message wait reminder tone is enabled ALL stations in the system will receive this alert tone at the programmed interval including SLT's connected to the SLA. Refer to the 630.2 for complete programming procedures to enable the Message Wait Reminder Tone.

NOTE

The SLA adapter does not support standard Message Waiting telephones with message waiting lamps.

D. Programming Flexible Buttons

When the SLA is installed behind the Starplus 616 FLEX, it is necessary to program flexible buttons 17 through 22 as desired. Please note, it is possible to operate the SLA on the 616 FLEX with the SW1 switch set to the SP1224 setting (SW1 position 3). However, if this is done, the flex buttons 1-6 must also be programmed for the desired operation. These buttons can be programmed as CO line Buttons, LOOP buttons, or POOL buttons. They can also be programmed as DSS, Speed Dial, or any other function that can be programmed onto a Flexible button. The user access the programmed function by dialing the codes 81 through 92 (In the Starplus Single Line Station Adapter (SLA) Installation Guide, refer to Table 1 and Figure 3 for the button code mapping). CO Line, LOOP, and POOL button programming is performed in the Data base admin Flex Button Programming, program code 05. Buttons programmed as Multi Function in data base admin can be assigned as a feature access (i.e. speed dial) by first installing an electronic key telephone to assign the buttons, then removing the electronic key telephone and installing the SLA. Follow the programming procedures in Sec. 610.5 for Flexible Button Assignments.

Table 630.1 Applicable SLA Program Codes

PROGRAM CODES	616 FLEX
CLASS OF SERVICE	DF 01
DO NOT DISTURB (DND)	DF 02, SF 1
SYSTEM SPEED DIAL	DF 02, SF 2
ALARM/DOOR SIGNAL	DF 02, SF 3
PREFERRED LINE ANSWER (Must be enabled)	DF 02, SF 4
CALL FORWARDING	DF 02, SF 5
PAGING ACCESS	DF 03, SF 2
FLEXIBLE BUTTON ASSIGN.	DF 05
PICK UP GROUP	DF 07
CO LINE RINGING, DAY	DF 13
CO LINE RINGING, NIGHT	DF 14
MESSAGE REMINDER TONE	DF 25
PRESET FORWARD STA ASSIGN	DF 34

DF=Data Field, SF=Sub-Field

630.23 DEFAULT DATA BASE CODES

PROGRAMMING STEPS

If you are in the program mode, continue using the program codes. If you are starting to program here, enter the program mode first.

A. Default Station Data

To initialize the Station Data, dial an (*) asterisk and [00] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
DEFAULT STATION DATA

1. Press the HOLD button to initialize the Station Data. Confirmation tone will be heard.

DESCRIPTION

This data field is used to initialize all Station Data. (Program Codes 01-04, and 06-08).

Note: Flexible Button data (Program Code [*][05] is NOT set to default with this code. (Refer to Sec. 610.5)

Default: All applicable program codes returned to default (Program codes: 01, 02, 03, 04, 06, 07, and 08)

B. Default CO Line Data

To initialize the Station Data, dial an (*) asterisk and [10] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD
DEFAULT CO LINE DATA

1. Press the HOLD button to initialize the CO Line Data. Confirmation tone will be heard.

This data field is used to initialize all CO Line Data. (Program codes 11-17)

Default: All applicable program codes returned to default (Program codes: 11, 12, 13, 14, 15, 16, and 17)

630.23 DEFAULT DATA BASE CODES (Cont'd)

PROGRAMMING STEPS	DESCRIPTION
C. Default System Data To initialize the System Data, dial an (*) asterisk and [20] on the dial pad. If you have a display phone, you will see the following: SP 616 FLEX VX.XX YYMMDD DEFAULT SYSTEM DATA 1. Press the HOLD button to initialize the System Data. Confirmation tone will be heard.	This data field is used to initialize all System Data. (Program Codes 21-39). **Default:** All applicable program codes returned to default (Program codes: 21, 22, 23, 24, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, and 39)
D. Default FLEX Button Data To initialize the FLEX Button Data, dial an (*) asterisk and [30] on the dial pad. If you have a display phone, you will see the following: SP 616 FLEX VX.XX YYMMDD DEFAULT FLEX BUTTONS 1. Press the HOLD button to initialize the FLEX Button Data. Confirmation tone will be heard.	This data field is used to initialize all FLEX Button Data. (Program code 05) **Default:** All FLEX Buttons returned to default assignment (Program code: 05).

630.23 DEFAULT DATA BASE CODES (Cont'd)

PROGRAMMING STEPS

E. Default Toll Table Data

To initialize the Toll Table Data, dial an (*) asterisk and [40] on the dial pad.

If you have a display phone, you will see the following:

SP 616 FLEX VX.XX YYMMDD DEFAULT TOLL TABLES

Press the HOLD button to initialize the Toll Table Data. Confirmation tone will be heard.

