

Strata VI

GENERAL DESCRIPTION

(Release 3)

10

01 GENERAL

01.00 Summary Description

01.01 **Strata VI** is an electronic key telephone system with many standard features; utilizing stored program control, custom LSI circuitry, solid-state space division switching and reduced station cabling. Served by a key service unit (MKSU) that is housed in a single cabinet with an optional add-on external module (KBXU), the system has a capacity of six central office/PBX lines, two intercom lines and 16 station lines.

01.02 **Strata VI** utilizes specially designed Electronic Key Telephones (EKTs). Each EKT is connected to the system via industry-standard 2-pair cabling, and is equipped with a push-button dial pad. Solid-state electronics within the MKSU translate signals from the station dial pad, into either DTMF or rotary dial signals, as required by the central office.

01.03 It is electrically compatible with the public telephone network and is also designed to function in a "behind PBX" environment.

01.04 Maintenance procedures are based on quickly locating and replacing defective plug-in units, keeping service disruption to a minimum.

02 PHYSICAL DESCRIPTIONS

02.00 Key Service Unit

02.01 Designed for table-top or wall mounting, the **Strata VI** MKSU is housed in a single metal cabinet (Figure 1) with the following dimensions:

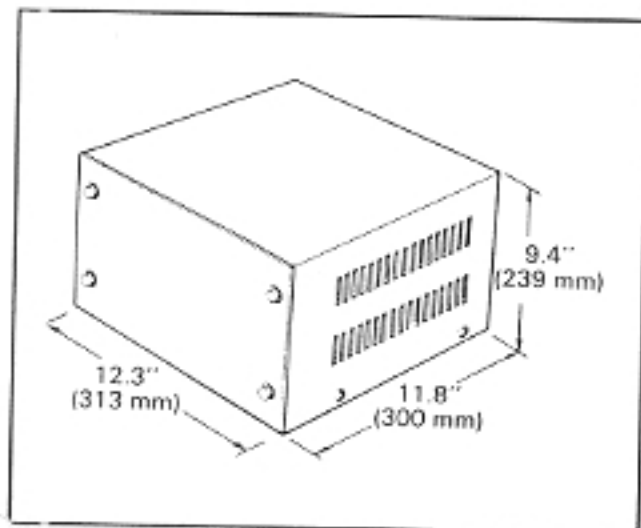


FIGURE 1—MKSU (Dimensions)

Height: 9.4" (239 mm)
Width: 12.3" (313 mm)
Depth: 11.8" (300 mm)
Weight: 19.8 lbs. (9.0 kg)

The MKSU contains a single shelf arranged to accommodate up to six printed circuit boards (PCBs). The PCBs (Figure 2) plug into connectors mounted on the backplane of the equipment shelf.

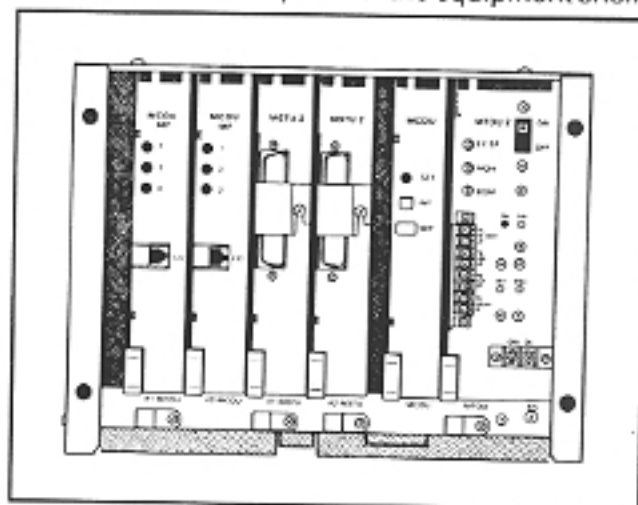


FIGURE 2—MKSU (Internal View)

02.02 Each PCB measures 8.7 x 7.1" (220 x 180 mm) and is equipped with either an 80- or a 100-pin edge connector. All external MKSU connections are made on the front panels of the various PCBs by using cables with industry-standard connectors.

NOTE:

Several **Strata** PCBs utilize plug-in sub-assemblies which are mounted directly on the host PCB. See Paragraph 06, System Configuration, for complete details.

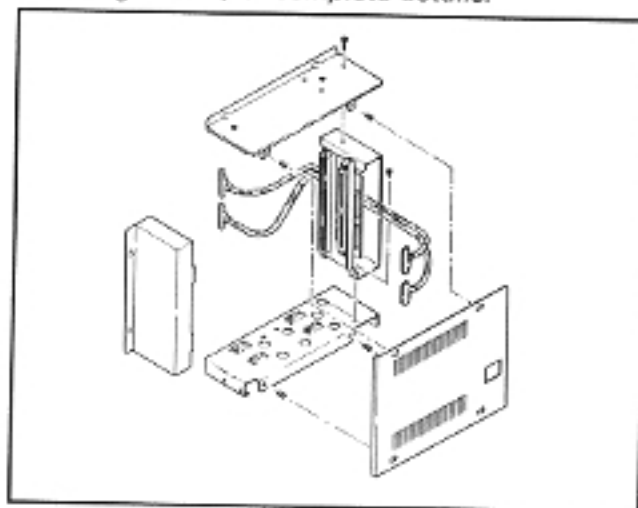


FIGURE 3—KBXU

02.10 KBXU

02.11 An optional expansion module (KBXU) for the MKSU is available to accommodate the Station Message Detail Recording (SMDR) and the Off-Premise Extension (OPX) feature. The KBXU mounts on the right-hand side of the MKSU (Figure 3) and provides mounting space for one MOPU PCB (OPX) and one MSMU PCB (SMDR). With the KBXU attached to the MKSU, the overall width (Figure 4) increases to 16.00" (405 mm).

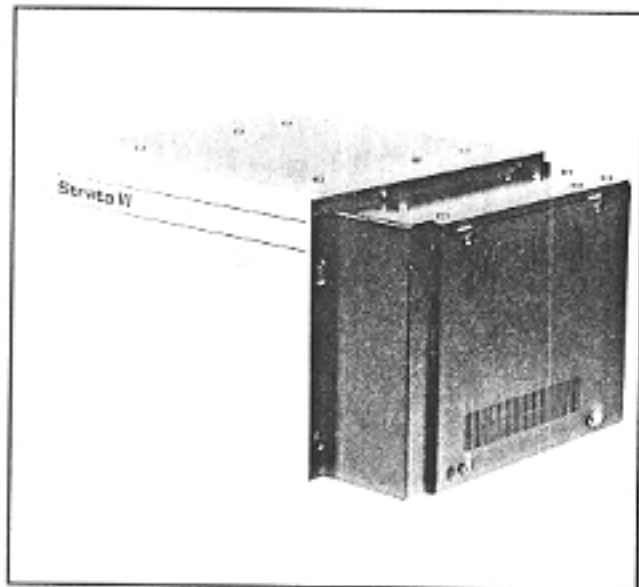


FIGURE 4—MKSU/KBXU

02.20 Electronic Key Telephones

02.21 Five different Electronic Key Telephones (EKTs), having three or four permanently dedicated feature keys, may be used in the *Strata* system—three with 10 line/feature keys (S-type, speakerphone, Busy Lamp Field) and two with 20 line/feature keys (speakerphone and Liquid Crystal Display).

02.22 Housed in an impact-resistant off-white plastic case, each EKT comes with a brown faceplate (with wine, black or blue faceplates available as extra-cost options) and a push-button dial pad in addition to their line/feature keys.

02.23 The S-type EKT measures:

Height: 3.5" (88.9 mm)
Width: 6.0" (152 mm)
Depth: 9.0" (229 mm)

All other EKTs measure:

Height: 4.0" (102 mm)
Width: 8.8" (224 mm)
Depth: 9.1" (230 mm)

02.24 The standard EKT, the 10-key S-type EKT (Figure 5)—a non-speakerphone, having a speaker, but no microphone—is equipped with 13 line/feature keys.

02.25 The 10-key EKT (Figure 6) and 10-key Busy Lamp Field (BLF) EKT (Figure 7)—both fully functional speakerphones—are equipped with 14 line/feature keys.

02.26 The 20-key EKT (Figure 8) and the 20-key Liquid Crystal Display (LCD) EKT (Figure 9)—both fully functional speakerphones—are equipped with 24 line/feature lines.

02.27 All EKTs feature modular handset cords and are connected to the system via 4-conductor modular line cords.

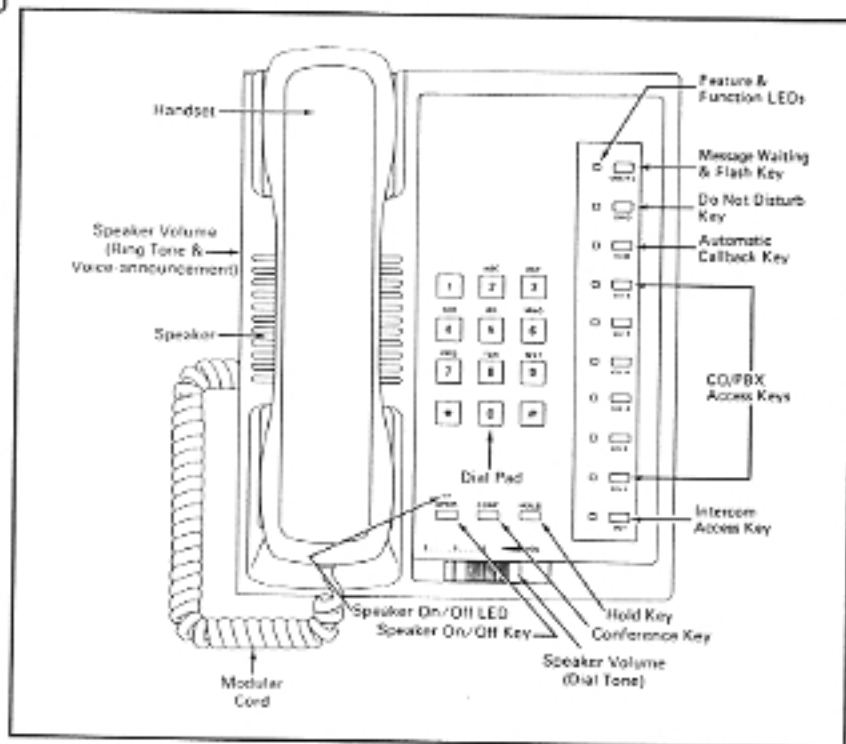


FIGURE 5—S-type EKT



FIGURE 6—10-key SPEAKERPHONE EKT



FIGURE 7—10-key BLF EKT



FIGURE 8—20-key SPEAKERPHONE EKT



FIGURE 9—20-key LCD EKT

03 ELECTRICAL CHARACTERISTICS

03.00 General

03.01 The electrical characteristics of the system are detailed in Table A.

03.02 The MKSU operates from an external 24 VDC power supply.

03.03 Loss of AC power will cause operational failure of the system. System memory, however, is protected from loss, due to power failure, with a memory back-up battery. Full system reserve

power is available as an option.

NOTE:

The batteries used are designed to maintain full memory protection for up to five years with no external power source applied.

04 FEATURES and SERVICES

04.01 The features and services of the **Strata VI** electronic key telephone system are summarized in Tables B and C, which list the standard and optional features, respectively.

TABLE A
SUMMARY OF ELECTRICAL CHARACTERISTICS

Station Loop Limit	
EKT	1000' (305 M), 24 AWG
OPX (MF)	1200 Ω , 48 VDC
(DP)	1700 Ω , 48 VDC
Ringing Tone	
CO Line (idle station)	600/800 Hz, modulated by 16 Hz, 1 sec. on—3 sec. off
(busy station)	2400 Hz, modulated by 10 Hz, 1 sec. on—3 sec. off
Intercom Line	600 Hz, 1 sec. on—3 sec. off
Busy Override Tone	2400 Hz, 1 sec. on—3 sec. off
Dial Tone (Intercom)	600 Hz, continuous
Ringback Tone	600 Hz, 1 sec. on—3 sec. off
Busy Tone	600 Hz, ¼ sec. on—¼ sec. off
Do Not Disturb Tone	600 Hz, ⅓ sec. on—⅓ sec. off
Voice Page Warning Tone	600 Hz, 1 sec. on only (via EKT speaker)
Executive Override Warning Tone	600 Hz, ½ sec. on only (via handset)
Dialing	Push-button; system generated DTMF or dial pulse
Primary Power	90 ~ 130 VAC, 60 Hz, 96 VA
Hold Recall Tone	2400 Hz, modulated by 10 Hz, 1 sec. on—1 sec. off
Environmental Specifications	
Operating Temperature	32 ~ 122°F (0 ~ 50°C)
Operating Humidity	20 ~ 80% relative humidity (without condensation)

TABLE B
STANDARD FEATURES

SYSTEM

- All Call Voice Page
- Automatic Callback (Intercom)
- Automatic Dialing-Station
- Automatic Dialing-System
- Automatic Hold Recall
- Automatic Privacy
- Automatic Release from Hold
- Background Music with Station Control
- Busy Override
- Call Transfer with Camp-on
- Conference (Multi-station)
- Conference (Multi-trunk)
- Directed Call Pick-up
- Distinctive Ringing
- DTMF and Dial Pulse Compatible
- External Page Interface
- Flash Key (PBX Transfer or CO Dial Tone Recall)
- Flexible Line Ringing Assignment
- Group Paging
- Live System Programming
- Message Waiting

- Multiple Simultaneous Handsfree Intercom Paths
- Music-on-hold Interface
- Night Ringing Over External Page
- Night Transfer
- Non-blocking Dialing
- Outgoing Call Restriction
- PBX Compatible

- Private CO Lines
- Repeat Last Number Dialed
- Toll Restriction
- Toll Restriction Override by System Auto Dial
- Trunk Queuing
- Voice or Tone Signalling
- Wall Mountable MKSU

- Do Not Disturb
- Do Not Disturb Override
- Executive Override of Privacy
- I-called Illumination
- I-hold Illumination

STATION

- I-use Illumination
- Modular Handset and Line Cords
- On-hook Dialing
- Push-button Dialing
- Ringing Line Preference

TABLE C
OPTIONAL FEATURES

- Colored EKT Faceplates
 - Blue, Black or Wine
- Off-Premise Extension (OPX)
- Off-Premise Line (OPL)
- Relay Service
 - External Page
 - Night Relay Service
- Station Message Detail Recording (SMDR)
- System Battery Back-up

- 10-key EKT or 10-key BLF EKT
 - Handsfree Answerback
 - Microphone Control Key
 - Speakerphone
- 20-key EKT or 20-key LCD EKT
 - Handsfree Answerback
 - Microphone Control Key
 - Speakerphone
- Wall Mounting Kits for EKTs

05 SYSTEM OPERATION

05.00 General

05.01 The system (Figure 10) consists of an MKSU, power supply and up to 16 electronic key telephones (EKTs). All connections between the MKSU and the EKTs are made via a customer-provided main distribution frame (MDF). Using modular line cords, the CO lines are then connected between the MCOU (and/or MPLU) PCBs and the locally-provided RJ-25C jacks. An external tuner (or equivalent) is required if the music-on-hold/background music feature is utilized.

05.02 A functional block diagram of the MKSU is shown in Figure 11. It consists of station interfaces (MSTU), which include a solid-state space division matrix; CO line interfaces (MCOU/ MPLU); the central control equipment (consisting of the MTOU and MCDU); Off-Premise Extension (OPX) interface (MOPU); and the SMDR interface (MSMU).

05.03 Connections between the station voice lines and the CO lines are via the switching matrix

provided on the MSTU PCBs. A similar matrix is provided on the MTOU for intercom connections, paging connections and for the distribution of the various system tones (Dial, Busy, etc.).

05.04 The system is entirely under the control of a single-chip microprocessor, located, along with the system program and data memories, on the MCDU PCB.

06 SYSTEM CONFIGURATION

06.00 Key Service Unit

06.01 The MKSU arrangement illustrated in Figure 12 shows the locations of the various PCBs. The KBXU add-on module on the right side of the MKSU is optional and is used only when an MOPU PCB (OPX) and/or MSMU PCB (SMDR) is required. All PCBs slide in from the front of the cabinet, and, although the rear panel of the MKSU is removable, rear access is usually not required.

06.02 Complete with all available options, the MKSU utilizes seven different printed circuit boards.

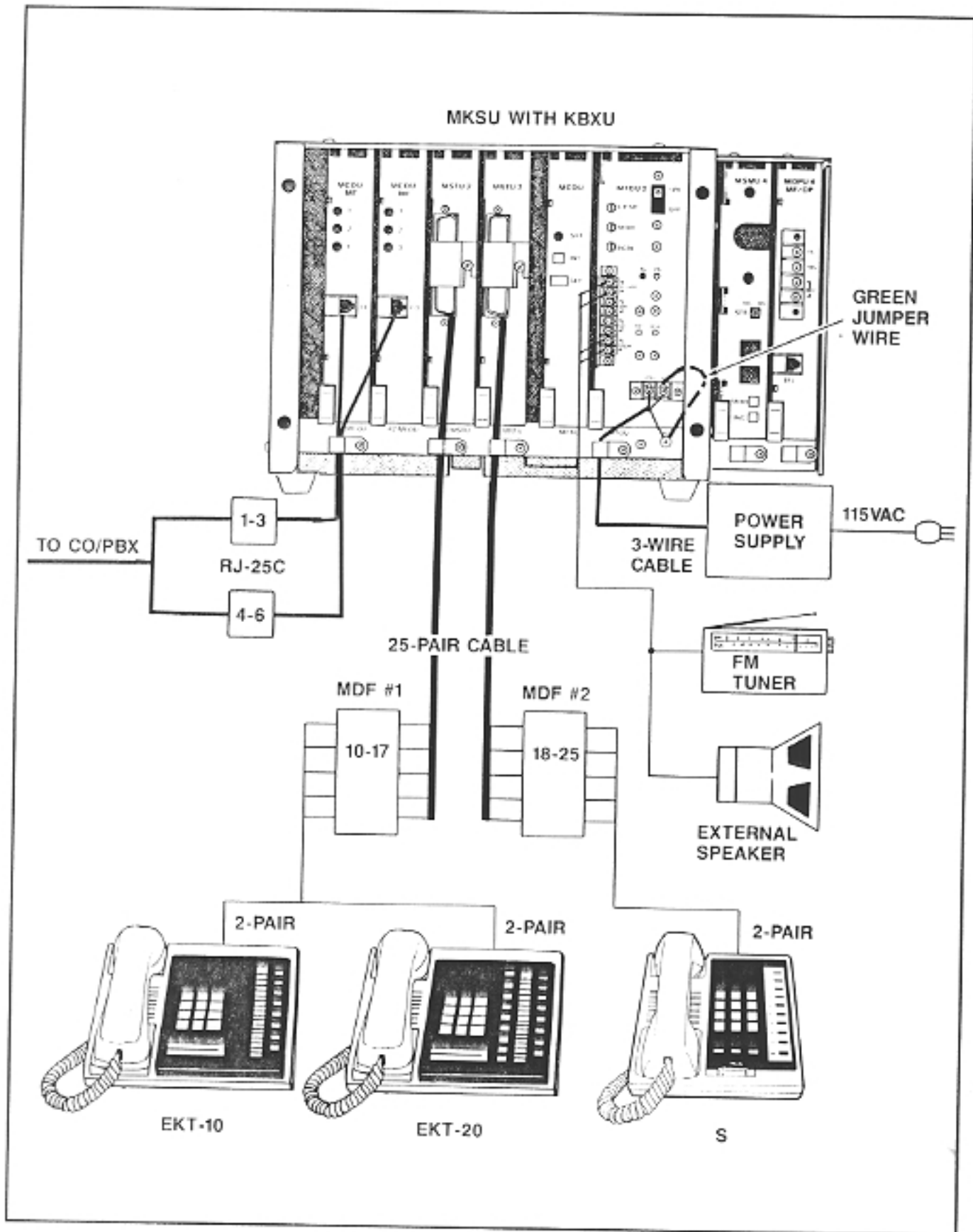


FIGURE 10—SYSTEM DIAGRAM

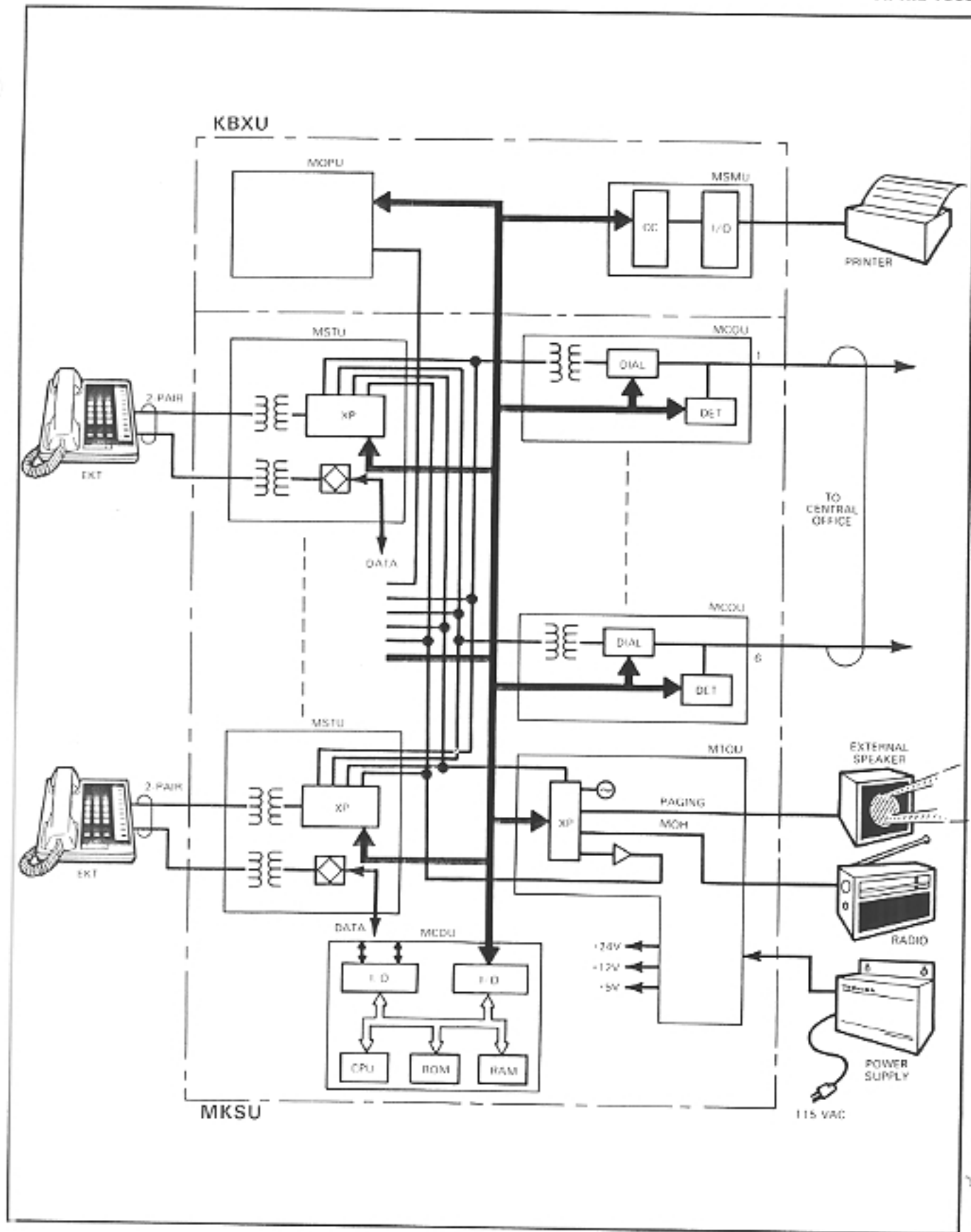


FIGURE 11—FUNCTIONAL BLOCK DIAGRAM

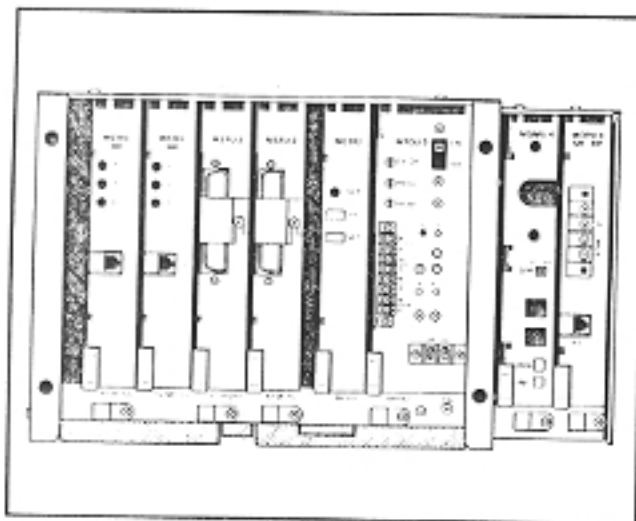


FIGURE 12—MKSU/KBXU

The functions of these PCBs are:

MCOU (MF or DP): An interface between the MKSU and the public telephone network or PBX lines. Ring detection, hold and dial outpulsing are performed by this PCB. Depending upon local CO requirements, an MF or DP type of MCOU will be provided (MF for DTMF outpulsing; DP for rotary dial outpulsing). Each MCOU PCB serves up to three CO/PBX lines.

MSTU: An interface between the MKSU and EKTs, which includes the system's solid-state space division matrix that is used for voice connections between the EKTs and the CO/PBX lines. Each MSTU PCB serves up to eight EKTs. Two-pair wiring is required for each EKT; one pair carrying voice and the other pair carrying data to and from the EKT.

MCDU/CMTU: The CMTU is required and mounts directly on the MCDU to form a single unit. All system control functions are performed by the single-chip microprocessor located on the MCDU. The system program stored in ROM, the RAM for system operations and the battery-protected RAM for system data and auto dial number storage are located on the CMTU. An MCDU is required for Release 3 features.

MTOU: Performs a number of miscellaneous system functions:

- Generates system tones.
- Provides the switching matrix for the delivery of tones for both paging and intercom connections.
- Houses the external page amplifier.

- Houses circuitry and connection points for the relay service and music-on-hold.
- Provides connection points for the 24 VDC input power.
- Houses the voltage regulators that provide 12 and 5 VDC for system operation.
- Houses three circuit breakers, one each protecting the 24 VDC, EKT, and KSU circuits.