DESCRIPTION

This data field is used to initialize all Toll Table Data. (Program Codes 41-44).

Default: All applicable program codes returned to default (Program codes: 41, 42, 43, and 44)

SECTION 640
DATABASE PRINTOUT

Station Configuration

The Station Configuration printout will provide station related information in a 54-character field in the following format:

```
STA CONFIG
CKT NUM  COS DND SPD ALM PFL
 01  10   1   Y   Y   N   N
CF DSLT PAGE BNA PKUP PAC HST
 Y   Y  1,.  ..  1,.  Y   N
CKT NUM  COS DND SPD ALM PFL
 02  11   1   Y   Y   N   N
CF DSLT PAGE BNA PKUP PAC HST
 Y   Y  1,.  ..  1,.  Y   N
```

and so on through the rest of the stations

CKT	= The two-digit circuit number (KSU physical port)
NUM	= The two-digit intercom number assigned to this KSU port
COS	= The one-digit class of service assignment
DND	= "Y" enabled DND; "N" disabled DND at that station
SPD	= "Y" allows system speed dial; "N" disables system speed dial
ALM	= "Y" allows alarm tone/Door Box ringing; "N" disables it
PFL	= "Y" enables Preferred Line operation; "N" disallows it
CF	= "Y" allows Station Call Forwarding; "N" disallows it
DSLT	= "Y" enables Direct Select operation; "N" disables it
PAGE	= Valid data is "1" or "2" or both "1" & "2" indicating page zone(s)
BNA	= Valid date is "10" through "25" indicating the Busy/No Answer preset forward station assigned
PKUP	= Valid data is "1" or "2" or both "1" & "2" indicating Pickup Groups.
PAC	= "Y" enabled station paging access; "N" disables it
HST	= "Y" enables headset operation; "N" disables it

CO Line Configuration

The CO Line Configuration will provide CO line related information in the following format:

```
CO CONFIG
CO GRP TYPE SIGL TRO PVL FLSH
01  1   CO  DTMF  N   N   20
RDT DIAL-PLS SMDR
 3  60/40;10   Y
DAY RING:
10 .. .. .. .. .. .. ..
.. .. .. .. .. .. .. ..
NIGHT RING:
10 .. .. .. .. .. .. ..
.. .. .. .. .. .. .. ..
```

and so on through the rest of the CO lines

CO	= The CO line number as it is terminated on the system
GRP	= The CO line group this CO line is assigned to
TYPE	= Valid data is "CO" or "PBX"
SIGL	= Valid data is "DTMF" or "Dial Pulse"
TRO	= "Y" enables Toll Restrict Override; "N" disables it
PVL	= "Y" enables a Private Line; "N" disables it
FLSH	= Valid entries for Flash Timer are "01" through "99"
RDT	= Valid entries for Ring Detect Timer are "2" through "9"
DIAL-PLS	= Valid entries are: 1) 60/40; 10 2) 66/33; 10 3) 60/40; 20 4) 66/33; 20
SMDR	= "Y" enables SMDR; "N" disables SMDR
DAY RING	= Stations assigned to ring in the day mode for this CO Line. Unassigned numbers are shown as two dots ".."
NIGHT RING	= Stations assigned to ring in the night mode for this CO Line. Unassigned numbers are shown as two dots ".."

System Configuration

The System Configuration related database information is provided in the following format:

```
SYS CONFIG
QUE HOLD  ALM :DT :SIGL :ENBL
 Y   SY        CL  REPT    N
PRV ATTD SMDR BAUD PRNT BGM
 Y   10  ALL  1200  80   N
LBC HOUR DATE
 ..  12  MMDD
EX/SC1 EX/SC2 EX/SC3 EX/SC4
.. ..  .. ..  .. ..  .. ..
PBX   CODES
.. .. .. ..
SMDR LINE ENABLE
01 02 03 04 05 06
```

QUE = Enabled = "Y", Disabled = "N"

HOLD = Valid data is "EX" or "SY"

ALM = Alarm parameters where:

DT = Closed "CL" or Open "OP" detection

SIGL = Repeated "RPT" or one-time "ONCE" signaling

ENBL = Enable the alarm, "Y"=yes, "N"=no

PRV = Privacy enabled, "Y"=yes, "N"=no

ATTD = Assigned Attendant station. Valid data=Stations 10-25

SMDR = Type of SMDR: "ALL" prints local and long distance; "LD" prints long distance only

BAUD = Baud Rate: "300" or "1200"

PRNT = 29 or 80 character option

BGM = Background Music Enable, "Y"=yes, "N"=no

LBC = Loud Bell/CO Line Control station/CO assignment. Valid data for LBC Station assignments is "B10 through B25" or if programmed for CO Line Control, CO Lines "C01 through C06"

HOUR = Hour format: Valid display is "12" or "24"

DATE = Date format: Valid display is "MMDD" or "DDMM"

EX/SC = The four (4) programmable Executive/Secretary pairs. Valid data is stations "10" through "25"

PBX CODES = These are the four (4) programmable two-digit PBX codes. Valid data for each two-digit code is "00" through "99" including *'s and #'s. One digit codes are also allowed

SMDR LINE ENABLE = CO lines assigned to report port detailed call information. Unassigned CO lines are shown as two dots ".."

System Timers

The Timers printout will provide programmed information on all programmable timers in the system in the following format:

```
TIMERS
ERCL SRCL TRCL MSG-TNE PAUSE
 060  060  030   00     2
RING-FWD CNFTO RNGTO
   30      15    50
```

Where:

ERCL	= Exclusive Recall Timer
SRCL	= System Recall Timer
TRCL	= Transfer Recall Timer
MSG-TNE	= Message Wait Reminder Tone
PAUSE	= Programmed length for a pause stored in a speed dial number
RING-FWD	= Busy/No Answer Ring Forward Timer
CNFTO	= Conference Time-out for unsupervised conference
RNGTO	= Ring Time-out Timer

Exception Tables

The Exception Tables printout will provide information on data programmed into the Allow and Deny Tables "A" and the Allow and Deny Tables "B". Up to eight (8) digit entries will be displayed. A double period indicates that no data has been programmed for the particular bin. Exception Table information is displayed in the following format:

```
EXCEPT TABLE
ALLOW TABLE A
01 ..        09 ..
02 ..        10 ..
03 ..        11 ..
04 ..        12 ..
05 ..        13 ..
06 ..        14 ..
07 ..        15 ..
08 ..        16 ..

DENY TABLE A
01 ..        09 ..
02 ..        10 ..
03 ..        11 ..
04 ..        12 ..
05 ..        13 ..
06 ..        14 ..
07 ..        15 ..
08 ..        16 ..
```

Where:

Valid data will be digits [0] through [9], [*], and [#], and don't care character "D". Valid data, if programmed will printout in the eight spaces to the right of each bin number with the first digit occupying the position of the first period shown.

System Speed Dial Printout

System Speed Dial numbers programmed into the system can be displayed in this printout. Up to sixteen (16) digits can be displayed for each of the forty (40) bins. System Speed Dial numbers can be displayed sequentially from bin 10 through 49, one bin and it's data per line.

```
SYSTEM SPEED
10 ..30 ..
11 ..31 ..
12 ..32 ..
13 ..33 ..
14 ..34 ..
15 ..35 ..
16 ..36 ..
17 ..37 ..
18 ..38 ..
19 ..39 ..
20 ..40 ..
21 ..41 ..
22 ..42 ..
23 ..43 ..
24 ..44 ..
25 ..45 ..
26 ..46 ..
27 ..47 ..
28 ..48 ..
29 ..49 ..
```

Where:

Valid data will be any digit [0] through [9], [*] and [#] plus the rotary to DTMF switch-over command "T", the pause symbol "P", the no display character "N", and the FLASH command "F".

Flexible Station Button Printout

The Flexible button assignments for the Key Telephones can be displayed in this printout.

```
STATION 10 FLEX BUTTON ASSIGN
BTN FUNCTION     BTN FUNCTION
01 DSS/BLF 10    12 DSS/BLF 21
02 DSS/BLF 11    13 DSS/BLF 22
03 DSS/BLF 12    14 DSS/BLF 23
04 DSS/BLF 13    15 DSS/BLF 24
05 DSS/BLF 14    16 DSS/BLF 25
06 DSS/BLF 15    17 CO LINE 01
07 DSS/BLF 16    18 CO LINE 02
08 DSS/BLF 17    19 CO LINE 03
09 DSS/BLF 18    20 CO LINE 04
10 DSS/BLF 19    21 CO LINE 05
11 DSS/BLF 20    22 CO LINE 06
```

NOTE: This example shows the format of the printout for a Enhanced or Executive key telephone. The printout for a Basic key telephone will only show six (6) buttons, displayed as button 01 through 06.

Where FUNCTION Designations may be any of the following:

DSS/BLF XX	= Direct Station Selection where XX is Stations 10-25
CO LINE XX	= CO Line number 01-06
SPEED XX	= Speed Bin number 00-09, 90-99, or 10-49
POOL X	= CO Line Group number 1-6
LOOP	= Loop button assignment
MUL	= Multi-Function button (Un-programmed by the used)
IN PG X	= Page Zone 1 or 2
INT AC PG	= Internal All Call Page
EXT PAGE	= External Page
AC PAGE	= All Call Page (internal and external)
MEET ME	= Meet Me Page code
MUTE	= Mute Button
PICK UP	= Group Pickup code [6]
UNA	= Universal Night Answer code [55]
ALARM	= Alarm Reset code [9]
MUSIC	= Background Music function [8]
HEADSET	= Headset Mode Function [41]
LNR	= Last Number Redial [SPD+#)

This printout will be printed for all Stations that are connected on the system when selected to print.