MOPU (DP or MF/DP): An optional PCB that serves as an interface between the MKSU/KBXU and conventional, single line telephones or Off-Premise Extension (OPX) lines. The MOPU PCB services two extensions. A maximum of one MOPU can be installed in *Strata VI*. An MOPU DP will operate with rotary dial-type telephones only. Either DTMF or rotary dial telephones can be used with an MOPU MF/DP PCB. An auxiliary Power/Ringing supply is required for the MOPU.

MSMU/SCNU: The optional MSMU PCB serves as an interface between the MKSU/KBXU and a printer or storage device used for the SMDR feature. The SCNU is required and mounts directly on the MSMU to form a single unit. The PCB is equipped with an RS 232C-type interface (one per system).

MPLU (MF or DP): The MPLU PCB is a special assembly of a POPU PCB mounted on an MCOU to form a single unit. This optional PCB allows the bridging of a CO/PBX line (which appears in the *Strata VI* system) with a conventional telephone. OPL telephones thus connected will then automatically cause a busy indication within the *Strata VI* system and establish system privacy when initiating or answering a call on the dedicated CO line. If an MPLU 3 (MF or DP) is used, all incoming calls on that card's three circuits may be directed to an answering machine (or similar device) attached to circuit #1. This is accomplished as a programming option via night service. Each MPLU serves up to three CO/PBX line/OPL combinations and replaces the MCOU PCB that would usually serve these lines.

06.10 Power Supply Assembly

06.11 The separate power supply is a fixed unit complete with a wall mounting bracket. Attachment to a wall or other fixed surface is via two 1/4" toggle bolts or screws. The unit can accommodate

"brown out" conditions or high voltages within a range of 90 – 130 VAC, 60 Hz. A 10' AC power cord allows flexibility in locating the power supply during installation.

06.12 An optional battery back-up unit (PBBU) is available. It is a PCB that mounts inside the power supply housing and is connected to the recommended battery pack (which is customer-supplied, consisting of two 12 VDC, maintenance-free, automobile-type batteries—80 amp/hour maximum rating). With the optional battery back-up assembly installed, all functions of the system will continue to operate for several hours (the actual time period is in direct ratio to the type and size of batteries selected) after a loss of normal electrical power. No calls will be disconnected during switch-over to or from battery power.

06.20 Station Equipment

06.21 The principal components of the standard 10-key S-type electronic key telephone are handset, dial pad, speaker, sliding ringing/speaker volume control, 3-position volume control, one intercom key, six CO/PBX line keys, an [ACB] key and five feature keys. LED indicators are provided for all keys except the [HOLD] and [CONF] keys. Standard features of the 10-key S-type EKT include paging, on-hook dialing, automatic dialing, automatic callback, repeat last number dialed and one key each for do not disturb and message waiting/flash.

06.22 The optional 10-key speakerphone EKT provides the same feature keys as the standard EKT, plus a microphone control [MIC] key (with an LED indicator), handsfree answerback and full speakerphone capability.

06.23 The optional 10-key BLF EKT provides the same features as those listed in Paragraphs 06.21 and 06.22, plus an LED indication on which stations are in use or in DND mode.

06.24 The optional 20-key EKT provides the same features as those listed in Paragraphs 06.21 and 06.22, plus ten additional feature keys. That is, six CO/PBX keys, one intercom key, one automatic callback (ACB) key, seven automatic-dialing (AD1 ~ 7) keys, repeat last number dialed (RND) key, pause (PAU) key, automatic dialing access (REP) key, DND and MW/FL keys.

06.25 The optional 20-key LCD EKT provides the same features as those listed in Paragraph 06.24 plus a 12-character (numeric only) Liquid

Crystal Display (LCD) that provides an accurate desk clock/calendar in its idle state; and elapsed time, dialed number, calling station and CO line, depending on use.

06.30 Installation

06.31 The *Strata VI* MKSU is arranged at the factory for table-top mounting, but a simple reversal of the back panel quickly converts it for wall mounting.

06.32 All connections to the MKSU are made via the faceplates of the various printed circuit boards.

- CO/PBX line connections are made to the front of each MCOU using one 3-pair modular cord for each card.
- Each group of eight EKTs is connected to the front of each MSTU with one standard 50-pin amphenol-type connector.
- Screw-terminal barrier strips are mounted on the front of the MTOU to provide attachment points for the following connections:
 - 24 VDC power input
 - MOH/BGM source input
 - External page output
 - Night relay service
 - External page relay service
- An RS 232C-type plug is provided on the MSMU for connecting the SMDR printer.
- OPX connections for two circuits are made to the front of the MOPU PCB using a single 2-pair modular cord. External DC and ringing power is connected to the MOPU via a screw-terminal barrier strip.
- OPL connections are made via 3-pair modular cords to the front of the MPLU. Two cords are required; one cord is connected to the CO jack and serves up to three CO/PBX line connections, as with an MCOU (the MPLU occupies an MCOU PCB position), the second 3-pair cord connects to the OPL jack and serves the three OPL stations provided by that PCB.

06.33 The power supply is mounted to the wall separately from the MKSU and is connected to the 24 VDC input on the MTOU PCB.

06.40 Maintenance

06.41 Faults in *Strata VI* are repaired by replacing any faulty component (PCB, sub-as-

sembly, telephone, etc.) and returning it to the manufacturer for repair.

07 FEATURES and OPERATION

07.00 General

07.01 This section contains brief descriptions of the *Strata* features listed earlier in Tables B and C and some associated operating instructions. Detailed operating instructions can be found in either the *Strata VIUSER GUIDE* or Section 200-006-400, *Operating Procedures*.

07.10 Standard Features

07.11 System

All Call Voice Page: Dialing a 2-digit access code permits a station user to page via all idle EKT speakers simultaneously. The system can also be programmed to include the External Page feature in an All Call Page.

Automatic Callback (Intercom): Permits a station user encountering a busy station on intercom to request a callback by depressing a dedicated key. The system then monitors the called station and signals the caller when that station becomes idle.

Automatic Dialing-Station: This feature provides a private speed-dial list of 40 numbers for each station in the system.

Automatic Dialing-System: This feature allows 40 numbers to be stored in the system memory. After selecting an outgoing line, any station user can cause one of the stored numbers to be outputted by dialing the proper access code.

Automatic Hold Recall: A CO line placed on hold by any station will recall that station after a programmable period of time. A different time period can be selected for each station.

Automatic Privacy: Privacy is automatic on all connections (except OPL).

Automatic Release from Hold: The system automatically releases held CO lines if a disconnect signal is received from the central office.

Background Music with Station Control: Music from the music-on-hold source can, at the station user's option, be heard via the EKT speaker. The same music may also be broadcast via the external page interface if an external speaker is installed.

Busy Override: After calling a busy station and receiving busy tone, the caller can dial [2] and cause a tone burst to be sounded via the called EKT's speaker.

Call Transfer with Camp-on: Allows the transfer of an outside call to a station that is either idle or busy.

Conference (Multi-station): Non-amplified conferencing is permitted to a maximum of four stations and one CO line.

Conference (Multi-trunk): Non-amplified conferencing of two CO lines and up to three stations is permitted.

Directed Call Pick-up: Intercom calls can be answered from any station by going off-hook and dialing the number of the ringing station without depressing the [INT] key.

Distinctive Ringing: CO line and intercom calls are distinguished by different ringing tones.

DTMF and Dial Pulse Compatible: DTMF or rotary dial pulse signalling can be sent to the CO/PBX line by installing the proper MCOU PCB type.

External Page Interface: Dialing a 2-digit code permits a station user access to a customer-provided external speaker via an internal 3-watt amplifier. As an option, a 2-way, 600 Ω voice path is available for use with a customer-supplied talkback speaker/amplifier.

Flash Key (PBX Transfer or CO Dial Tone Recall): All EKTs are equipped with a Message Waiting/Flash [MW/FL] key which, when operated while connected to a CO/PBX line, causes a timed "flash" to be transmitted to the CO or PBX. The timing of the flash can be programmed to signal a PBX for feature operation or can be long enough to cause a disconnect and dial tone recall on a CO line. Also see Message Waiting.

Flexible Line Ringing Assignment: A programmable ring or no ring option is provided for each line selectively by each station. Each line may be programmed to ring a maximum of eight stations.

Group Paging: Special 2-digit access codes (81, 82, 83 or 84) permit voice paging to one of four zones. Zone assignment is via software and is totally flexible. Paging is via the idle EKT speakers.

Live System Programming: Live system programming is accomplished without service interruption to other station users by placing the system in the special programming mode and inputting data via station 17. Station 17 is the only station that is "down" during programming.

Message Waiting: The designated Message Center can indicate a message is waiting for any station with the Message Waiting LED of that station. The called station cancels the LED by lifting the handset and depressing the [MWW/EL] key. Also see Flash Key.

Multiple Simultaneous Handsfree Intercom Paths: Two intercom paths are available in *Strata VI*. Both intercom lines are able to carry handsfree conversation simultaneously.

Music-on-hold Interface: An interface is included for a customer-provided music source. CO lines placed on hold will be connected to this source. In addition, this music may also be broadcast from EKT speakers and external page when the background music programming options are selected.

Night Ringing Over External Page: As a programmable option, while the night mode is active, a system-generated ring tone will be transmitted via the external speaker whenever any line rings.

Night Transfer: On a programmable optional basis, the *Strata* system can function with two or three ringing patterns. If three patterns are selected, they are designated **Day**, **Day 2**, and **Nite**. If only two patterns are selected, **Day** and **Nite** designations are used. In both cases, the ringing modes are selected with the [NT] key on station 10.

Non-blocking Dialing: Dialing is permitted on intercom and all CO lines simultaneously.

Outgoing Call Restriction: Any station can be selectively restricted from originating calls on any or all CO lines. However, the station may still receive calls on the restricted line(s).

PBX Compatible: *Strata VI* features, such as toll restriction and automatic dialing, are compatible with PBX operation.

Private CO Lines: Restrictions may be programmed into the system so selected CO line(s) will appear only on selected station(s).

Repeat Last Number Dialed: The last number dialed by each station is always stored by the system and will be dialed automatically whenever the station user depresses the [H] key.

Toll Restriction: Selectively programmed on a per-station basis, *Strata* performs toll restriction by rejecting the numbers 0 and 1 as the first and/or second digit and limiting the total number of digits dialed.

Toll Restriction Override by Automatic Dialing: A programmable system feature that permits numbers stored by the Automatic Dialing-System feature to be called by toll restricted stations.

Trunk Queuing: This feature provides a means for station users to be "stacked" in a waiting queue for a busy outgoing trunk group. The station will then be called back when a trunk in the group becomes available. As a programmable option, the system may be equipped with one trunk group (dial 9) or four trunk groups (dial 91, 92, 93, 94).

Voice or Tone Signalling: A programmable system feature that optionally selects either tone ringing or voice page as the primary method. The alternate method is selected by dialing [1] following the station number.

Wall Mountable MKSU: The MKSU is shipped configured for table mounting. Rotating the back cover 180° converts the MKSU to wall mounting.

07.12 Station

Do Not Disturb: This feature is activated and deactivated by alternate depressions of the [DND] key. A station calling a station that is in the DND mode will receive a fast busy tone.

Do Not Disturb Override: After reaching a DND station, that station may be advised that a call is waiting by dialing [2]. A tone signal will be heard at the DND station.

Executive Override of Privacy: A station that is programmed for this feature will override the automatic privacy feature and is able to enter any existing conversation within the system. A warning tone, however, is inserted before the overriding station is actually connected. A maximum of two stations can be programmed for executive override.

I-called Illumination: A distinctive flash appears

on the intercom LED at the EKT that is actually being called.

I-hold Illumination: The EKT user is shown a distinctive LED flash to indicate the line placed on hold at the EKT. All other stations see a normal on-hold flash.

I-use Illumination: A distinctive flash rate shows the line presently in use at a given EKT. Other stations see a steadily illuminated LED for that line.

Modular Handset and Line Cords: All EKTs are equipped with modular handset and line cords.

On-hook Dialing: *Strata* lets you dial your calls with the handset still on-hook. Call progress can be heard via the telephone speaker; no need to pickup the handset until your party answers.

Push-Button Dialing: All *Strata* EKTs are equipped with push-button dial pads.

Ring Line Preference: A line ringing a station can be answered by merely lifting the handset or depressing the [SPKR] key. The ringing line will be automatically selected.

07.20 Optional Features

Handsfree Answerback: All EKTs (except the S-type EKT) are equipped for handsfree answerback, on voice-announced intercom calls, as a standard feature.

Microphone Control Key: The [MIC] (MUTE) key on speakerphone-type EKTs cuts off the microphone to permit private local conversations. The [MIC] key can function in one of two modes, momentary or push-off/push-on. This is a programming selection to be made for each station.

Off-Premise Extension (OPX): Installing an optional MOPU (DP or MF/DP) PCB, along with auxiliary power and ringing supply, allows the system to interface with conventional single line telephones or off-premise circuits. The MOPU (one per system) serves two extensions.

Off-Premise Line (OPL): Installing an optional MPLU (MF or DP) in place of an MCOU PCB allows the bridging of a CO/PBX line (which appears in the *Strata* system) with a conventional telephone. If an MPLU 3 (MF or DP) is used, all incoming calls on that card's three

circuits may be directed to an answering machine (or similar device) attached to circuit #1. This is accomplished as a programming option via Night Service.

Relay Service: When the optional relays are equipped on the MTOU PCB, the following signals are provided for external equipment:

a) **External Page**—The relay is activated whenever the external page circuit is accessed. A dry "make" contact is provided for control of background music on external page. This is required only when an external page amplifier is used.

b) **Night Relay Service**—Relay will provide a dry "make" contact at the NR terminals on the front of the MTOU PCB. A strap option on the MTOU allows the NR relay to function in one of two modes:

1) **Answering Machine Control**—If the strap remains intact, the relay is operated continuously when the system is in Night Service. This mode is intended for indirect control of an answering machine.

2) **Night Bell Control**—If the strap is cut, the relay pulses at a 1-second on/3-second off rate whenever the system is in Night Transfer mode and an incoming call is ringing the system. This mode is intended to be used for indirect control of an external night bell.

Speakerphone: All EKTs (except the S-type EKT) are fully functional speakerphones.

Station Message Detail Recording (SMDR): Adding the optional MSMU PCB allows data to be collected for each outgoing and incoming CO line call. This data may be outputted to a printer or recording device via the RS 232C-type interface located on the MSMU. The MSMU PCB is mounted in the optional KBXU.

System Battery Back-up: An optional PCB can be installed in the *Strata* power supply to provide automatic switching to standby battery power. During normal power conditions the batteries are kept fully charged by the power supply.

10-key Speakerphone EKT: An optional EKT provides handsfree answerback and full speak-

erphone capability.

10-key BLF EKT (Speakerphone): An optional 10-key EKT provides handsfree answerback, full speakerphone capability, and an LED panel showing the busy/idle status of each station. A station in the DND mode will show as busy.

20-key Executive EKT (Speakerphone): An optional executive unit provides, via 10 additional feature keys, automatic-dialing access, seven one-key automatic-dialing telephone

numbers, redial last number dialed, and a pause key. This EKT is also equipped for full speakerphone and handsfree answerback operation.

20-key LCD EKT (Speakerphone): This EKT includes a 12-character (numeric only) Liquid Crystal Display (LCD) and has the same capability as the 20-key Executive EKT.

Wall Mounting Kits for EKTs: The *Strata* EKTs are easily converted for wall mounting with optional handset hanger kits.

Strata VI

(Release 3)

INSTALLATION INSTRUCTIONS

Strata VI

INSTALLATION INSTRUCTIONS

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01 GENERAL

01.01 This section describes the installation procedures necessary to ensure proper operation of the **Strata VI** system.

02 PACKING

02.00 Inspection

02.01 When a **Strata VI** system is received, examine all packages and carefully note any visible damage. If any damage is found, bring it to the attention of the delivery carrier and make the proper claims.

02.02 Check the number of cartons and the contents of the **Strata VI** shipment against the purchase order and packing slip. If it is determined that any cartons are missing, contact your delivery carrier immediately. If it is determined that any equipment within a carton is missing, contact your Toshiba supplier immediately.

02.03 After unpacking (prior to beginning the installation), inspect all equipment for damage. If any damage is detected, contact your delivery carrier immediately. If possible, retain all the original packing material.

CAUTION!

When handling (installing, removing, examining, etc.) a printed circuit board, do not touch the back (soldered) side or the edge connector. Always hold a PCB by its edge.

02.04 When packing or storing an MCDU or MSMU, ensure the following:

- Do not use plastic or any type of conductive material for packing either an MCDU or MSMU. Use plain paper.

CAUTION!

Conductive packing material may cause the internal back-up battery to discharge and damage the PCB.

02.05 Whenever storing or shipping an MCDU or MSMU always ensure that the battery strap is in the OFF position. See Figure 1 for the MCDU and Figure 2 for the MSMU.

NOTE:

Always make sure the battery strap on the MCDU is in the "ON" position just prior to installation. If not, the SET LED on the MCDU will not operate. Also, if equipped, ensure that the battery strap on the MSMU is in the "ON" position.

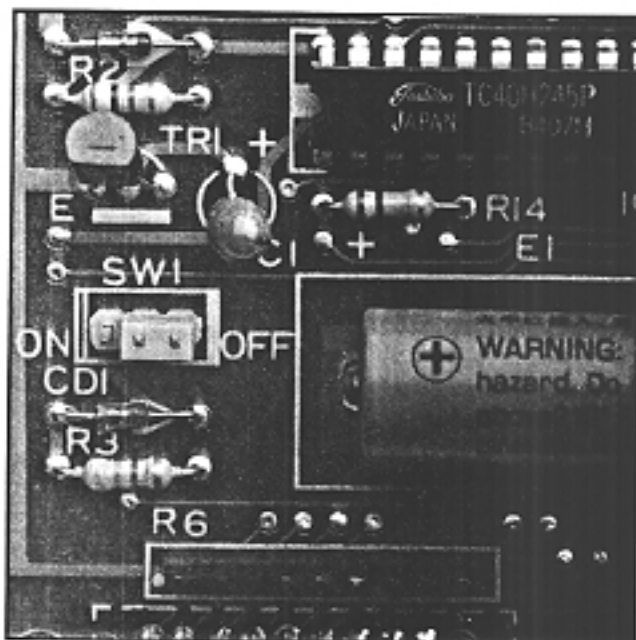


FIGURE 1—MCDU BATTERY STRAP

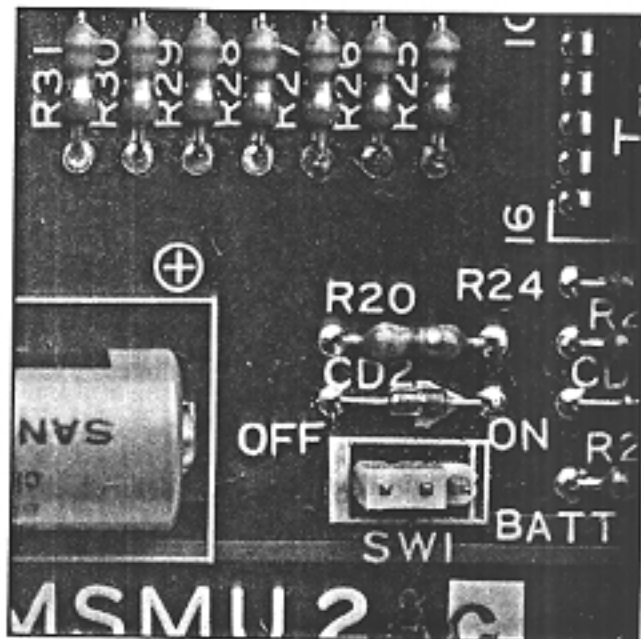


FIGURE 2—MSMU BATTERY STRAP

03 MKSU REQUIREMENTS

03.00 Power Requirements

03.01 The **Strata VI** MKSU requires 24 VDC. This is provided by the MPSA-200 power supply, which in turn requires power from a grounded 115 VAC outlet. The outlet should be separately fused and rated at 15 amps.

03.02 The MPSA-200 provides sufficient power for 16 stations, all of which may be BLF EKTs.

03.03 The 54-inch cord provided to connect the MPSA to the MKSU dictates the relative location of the power supply. The power supply is also equipped with a 10-ft. AC power cord.

03.04 An optional battery back-up unit (PBBU) is available for the power supply. It is a printed circuit board that mounts inside the power supply housing. The recommended battery pack, which is customer-supplied, consists of two maintenance-free automobile 12 VDC batteries (maximum 80-amp/hr rating). With the optional PBBU assembly installed, all functions of the **Strata VI** system will continue to operate for several hours after a loss of normal electrical power (the actual period of time is in direct ratio to the type and size of batteries selected). No calls will be disconnected during switch-over to battery power.

03.10 Ventilation Requirements

03.11 Sufficient ventilation should exist to allow dissipation of the heat generated by the power supply and MKSU.

03.20 Environmental Factors

03.21 Humidity at the MKSU location should be within 20 – 80% (without condensation), and the temperature should be relatively constant within a range of 32 ~ 122°F (0 ~ 50°C). Exposure to dust and airborne chemicals should also be taken into consideration.

03.30 Cabling Considerations

03.31 The MKSU must be located so that all stations are within 1000 cable feet (305 m) of it. Acceptable cable is 22 or 24 AWG inside telephone station cable, jacketed but not shielded, having two or more twisted wire pairs.

04 KBXU INSTALLATION

04.00 General

04.01 If either an MOPU (OPX) or MSMU (SMDR) PCB is to be equipped, an MKSU expansion module, known as a "KBXU", is required.

04.02 The KBXU mounts on the right side of the MKSU-203* and provides a mounting slot for one

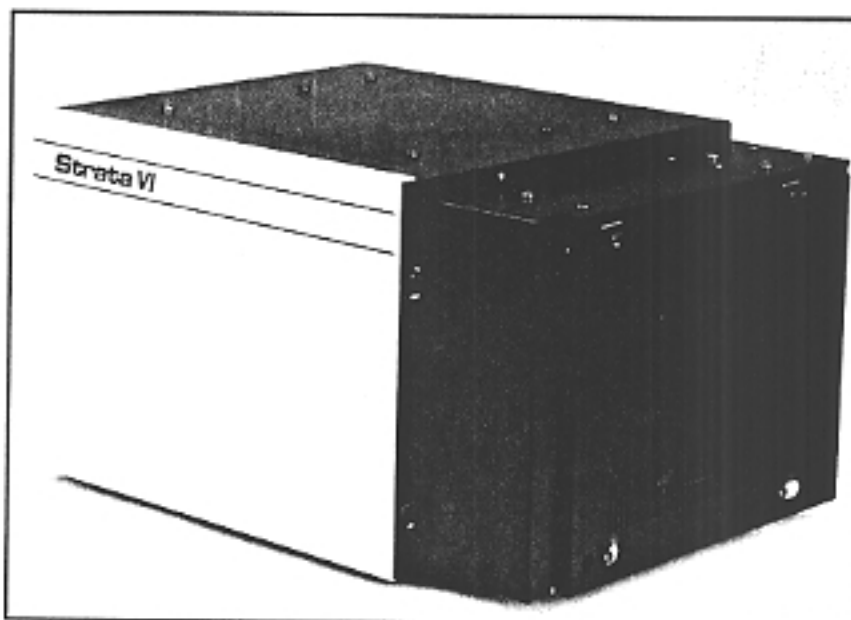


FIGURE 3—MOUNTED KBXU

MOPU and one MSMU PCB (see Figure 3). The PCB slots are not interchangeable and only one KBXU per system is possible.

**NOTE:*

The KBXU cannot be used with the MKSU-202.

04.03 The KBXU is provided in kit form (Figure 4); it must be assembled and installed on the MKSU-203 per Paragraph 04.10.

04.10 KBXU Installation

04.11 Unpack the KBXU kit, refer to Figure 4 and verify that the following parts are present:

Quantity	Item	Designation
1	Back panel	A
2	Cables (blue & yellow)	
1	Bottom shelf	B
1	Top cover	C
1	Side panel	D
1	Front panel	E
12	Screws	
2	Cable clamps	

If it is determined that any part is missing, contact your Toshiba supplier.

04.12 Refer to the relationship of the parts as indicated in Figure 4 and perform the following:

- 1) Rest the back panel (A) on the bottom shelf (B) and secure with one provided screw.

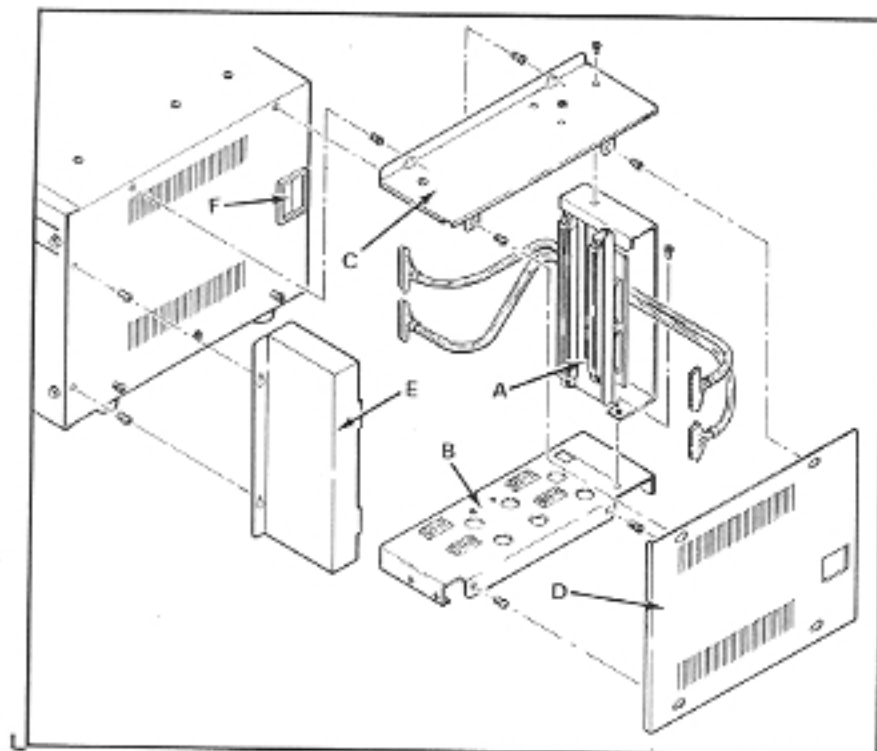


FIGURE 4—KBXU KIT

- 2) Remove the rubber grommet (F, Figure 4) from the right-hand side of the MKSU. Use a sharp knife and cut an "X" (from corner-to-corner) in the grommet. Reinstall the grommet.
- 3) Loosen the two outer screws on the bottom of the right-hand side panel of the MKSU. (The KBXU bottom shelf is equipped with slots that match these screws.)
- 4) Route the two cables through the grommet and slide the KBXU bottom shelf onto the loosened screws. Tighten the two screws.

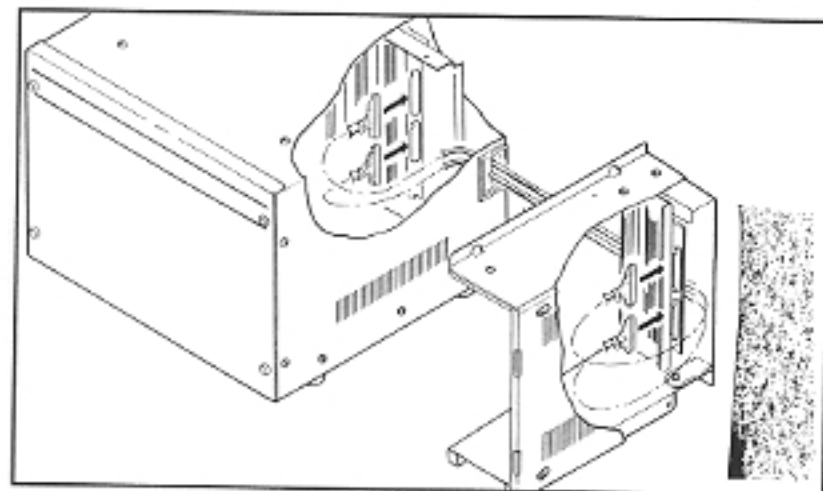


FIGURE 5—KBXU CABLES

IMPORTANT!
If the system is up and running, the power supply must be unplugged and the MTOU and MCDU PCBs must be removed in order to connect the two cables. Make sure the MCDU is placed on a non-conductive, static-free surface so the PCB will not be damaged nor the battery discharged.

- 5) See Figure 5, and connect the blue cable plug to the jack on the MKSU's motherboard labeled **SMU**, and the yellow cable plug to the jack labeled **OPU**.
- 6) Start two screws in the holes on the upper right-hand side of the MKSU. Slide the KBXU top cover (C) down over the screws and secure it to the KBXU back panel (A) with a screw. Tighten all three screws.
- 7) Attach the two cable clamps to the front of the KBXU bottom shelf. Start the four screws that secure the KBXU side panel and the two screws that secure the KBXU front panel.
- 8) Slide the side panel (D) into place with the four screws protruding through the appropriate keyholes. Tighten the screws.
- 9) Insert the PCBs (MSMU, and/or MOPU) into the KBXU. Reinsert the MCDU and MTOU PCBs (if removed earlier) at this time.
- 10) Turn the system on. *If the system is an existing one, do not reinitialize.*
- 11) Slide the front panel (E) into place, making sure the two tabs are in their matching slots in the side panel and the screws are protruding through their keyholes. Tighten the screws.

05 MKSU MOUNTING

05.00 General

05.01 The MKSU is designed for either table or wall mounting, but is factory-configured for table mounting. For wall mounting instructions, refer to Paragraph 05.20.

05.10 Table Mounting the MKSU

05.11 Since the MKSU is already configured for table mounting, the only requirement is to choose a suitable location and proceed to Section 200-006-250, *Power Supply Installation*.

05.20 Wall Mounting the MKSU

05.21 Prepare the MKSU for wall mounting by reversing the back cover to expose the two top mounting holes. Proceed as follows:

- 1) Remove and save the five screws securing the back cover.
- 2) Rotate the back cover 180°, and realign it so that the flanges with the two keyholes project above the top of the MKSU (see Figure 6).
- 3) Reinstall the back cover, and secure it with the five screws that were removed earlier.

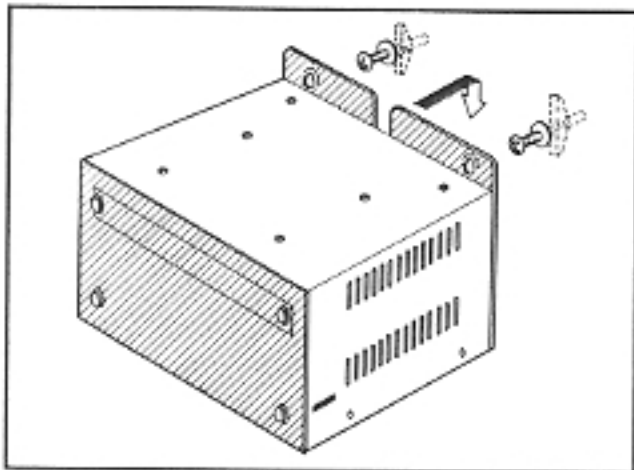


FIGURE 6—ROTATED BACK COVER

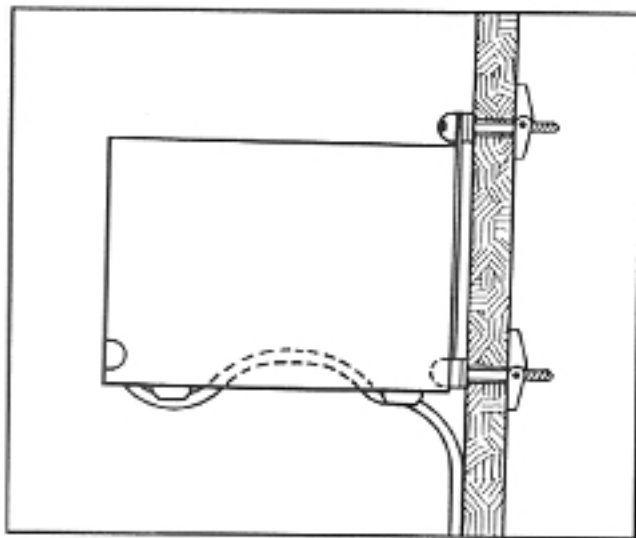


FIGURE 7—MOUNTED MSKU

05.22 Secure the MKSU, as shown in Figures 6 and 7, with fasteners through the upper two keyholes and the single lower hole in the back cover. The fasteners should be either ¼-inch molly screws, toggle bolts, or lag screws, depending upon the type of wall surface being used.

06 PRINTED CIRCUIT BOARDS

06.00 Explanation of Functions

06.01 A maximum of seven PCBs can be installed in the *Strata VI* MKSU. Two additional PCBs can be installed in the KBXU. They are:

IMPORTANT!

For proper static electricity protection, install the PCBs in the following sequence.

MTOU—one per system:

Performs several system functions:

- Provides connection points for the 24 VDC input power.
- Houses the voltage regulators that provide 12 and 5 VDC for system operation.
- Houses circuitry and connection points for the relay services and music-on-hold (MOH).
- Houses the external page amplifier.
- Generates system tones and provides the switching matrix for the delivery of tones for both paging and intercom connections.

MCDU/CMTU:

The CMTU is required and mounts directly on the MCDU to form a single unit. All system control functions are performed by the single chip microprocessor located on the MCDU. The system program stored in ROM; RAM for system operations and battery-protected RAM for system data storage are located on the CMTU.

MCOU (MF or DP):

An interface between the MKSU and the public telephone network or PBX lines. Depending upon local CO requirements, an MF or DP type of MCOU will be provided (MF for DTMF outpulsing, DP for rotary dial outpulsing). Each MCOU serves up to three CO/PBX lines.

MSTU:

An interface between the MKSU and EKTs, which includes the system's solid-state space division matrix. Each MSTU PCB services up to eight EKTs.

MSMU/SCNU (mounts in the KBXU):

The SCNU is required and mounts directly on the MSMU to form a single unit. This optional

PCB serves as an interface between the MKSU and a printer or storage device used for the SMDR feature. The PCB is equipped with an RS 232C-type interface (one per system).

MOPU (mounts in the KBXU):

An optional PCB that serves as an interface between the MKSU and conventional, single line telephones or off-premise extension (OPX) lines. An MOPU DP will operate with rotary dial telephones only. Either DTMF or rotary dial telephones can be used with an MOPU MF/DP PCB. The MOPU services two extensions. A maximum of one MOPU can be installed in **Strata VI**.

NOTES FOR DTMF TELEPHONES:

- DTMF telephones cannot be Toll Restricted.
- SMDR cannot capture a telephone number dialed from a DTMF telephone; however, the remainder of the call details will be recorded.

MPLU (MF or DP):

The MPLU PCB is a special assembly of a POPU PCB mounted on an MCOU to form a single unit. This optional PCB allows the bridging of a CO/PBX line (which appears in the **Strata VI** system) with a conventional telephone. "OPL" telephones thus connected will then automatically cause a busy indication within the **Strata VI** system and establish system privacy when initiating or answering a call on the dedicated CO line. If an MPLU 3 (MF or DP) is used, all incoming calls on that card's three circuits may be directed to an answering machine (or similar device) attached to circuit #1. This is accomplished as a programming option via NITE service. Each MPLU serves up to three CO/PBX line/OPL combinations and replaces the MCOU PCB that would usually serve these lines.

06.10 MTOU PCB Options

06.11 The MTOU houses several options that must be considered before it is installed in the MKSU, they are:

Background Music Relay Service:

An optional BR relay (K1 socket, Figure 8), if installed, provides a dry contact at the BR terminals on the front of the MTOU to control cut-off of BGM during an external page. The relay operates whenever an external page occurs. (A BR relay is required only when BGM is

provided via an externally-mounted page amplifier.)

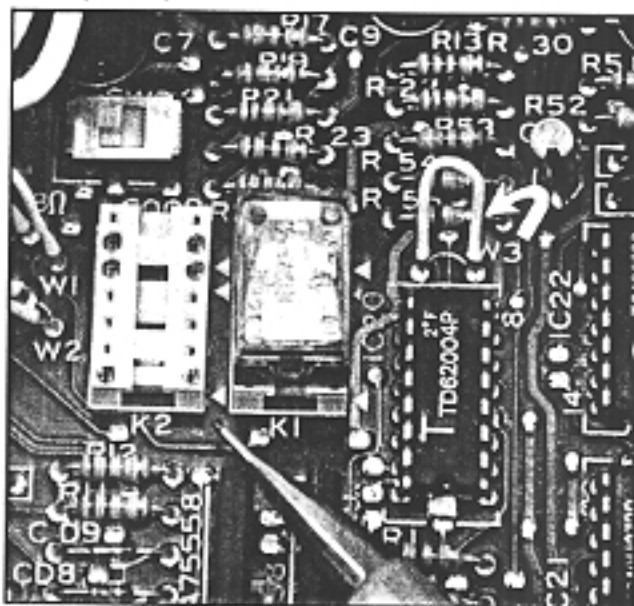


FIGURE 8
MTOU RELAY SOCKETS & W3 STRAP

Night Relay Service:

An optional NR relay (K2 socket, Figure 8), if installed, provides a dry contact at the NR terminals on the front of the MTOU. The W3 strap option (Figure 8) allows the relay to function in one of two modes:

- a) Answering Machine Control—if the W3 strap remains intact, the relay is operated continuously when the system is in night service. This mode is intended for indirect control of an answering machine.
- b) Night Bell Control—if the W3 strap is cut, the relay pulses at a 1-sec. on, 3-sec. off rate whenever the system is in night transfer mode and an incoming call is ringing the system. This mode is intended to be used for indirect control of an external night bell.

External Page Impedance Selection:

The external page output appears at the terminals labeled "8/600" on the front of the MTOU. The output impedance can be selected to be either 8 Ω or 600 Ω . If 8 Ω is selected, the output will be via a 3-watt amplifier on the MTOU, and the voice path will be one way. If 600 Ω is selected, an external PA amplifier is required and the internal voice path will be 2-way.

06.12 To equip either of the two relay service

functions; obtain the optional relay from your Toshiba supplier and install it in the proper location on the MTOU, per Figure 8.

06.13 External page impedance is selected with the SW2 switch located adjacent to the relay sockets on the MTOU (Figure 9). Decide if 8 or 600 Ω impedance is required, then make the selection by positioning the SW2 switch to "8" or "600", whichever is required. Figure 9 shows the switch in the 8 Ω position.

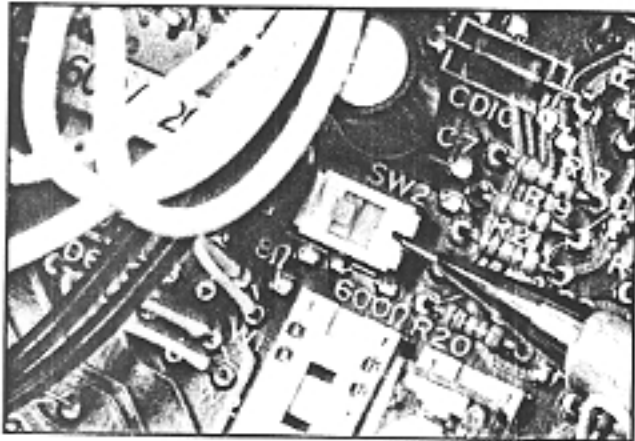


FIGURE 9—MTOU SW2 SWITCH

06.20 MTOU PCB Installation

06.21 Refer to Figure 10, the MTOU front panel provides the connection point for the 24 VDC input from the external power supply. Therefore, it must be installed first.

06.22 Install the MTOU PCB in its proper slot in the MKSU as shown in Figure 10.

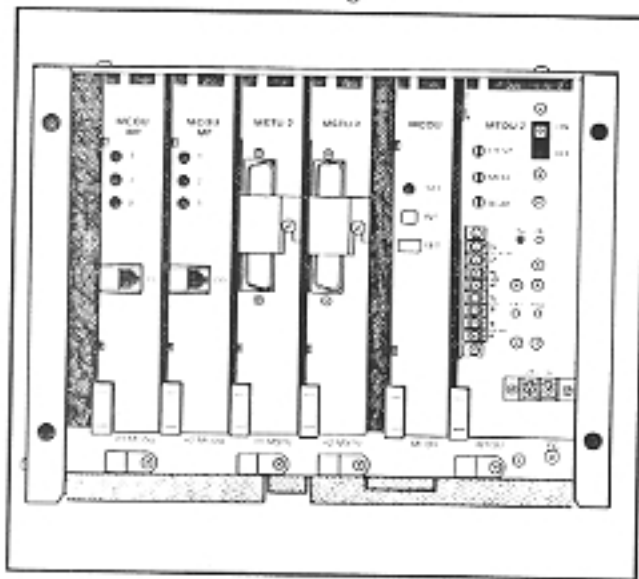


FIGURE 10—MKSU WITH PCBs

06.30 Power Connection

06.31 Plug the power supply into a 115 VAC outlet and check its output voltage to be sure it is 23.2 ~ 28.2 VDC. If the voltage is not within these limits, replace the power supply before proceeding.

06.32 Disconnect the power supply from the 115 VAC outlet. Remove the plastic protective cover from the power terminal strip on the MTOU, and, with the supplied cord, connect the power supply to the terminal strip and the MKSU frame ground (see Figure 11) in the following manner.

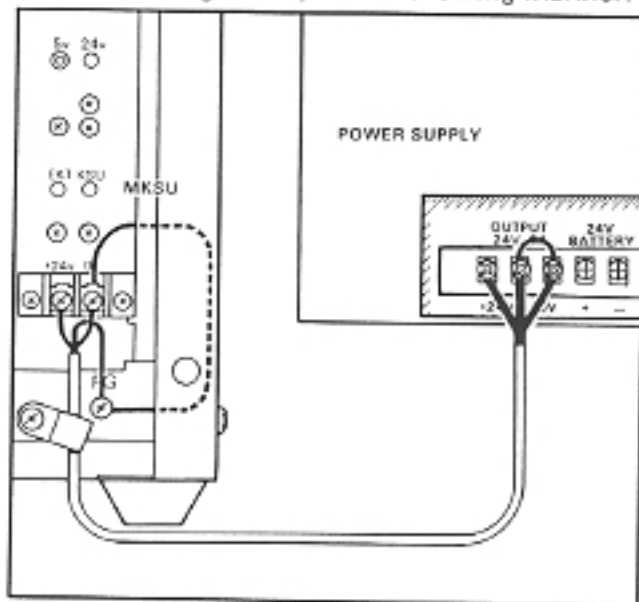


FIGURE 11—POWER CONNECTION

White: "24V"
Black: "0V"
Green: "FG" on MKSU
"E" on power supply

Make sure the wires are connected to matching terminals at each end. Secure the power cord to the MKSU with the provided plastic cable clamp.

06.33 Use the additional green wire packed with the system to bond the "E" and "0V" terminals on the power supply (see Figure 11).

06.34 For protection against static electricity, a green jumper wire is attached to the "FG" screw (refer to Figure 11). This wire must be connected to the "0V" terminal on the MTOU power strip. Reinstall the plastic protective cover on the power strip at this time.

06.35 The Toshiba *Strata VI* electronic key telephone system requires a solid earth ground on the "FG" terminal on the MKSU tray. Failure to

provide such a ground may lead to confusing trouble symptoms in the system and, in extreme cases, circuit board failure. In most installations, within the continental United States, the ground provided by the "third wire ground" at the commercial power outlet will be satisfactory for all **Strata VI** requirements. However, in a small percentage of installations this ground may be installed incorrectly. Therefore, prior to installing a system, the third wire ground must be tested for continuity by either measuring the resistance between the 3rd prong terminal (earth ground) and a metal cold water pipe, or by using a commercially available earth ground indicator. If neither procedure is possible, then the test procedures outlined in Paragraph 06.36 should be performed.

WARNING!

Hazardous voltage is exposed during the following test. Use great care when working with AC powerline voltage.

06.36 Test Procedure

- 1) Obtain a suitable voltmeter and set it for a possible reading of up to 250 VAC.
- 2) Connect the meter probes between the two main AC voltage points on the wall outlet. The reading obtained should be 90 ~ 130 VAC.
- 3) Move one of the meter probes to the 3rd prong terminal (GND). Either the same reading or a reading of 0 volts should be obtained.
- 4) If the reading is 0V, leave one probe on the GND terminal and move other probe to the 2nd voltage terminal. If a reading of 0V is obtained on both voltage terminals, the outlet is **not** properly grounded. Omit Steps 5 ~ 7 and proceed directly to Step 8.
- 5) If a reading of 0V on one terminal and a reading of 90 ~ 130 VAC on the other terminal is not obtained, the outlet is **not** properly grounded. Omit Steps 6 & 7 and proceed directly to Step 8.
- 6) If a reading of 0V on one terminal and a reading of 90 ~ 130 VAC on the other terminal is obtained, remove both probes from the outlet.
- 7) Set meter on the "OHMS/Rx1" scale, place one probe on the GND terminal and the other probe on the terminal which gave a reading of 0V. A reading of less than 1 Ω should be obtained. If a reading of less than 1 Ω is not obtained, the outlet is **not** adequately grounded.

- 8) If the above tests show the outlet is improperly grounded, that condition should be corrected by a qualified electrician (per Article 250 of the *National Electrical Code*) before the **Strata VI** system is connected.

06.37 Ensure that the power switch on the MTOU is **OFF**, then plug the power supply into the 115 VAC outlet and measure the voltage at the MTOU input terminals. Correct any problems before proceeding.

06.40 PCB Installation

06.41 Mount CMTU on the MCDU (Figure 12).

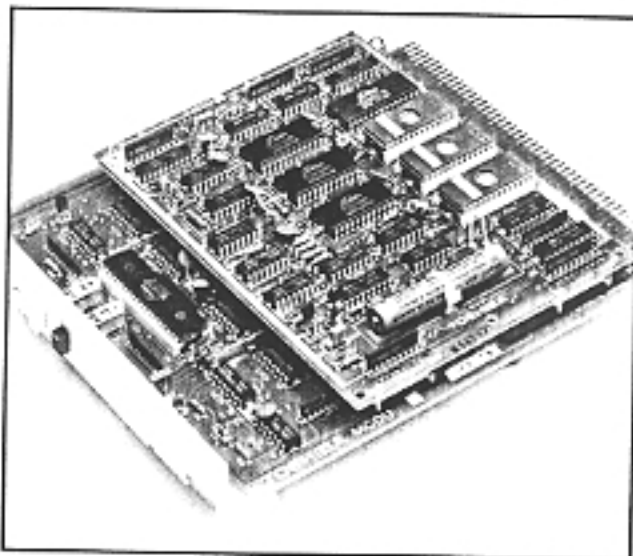


FIGURE 12—CMTU ON MCDU

06.42 Refer to Figure 13, locate the SW1 battery strap on the CMTU, the strap is shown in the **OFF** or disconnected position. To connect the battery, remove and reinstall the strapping plug so that it bridges the center pin with the pin labeled **ON**.

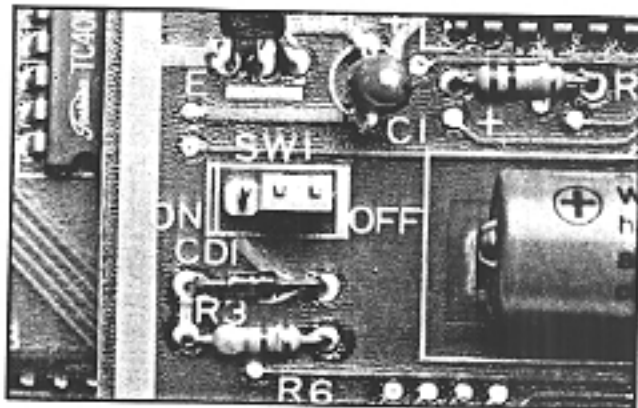


FIGURE 13—CMTU SW1 SWITCH

06.43 Install the MCDU in the correct MKSU position (Figure 10).

06.44 Follow the position arrangement in Figure 10, and install the required MSTU PCBs.

- MSTU #1 serves stations 10 ~ 17
- MSTU #2 serves stations 18 ~ 25

06.45 Select the proper type of MCOU PCB (MF or DP) and install the required number in the positions shown in Figure 10.

- MCOU #1 serves CO lines 1 ~ 3
- MCOU #2 serves CO lines 4 ~ 6

06.46 If the system is to be equipped with the Off Premise Line (OPL) feature, an MPLU PCB* must be used *in place of* an MCOU for the CO lines in question. An MPLU MF or MPLU DP should be chosen depending upon the serving central office. Each MPLU PCB serves three circuits.

**An MPLU PCB can be used only in an MKSU-203 or later model MKSU.*

06.50 MSMU Installation

NOTE:

A KBXU is required, see Paragraph 04.

06.51 If the system is to be equipped with Station Message Detail Recording (SMDR), an MSMU* must be installed in the correct location per Figure 14.

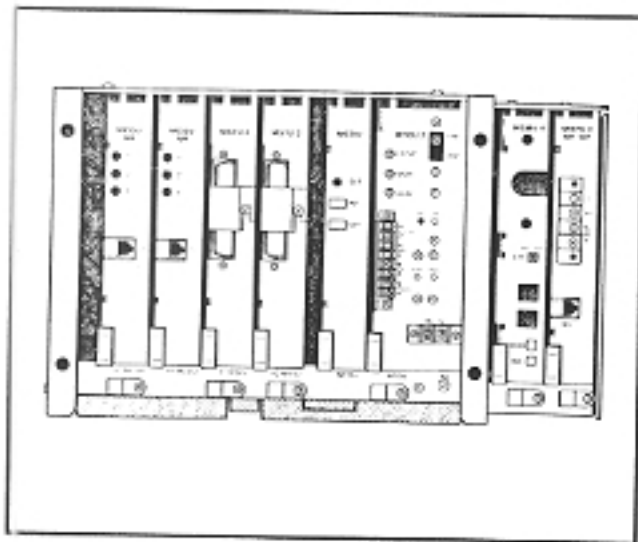


FIGURE 14—KBXU WITH PCBs

Install the MSMU as follows:

An MSMU-4 or later model PCB is required; earlier models will not function in **Strata VI.*

06.52 Locate the SW1 battery strap on the MSMU (Figure 15) and connect the memory back-up battery. The strap is shown in the OFF position. To connect the battery, remove and reinstall the strapping plug so that it bridges the center pin with the pin labeled ON.

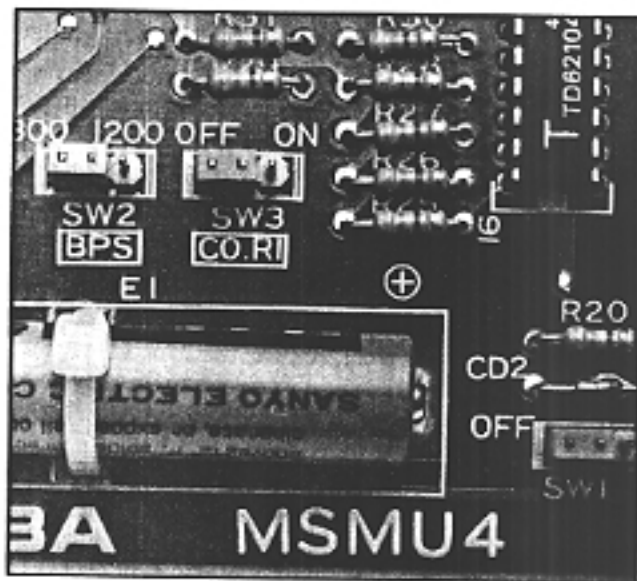


FIGURE 15
MSMU CONNECTION STRAPS

06.53 Select the data output speed using the SW2 strap (Figure 15). The speed may be set at 300- or 1200-BPS by installing the strapping plug so that it bridges the center pin with the terminal labeled "300" or "1200". The SW2 strap is shown in the 300-BPS position.

06.54 The SMDR feature will printout call records of both incoming and outgoing calls or *only* outgoing calls. This option is selected using the SW3 strap (Figure 15). Installing the strapping plug so that it bridges the center pin with the terminal labeled OFF will cause both incoming and outgoing calls to be recorded. The SW3 strap is shown in the ON position, which selects outgoing calls only.

06.55 The RS 232C connector is located *behind* the metal faceplate of the MSMU, making it necessary to connect the printer cable *before* the PCB is installed in the KBXU. Secure the printer connector using the two screw holes provided on the PCB connector (Figure 16).