SECTION 700
SYSTEM CHECKOUT PROCEDURES

700.1 FUNCTIONAL TEST PROCEDURES

This section describes the procedures that should be followed during system start-up. The installer will also find these tests to be helpful in the event of system mal-function and trouble shooting. System trouble shooting will be confined to replacement of key telephone sets & fuses.

700.2 PRELIMINARY CHECKLIST

Before starting the functional test procedures, it is recommended that the following checklist be completed. This is designed to save time and possibly eliminate the need for more detailed trouble shooting.

Check:

A. Station cables for proper connections and polarity.
B. Central office line connections.
C. Earth ground connections.
D. AC power cable.
E. Music source connections (if provided).
F. Alarm connections (if provided).

Table 700.1 - Key Station Testing

OPERATIONAL TEST	RESULT	PROCEDURE
1. Connect the modular cord to the instrument.	1.1 ON/OFF LED momentarily lights.	1.1 Normal
	1.2 DND button flashes.	1.2 Check station wiring.
2. Press the ON/OFF button on the telephone.	2.1 ON/OFF LED lights.	2.1 Normal
	2.2 That station's DSS LED lights.	2.2 Normal
	2.3 No reaction.	2.3.1 Make sure line cord is plugged in.
		2.3.2 Check K connector inside the telephone.
3. Background music		
3.1 With the telephone in an idle state, press "8" on the dial pad.	3.1.1 Background music is heard.	3.1 Normal
	3.1.2 No reaction.	3.1.2 Is handset on-hook? Check music connections on the KSU.
3.2 Adjust voice volume (front) knob on telephone.	3.2.1 Volume is increased or decreased as desired.	3.2.1 Normal
	3.2.2 No reaction	3.2.2 Check volume control (VL2) in telephone.
	3.2.3 Low background music (BGM) volume	3.2.3 Adjust BGM adjustment on left side of KSU.
3.3 Press "8" again.	3.3 Music is turned off.	3.3 Normal
4. Do Not Disturb		
4.1 Press FWD/DND button. Telephone must be on-hook.	4.1.1 DND LED is lit steady.	4.1.1 Normal
	4.1.2 No reaction	4.1.2 Check phone connections
		4.1.3 Verify station is allowed DND in programming.
4.2 Press DND button again.	4.2.1 DND LED is extiguished.	4.2.1 Normal
5. Tone ringing volume		
Telephone must be in "T" mode.	5.1.1 Two bursts of tone are heard. Adjust volume if necessary.	5.1.1 Normal
5.1 From another telephone, place an intercom call to the set being tested.	5.1.2 HOLD button LED flashes.	5.1.2 Normal
	5.1.3 DSS of calling station flashes (if programmed).	5.1.3 Normal
	5.1.4 Two bursts of tone ringing are not heard.	5.1.4 Check phone connections.
6. Transmitting Data Signals		
6.1 When incorrect or no data signals are transmitted between KSU and the	6.1.1 Only ON/OFF LED lights when pressed, remaining LEDs do not light or they	6.1.1 Check cabling to telephone and J-1 wiring.

Table 700.2 - Intercom Station Testing

OPERATIONAL TEST	RESULT	PROCEDURE
1. Making an intercom call.		
1. Press DSS button or dial station number of desired party. If called phone is a speakerphone and is placed in H (voice) mode:	1.1.1 ON/OFF LED lights.	1.1.1 Normal
	1.1.2 DSS LED of called party is lit (if programmed).	1.1.2 Normal
	1.1.3 Busy tone is heard.	1.1.3 Normal if called party is in DND, not installed, or is off-hook.
	1.1.4 Three tones are heard if called station is a speaker-phone and in H mode.	1.1.4 Normal
	1.1.5 HOLD button flashes at called station (30 ipm)	1.1.5 Normal
	1.1.6 Intercom call is not connected.	1.1.6 Consult troubleshooting guide (Section 8).
	1.1.7 Intercom ringing is heard instead of 3 bursts of tone.	1.1.7 Normal for station not in H or P mode.
	1.1.8 Handsfree conversation at called phone is not possible.	1.1.8 Check phone connections.
1.2 If called station answers by lifting the handset.	1.2.1 Flashing HOLD LED of the called party is extin-guished.	1.2.1 Normal
	1.2.2 DSS of calling station changes from flashing to steady (if programmed).	1.2.2 Normal
2. Call Pickup		2.1 Normal
2.1 Press DSS button or dial station number of desired party.	2.1 Intercom ringing or CO ringing heard at the called station.	
2.2 To answer at another station, lift handset or press ON/OFF button.	2.2 Intercom dial tone heard.	2.2 Normal
2.3 Dial Pickup Code "6".	2.3 Called station returns to idle state. HOLD LED is extinguished. Intercom conversation between calling station & answering station is possible. Station LED is lit.	2.3 Normal
3. Intercom Conference		
31. During an intercom con-	3.1 Intercom dial tone is	3.1 Normal