06.56 Install the MSMU into the KBXU.

06.60 MOPU Installation

06.61 If the system is to be equipped with

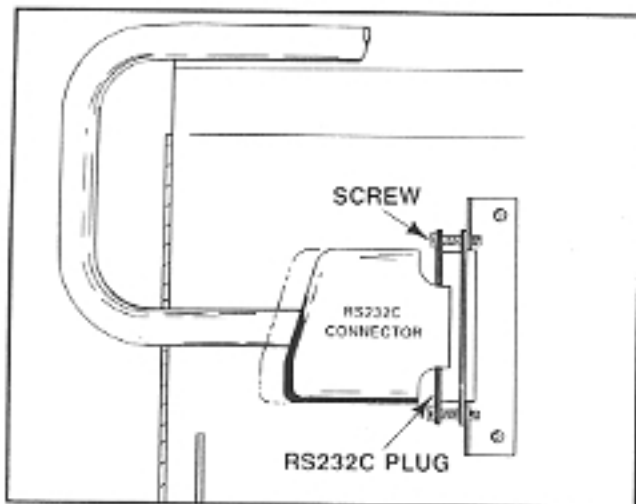


FIGURE 16
MSMU/RS 232 CONNECTOR

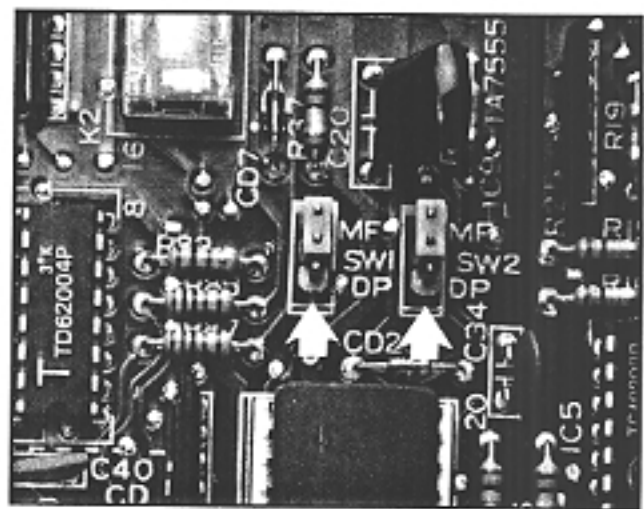


FIGURE 17
MOPU CONNECTING STRAPS

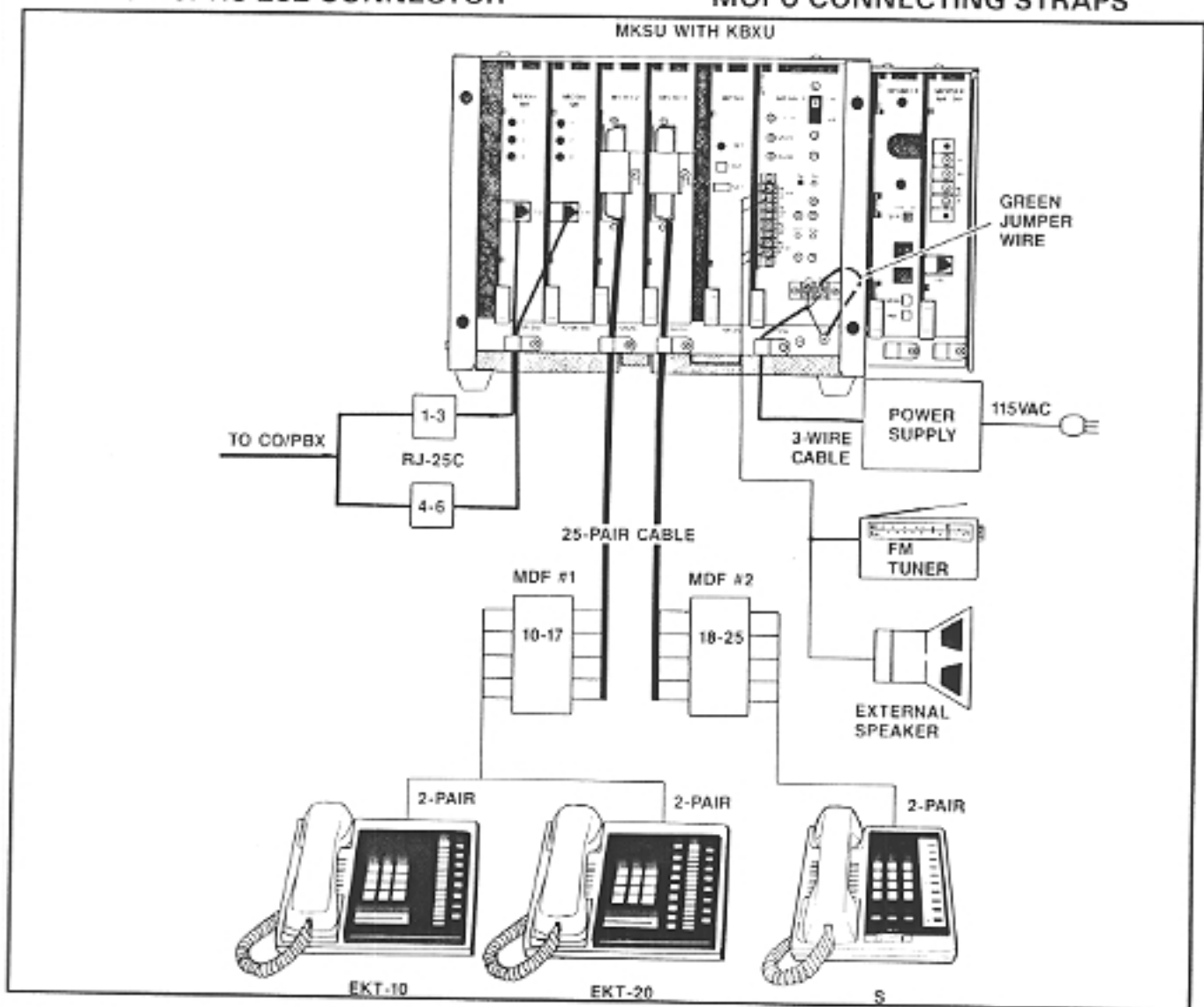


FIGURE 18—SYSTEM DIAGRAM

conventional telephones or OPX extensions, an MOPU PCB is required. The MOPU PCB mounts in the KBXU per Figure 14 and serves stations 20 and 21. A maximum of one MPOU PCB is permitted in a **Strata VI** system.

NOTE:

An MSTU #2 must be installed, but EKTs cannot be installed at the equivalent station numbers when an MOPU PCB is installed.

06.62 Choose the appropriate type of MOPU PCB (MF/DP or DP). If MF/DP, make sure the SW1 and SW2 strapping plugs (Figure 17) are in the correct strapping position to match the type of telephones being used. Position each plug so that the center pin is strapped to the pin marked either MF or DP. See Section 200-006-300, *System Programming*, for further information.

06.63 For correct cabling information, refer to Paragraph 07.

07 CABLE CONNECTIONS

07.00 Main Distribution Frame (MDF) Configuration

07.01 Two 66MI-50 split connection blocks (Figure 18) are recommended as the fully-equipped **Strata VI** main distribution frame (MDF).

07.02 A 25-pair male-amphenol-ended cable is connected directly to the front of each MSTU and fastened with the provided metal bracket (Figure 19).

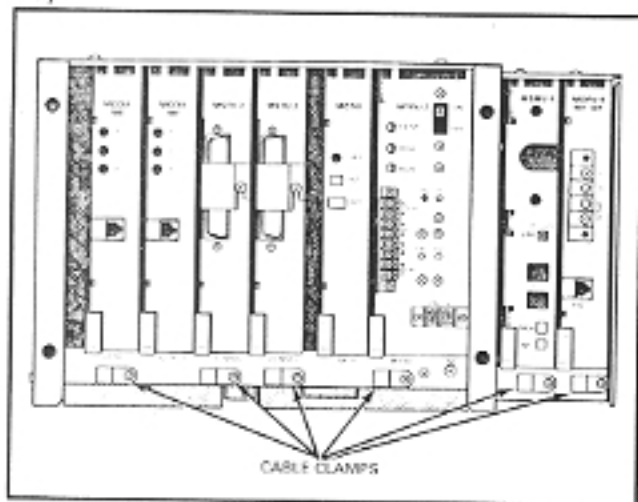


FIGURE 19—CABLE CLAMPS

07.03 Secure the cables to the bottom of the MKSU shelf (Figure 19) with the provided plastic cable clamps. Route the cables under the MKSU and toward the rear, as shown in Figure 20.

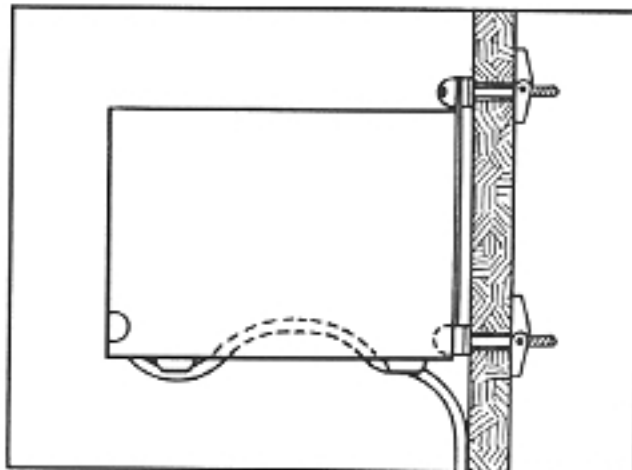


FIGURE 20—CABLE ROUTING

07.04 Refer to Figure 18 and route the cable from #1 MSTU (stations 10 ~ 17) to Block 1 and the cable from #2 MSTU (stations 18 ~ 25) to Block 2.

07.05 Use the industry-standard color code sequence and terminate the cables on the MDF blocks as shown in Figures 21 and 22. (Use one side of each block for each cable.)

07.10 Station Cable Connections

07.11 Terminate the individual 2-pair station cables consecutively on each MDF block, and attach them to the side opposite the MSTU cable. Use bridging clips to connect the MSTU cable pairs to the station cable pairs.

07.12 The cables used for station wiring should be twisted pair.

07.13 The overall length of the cable run must not exceed 1000 ft. (305 m) for 24 AWG wire.

WARNING:

When installing station cable, do not run parallel to and within 3 ft. of an AC power line. Such power lines should be crossed at right angles (90°) only.

07.14 At the station locations, terminate the station cable in a conventional 4- or 6-conductor modular station connector to accommodate the modular line cord from the EKT. The standard modular EKT cord length is 7 ft., while the maximum allowed length is 25 ft.

07.15 Figures 21 and 22 show the EKT wiring arrangement.

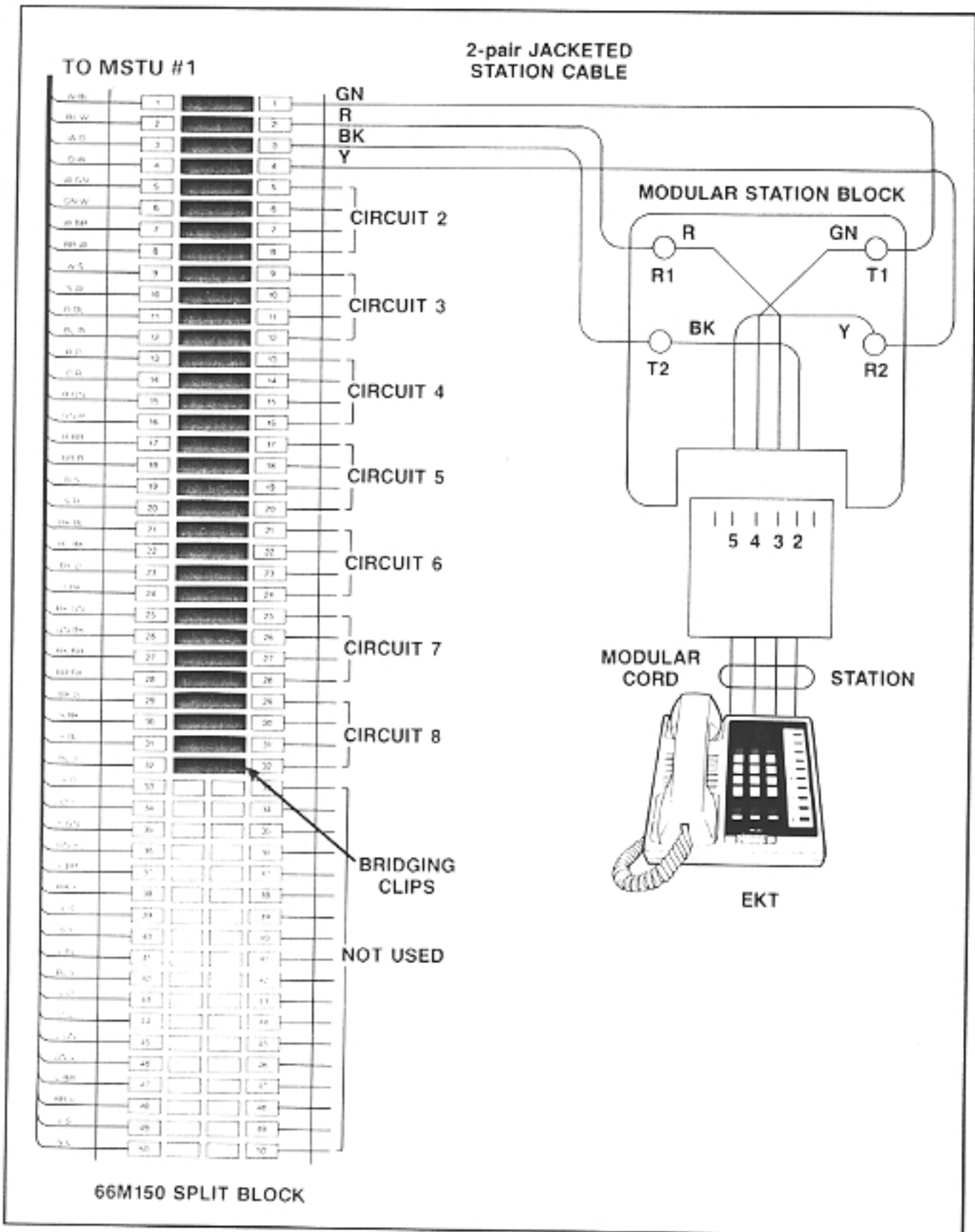


FIGURE 21—MDF/EKT WIRING (Stations 10 ~ 17)

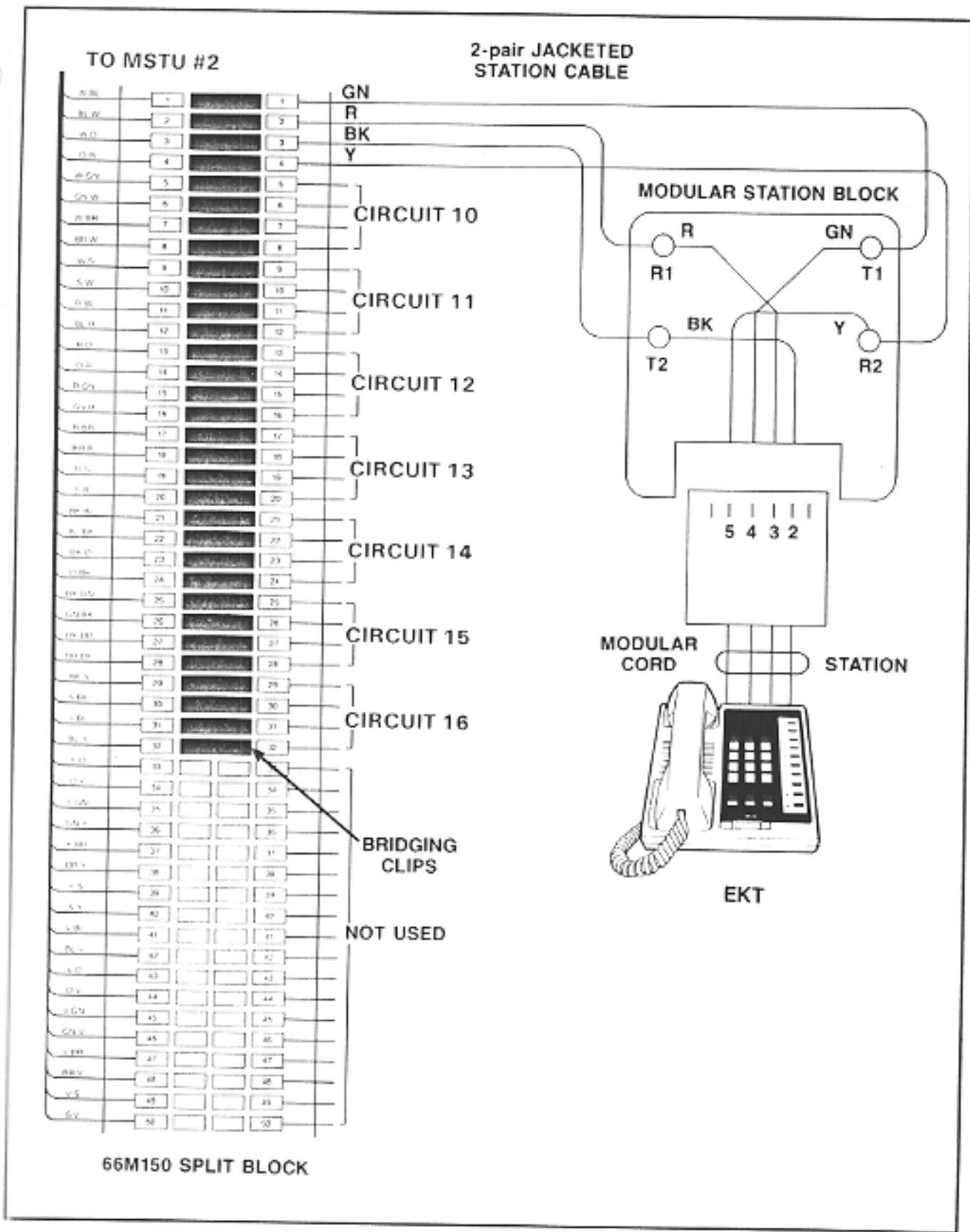


FIGURE 22—MDF/EKT WIRING (Stations 18 ~ 25)

07.16 Various manufacturers of modular station blocks have employed different color codes to indicate the sequence of pairs in their blocks. However, the color code most commonly used is shown in Figures 21 and 22. Verify the configuration of your modular blocks before connecting the station cables.

07.20 Intercom Code Assignment

07.21 Intercom codes are assigned permanently to specific MSTU cable appearances in **Strata VI**. Make sure the station cables are connected to the proper terminals (see Figures 21 and 22).

NOTE:

White and blue (T3 & R3) are not used for Strata VI station line connectors.

07.30 CO Line Connection

07.31 The CO/PBX lines are introduced into the **Strata VI** system via 6-wire modular line cords (no longer than 25 ft.) connected directly to a jack on the MCOU PCB. Each modular cord contains three lines. The opposite end of each cord then terminates directly into a locally-provided RJ-25C jack (Figure 23).

- MCOU #1 serves CO lines 1 ~ 3
- MCOU #2 serves CO lines 4 ~ 6

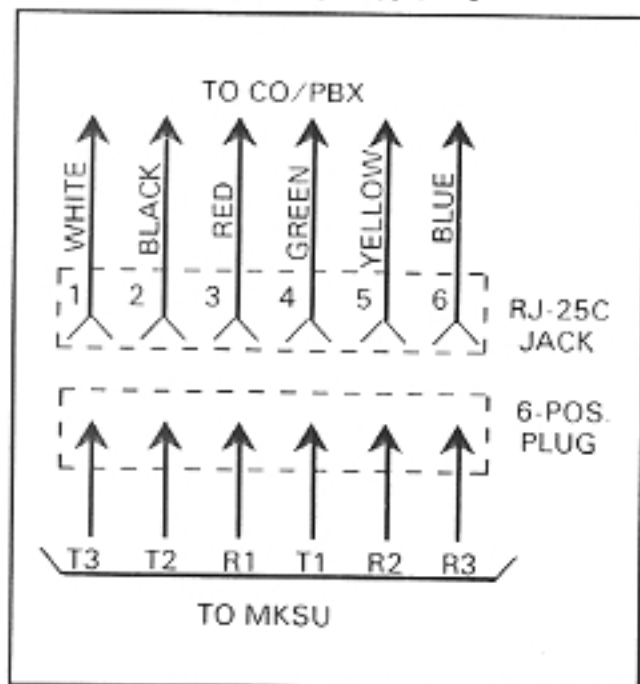


FIGURE 23—RJ-25C COLOR CODE

07.32 Secure the modular cords to the MKSU shelf (Figure 24) using the provided cable clamps.

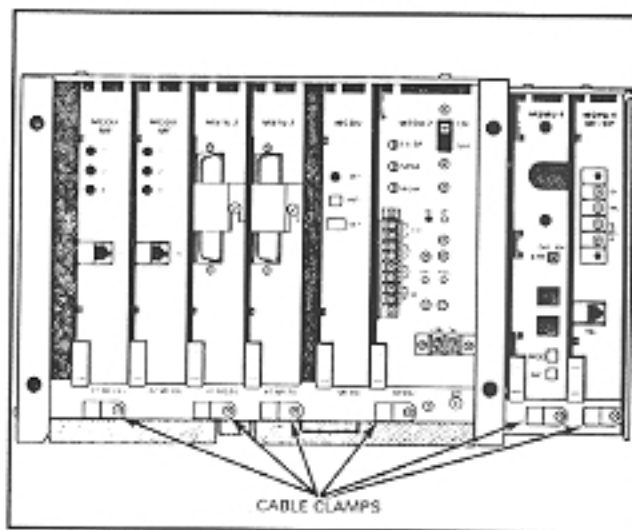


FIGURE 24—CABLE CLAMPS

07.40 Off Premise Extension/Conventional Telephone Connections

07.41 Off premise extension/conventional single line telephone (OPX) connections are made via a 4-wire modular cord to the front of the MOPU PCB. One cord serves the two OPX connections. See Figure 25.

07.42 For an OPX telephone to function, customer-supplied external DC and ringing power supplies are required. Power supply specifications are as follows:

IMPORTANT FCC INFORMATION:

1. If the conventional telephone is to operate on-premise (that is, using only on-site wiring), any power source meeting the following requirements may be used.
2. If the telephone is to be used off-premise (that is, connected to a line provided by the telephone company), its power supply must have been tested and then registered with the FCC as being suitable for the purpose. Contact your Toshiba supplier for details.

DC Supply:

- Voltage: 24 ~ 53 VDC
- Ripple/noise: < 500 mV P-P
- Current: 50mA per OPX telephone

Ringing Supply:

- Voltage: 80 ~ 110 VAC
- Frequency: 20 ~ 30 Hz
- Power: According to ringers to be used (maximum of three ringer equivalents per OPX circuit)

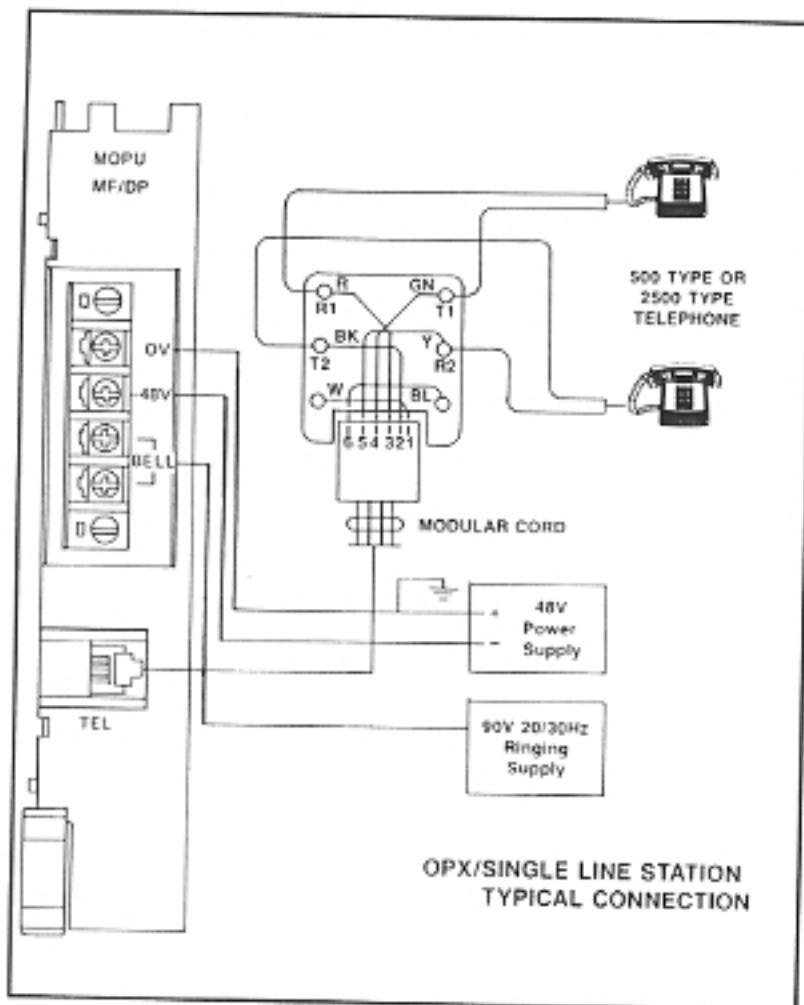


FIGURE 25—MOPU WIRING

07.43 The DC voltage to be used should be chosen according to the wire gauge used and the loop length requirements as follows:

DTMF Telephone (MOPU MF/DP):	
Voltage	Loop Range
-48 VDC	1200 Ω
-24 VDC	680 Ω

Rotary Dial Telephone (MOPU DP or MF/DP):	
Voltage	Loop Range
-48 VDC	1700 Ω
-24 VDC	850 Ω

NOTE:

The OPX circuit requires a negative DC voltage; therefore, the main MKSU power cannot be used since it is a positive 24 volts.

07.44 The DC and ringing power supplies are connected to the terminal strip on the front of the MOPU using standard station wire.

07.45 Secure the station and power wires to the KBXU shelf using the provided cable clamp (Figure 26).

07.50 Off Premise Line (OPL) Connection

07.51 OPL connections are made via 6-wire modular cords to the front of the MPLU. Two cords are required; one is connected to the CO jack and serves up to three CO/PBX line connections, the second connects to the TEL jack and serves the three OPL stations provided by that PCB (Figure 27). The MPLU occupies an MCOU PCB position.