Table 700.2 - Intercom Station Testing (Cont'd)

OPERATIONAL TEST	RESULT	PROCEDURE
5. Camp On (Call Waiting)		
5.1 Lift handset or press ON/OFF button, then press DSS button or dial desired station number. Receive busy on outside (CO) or intercom call.	5.1 Busy tone is heard through handset or station speaker. Station ON/OFF LED is lit steady.	5.1 Called phone is busy - normal.
5.2 Press MSG/CP.ON button.	5.2 Ringing tone is heard at calling station & 2 bursts of tone are heard over speaker at called station. MSG/CP.ON LED and DSS of calling station are flashing at called station at 60 ipm.	5.2 Normal
	5.3 Busy tone heard continuously.	5.3 Second camp-on request is being made at same station.
6. Executive/Secretary		
6.1 Transferring intercom calls to an Executive/Secretary phone. Incoming intercom call is routed to Secretary when Executive station is busy.	6.1 Incoming intercom call is automatically transferred to secretary station.	6.1 Normal
	6.2 Incoming intercom call is not transferred.	6.2 Confirm programming of Exec/Sec assignment.
7. Paging		
7.1 Lift handset, dial "74" on dial pad and make paging announcement.	7.1 All call warning tone is heard over key phone speaker. HOLD LED lights steady at stations receiving the page, not at page initiator. All idle phones not in DND or busy are paged.	7.1 Normal
	7.2 DSS of paging station is lit steady at all stations where DSS is programmed to appear.	7.2 Normal
	7.3 Paging does not occur.	7.3 Check programming for page zones or change telephone.
	7.4 Hang up. Page is terminated and all stations not off-hook return to	7.4 Normal

Table 700.3 - CO Line Functions Test

OPERATIONAL TEST	RESULT	PROCEDURE
1. Outgoing calls		
1.1 Lift handset or press ON/OFF button & press CO line button.	1.1.1 The CO line LED is lit steady.	1.1.1 Normal
	1.1.2 Station OF/OFF button LED is lit steady. All stations where DSS is programmed to appear are lit steady. Dial tone is heard.	1.1.2 Normal
	1.1.3 CO LED is not lit.	1.1.3 Check line access programming.
	1.1.4 Dial tone is not heard.	1.1.4 Check CO line connections at RJ-21X on the KSU.
2. Incoming calls		
2.1 Incoming CO ringing	2.1.1 Co ringing is heard.	2.1.1 Normal
	2.1.2 CO ringing is not heard but that line is flashing.	2.1.2 Check programming for ring assignment (day/night). Check CO line connections at RJ-21X on the KSU.
2.2 Press flashing CO line button.	2.1.3 CO line LED or loop button LED is flashing at 30 ipm.	2.1.3 Normal
	2.2 CO line LED or loop button is lit steady.	2.2 Normal
3. Transferring a CO line call		
3.1 During a CO line coversation, press TRANS/QUE and dial station number to which CO line is to be transferred or press that station's DSS button.	3.1.1 The CO line is placed on Exclusive Hold automatically.	3.1.1 Normal
	3.1.2 CO line LED is flashing at transferring station but remains steady at all other stations having line access.	3.1.2 Normal
	3.1.3 At receiving phone, the CO line or loop button LED is flashing at Exclusive Hold.	3.1.3 Normal
	3.1.4 Hang up after dialing station number or pressing DSS button for unscreened transfer; announce call to receiving station before hanging up for screened	3.1.4 Normal

Table 700.3 - CO Line Functions Test (Cont'd)

OPERATIONAL TEST	RESULT	PROCEDURE
3.2 At phone receiving the transfer, press flashing CO line button or loop button.	3.2.1 CO line LED is now steady at all phones in the system.	3.2.1 Normal
	3.2.2 CO line call is not transferred to desired station.	3.2.2 Check if called station is in DND.
4. Add-On Conference		
4.1 During a CO line conversation, press the CONF button.	4.1 CO line is placed on Exclusive hold automatically, receiving MOH if provided.	4.1 Normal
4.2 Press DSS button of 3rd party to be added to the conversation.	4.2 Ringing is heard.	4.2 Normal
4.3 When 3rd party answers, initiator presses CONF button again.	4.3 All 3 parties are connected together. CONF LED at both internal stations is lit.	4.3 Normal
4.4 Hang up handset at first station to terminate conference call.	4.4 CONF LED will extinguish.	4.4 Normal
5. Multi-line Conference		
5.1 Place an outgoing CO line call.	5.1 Ringing is heard	5.1 Normal
5.2 When party answers & is notifed of conference request, initiator presses the CONF button.	5.2 Party B is placed automatically on Exclusive Hold, hearing MOH if provided. Initiator hears intercom dial tone.	5.2 Normal
5.3 Initiator presses another CO line button & makes another outgoing call to party C.	5.3 CONF LED is lit steady & ringing is heard.	5.3 Normal
5.4 Initiator presses CONF button again.	5.4 All 3 parties are connected and both CO line LEDs are lit steady. CONF button LED is lit steady.	5.4 Normal
6. Flash		
6.1 When completing a CO line conversation, press the FLASH button.	6.1 New CO dial tone is heard.	6.1 Normal