07.52 Secure the modular cords to the MKSU shelf (Figure 24) using the plastic cable clamps that are provided.

07.53 If an MPLU (MF-4 or DP-4) is used, a single answering machine connected to OPL circuit #1 will also serve OPL circuit #2 and/or #3. An MPLU (MF-4 or DP-4) is equipped with a chain of relay contacts (Figure 28) that—operating under software control via Program 0#9—can switch incoming calls on CO circuits #2 and/or #3 to the OPL

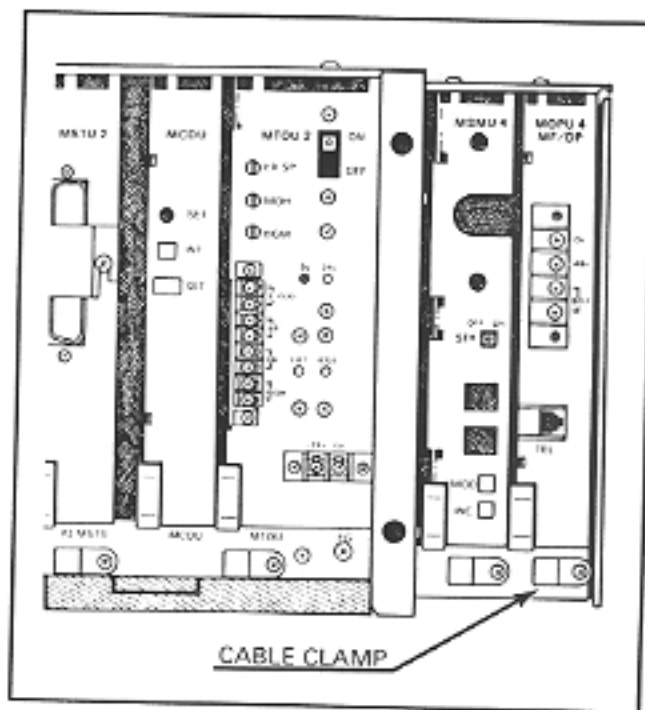


FIGURE 26—MOPU WIRING CLAMP

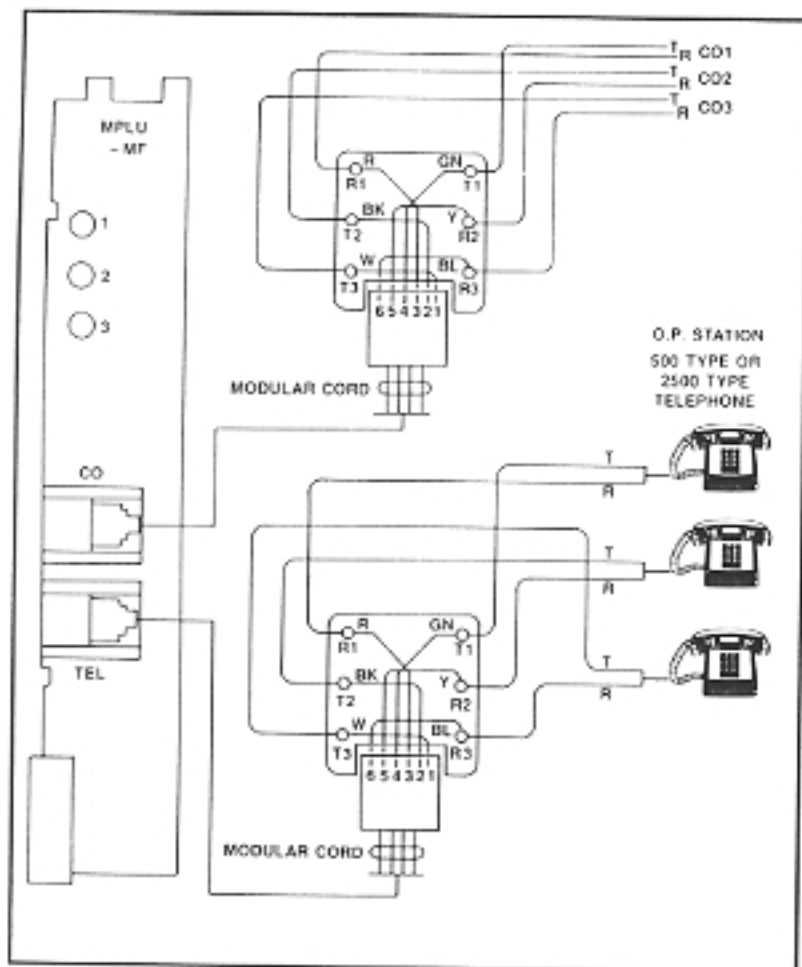


FIGURE 27—MPLU WIRING

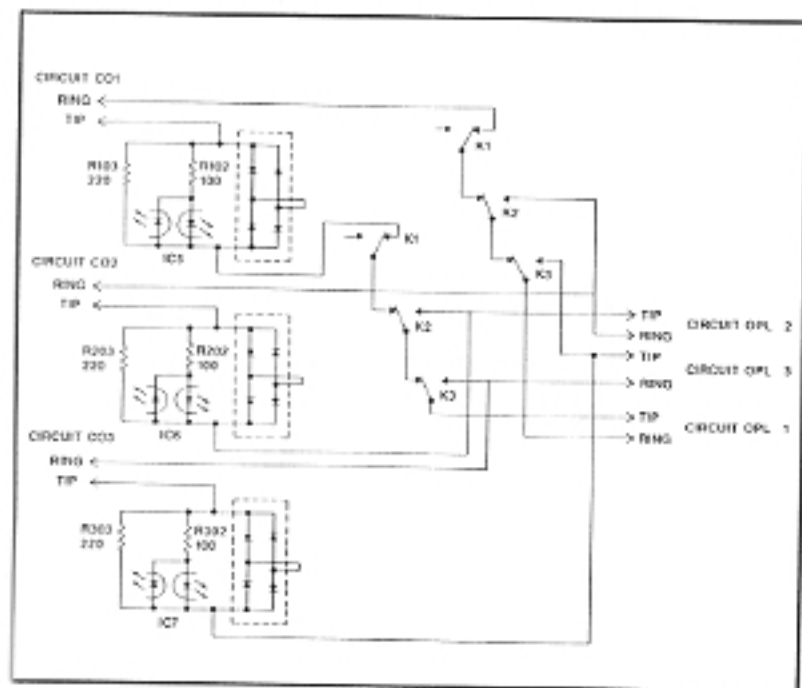


FIGURE 28—MPLU RELAY CIRCUITS

#1 output circuit. This hunting operates *only* during NITE service and can occur *only* with the three circuits appearing on the PCB; and it always occurs from #3 and/or #2 to #1. (It is not possible to chain two MPLU PCBs together.)

07.60 Station Message Detail Recording (SMDR) Connections

07.61 The MSMU PCB is equipped with an RS-232C connector to permit attachment of a printer or other recording device. An 80-column printer with an EIA RS-232C serial interface operating at 300 or 1200 bps is required. Printer types known to be compatible with this system are:

- Texas Instruments Model 743/745
- OKI Data Model 82A

✓ 07.62 The data output is in a 7-bit ASCII code with one start bit, one parity bit (even parity) and one stop bit.

07.63 The pin assignments on the MSMU RS 232C jack are as follows:

Pin No.	Function
1	FG (frame ground)
3	RD (receive data)
6 ¹	DSR (data set ready)
7	SG (signal ground)
8 ¹	CD (carrier detect)
20 ²	DTR (data terminal ready)

NOTES:

1. Held to EIA "ON" by MSMU.
2. Input to MSMU from printer.

Figure 29 shows the detailed connections for the printers listed above.

07.64 Verify that (A) the output cable is connected to the PCB, (B) the battery strap is ON, and (C) the data speed and incoming/outgoing call options are selected per Paragraph 06.50.

07.65 Route the printer cable out of the KBXU and connect it to the printer or recording device. Secure the cable to the KBXU shelf using the provided cable clamp (Figure 26).

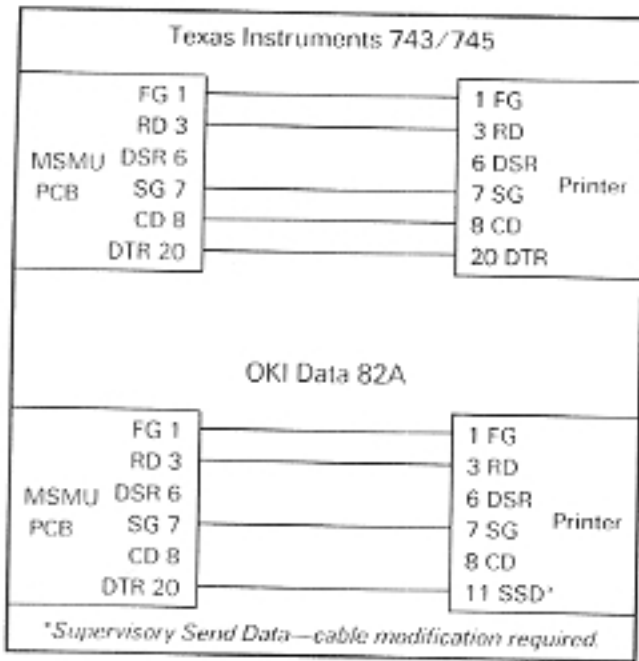


FIGURE 29—MSMU-PRINTER CABLING

08 EKT INFORMATION

08.00 General

08.01 Five different Electronic Key Telephones (EKTs) may be used in **Scrata VI**. The standard EKT (Figure 30), known as the 10-key "S" EKT, is equipped with three permanently dedicated keys and ten line/feature keys. The four optional (full speakerphone) EKTs are equipped with four permanently dedicated keys and either 10 or 20 feature keys: 10-key EKT (Figure 31), 10-key Busy Lamp Field (BLF) EKT (Figure 32), 20-key EKT (Figure 33) and 20-key Liquid Crystal Display EKT (Figure 34).



FIGURE 31
10-key SPEAKERPHONE EKT



FIGURE 32—BLF EKT



FIGURE 30—10-key "S" EKT



FIGURE 33—20-key EKT



FIGURE 34—20-key LCD EKT

08.02 The 10-key S EKT measures:

Height: 3.5 inches (88.9 mm)
Width: 6.0 inches (152 mm)
Depth: 9.0 inches (229 mm)

and is equipped with 13 line/feature keys in addition to its push-button dial pad. Six of the keys are utilized for central office/PBX lines, one for intercom access, one for Automatic Callback (ACB) and the remaining keys for feature operation.

08.03 All four optional EKTs share the same external dimensions:

Height: 4.0 inches (102 mm)
Width: 8.8 inches (224 mm)
Depth: 9.1 inches (230 mm)

Each is equipped with either 14 or 24 line and feature keys in addition to a push-button dial pad. Again, six of the keys are utilized for central office/PBX lines, one for intercom access, one for Automatic Callback [ACB] and the remaining keys for feature operation.

08.04 The optional 10-key EKT provides the same key configuration as the standard EKT, plus a microphone control key, handsfree answerback and full speakerphone capability.

08.05 The optional 10-key BLF EKT provides the same features as those listed in Paragraph 08.04, plus an LED indication on which stations are in use.

08.06 The optional 20-key EKT provides the same features as those listed in Paragraph 08.04, plus ten additional feature keys. That is, six CO/PBX keys, one intercom key, one [ACB] key,

and 12 keys that may be used for several different features. See Program 5XX, Section 200-006-300, *Programming Procedures*, for inputting information concerning the 20-key EKT.

08.07 The optional 20-key LCD EKT provides the same features as those listed in Paragraphs 08.04 and 08.06, plus a 12-digit Liquid Crystal Display.

08.08 All EKTs feature modular handset cords and are connected to the system via four-conductor modular line cords.

08.09 In its initialized mode the system expects all telephones in the system to be EKTs with 10 keys (i.e. 10-key S, 10-key Speakerphone or 10-key BLF). Any 20-key EKT must be identified via Program 4XX. The *Strata VI* system can be equipped with any mix of EKTs, including 100% 20-key LCD EKT. When an LCD EKT is used in the system, the time and date must be set by station 10. See Section 200-006-400, *Operating Procedures*.

08.10 10-key S EKT Wall Mounting

08.11 An optional "SKWM" kit is required to convert the 10-key S EKT for wall mounting. The SKWM kit consists of a metal wall bracket and a handset hanger kit.

08.12 The EKT may be mounted on a wall or any other flat, vertical surface to which the base can be secured. When selecting the mounting site, consider the EKT weight and the additional stresses to which the EKT will be subjected.

08.13 Mounting screws or mollys, appropriate for the surface on which the EKT is to be secured, must be provided by the installer.

08.14 With the wall bracket the S EKT can be mounted to any suitable vertical surface or to a telephone outlet plaster ring (see Figure 35). Secure the wall bracket to the desired wall site, and use a spirit level, if necessary, to make certain the bracket is level.

08.15 The EKT is placed on the wall bracket by mating the bracket's four hooks (A—Figure 35) with the four slots on the EKT base (B—Figure 36) and sliding the EKT downward. The EKT is secured in position by bending the two tabs (C—Figure 35) forward to prevent upward motion of the EKT.

08.16 Route the tail cord as shown in Figure 37.

08.17 Install the handset hanger kit per Paragraph 08.30.

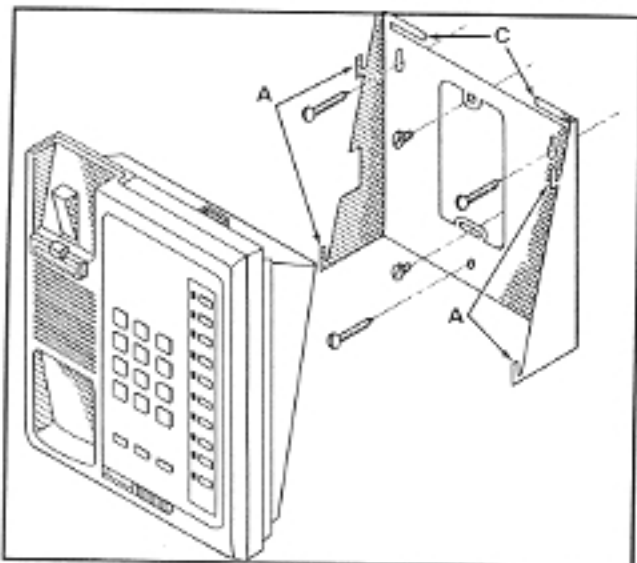


FIGURE 35—WALL MOUNT BRACKET

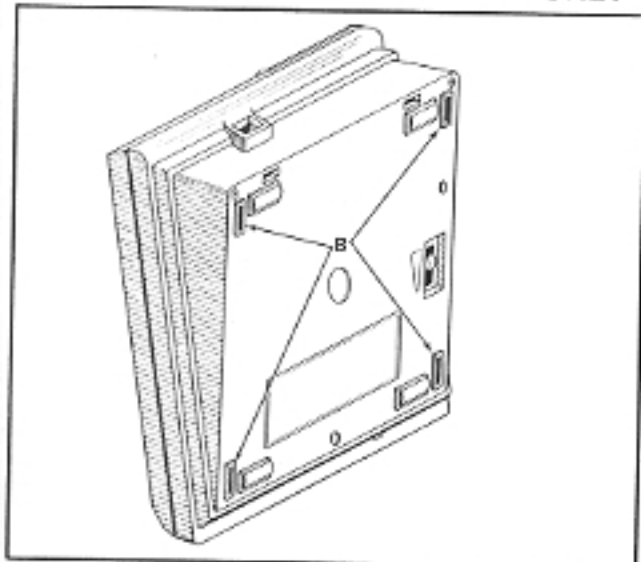


FIGURE 36—BRACKET SLOTS

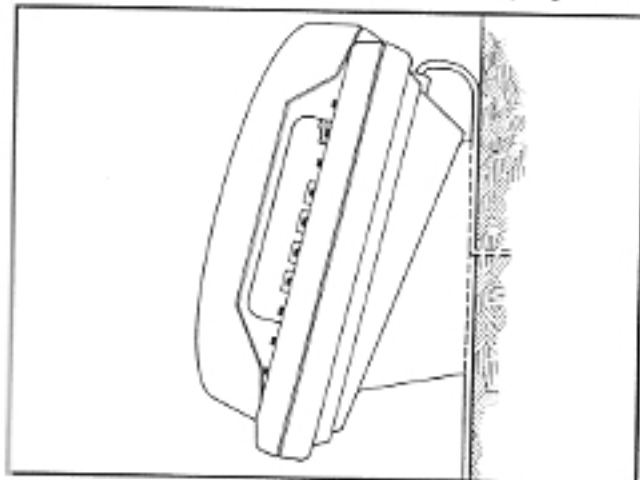


FIGURE 37—"S" EKT WIRE ROUTING

08.20 Optional EKT Wall Mounting

08.21 An optional handset hanger kit (HWMA) is required to convert the optional EKTs for wall mounting.

08.22 All optional EKTs are mounted in the same manner, and they may be mounted on a wall or any other flat, vertical surface to which the base can be secured. When selecting the mounting site, consider the EKT weight and the additional stresses to which the EKT will be subjected.

08.23 Mounting screws or mollys, appropriate for the surface on which the EKT is to be secured, must be provided by the installer.

08.24 Locking tabs secure the EKT's base. The direction in which the base is attached to the EKT determines whether it will be a desk unit or wall unit (it is factory-configured as a desk unit). Disengage the locking tabs by pushing downward on the base (Figure 38).



FIGURE 38
REMOVING THE OPTIONAL EKT BASE

08.25 Refer to Figure 39, choose which of the knockouts are appropriate for the tail cord route, and then cut them.

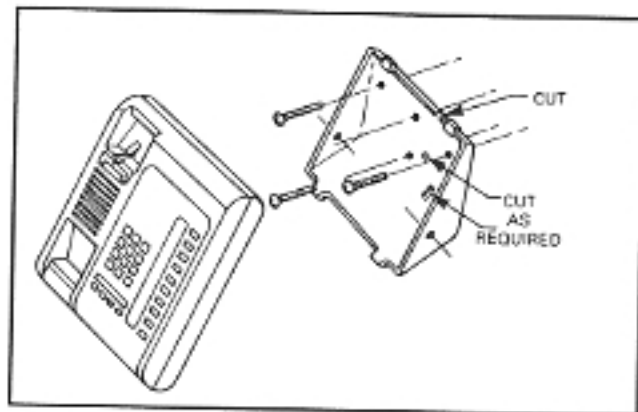


FIGURE 39
OPTIONAL EKT WIRE ACCESS

08.26 Secure the base to the desired wall site. Use a spirit level and make certain the top of the base is level and that the deeper portion is down.

08.27 Route the tail cord through the holes in the base and secure the EKT (Figure 40).

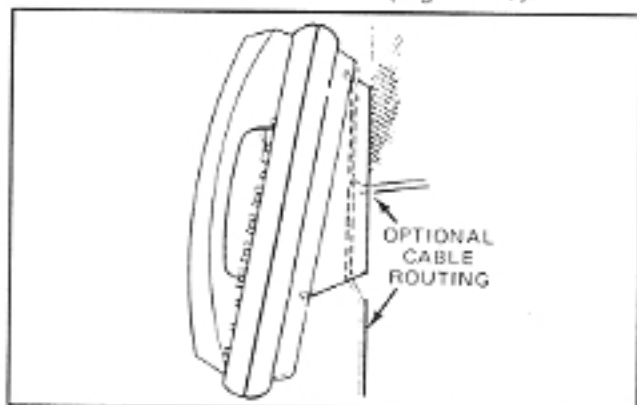


FIGURE 40
OPTIONAL EKT WIRE ROUTING

08.28 Install the handset hanger kit per Paragraph 08.30.

08.30 Installing the Handset Hanger Kit

08.31 Refer to Figure 41, the optional handset hanger kit (P/N HWMA, available from your Toshiba supplier) must be used whenever the EKT is wall-mounted. (When ordering, specify if S EKT or optional EKT—the HWMA is included in the SKWM kit.) The remainder of the installation is the same for all EKT types.

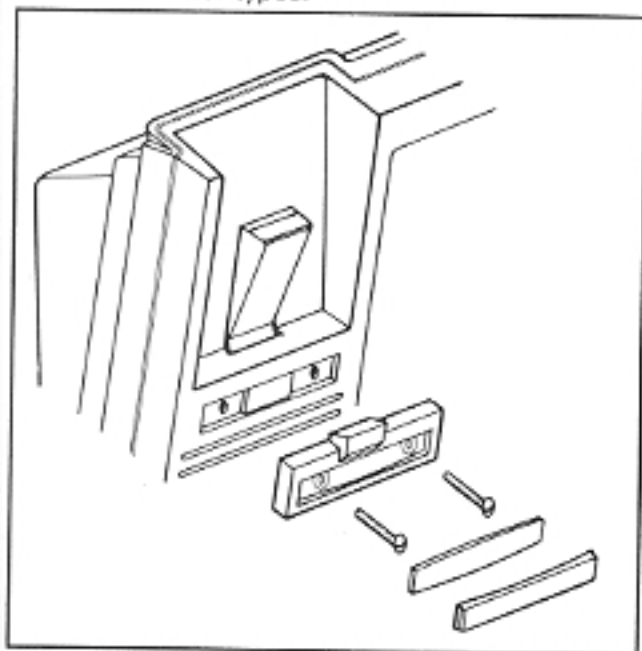


FIGURE 41—HANDSET HANGER KIT

08.32 Remove the card cover by inserting a paper clip in the hole at one end. Bend the cover up and remove it and the number card.

08.33 Install the handset hanger into place and tighten the screws. Reinstall the number card and card cover.

08.34 An optional 13-ft. handset cord is available from your Toshiba supplier, and it is suggested that this cord be used when wall-mounting an EKT.

08.40 EKT Connections

08.41 Connect the appropriate length line cord to the modular connector, route the cord to the EKT and connect to the EKT modular jack. Test the EKT as per Paragraph 10.00.

09 SYSTEM POWER-UP INITIALIZE

09.00 General

09.01 **Strata VI** has a list of standard system data assignments stored in ROM that can be entered at any time by performing the initialize sequence outlined below. The system must be initialized when it is first installed or whenever the MCDU PCB is changed. This will allow the system to be tested and any faults to be corrected before time is spent on programming.

NOTE:

Do not initialize if using a preprogrammed, battery-protected MCDU/CMTU.

09.02 Refer to Figure 42 and verify that the battery on the MCDU/CMTU is connected to ensure that data changes entered after initialization will not be lost due to power failure.

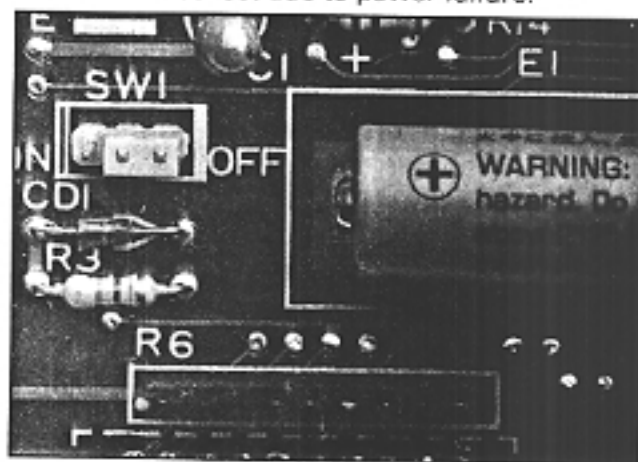


FIGURE 42
MCDU/CMTU BATTERY STRAP

NOTE:

The SET LED will not function if the MCDU/CMTU battery is not connected.

09.03 To initialize the system data memory, refer to Figure 43 and perform the following:

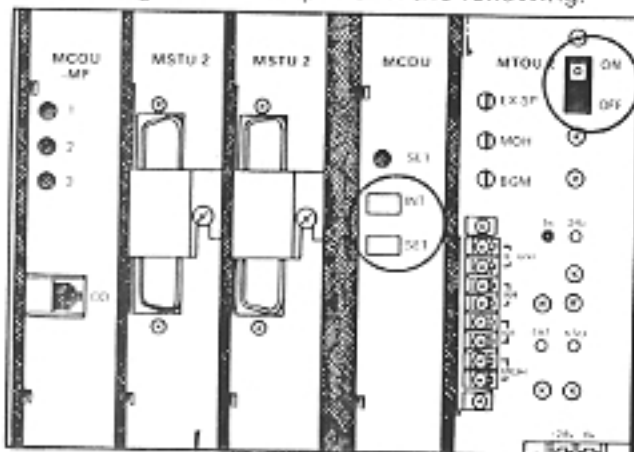


FIGURE 43—INITIALIZING SWITCHES

- 1) Place the power switch on the MTOU in the ON position.
- 2) Depress the INT switch on the MCDU, and hold it in.
- 3) Depress the SET switch and allow it to lock.
 - SET LED goes on.
 - Station 17: All LEDs except SPKR and MIC flash continuously.
- 4) Depress and release the SET switch again.
 - SET LED goes off.
 - Station 17: All LEDs go off.
- 5) Release the INT switch.
- 6) Cycle the MTOU power switch OFF and ON.

09.10 Clearing Automatic Dialing

09.11 The Automatic Dialing memory will contain random numbers when the system is powered up initially. To clear the memory; therefore preventing meaningless numbers from being dialed, proceed as follows.

IMPORTANT!

Station 17 may be equipped with either a 10-key or a 20-key EKT. In the procedure that follows a single key designation is given if it is the same for both EKT types. If a difference exists, the key designations of the 20-key EKT are given first, and the designations of the 10-key are given second—if any of the 10-key designations are

in brackets, the EKT must be off-hook for those particular keys to be effective.

09.12 To clear Automatic Dialing:

- 1) Lock in the SET switch on the MCDU.
 - The SET LED and REP [MW/FL] LED on station 17 goes on.
- 2) Depress the [SPKR] key on station 17.
 - SPKR LED will light steadily.
- 3) Dial [1] [x] [x] on the dial pad.
 - SPKR LED will flash continuously.
- 4) Depress the [INT] [CO-4] [DND] [AD3] [CO2] keys, respectively.
 - The corresponding LEDs will light.
- 5) Depress the [HOLD] key.
 - All station 17 LEDs (except REP [MW/FL]) go off.
- 6) Release the SET switch on the MCDU:
 - The SET LED and REP [MW/FL] LED on station 17 go off.

09.20 SMDR Real Time Clock Adjustment

09.21 One of the functions of the MSMU PCB is to provide a calendar and clock for showing time, date and duration of recorded calls. This clock and calendar must be set when the system is first placed into service.

09.22 The MSMU is equipped with a battery to protect the clock and calendar settings in event of a power failure. Ensure that the MSMU battery strap is in the ON position per Paragraph 06.52.

09.23 The MSMU will automatically adjust for 30- and 28-day months and leap year.

09.24 The MSMU faceplate is equipped with three switches and two LED displays (Figure 44). Looking from top to bottom; the functions of the switches are as follows:

STR: Writes data into memory once it is properly displayed.

MOD: Selects items to be adjusted. Multiple depressions of the MOD switch will cause item numbers to be displayed sequentially by LED #1. The possible displays are:

- | | | |
|-----|-----------|------------|
| Off | 1 = year | 4 = hour |
| | 2 = month | 5 = minute |
| | 3 = day | 6 = start |

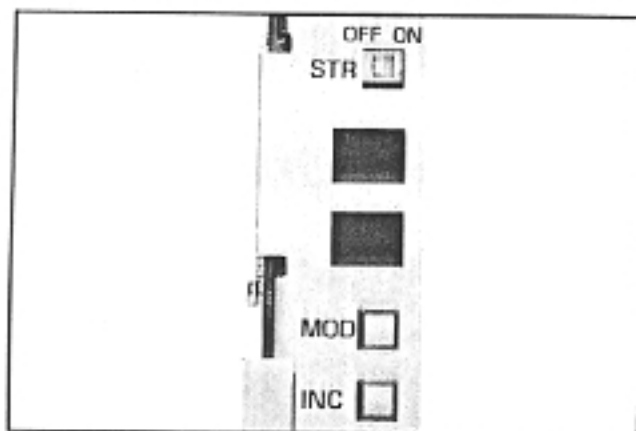


FIGURE 44—MSMU FACEPLATE

INC: Selects the data (hour, minute, day, etc.) for the item number selected by the **MOD** switch and displayed by LED #1. LED #2 displays data selected by the **INC** switch.

- Depressing the **INC** switch once increments data by 1.
- Depressing and holding the **INC** switch causes data to increase continuously until the **INC** switch is released.

09.25 To set clock and calendar:

- 1) Verify that the battery is connected on the MSMU (Figure 15).
- 2) Depress the **MOD** switch once.
 - LED #1 displays 1 (year).
 - LED #2 displays current data.
- 3) Use the **INC** switch to correct data in LED #2 display.
- 4) Depress the **MOD** switch once.
 - LED #1 displays 2 (month).
 - LED #2 displays current data.
- 5) Use the **INC** switch to correct data in LED #2 display.
- 6) Depress the **MOD** switch once.
 - LED #1 displays 3 (day).
 - LED #2 displays current data.
- 7) Use the **INC** switch to correct data in LED #2 display.
- 8) Depress the **MOD** switch once.
 - LED #1 displays 4 (hour).
 - LED #2 displays current data.
- 9) Use the **INC** switch to correct data in LED #2 display.

- 10) Depress the **MOD** switch once.
 - LED #1 displays 5 (minute).
 - LED #2 displays current data.
- 11) Use the **INC** switch to correct data in LED #2 display.
- 12) Depress the **MOD** switch once.
 - LED #1 displays 6 (start).
 - LED #2 has no display.
- 13) Slide the **STR** switch to **ON** and then back to **OFF**.
 - LEDs go off.
 - Data is transferred to working memory and time keeping starts.

NOTE:

If LED #1 is changed to OFF before the STR switch is operated, existing data will not be changed regardless of adjustments made in previous steps.

09.30 Program Listing

09.31 The MSMU has the capability to retrieve current customer data from memory and output it to the SMDR printer.

09.32 See Section 200-006-300, *Programming Procedures*, for printout method and format.

10 SYSTEM TEST PROCEDURES

10.00 10-key S EKT Functional Check

10.01 In order to verify basic system functions, and confirm the proper functioning of the EKT itself, perform the following test procedure at each station equipped with a 10-key S EKT, begin with the lowest numbered station so equipped.

10.02 With handset on-hook:

- a) Depress the **[INT]** key.
 - INT LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- b) Adjust the speaker's volume with the sliding volume control on the face of the EKT.
- c) Depress the **[CO 1]** key.
 - CO 1 LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
- d) Dial any digit (2 ~ 9) on the dial pad and dial tone will stop.

- e) Depress the [MW/FL] key.
- Listen for circuit break followed by dial tone after approximately 2 seconds.
- f) Continue to depress each [CO] key in order on every EKT; the following should occur:
- CO LED: I-use flash.
 - SPKR LED: on steady.
 - CO/PBX dial tone via the EKT speaker.
- NOTE:*
If no CO/PBX facility is connected to a CO key, dial tone will not be heard but the LED is still functional.
- g) When CO testing is complete on each EKT, continue the EKT test by depressing the [SPKR] key.
- SPKR LED: off.
 - EKT speaker: off.
- h) Depress the [DND] key.
- DND LED: on.
- i) Depress the [DND] key.
- DND LED: off.
- j) Depress the [CO 1] key.
- CO 1 LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for CO/PBX dial tone via EKT the speaker.
- k) Depress the [HOLD] key.
- CO 1 LED: I-hold flash.
 - Speaker off (no dial tone).
 - SPKR LED: off.
- l) Depress the [CO 1] key.
- CO 1 LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
- m) Depress the [CONF] key.
- CO 1 LED: Conference call flash rate.
 - Dial tone continues.
- n) Depress the [CO 1] key and then the [SPKR] key.
- CO 1 LED: off.
 - SPKR LED: off.
 - Dial tone: off.
- o) Call the EKT that is being tested from another station.
- Listen for voice via speaker after warning tone.
 - Called station INT LED: I-called flash.
- p) Dial [1] at calling station.
- Tone signalling heard via the called station's speaker.
- q) Adjust tone signalling volume with volume control on the bottom of the EKT being tested.
- r) Depress the [INT] key.
- INT LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- s) Lift the handset.
- SPKR LED: off.
 - Speaker off.
 - Listen for dial tone via handset receiver.
- t) Call another station and talk into the handset transmitter.
- Verify that your voice can be heard via called EKT speaker.
- u) Hang up.
- v) Depress the [INT] key.
- INT LED: I-use flash.
 - SPKR LED: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- w) Call a *busy* station.
- Listen for busy tone.
- x) Depress the [ACB] key.
- Dial tone should be heard for 2 seconds followed by busy tone again.
- y) Depress the [SPKR] key.
- SPKR LED: off.
 - INT LED: off
- z) Depress the [INT] key.
- INT LED: I-use flash rate.
 - SPKR LED: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- aa) Dial [7] [7] to cancel ACB feature.
- Dial tone should be heard for 2 seconds followed by busy tone.
- bb) Depress the [SPKR] key.
- SPKR LED: off.
 - INT LED: off
- 10.03 This completes the station functional check for the standard S EKT; repeat the procedure for all standard S EKTs in the system. See

Paragraph 10.10 for the optional EKT functional checks.

10.10 Optional EKT Functional Check

10.11 In order to verify the optional EKT's functions and confirm the proper functioning of the EKT itself, perform the following test procedure on each optional EKT, begin with the lowest numbered station so equipped.

NOTE:

On some speakerphone EKTs the microphone control key may be titled "MUTE"; however, we use "MIC" in these instructions.

10.12 With handset on-hook:

- a) Depress the [INT] key.
 - INT LED: I-use flash.
 - SPKR LED: on steady.
 - MIC LED: on steady.
 - Listen for intercom dial tone via the EKT speaker.
 - b) Adjust speaker volume with the volume control on the rear right-hand side of the EKT.
 - c) Depress the [CO 1] key.
 - CO 1 LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
 - d) Dial any digit (2 ~ 9) on the dial pad and dial tone will stop.
 - e) Depress the [MWRFL] key.
 - Listen for circuit break followed by dial tone after approximately 2 seconds.
 - f) Continue to depress each [CO] key in order on every EKT; the following should occur:
 - CO LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
- NOTE:**
If no CO/PBX facility is connected to a CO key, dial tone will not be heard but the LED is still functional.
- g) When CO testing is complete on each EKT, continue the EKT test by depressing the [SPKR] key.
 - SPKR & MIC LEDs: off.
 - EKT speaker off.
 - h) Depress the [DND] key.
 - DND LED: on.
 - i) Depress the [DND] key.
 - DND LED: off.
 - j) Depress the [CO 1] key.
 - CO 1 LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
 - k) Depress the [HOLD] key.
 - CO 1 LED: I-hold flash.
 - Speaker off (no dial tone).
 - SPKR & MIC LEDs: off.
 - l) Depress the [CO 1] key.
 - CO 1 LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
 - Listen for CO/PBX dial tone via the EKT speaker.
 - m) Depress the [CONF] key.
 - CO 1 LED: Conference call flash rate.
 - Dial tone continues.
 - n) Depress the [CO 1] and [SPKR] keys.
 - CO 1 LED: off.
 - SPKR & MIC LEDs: off.
 - Dial tone: off.
 - o) Call the EKT that is being tested from another station.
 - Listen for the caller's voice via the called EKT's speaker after the single tone signal.
 - Called station's INT LED: I-called flash.
 - p) Dial [1] at calling station.
 - Tone signalling heard via the called station's speaker.
 - q) Adjust tone signalling volume with volume control on the rear left-hand side of the EKT being tested.
 - r) Depress the [INT] key.
 - INT LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
 - Listen for intercom dial tone via the EKT speaker.
 - s) Lift handset.
 - SPKR & MIC LEDs: off.
 - Speaker off.
 - Listen for dial tone via handset receiver.
 - t) Call another station and talk into the handset transmitter.

- Verify that your voice can be heard via the called EKT's speaker.
- u) Hold down the [SPKR] key, and set the handset back on-hook.
 - INT LED: I-use flash.
 - SPKR & MIC LEDs: on steady.
- v) Tap the EKT microphone and verify that the sound can be heard via the called EKT's speaker.
- w) Depress the [MIC] key while tapping the microphone and verify that the sound cannot be heard via called EKT's speaker.
 - MIC LED: off while [MIC] key is depressed.
- x) Depress the [SPKR] key.
 - INT LED: off.
 - SPKR & MIC LEDs: off.
- y) Depress the [INT] key.
 - INT LED: I-use flash rate.
 - SPKR & MIC LEDs: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- z) Call a *busy* station.
 - Listen for busy tone.
- aa) Depress the [ACB] key.
 - Dial tone should be heard for 2 seconds followed by busy tone again.
- bb) Depress the [SPKR] key.
 - SPKR & MIC LEDs: off.
 - INT LED: off.
- cc) Depress the [INT] key.
 - INT LED: I-use flash rate.
 - SPKR & MIC LEDs: on steady.
 - Listen for intercom dial tone via the EKT speaker.
- dd) Dial [7] [7] to cancel the ACB feature.
 - Dial tone should be heard for 2 seconds followed by busy tone.
- ee) Depress the [SPKR] key.
 - SPKR & MIC LEDs: off.
 - INT LED: off

10.13 This completes the station functional check for the optional EKTs; repeat the procedure for all optional EKTs in the system.

10.20 Off Premise Extension/Conventional Telephone Functional Check

10.21 Perform the following test procedure at

each Off Premise Extension/Conventional Telephone (OPX) location:

- a) Lift the OPX handset and listen for intercom dial tone.
- b) Dial the number of another station.
 - Dial tone will stop when the first digit is dialed.
 - Ringing or voice paging will be heard at the called station.
- c) Lift the handset at the called station.
 - Ringing stops.
- d) Verify that a 2-way voice connection exists between the OPX and the called station.
- e) Go on-hook at both stations.
- f) Lift the OPX handset and listen for intercom dial tone.
- g) Dial [9].
 - An idle line, from the group defined by Program 09, will be seized.
 - Listen for CO dial tone.
- h) Dial a test call.
 - Verify that a 2-way voice connection is established.
- i) Flash the hookswitch on the OPX and listen for intercom dial tone.
- j) Dial the number of another station.
 - Dial tone will stop when the first digit is dialed.
 - Ringing or voice page will be heard at the called station.
- k) Lift the handset at the called station.
 - Ringing stops.
- l) Verify that a 2-way voice connection exists between the OPX and the called station.
- m) Flash the hookswitch on the OPX.
- n) Verify that a 3-way conference is established.
- o) Go on-hook at the OPX.
- p) Verify that the CO line and called station are connected.
- q) Go on-hook at the called station.

10.30 OPL Circuit Functional Check

10.31 Perform the following test procedure on each OPL/CO line pair.

- a) Lift the OPL telephone handset and listen for CO dial tone.
 - b) Verify that the corresponding CO line LED lights on the system EKTs.
 - c) Dial a test call from the OPL telephone.
 - Verify that a 2-way voice connection is established.
 - d) Depress the corresponding line key on an EKT.
 - Verify that the privacy feature prevents access.
 - e) Go on-hook at OPL telephone.
 - f) Depress the OPL CO line key on an EKT and listen for CO dial tone.
 - g) Dial a test call from the EKT.
 - Verify that a 2-way voice connection is established.
 - h) Lift the OPL telephone handset.
 - Verify that a 3-way voice connection is established.
 - i) Go on-hook at both stations.
 - j) Make an incoming call to the OPL CO line.
 - Ringing will be heard at the OPL telephone.*
 - Appropriate EKT(s) will ring.
 - Appropriate EKT LED(s) will flash.
- *NOTE:
If OPL hunting is programmed for the line being tested, the call will always ring OPL station #1 if it is idle.*
- k) Lift the OPL telephone handset to answer the call.
 - Ringing stops.
 - EKT LED(s) light steadily.
 - Verify that a 2-way voice connection is established.
 - l) Depress OPL [CO] key on an EKT.
 - Verify that the privacy feature prevents access.
 - m) Go on-hook at the OPL telephone.
 - n) Make another incoming call to the OPL CO line.
 - o) Answer the call using an EKT.
 - Verify that a 2-way voice connection is established.
 - p) Lift the OPL telephone handset.
 - Verify that a 3-way voice connection is established.
 - q) Go on-hook at both stations.

10.40 SMDR Functional Check

10.41 Perform the following test to verify the proper functioning of the SMDR feature.

- a) Connect the printer to the MSMU PCB.
- b) Set data speed and select type of calls to be recorded per Paragraph 06.53.
- c) Make an outgoing call from any EKT.
- d) Enter an account code as follows:
 - Dial the access code (* 5 0).
 - Dial the account code (6 digits).
- e) Hang up after the call has been active for at least 10 seconds (calls of less than 10 seconds duration will not be recorded).
 - The call record will be output to the printer in the format shown in Figure 45.
- f) Take the printer "off-line" (DTR signal "off").
- g) Make an outgoing call.
- h) Hang up after the call has been active for at least 10 seconds.
 - Call record will not be output.

MM/DD/YY					
01	10	HH:MM	00:30;51	7305000	
02	14	HH:MM	00:02;39	8531212	123456
04	18	HH:MM	00:01;37	12135551212	654321
03	15	HH:MM	00:04;51	18002436161	
07	19	HH:MM	00:02;25	2731750	

**FIGURE 45—SMDR PRINTOUT EXAMPLE
(Outgoing Call Record)**

INSTALLATION INSTRUCTIONS
SECTION 200-006-200
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- i) Put the printer "on-line" (DTR signal "on").
 - Call record will be output.
- j) Make an incoming call to the system and delay answering it for several rings.
- k) Answer the call.
- l) Enter an account code as in Step d.

- m) Hang up.
 - Call record will be output to the printer in the format shown in Figure 46.

10.50 Feature Check

10.51 Verify that all system features function properly per Section 200-006-400, *Operating Procedures*.

MM/DD/YY					
01	10	HH:MM	00:01;13	00:02	
02	14	HH:MM	00:02;30	00:04	
03	11	HH:MM	00:03;36	00:10	654321

FIGURE 46—SMDR PRINTOUT EXAMPLE
(Incoming Call Record)

11 MISCELLANEOUS EQUIPMENT CONNECTIONS

11.00 Wiring Connections

11.01 All connections to miscellaneous equipment are made via the barrier strip mounted on the front of the MTOU PCB, as shown in Figure 47.

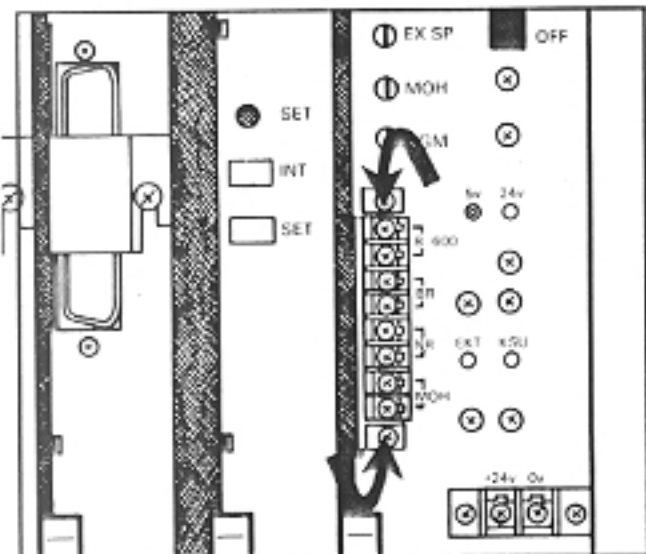


FIGURE 47—MTOU CONNECTION STRIP

11.10 MOH/BGM Source

11.11 Connect the customer-provided MOH/BGM program source (tuner, tape deck or commercial source) via the two MOH terminals on the MTOU barrier strip. Input impedance is 600 Ω.

11.20 Music-On-Hold Volume Control

11.21 Adjust the MOH volume with the MOH

volume control on the front of the MTOU PCB. Maximum volume is limited by internal circuits in order to comply with FCC regulations. See Paragraph 11.80 for the correct volume setting sequence.

11.30 External Paging Connections

11.31 *Strata VI* provides access to an external paging system by dialing two digits (89). The single output connection is made via the 8/600 terminals on the front of the MTOU, and can be used in one of three ways:

- a) To operate customer-provided speaker directly, via an internal 3-watt amplifier located on the MTOU PCB.
- b) If more than 3 watts are required, an external customer-provided amplifier can be connected to operate the external speaker.
- c) If talkback capability is required, a customer-provided talkback amplifier/speaker can be connected.

NOTE:

See Paragraph 11.80 for the correct volume setting sequence.

11.40 Direct External Speaker Connection

11.41 The exact number of speakers that may be connected to the 8 Ω, 3-watt output will depend on type of speaker used, conductor resistance, and desired volume.

11.42 The 8 Ω output impedance must be selected with the SW2 switch on the MTOU (Figure 48). The switch must be on the side labeled "8".

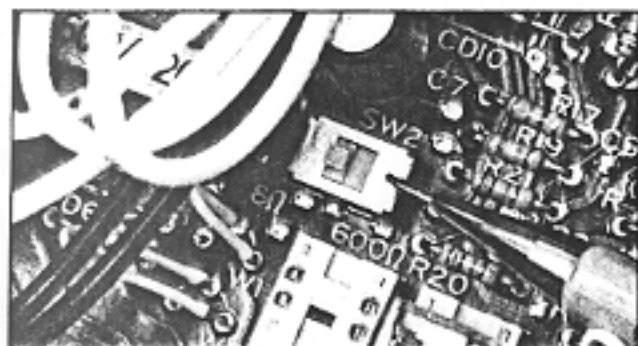


FIGURE 48—MTOU IMPEDANCE SWITCH

11.43 Connect the external speaker to the two 8/600 terminals on the MTOU.

11.44 Adjust the speaker volume with the EX.SP volume control on the front of the MTOU. See Paragraph 11.80 for the correct volume setting sequence.

11.50 External Amplifier Connection

11.51 If more power is required than the MTOU amplifier can deliver, a customer-provided external amplifier may be connected to the 8/600 terminals on the MTOU (connect external speakers to the external amplifier).

11.52 Determine which output impedance is most suitable for the amplifier being used, and make the selection with the SW2 switch on the MTOU (Figure 48).

11.53 If 8 Ω impedance is chosen, the EX.SP volume control may be used to control input level to the external amplifier. If 600 Ω impedance is chosen, the level is fixed and input must be controlled by the external amplifier. See Paragraph 11.80 for the correct volume setting sequence.

11.60 Talkback Amplifier

11.61 A customer-provided talkback amplifier/speaker may be connected to the external page (8/600) terminals on the MTOU.

11.62 For talkback operation, the SW2 switch on the MTOU must be set at "600". The MTOU amplifier is not used for the 600 Ω mode in order to permit a 2-way voice path.

11.63 The EX.SP volume control on the front of the MTOU will not function when the 600 Ω mode is selected.

11.70 Background Music

11.71 Background music (BGM) can be provided in two ways through the *Strata VI* system:

- Internal to the system using the MOH source.
- External to the system when an external amplifier is used on the External Page feature.

11.72 Internal BGM uses the music-on-hold program source that is connected to the MOH input terminals on the MTOU. It is broadcast through all EKT speakers (under the individual control of each station user) and will be heard if the [SPKR] key is operated with the handset on-hook and no line selected.

11.73 As a programmable option, the BGM from the MOH source can be heard via the external speaker (see Section 200-006-300, *Programming Procedures*).

11.74 BGM is automatically preempted when a page or ringing signal must be output from an EKT speaker or the external speaker.

11.75 Overall system BGM volume is set with the BGM volume control on front of the MTOU (see Paragraph 11.80 for the correct volume setting sequence). The volume at individual stations is set with volume control on the rear right-hand side of the speakerphone-type EKTs and with the sliding control on the lower face of the S-style EKTs.

11.76 If BGM is connected via an external amplifier on the external page, it can be heard from the external speaker only. *Strata VI*, if required, can provide a dry contact control signal for muting the external BGM when a page is in progress.

11.77 To provide external BGM control, obtain and install the optional BR(K1) relay on the MTOU PCB, see Paragraph 06.11. Connect the BR terminals on the MTOU to the control terminals (mute, mike switch, etc.) on the amplifier (see Figure 49).

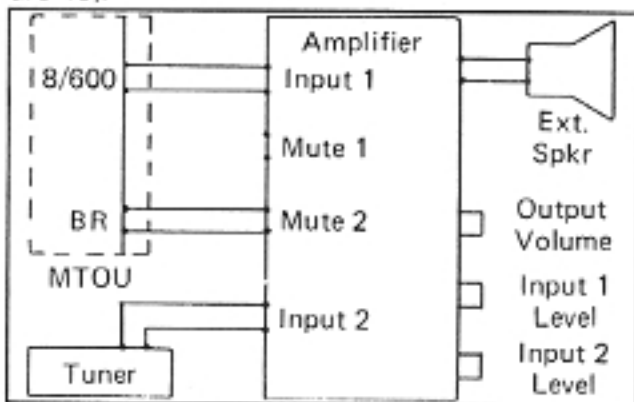


FIGURE 49
EXTERNAL AMPLIFIER HOOK-UP

11.80 Volume Setting Sequence

11.81 Refer to Figure 50.

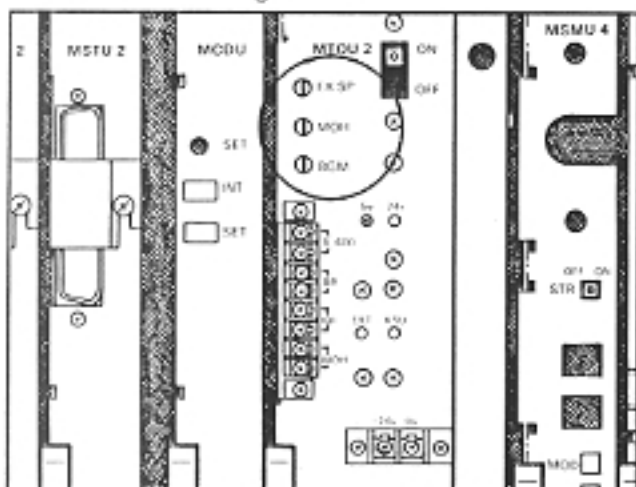


FIGURE 50
VOLUME SETTING CONTROLS

and adjust the volume for MOH, BGM and External Page in the following sequence:

11.82 Adjust the MOH level first using the following procedure:

- 1) Set the **MOH** volume control on the front of the MTOU to its lowest level (counterclockwise).
- 2) Lift the handset on one station and call another station using two CO/PBX lines.
- 3) At the **called** station, put the incoming call on hold, and listen on the **handset** (not the speaker) of the **calling** EKT.
- 4) Using the volume control on the **MOH source**, adjust MOH to the most comfortable level without distortion.
- 5) If a higher level is needed than can be provided by the MOH source, turn the **MOH** volume control on the MTOU slowly clockwise to achieve the most comfortable level without distortion.
- 6) Release the connection between the two CO lines.
- 7) **No** further changes should be made using the **MOH** control or the MOH source volume control.

11.83 If an external speaker is to be used in the system; adjust the external page and BGM levels as follows:

- 1) Adjustments should be made while an actual external page test is in progress. Adjust the voice loudness to a comfortable level. The procedure varies depending on the paging system configuration and the setting of the 8/600 Ω switch (**SW2**) on the MTOU:

- a) 8 Ω with **no** external amplifier—adjust output level using the **EX.SP** volume control on the front of the MTOU.
- b) 8 Ω with external amplifier—adjust output level using the **EX.SP** volume control on the front of the MTOU along with the controls on the external amplifier.
- c) 600 Ω —the volume level through **Strata VI** is fixed in this mode; adjustments must be made using the external amplifier controls.

- 2) If background music is to be heard over the external speaker:

- a) Adjust voice page level per above procedure.
- b) With music playing over the speaker, adjust the volume to a comfortable level using **only** the **BGM** control on the front of the MTOU. **Do not** tamper with the **EX.SP** control, external amplifier adjustments or MOH adjustments.
- c) If background music is connected directly to the external amplifier instead of through the system, all adjustments must be made on the external amplifier.

11.84 If no external speaker is to be used in the system, adjust the BGM level as follows:

- 1) Using an EKT in speakerphone mode, make a call on a CO line, and adjust the EKT speaker volume to a comfortable level.

NOTE:

This should be done in an area that has background noise that is about average for that particular installation.