SECTION 800
MAINTENANCE AND TROUBLESHOOTING

800.1 GENERAL INFORMATION

This section provides common maintenance, troubleshooting and repair instructions for the STARPLUS 616 FLEX Key Telephone System. It is advisable to use the latest issue manual and supporting documentation whenever possible.

The 616 FLEX architecture is designed such that all solid state circuitry is enclosed in the KSU. The only modular or replaceable type printed circuit boards located inside the KSU are the SIU and RCU. Therefore unless installing or replacing these boards, the KSU cover should not be removed.

Isolating problems in the replaceable units such as the key telephones or any external devices requires no special knowledge of solid state electronics or micro-processor programming techniques. The 616 FLEX system requires no involved or complicated mechanical procedures for installation or removal of peripherals.

800.2 PREVENTIVE MAINTENANCE

A regular preventive maintenance program is essential to reduce the possibility of system failures. General type servicing such as cleaning and inspecting should be done yearly. If the KSU is located in an area of humidity, dust, etc., servicing should be done more frequently. General servicing should include:

- Hardware and cabling. Check for general mechanical integrity, loose or broken wires, plugs or connectors. Tighten or repair as necessary.
- KSU. Inspect air vents located in front and on top of the KSU cabinet for unrestricted air passage.
- MDF/cabling. Inspect the MDF for loose wires, obstructions, dust and dirt.

800.3 TEST EQUIPMENT AND TOOLS

The following test equipment and tools are necessary in performing maintenance and repair on the 616 FLEX system.

- voltmeter
- DTMF/dial pulse hand held test telephone
- standard telephone repairman's hand tools

800.4 SPARE PARTS

The troubleshooting and repair instructions are based on the assumption that spare key telephones and KSU are available to the repairman, either on-site or at a central warehouse/storeroom location. In addition, spare fuses, jacks, wire and terminal block should be available.

800.5 FIELD SERVICE ENGINEERING

Installation, troubleshooting and repair are described in detail within this manual. However, field service type questions such as application requirements and troubleshooting assistance arise which require support. Such services are available through STARPLUS field service.

800.6 FAULT CLASSIFICATION

Reported problems come from a variety of people under differing conditions, therefore all trouble reports should be thoroughly examined so that the exact problem is understood. Do not always suspect the 616 FLEX equipment. Be sure to check external interface equipment such as the MDF, interconnection points, cabling, central office or programming. To help isolate a fault from the reported description, the following information should be investigated to further define the fault source.

A. Were any changes made recently to the customer database assignments that could cause the problem?

B. Were any changes made recently to cabling that could cause the problem?

C. Is the trouble condition associated with one circuit, a particular section or sections of circuits (i.e., CO lines, stations) or common to all circuits?

D. Is the trouble intermittent or continuous?

E. Could the trouble be caused by "cross symptoms" such that 2 failures mask the symptoms associated with a particular fault?

800.7 SYSTEM FAILURES

Various problems will affect the entire system. These are normally related to power failures, central processor failures, or memory failures. Where central processor or memory failures occur, the KSU must be replaced. When loss of power occurs, steps can be taken to localize the problem.

800.8 POWER FAILURES

The loss of commercial power will shut the system down unless external battery backup is provided. This loss of power could come from tripped circuit breakers, AC cords unplugged, or a fuse blown. When a power failure occurs, working toward the source, test for voltage. The power monitor LED will remain lit when power is present. Since the processor or power failure will cause switchover to the power failure telephone, the LED should be used to determine whether it is a power failure or processor failure. It can be seen through the bottom air vents located on the front cover of the KSU.

800.9 KEY TELEPHONE FAILURES

The following statements should be considered when isolating & categorizing key telephone failures:

Is the reported fault:

A. Present on one telephone only? Check wiring, programming, telephone and KSU. Move telephone to a good working position to eliminate possible telephone failure.

B. Common to station numbers in pairs (1-2, 3-4, 5-6, etc.)? Check wiring polarity & KSU.

C. Common to all station numbers? Check programming & KSU.

D. Associated with a key telephone that was recently moved? Check wiring, programming, telephone & KSU.

E. Associated with programming changes made recently? (Ringing, CO line access, etc.) Check for proper & accurate programming.