- 2) Using the [SPKR] key, disconnect the CO call and activate BGM at the EKT.
- 3) Using **only** the **BGM** volume control on the front of the MTOU, adjust the BGM to a comfortable level. **Do not** use the EKT volume control.

11.90 Night Relay Service

11.91 As an option, **Strata VI** can provide a dry contact for the purpose of controlling an external loud ringing bell (or similar device) or an answering machine when the system is in the "NITE" mode.

11.92 To provide this service, obtain and install the optional NR (K2) relay on the MTOU PCB per Paragraph 06.11. Connect the external device to the NR contacts on the front of the MTOU (see Figure 51).

IMPORTANT!

The NR and BR relay contacts are rated at 24 VDC/1.0 Amp and are not intended to operate high power devices directly. If the power required for the device being con-

trolled exceeds the contact ratings, an external slave relay must be used.

11.93 The W3 strap option on the MTOU allows the NR relay to function in one of two modes:

- a) Answering Machine Control—if the W3 strap remains intact, the relay is operated continuously when the system is in night service. This mode is intended for indirect control of an answering machine.
- b) Night Bell Control—if the W3 strap is cut, the relay pulses at a 1-second on, 3-second off rate when the system is in night service and an incoming call is ringing the system. The mode is intended to be used for indirect control of an external night bell.

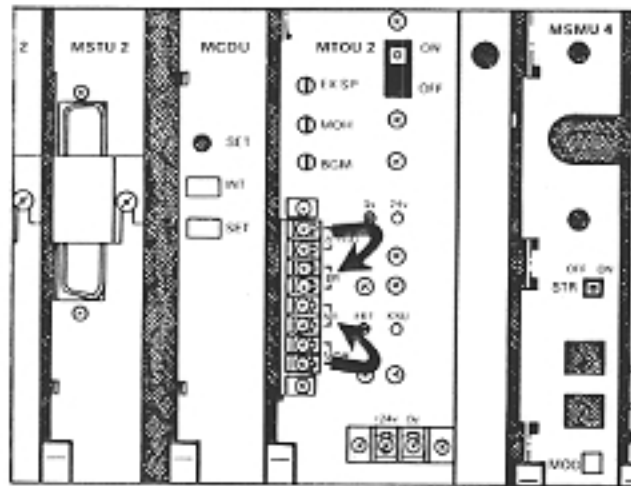


FIGURE 51—NR WIRING CONTACTS

Strata VI

MPSA-200 INSTALLATION

Strata VI

MPSA-200 INSTALLATION

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01 GENERAL

01.01 The MPSA-200 is equipped with a reversible, built-in bracket (Figure 1); it is configured at the factory

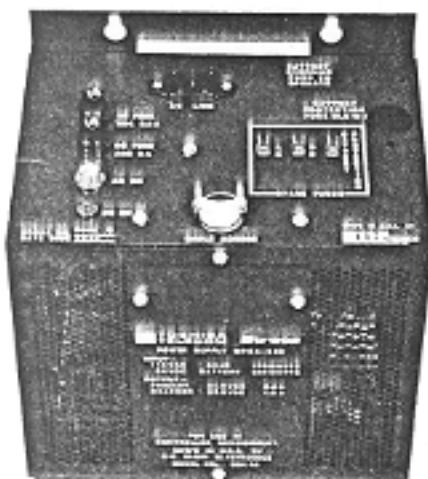


FIGURE 1

for mounting on a wall or other vertical surface. In order to mount on a table or horizontal surface securely, the bracket must be reversed to the position shown in Figure 2. This orientation is necessary to assure proper cooling.

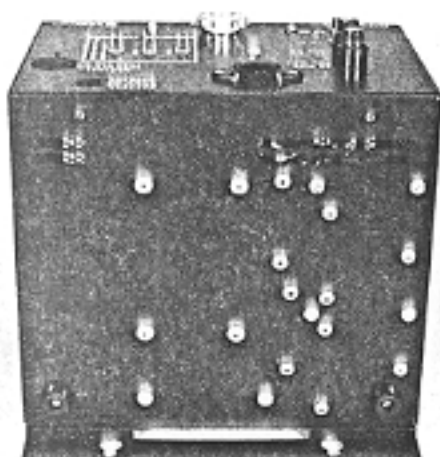


FIGURE 2

01.02 Unpack and inspect the power supply and the enclosed hardware. Ex-

amine the package and make careful note of any visible damage. If any damage is found, bring it to the attention of the delivery carrier and make the proper claims.

01.03 Check the hardware list; if it is determined that any equipment within the carton is missing, contact your Toshiba supplier immediately.

01.04 The following hardware, which is required to mount and connect the MPSA to the system, is supplied with each unit.

ENCLOSED HARDWARE

Quantity	Item
2	T.C. Toggler Wall Fasteners (Figure 3)
2	#14 Hex Head Sheet Metal Screws
1	Toggler Key
1	Template
1	Spare AC Fuse (F1, 2.5 amp, SLO-BLO 125-VAC)
1	Spare DC Fuse (F2, 5 amp, Fast-BLO, 32-VDC)
1	16 AWG, 3-wire Jacketed Cable (54 inches)

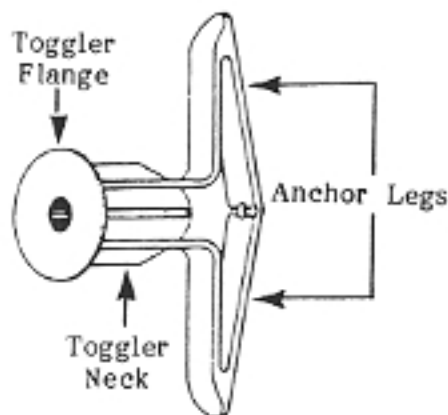


FIGURE 3

01.10 Surface Preparation

01.11 Choose a suitable location (either vertical or horizontal) for the

MPSA and locate the template on that location. If on a wall, use a spirit level to verify that the drilling points are level.

01.12 Place punch marks on the mounting surface through the two "+" marks on the template.

01.13 Drill through the mounting surface with a 5/16-inch bit to prepare the anchoring holes.

01.20 Mounting the MPSA

01.21 Press the anchor legs of the togglers together, and insert them into the anchoring holes (Figure 4) until their neck flanges are flush with the mounting surface. If insertion is difficult, tap them lightly with a hammer.

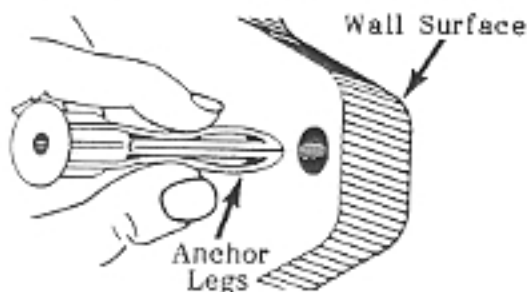


FIGURE 4

01.22 Insert a toggler key into the small hole in the neck of each fastener, as shown in Figure 5. This should cause the anchor legs to "pop" open. Remove the toggler key.

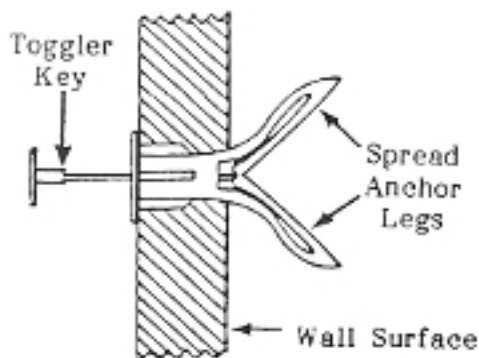


FIGURE 5

01.23 Thread the screws into the small holes in the center of the togglers. Leave some clearance between the bottom of each screw head and the mounting surface (Figure 6).

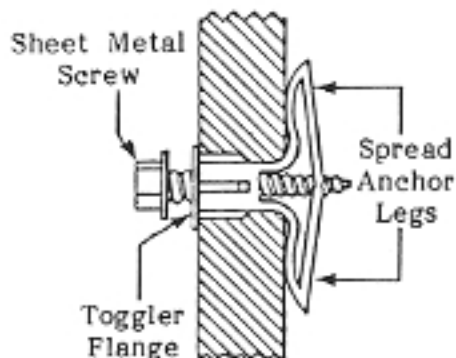


FIGURE 6

01.24 Place the MPSA against the mounting surface with the screws protruding through the holes (Figure 7).

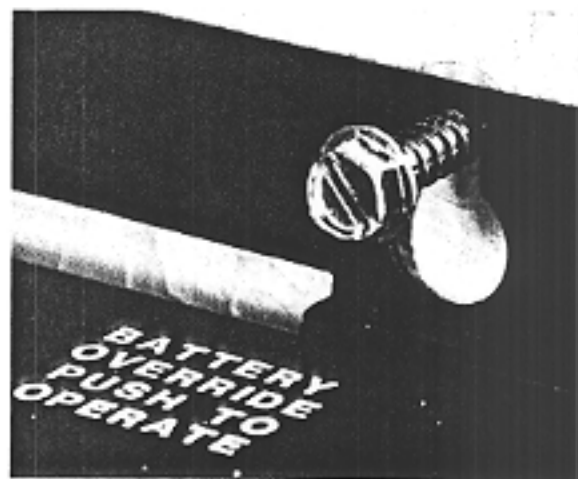


FIGURE 7

01.25 Position the power supply so that the narrower portions of the holes slip over the screws, and (if the unit is wall-mounted) the weight of the power supply is supported. Tighten the screws.

01.26 If the power supply is table-mounted, make certain the unit rests on its four rubber "feet" and is secured with the mounting bracket. This is essential for proper cooling.

01.30 Fuses

01.31 Remove the spare fuses from the hardware carton, and place them in their individually marked holders.

01.32 Remove and inspect the fuses that were shipped inside the MPSA. If either fuse is defective, replace it and order another spare fuse from your Toshiba supplier.

01.33 Prior to installing the PBBU, connect the MPSA to the MKSU per Paragraph **06.10**, Section 100-006-200, Installation.

02 BATTERY BACK-UP INSTALLATION

02.01 The power battery back-up unit (PBBU) in Figure 8 is an optional PCB which may be installed in the MPSA-200 to interface with two auxiliary 12-VDC batteries. In the event of an electrical power failure, the PBBU provides an automatic battery power source, permitting a typical STRATA VI system to continue normal operations for some time (in direct ratio with the type and size of the batteries chosen).

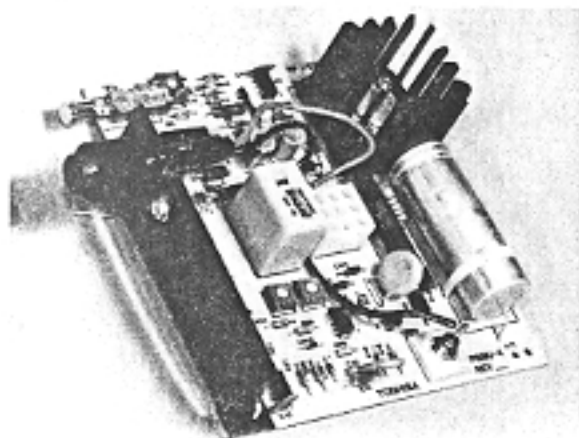


FIGURE 8

02.02 The PBBU contains a voltage sensing circuit which causes an electro-mechanical relay to connect the back-up battery power to the system

before the MPSA output voltage drops below 21-VDC (at which point system functions would be disrupted and existing calls would be disconnected).

02.03 When the normal source of electrical power is restored, the voltage sensing circuit relay will disconnect the standby battery power source.

02.04 If the standby battery power source output falls below 21-VDC while it is connected to the system, the voltage sensing circuit will cause the relay to disconnect the standby batteries from the system.

02.05 The standby batteries will not be reconnected unless:

- The "Battery Override" switch (Figures 8 and 9) is placed in the ON position, or...
- The depleted batteries are replaced by a freshly charged pair and the "Battery Override" switch is turned on and then released.

02.06 The PBBU also contains circuitry to provide the charge current necessary to maintain the batteries at a satisfactory level of charge while the STRATA VI system is in normal operation. An external fast charger may also be connected across the battery output terminal connections.

02.07 The PBBU kit contains the following items:

- PBBU—power battery backup PCB.
- Fuse—spare battery protection fuse.
- "PBBU-4 REV"—decal to be placed on the front of the MPSA.
- "WARNING"—warning tag for attachment to the 115-VAC power cord.

TABLE 5
PROGRAM 01
SYSTEM ASSIGNMENTS (BASIC)

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.																																																				
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.																																																				
3) Dial [0][1] on dial pad.	SPKR LED flashes continuously. The various LEDs (see below) will indicate present data.																																																				
4) Refer to the System Record Sheet. Using the various keys, turn the associated LEDs on or off, as required. The detailed meaning of each key/LED is shown below.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.																																																				
<p>NOTES:</p> <p>1. If any key/LED is not shown, it is not used.</p> <p>2. Shadowed area (■) indicates off-hook 10-key EKT.</p>																																																					
<table border="1"> <thead> <tr> <th colspan="2">KEY/LED</th> <th>LED ON</th> <th>LED OFF</th> </tr> <tr> <th>20-key</th> <th>10-key</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>PAU</td> <td>ACB</td> <td>Transfer Privacy</td> <td>Alternate point answer of transferred CO line</td> </tr> <tr> <td>AD 7</td> <td>CO 6</td> <td>System Speed Dial Override Toll Restriction</td> <td>Restricted</td> </tr> <tr> <td>AD 6</td> <td>CO 5</td> <td>Four CO Line Groups (91 ~ 94)</td> <td>One CO Line Group</td> </tr> <tr> <td>AD 5</td> <td>CO 4</td> <td>Two CO Conferencing—Inhibit</td> <td>Allowed</td> </tr> <tr> <td>ACB</td> <td>ACB</td> <td>Station 17 is 10-key EKT</td> <td>20-key EKT</td> </tr> <tr> <td>CO 6</td> <td>CO 6</td> <td>Incoming Call Abandon (8 seconds)</td> <td>6 seconds</td> </tr> <tr> <td>CO 5</td> <td>CO 5</td> <td>3-second Pause After Flash</td> <td>1.5-second Pause</td> </tr> <tr> <td>CO 4</td> <td>CO 4</td> <td>Insert Pause After Flash</td> <td>No Pause</td> </tr> <tr> <td>CO 3</td> <td>CO 3</td> <td>3-second Pause ([MW/FL] or [PAU] key)</td> <td>1.5-second Pause</td> </tr> <tr> <td>CO 2</td> <td>CO 2</td> <td>0.5-second Flash</td> <td>2.0-second Flash</td> </tr> <tr> <td>INT</td> <td>INT</td> <td>Tone First</td> <td>Voice First</td> </tr> </tbody> </table>		KEY/LED		LED ON	LED OFF	20-key	10-key			PAU	ACB	Transfer Privacy	Alternate point answer of transferred CO line	AD 7	CO 6	System Speed Dial Override Toll Restriction	Restricted	AD 6	CO 5	Four CO Line Groups (91 ~ 94)	One CO Line Group	AD 5	CO 4	Two CO Conferencing—Inhibit	Allowed	ACB	ACB	Station 17 is 10-key EKT	20-key EKT	CO 6	CO 6	Incoming Call Abandon (8 seconds)	6 seconds	CO 5	CO 5	3-second Pause After Flash	1.5-second Pause	CO 4	CO 4	Insert Pause After Flash	No Pause	CO 3	CO 3	3-second Pause ([MW/FL] or [PAU] key)	1.5-second Pause	CO 2	CO 2	0.5-second Flash	2.0-second Flash	INT	INT	Tone First	Voice First
KEY/LED		LED ON	LED OFF																																																		
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INT	INT	Tone First	Voice First																																																		
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.																																																				
6A) Go to Step 2 in another program table ... or ... 6B) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.																																																				

TABLE 6
PROGRAM 02
SYSTEM ASSIGNMENTS (OPTIONS)

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.		
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.		
3) Dial [0][2] on dial pad.	SPKR LED flashes continuously. The various LEDs (see below) will indicate present data.		
4) Refer to the System Record Sheet. Using the various keys, turn the associated LEDs on or off, as required. The detailed meaning of each key/LED is shown below.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.		
<i>NOTE: If any key/LED is not shown, it is not used.</i>			
	KEY/LED	LED ON	LED OFF
	DND	Station 20 is OPX	Stations 20 & 21 are OPX
	CO 4	Display dialed number (1.0 minute)	Display 15 seconds
	CO 2	Night Ringing over External Page Allowed	Not Allowed
	CO 1	BGM over External Page Allowed	Not Allowed
	INT	External Page Included with All Call Page	Not Included
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.		
6A) Go to Step 2 in another program table ... or ... 6B) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.		

TABLE 7
PROGRAM 03
SYSTEM ASSIGNMENTS (OPTIONS)

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.		
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.		
3) Dial [0][3] on dial pad.	SPKR LED flashes continuously. CO, DND & MW/FL LEDs will be on according to present data.		
4) Refer to the System Record Sheet. Using the various keys, turn the associated LEDs on or off, as required. The detailed meaning of each key/LED is shown below.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.		
<i>NOTE:</i> <i>If any key/LED is not shown, it is not used.</i>			
	KEY/LED	LED ON	LED OFF
	MW/FL	Station 10 has [DND] key	Station 10 has [NT] key
	DND	Night Ringing—3-ring modes	2-ring modes
	CO 4	Message Center—Station 12	Not Equipped
	CO 3	Message Center—Station 11	Not Equipped
	CO 2	Message Center—Station 10	Not Equipped
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.		
6A) Go to Step 2 in another program table ... or ... 6B) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.		

TABLE 8
PROGRAM 04
MCOU OUTPUTSING SELECTION

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [0] [4] on dial pad.</p>	<p>SPKR LED flashes continuously. CO LEDs go on according to present data.</p>
<p>4) Refer to the System Record Sheet. CO keys are divided into groups of three (CO 1 ~ 3 = group 1 and CO 4 ~ 6 = group 2). <i>Any</i> one key in the group can be used to control <i>all</i> three LEDs in the group. For example: if CO 1 ~ 3 LEDs are "on", depressing CO key 1, 2 or 3 will turn off all three LEDs. If the LEDs are on, DP will be outpulsed. If the LEDs are off, DTMF will be utilized.</p>	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>

TABLE 9
PROGRAM 05
AUTOMATIC RECALL FROM HOLD TIMING

(This program is used only if MW/FL, AD 1[INT] and AD 2[CO 1] LEDs are ALL off in Program 5XX.)

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.																		
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.																		
3) Dial [0][5] on dial pad.	SPKR LED flashes continuously. An INT, CO or ACB LED will be on according to present data.																		
4) Refer to the System Record Sheet. Using the various keys, turn one associated LED on or off, as required. The detailed meaning of each key/LED is shown below.	An X on the record sheet means the LED should be on. Only one LED is permitted to be on, depressing another key will turn that LED on and turn off the previous LED.																		
<p><i>NOTE:</i> <i>If any key/LED is not shown, it is not used.</i></p>																			
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 50%;">KEY/LED</th> <th style="width: 50%;">LED ON</th> </tr> </thead> <tbody> <tr> <td>ACB</td> <td>160 seconds</td> </tr> <tr> <td>CO 6</td> <td>128 seconds</td> </tr> <tr> <td>CO 5</td> <td>96 seconds</td> </tr> <tr> <td>CO 4</td> <td>64 seconds</td> </tr> <tr> <td>CO 3</td> <td>48 seconds</td> </tr> <tr> <td>CO 2</td> <td>32 seconds</td> </tr> <tr> <td>CO 1</td> <td>16 seconds</td> </tr> <tr> <td>INT</td> <td>No Recall</td> </tr> </tbody> </table>	KEY/LED	LED ON	ACB	160 seconds	CO 6	128 seconds	CO 5	96 seconds	CO 4	64 seconds	CO 3	48 seconds	CO 2	32 seconds	CO 1	16 seconds	INT	No Recall
KEY/LED	LED ON																		
ACB	160 seconds																		
CO 6	128 seconds																		
CO 5	96 seconds																		
CO 4	64 seconds																		
CO 3	48 seconds																		
CO 2	32 seconds																		
CO 1	16 seconds																		
INT	No Recall																		
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.																		
6A) Go to Step 2 in another program table ... or ... 6B) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.																		

TABLE 10
PROGRAM 0#5
CAMP-ON TIMEOUT

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.	
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.	
3) Dial [0][#][5] on dial pad.	SPKR LED flashes continuously. The INT or a CO LED will go on according to present data.	
4) Refer to the System Record Sheet. Using the various keys, turn one associated LED on or off, as required. The detailed meaning of each key/LED is shown below.	An X on the record sheet means the LED should be on. Only one LED is permitted to be on, depressing another key will turn that LED on and turn off the previous LED.	
<i>NOTE: If any key/LED is not shown, it is not used.</i>		
	KEY/LED	LED ON
	CO 3	64 seconds
	CO 2	48 seconds
	CO 1	32 seconds
	INT	16 seconds
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.	
6A) Go to Step 2 in another program table ... OF ... 6B) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.	

TABLE 11
PROGRAM 06
AUTOMATIC RELEASE ON HOLD ENABLE

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [0][6] on dial pad.	SPKR LED flashes continuously. CO LEDs go on according to present data.
4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, CO 1 will have AROH during normal operation. If CO 1 LED is off, AROH will not function on that line.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

TABLE 12
PROGRAM 07
AUTOMATIC RELEASE ON HOLD (AROH) TIMING

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [0] [7] on dial pad.	SPKR LED flashes continuously. CO LEDs go on according to present data.
4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, CO 1 will have XB (crossbar) timing for AROH. If CO 1 LED is off, ESS timing will be used on that line.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

NOTE:
This program will have no meaning unless AROH is enabled via Program 06.

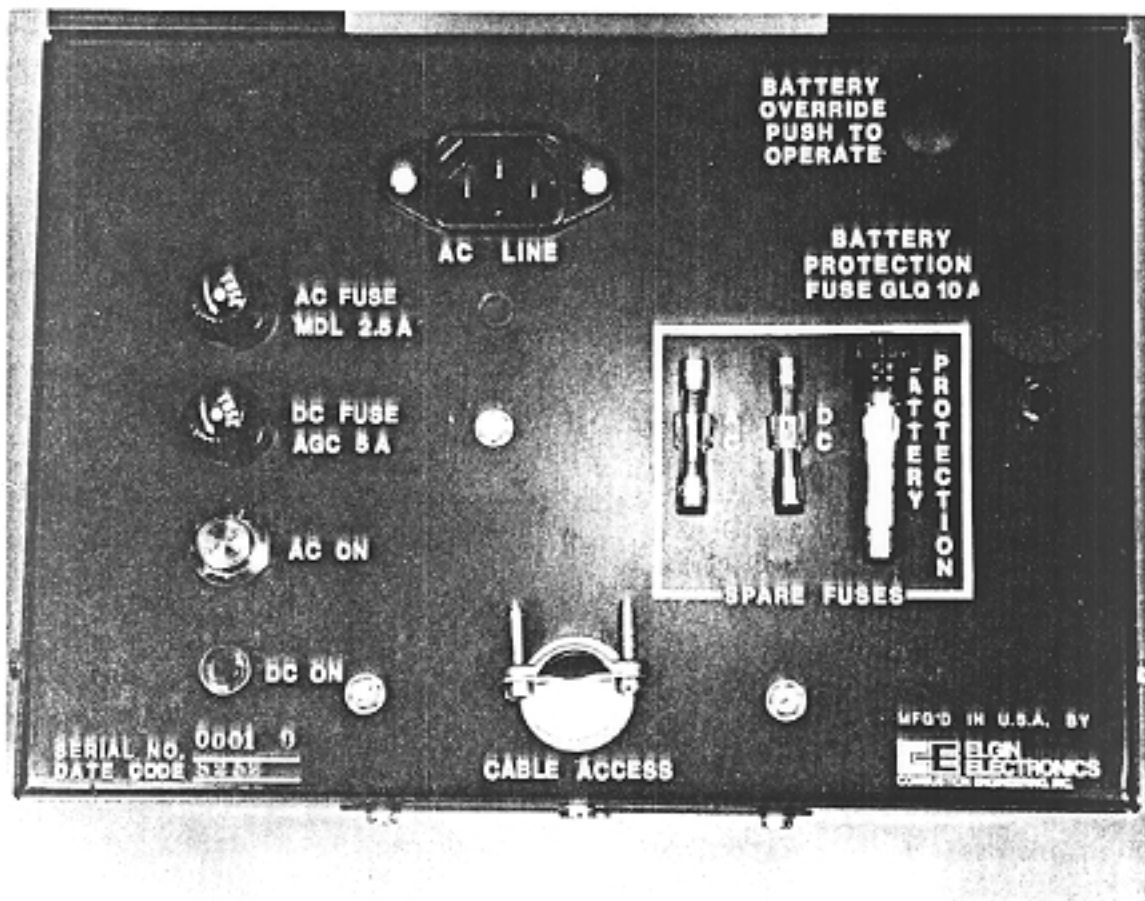


FIGURE 9

02.08 In addition to the PBBU kit, these items are needed to install a PBBU.

- Two Batteries—lead-acid, maintenance-free automobile batteries (80 amp/hr maximum) are recommended. The procedures in Paragraph 02.40 assume batteries with side-mounted terminals are used.
- Battery Rack & Separator—a battery rack and separator should be used to assure the batteries will not tip and spill battery acid or accidentally short the battery terminals.
- Two-Wire Connecting Cable—a 2-wire connecting cable, terminating

at one end with 3/8-in. ring terminals and at the other end with 1/8-in. spade terminals, is required to connect the batteries and the MPSA. The minimum wire gauge must be determined by the loop length of the connecting cable (as indicated in Table A).

TABLE A—MINIMUM WIRE GAUGE

LOOP LENGTH	RECOMMENDED SIZE
12 ft.	16 gauge
20 ft.	14 gauge
30 ft.	12 gauge
50 ft.	10 gauge

- Single-Wire Cable—a 16 AWG single-wire cable, approximately 18 inches in length and equipped with

ring terminals, is required to connect the two batteries in series.