F. Occurring intermittently? Set up a test to duplicate the problem.

G. Accompanying a software failure? Test the feature operation, programming & KSU.

800.10 CO/PBX LINE FAILURES

Problems with CO/PBX lines can be isolated and categorized by the following statements:

Is the reported fault:

A. Present on one CO line only? Check the affected line, wiring, plug connections & KSU.

B. Common to 2 or more CO lines? Check the lines, wiring & KSU.

C. Associated with a key telephone? Check programming, telephone & KSU.

D. Associated with signaling (DTMF, dial pulse)? Check programming, CO line & KSU.

E. Associated with CO incoming ringing? Check programming & KSU.

F. Occurring intermittently? Set up test to duplicate problem. Once the problem can be duplicated, check programming, telephone, CO line or KSU.

800.11 FEATURE OPERATION FAILURES

All operational features are controlled by software and specific database assignments. Most features are provided exclusively by software. However some require supporting equipment. For this reason, database assignments should be checked before corrective maintenance is performed. Also check for proper usage by the customer, as feature failures are often the fault of the user. Features that use supporting equipment could have faulty equipment. This should be checked.

The following is a list of features that use additional equipment:

- Alarm - alarm system
- Background Music - music source connections
- Battery Back-up - battery package & charger
- Loud Bell Control - external power source & ringing device
- CO Line Control - ancillary equipment
- Power Failure Transfer - telephone wiring
- External Paging - amplifier, speaker & connections

APPENDIX A
DATA BASE PROGRAMMING FORMS

Appendix A-1 Station Programming Chart

	Pgm Code	BTN	STATION NUMBER								DEFAULT VALUES
Class of Service	01	1-6									COS 1
Do Not Disturb	02	1									YES
Speed Dial	02	2									YES
Alarm Receive	02	3									NO
Preferred Line Answer	02	4									NO
Auto Select	02	5									YES
Call Forward	02	6									YES
Headset	03	1									NO
Page Access	03	2									YES
Page Group	06	1-2									1
Pickup Group	07	1-2									1
Basic Telephone	08	1									NO
Single Line Adapter (SLA)	08	2									NO

Flexible Station Number Assignment
Program Code (04)

FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO
FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO

Appendix A-2 Flexible Button Programming Chart (08)

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

STA # ____		1	2	3	4
PORT # ____		5	6	7	8
		9	10	11	12
		13	14	15	16
17	18	19	20	21	22

Multi Function = 1
DSS/BLF= 1XX (XX=Stations 10-25)
CO Button= 2XX (XX=CO Lines 1-6)
Loop Button= 3
Pool Button = 4X (X=CO Line Group 1-6)

Appendix A-3 CO Line Programming Chart

	Line Grp	Line Type	Signal	Toll Ovrd	Private Line	Day Ring	Nite Ring	Flash Timer	Ring Detect	Dial Pulse	Ring* Timeout	SMDR Enable
Prog Code	11	12	12	12	12	13	14	15	16	17	18	36
Prog Button	1-6/ 1-2	1	2	3	4	NA	NA	Key Pad	Key Pad	Key Pad	Key Pad	NA
CO 1												
CO 2												
CO 3												
CO 4												
CO 5												
DEFAULT	Grp 1	CO	DTMF	No	None	All Ring Attendant		2 sec.	300 msec.	60/40 10pps	5 sec.	Yes

*Ring Time-out Timer is programmed only ONCE for all CO Lines.

Appendix A-4 System Programming Chart

Prog Button	Prog Code	Feature	Format	Default	New
1	21	CO Line Queuing	Yes/No	Yes	
2	21	Hold Preference	System/Exclusive	System	
3	21	Alarm Detection	Open/Closed	Closed	
4	21	Alarm Signaling	Repeated/Single	Single	
5	21	Automatic Privacy	Yes/No	Yes	
6	21	Alarm Enable	Yes/No	No	
7	21	Background Music Enable	Yes/No	No	
Key Pad	22	Exclusive Hold Recall	000-255 sec.	060 sec	
	23	System Hold Recall	000-255 sec.	060 sec	
	24	Transfer Recall Timer	000-255 sec.	030 sec.	
	25	Message Reminder Tone	00-99 min.	00	
	26	Pause Timer	1-9 sec.	2 sec.	
NA	27	Executive/Secretary	4 pairs STA #, STA #	None	
1-4	28	Loud Bell/ CO Line Control	1 set STA # or CO Line	None	
1-4	31	PBX Codes	4 numbers 1 or 2 digit	None	
NA	32	Attendant Position	10-25	STA 10	
	33	Ring Timer-Preset Fwd	10-99 sec.	15 sec.	
NA	34	Station - Preset Fwd	Unlimited; STA #, STA #	None	
Key Pad	35	Conference Timer	00-99 min	15 min	
1-3	37	SMDR/Baud Rate/Printer	All calls/LD; 300/1200; 29/80 character	All Calls 300 baud 29 character	

Appendix A-5 System Speed Dial Chart

Programmed at attendant station.

Digits *up to 16)

Bin 10	
Bin 11	
Bin 12	
Bin 13	
Bin 14	
Bin 15	
Bin 16	
Bin 17	
Bin 18	
Bin 19	
Bin 20	
Bin 21	
Bin 22	
Bin 23	
Bin 24	
Bin 25	
Bin 26	
Bin 27	
Bin 28	
Bin 29	

Bin 30	
Bin 31	
Bin 32	
Bin 33	
Bin 34	
Bin 35	
Bin 36	
Bin 37	
Bin 38	
Bin 39	
Bin 40	
Bin 41	
Bin 42	
Bin 43	
Bin 44	
Bin 45	
Bin 46	
Bin 47	
Bin 48	
Bin 49	

Appendix A-6 Exception Tables Programming Chart

Code 41 - Allow Table A	
BIN 1	
BIN 2	
BIN 3	
BIN 4	
BIN 5	
BIN 6	
BIN 7	
BIN 8	
BIN 9	
BIN 10	
BIN 11	
BIN 12	
BIN 13	
BIN 14	
BIN 15	
BIN 16	

Code 42 - Deny Table A	
BIN 1	
BIN 2	
BIN 3	
BIN 4	
BIN 5	
BIN 6	
BIN 7	
BIN 8	
BIN 9	
BIN 10	
BIN 11	
BIN 12	
BIN 13	
BIN 14	
BIN 15	
BIN 16	

Code 43 - Allow Table B	
BIN 1	
BIN 2	
BIN 3	
BIN 4	
BIN 5	
BIN 6	
BIN 7	
BIN 8	
BIN 9	
BIN 10	
BIN 11	
BIN 12	
BIN 13	
BIN 14	
BIN 15	
BIN 16	

Code 44 - Deny Table B	
BIN 1	
BIN 2	
BIN 3	
BIN 4	
BIN 5	
BIN 6	
BIN 7	
BIN 8	
BIN 9	
BIN 10	
BIN 11	
BIN 12	
BIN 13	
BIN 14	
BIN 15	
BIN 16	

APPENDIX B
STARPLUS 616 FLEX PART NUMBERS

SP61600-10	616 FLEX BASIC KSU
SP61620-03	PROGRAM MODULE III
SP61630-00	REAL TIME CLOCK UNIT (RCU) KIT
SP61632-00	SERIAL INTERFACE UNIT (SIU) KIT
VC61101	BATTERY BACKUP UNIT
SP61610-00	BASIC KEY TELEPHONE-BLACK
SP61610-44	BASIC KEY TELEPHONE-ASH
SP61610-54	BASIC KEY TELEPHONE-GRAY
SP61610-60	BASIC KEY TELEPHONE-BURGUNDY
SP61612-00	ENHANCED KEY TELEPHONE-BLACK
SP61612-44	ENHANCED KEY TELEPHONE-ASH
SP61612-54	ENHANCED KEY TELEPHONE-GRAY
SP61612-60	ENHANCED KEY TELEPHONE-BURGUNDY
SP61614-00	EXECUTIVE KEY TELEPHONE-BLACK
SP61614-44	EXECUTIVE KEY TELEPHONE-ASH
SP61614-54	EXECUTIVE KEY TELEPHONE-GRAY
SP61614-60	EXECUTIVE KEY TELEPHONE-BURGUNDY
SP61616-44	PHONE BOX-ASH
SP61650-10	STARPLUS 616 FLEX INSTALLATION MANUAL
SP61654-10	STARPLUS 616 FLEX STATION USER GUIDE
SP61640-00	WALL MOUNT KIT-BLACK
SP61640-44	WALL MOUNT KIT-ASH
SP61640-54	WALL MOUNT KIT-GRAY
SP61640-60	WALL MOUNT KIT-BURGUNDY
SP61660-00	REPLACEMENT HANDSET-BLACK
SP61660-44	REPLACEMENT HANDSET-ASH
SP61660-54	REPLACEMENT HANDSET-GRAY
SP61660-60	REPLACEMENT HANDSET-BURGUNDY
SP61666-54	12 FOOT HANDSET CORD-GRAY
SP61666-60	12 FOOT HANDSET CORD-BURGUNDY
P14108-54	25 FOOT HANDSET CORD-GRAY
P14108-60	25 FOOT HANDSET CORD-BURGUNDY
SP61664-01	DIRECTORY SHEET FOR BASIC KEY TELEPHONE
SP61664-00	BLANK DESIGNATION TABS FOR STARPLUS TELEPHONES
SP61662-00	BUTTON CAPS (1 RED, 9 CLEAR)
SP61668-00	DIRECTORY WINDOW FOR BASIC KEY TELEPHONE