- Cable Clamp—a cable clamp should be used to prevent cable movement from affecting the batteries.
- Battery Protection—a 10-amp, 32V fuse, or a 10-amp DC instantaneous-tripping circuit breaker, is required to protect the batteries from power surge or short circuit damage.
- Bolts—four 3/8x1/2-in. hex head bolts are required to connect the cable terminals to the batteries.
- Washers—eight 3/8-in. flat washers and four 3/8-in. internal-tooth lock washers are required for the above cable terminal connections.
- Battery Cabinet—if the batteries are not located in a well-ventilated closet or other secure area, protected from fire or sparks, a properly ventilated protective cabinet is required to safeguard them.

CAUTION:

The power supply, battery, battery rack, and the interconnecting wiring shall be installed only by qualified installers, in accordance with all applicable electrical codes and Article 480 of the National Electrical Code. Before installing see the "Installation Instructions" enclosed with each item.

WARNING:

Only trained personnel may service or install the PBBU and power supply.

02.10 MPSA Preparation

02.11 Verify that the power switch

on the MTOU is in the **OFF** position, and then disconnect the 115-VAC power cord.

02.12 Remove the terminal strip cover (Figure 10).



FIGURE 10

02.13 The MPSA cover is secured by ten screws. Viewing the MPSA as if it is wall-mounted, two screws will be located on the front and four on each side.

02.14 Remove all ten screws.

02.15 Remove and set cover aside.

02.16 Locate the multi-wire harness in MPSA (Figure 11), it terminates in a nylon connector.

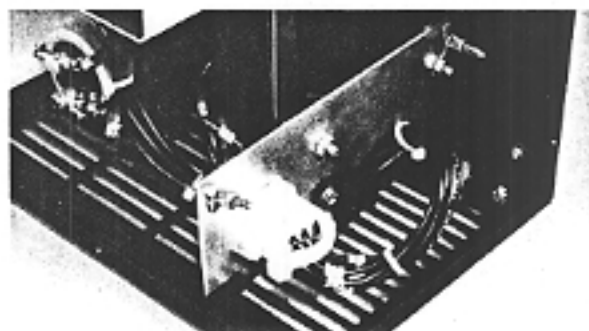


FIGURE 11

02.17 The harness is loosely secured to the chassis with a cable clamp (Figure 12); the clamp will allow slight harness movement.

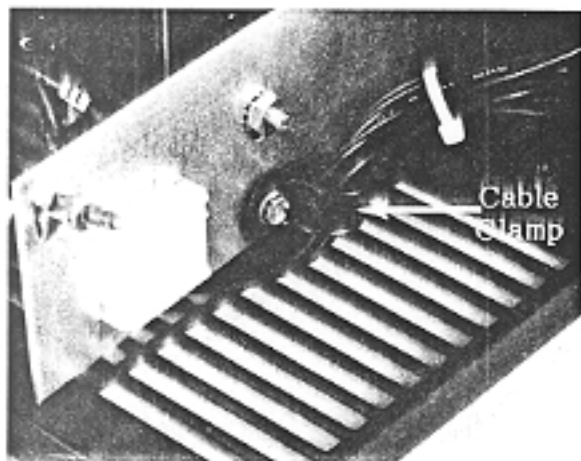


FIGURE 12

02.20 Installing the PBBU

02.21 Mounted in the MPSA control panel are two hole plugs, remove and discard them.

02.22 Unwrap the PBBU. Remove and save the screw located in the mounting bracket (Figure 13).

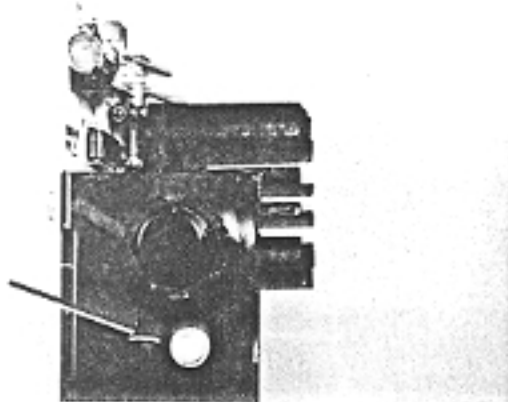


FIGURE 13

02.23 Slip the PBBU fuse holder and battery override button through their respective ports in the control panel (Figure 14). The PBBU mounting bracket should be flush against the rear of the control panel. The harness should flow around the PBBU PCB, with no wires beneath it.

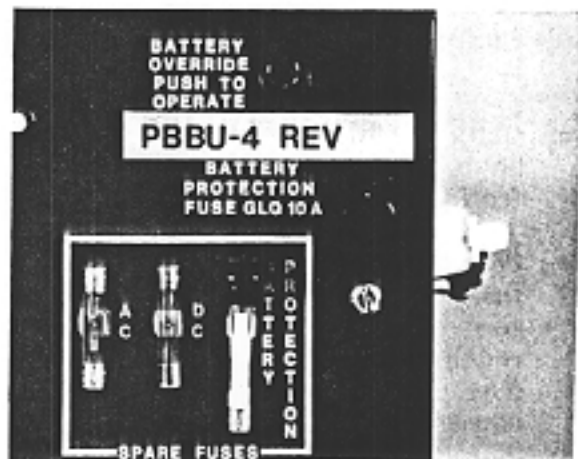


FIGURE 14

02.24 Align the two tan-colored PBBU pins with the two holes in the mounting bracket (Figure 15). Press the pins into the holes until they catch.

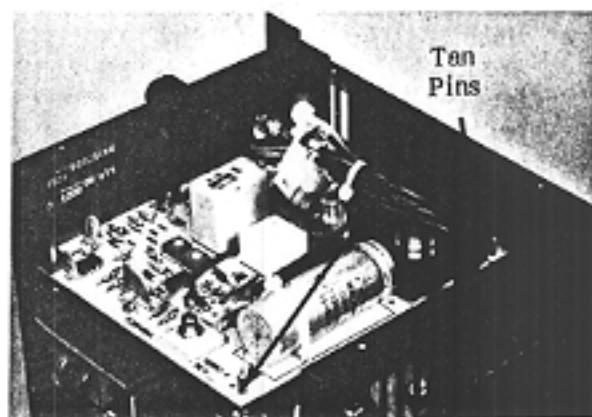


FIGURE 15

02.25 Use the previously removed screw and secure the mounting bracket to the control panel (Figure 14).

02.26 Plug the connector into the nine-hole jack in the center of the PBBU. **Do not** force the prongs into the jack, they are keyed so that they can be mated in only one position.

02.27 Make certain that no wires from the harness are caught between the cover and the PBBU heat sink

(Figure 16), and replace the MPSA cover. Secure it with the ten screws originally removed.

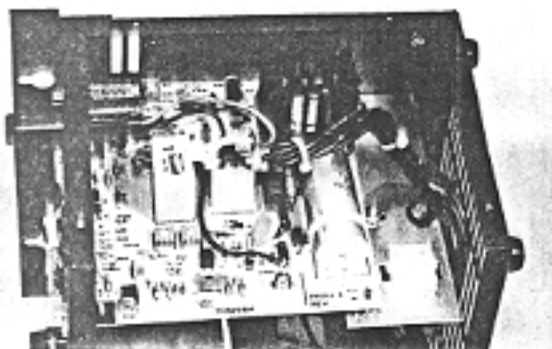


FIGURE 16

02.28 Depress the battery override button (Figure 14). If it catches and stays in, press it again to cause it to release and protrude out of the control panel. The button must be out for the MPSA to operate normally.

02.29 Remove the spare fuse from the PBBU kit, and put it in the holder located on the top of the MPSA.

02.30 Required Labels and Warning Tags

02.31 Remove the warning tag from the kit and tie it to the power cord where it connects to the MPSA.

02.32 A "PBBU-4 REV" decal must be placed on the control panel of the MPSA. Remove the decal from the kit, peel the backing off, and place it on the control panel (Figure 14).

02.40 Battery Connection

CAUTION:

Do not attempt to connect the batteries to the power supply while the AC power cord is plugged in, or without the power supply being connected to the MKSU. Do not connect

the two-wire cable to the batteries before connecting it to the power supply. Once the batteries are connected to the power supply, the 24V output terminals are live.

02.41 Select a location for the batteries near the power supply. The loop length of the cable connecting them to the power supply will determine the minimum gauge wire which can be used in the cable. See Table A.

NOTE:

The area in which the batteries are to be located must be well ventilated to prevent a dangerous accumulation of battery gases. The batteries must also be protected from moisture and extreme temperatures.

02.42 Secure the batteries in the battery rack and separator, which should be located in a minimum access area, such as a closet or a well ventilated cabinet.

02.43 Verify that the battery override button is in the **OFF** position (out).

02.44 Loosen the two screws on the terminal strip identified as 24V/BATTERY.

02.45 Connect the battery fuse (or circuit breaker) lead to the negative terminal on battery #1 (Figure 17).

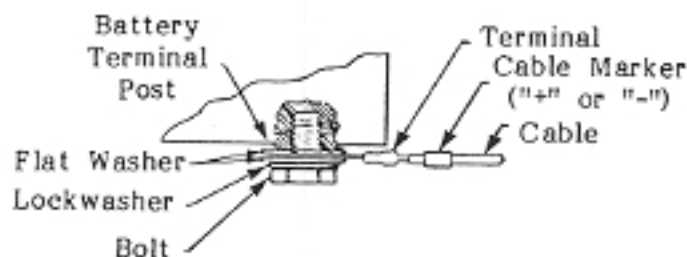


FIGURE 17

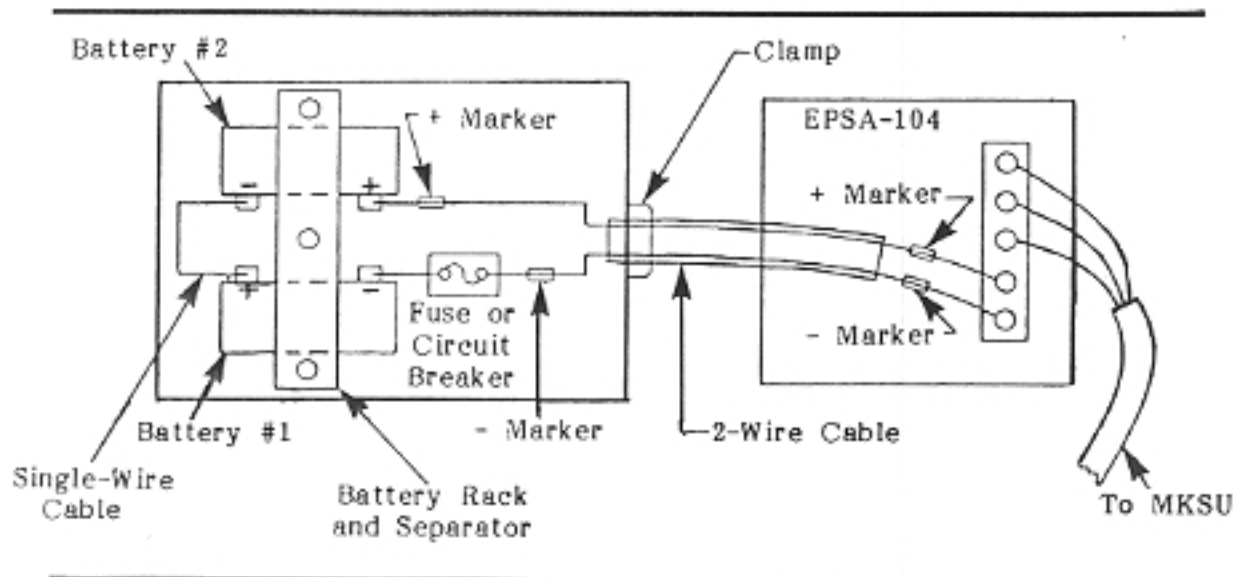


FIGURE 18

02.46 Attach the negative wire of the 2-wire cable to the battery fuse (or circuit breaker).

02.47 Connect the positive wire to the positive terminal of battery #2 (see Figure 17).

02.48 Connect the two batteries with the single-wire cable—one end to the positive terminal on battery #1 and the other end to the negative terminal on battery #2 (Figure 18).

NOTE:

Place the cable clamp over the two-wire cable and secure it to either the battery rack or the protective cabinet. Adjust the clamp to relieve strain on the cable.

02.50 Installation Finalization

02.51 Plug the AC power cord in, and verify that the **AC ON** indicator is lit.

02.52 Unplug the AC power cord, and verify that the **DC ON** indicator is lit to indicate the batteries are supplying electrical power.

02.53 Replace the terminal strip cover and test the STRATA VI system functions under both AC and battery back-up power.

CAUTION:

When testing is complete, make certain that the battery override button is in the OFF position and that the AC ON indicator is lit.

Strata VI

EPSA-104 INSTALLATION

Strata VI

EPSA-104 INSTALLATION

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01 GENERAL

01.01 The EPSA-104 is equipped with a built-in wall mounting bracket, as shown in Figure 1, to allow it to be mounted on a wall or other flat, vertical surface.

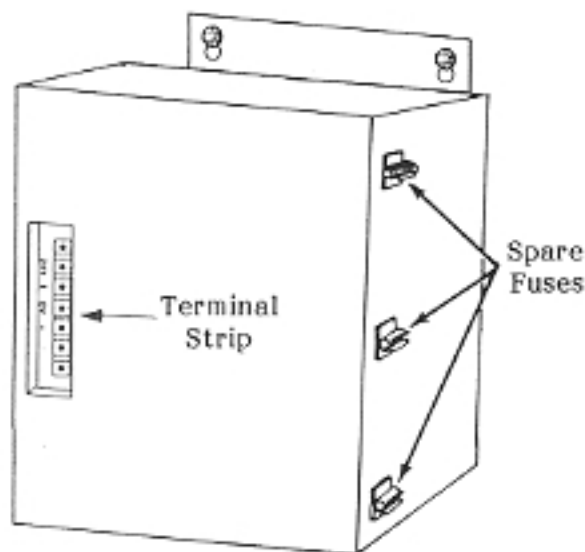


FIGURE 1

01.02 Unpack and inspect the EPSA-104 and the enclosed hardware. Examine the package and make careful note of any visible damage. If any damage is found, bring it to the attention of the delivery carrier and make the proper claims.

01.03 Check the hardware list; if it is determined that any equipment within the carton is missing, contact your Toshiba supplier immediately.

01.04 The following hardware, which is required to mount and connect the EPSA to the system, is supplied with each unit.

ENCLOSED HARDWARE

Quantity	Item
2	T.C. Toggler Wall Fasteners (Figure 2)

- 2 #14 Hex Head Sheet Metal Screws
- 1 Toggler Key
- 1 Template
P/N 117260-001 (to space the wall fasteners properly).
- 1 AC Fuse (spare)
P/N 116438-088 (F1, 5 amp, SLO-BLO 125 VAC)
- 1 DC Fuse (spare)
P/N 116438-030 (F2, 10 amp, Fast-BLO, 32 VDC)
- 1 16 AWG, 3-wire Jacketed Cable (54 inches)

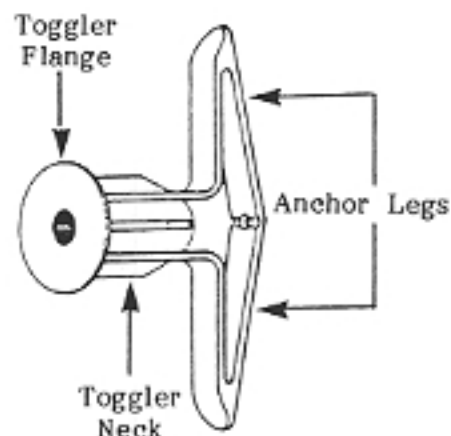


FIGURE 2

01.10 Surface Preparation

01.11 Choose a suitable location on a vertical surface for the EPSA, and attach the template to that location temporarily. Use a spirit level to verify that the drilling points are level.

01.12 Place punch marks on the mounting surface through the two "+" marks on the template.

01.13 Enlarge the two punch marks with an 1/8-inch drill bit.

01.14 Drill through the mounting surface with a 5/16-in. bit to prepare the anchoring holes.

01.20 Mounting the EPSA

01.21 Press the anchor legs of the togglers together, and insert them into the anchoring holes (Figure 3) until their neck flanges are flush with the mounting surface. If insertion is difficult, tap them lightly with a hammer.

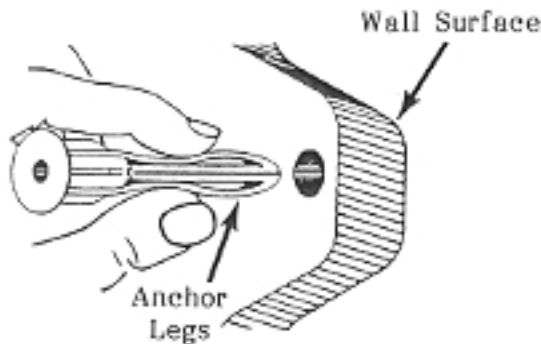


FIGURE 3

01.22 Insert a toggler key into the small hole in the neck of each fastener, as shown in Figure 4. This should cause the anchor legs to "pop" open. Remove the toggler key.

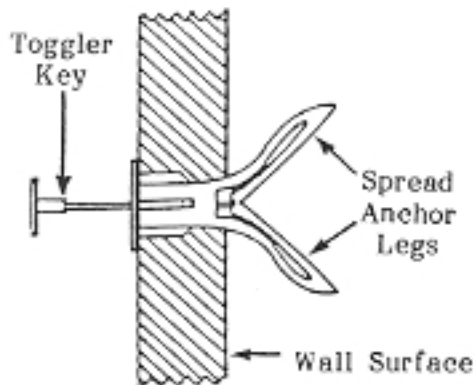


FIGURE 4

01.23 Thread the screws into the small holes in the center of the togglers. Leave approximately 3/16-inch clearance between the bottom of each screw head and the mounting surface (Figure 5).

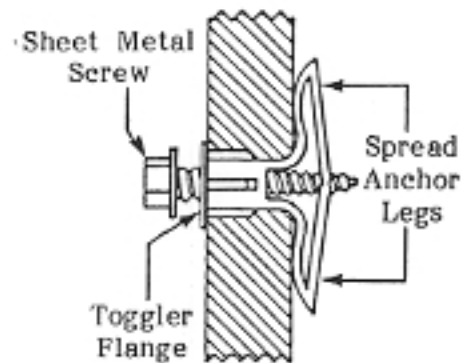


FIGURE 5

01.24 Place the EPSA against the mounting surface with the screws protruding through the holes (Figure 6).

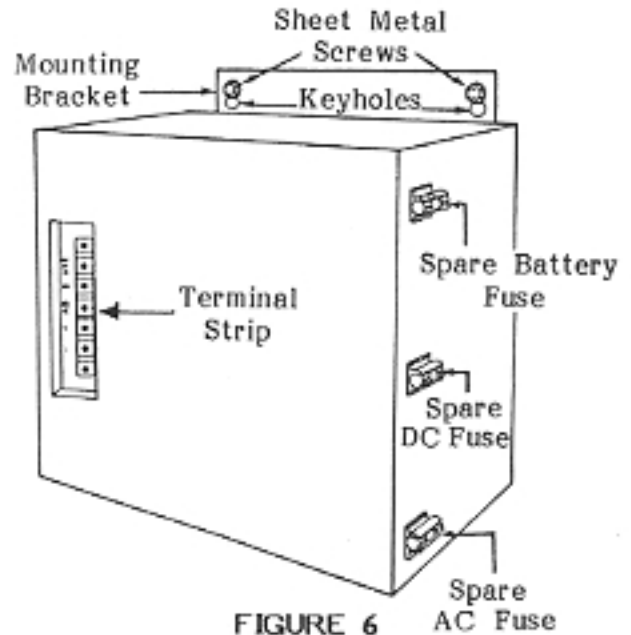


FIGURE 6

01.25 Lower the power supply so that the narrower portions of the holes slip over the screws and the weight of the power supply is supported. Tighten the screws.

01.30 Fuses

01.31 Remove the spare fuses from the hardware carton, and place them in their individually marked holders (see Figure 6).

01.32 Remove and inspect the fuses that were shipped inside the EPSA. If either fuse is defective, replace it and order another spare fuse from your Toshiba supplier.

01.33 Prior to installing the PBBU, connect the EPSA to the MKSU per Paragraph **06.20**, Section 100-006-200, Installation.

02 BATTERY BACK-UP INSTALLATION

02.01 The power battery back-up unit (PBBU) in Figure 7 is an optional PCB which may be installed in the EPSA-104 to interface with two auxiliary 12V batteries. In the event of an electrical power failure, the PBBU provides an automatic battery power source, permitting a typical STRATA VI system to continue normal operations for some time (in direct ratio with the type and size of the batteries chosen).

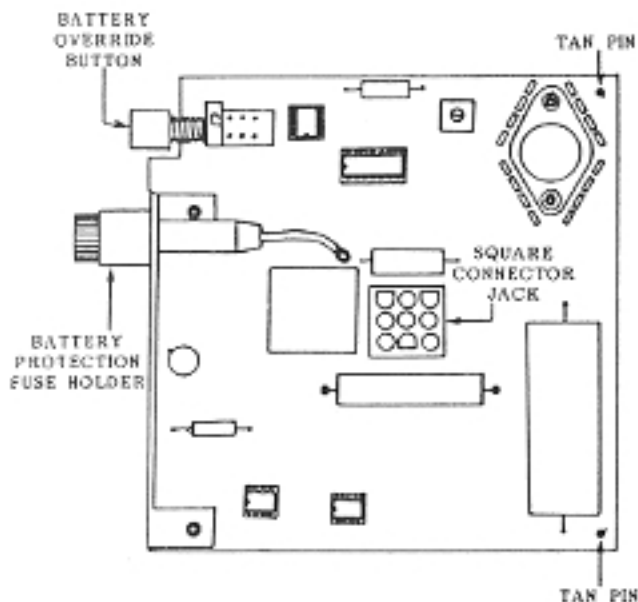


FIGURE 7

02.02 The PBBU contains a voltage sensing circuit which causes an electro-mechanical relay to connect the back-up battery power to the system before the EPSA output voltage drops below 21VDC (at which point system

functions would be disrupted and existing calls would be disconnected).

02.03 When the normal source of electrical power is restored, the voltage sensing circuit relay will disconnect the standby battery power source.

02.04 If the standby battery power source output falls below 21VDC while it is connected to the system, the voltage sensing circuit will cause the relay to disconnect the standby batteries from the system.

02.05 The standby batteries will not be reconnected unless:

- The "Battery Override" switch (Figures 7 and 8) is placed in the ON position, or...
- The depleted batteries are replaced by a freshly charged pair and the "Battery Override" switch is turned on and then released.

02.06 The PBBU also contains circuitry to provide the charge current necessary to maintain the batteries at a satisfactory level of charge while the STRATA VI system is in normal operation. An external fast charger may also be connected across the battery output terminal connections.

02.07 The PBBU kit contains the following items:

- PBBU—power battery backup PCB.
- Fuse—spare battery protection fuse.
- Cable Clamp—7/16-in. cable clamp which may be needed to secure the wiring harness inside the EPSA.
- "PBBU-3 REV A"—decal to be placed on the front of the EPSA.
- "WARNING"—warning tag for attachment to the 115VAC power cord.

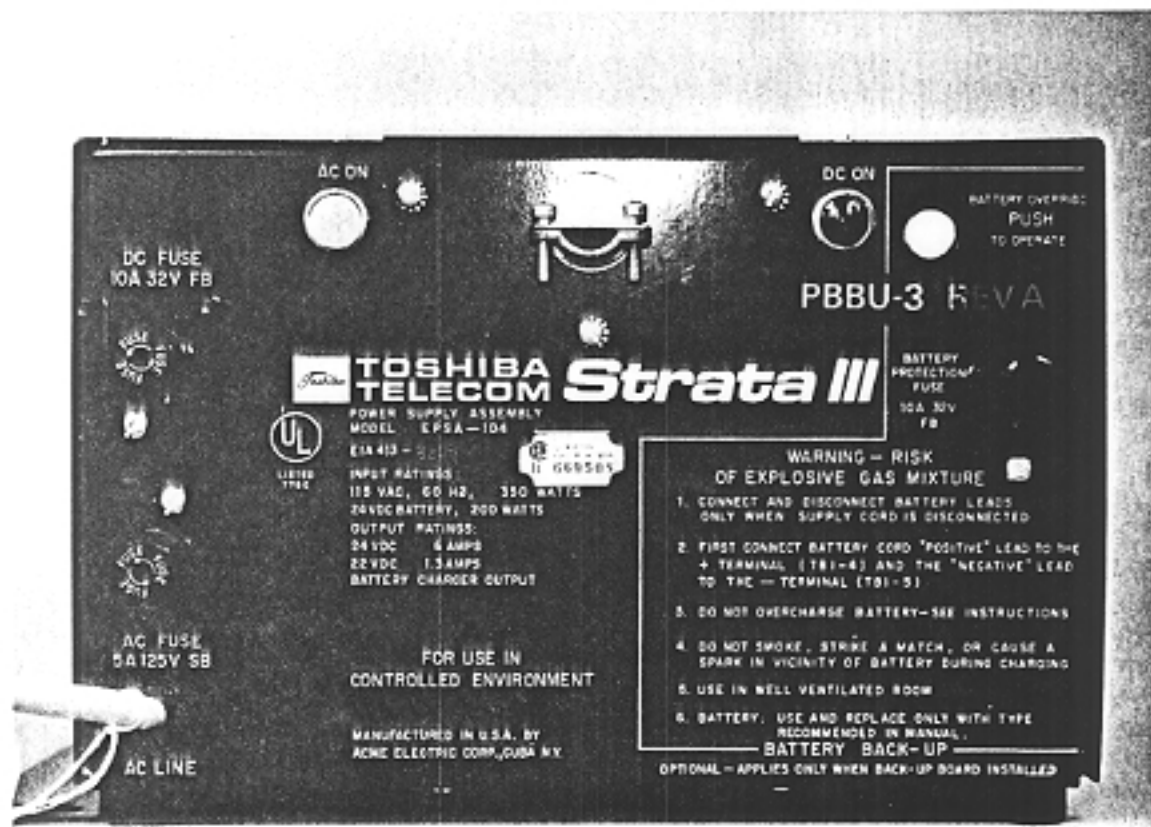


FIGURE 8

02.08 In addition to the PBBU kit, these items are needed to install a PBBU.

- Two Batteries—lead-acid, maintenance-free automobile batteries (80 amp/hr maximum) are recommended. The procedures in Paragraph **02.40** assume batteries with side-mounted terminals are used.
- Battery Rack & Separator—a battery rack and separator should be used to assure the batteries will not tip and spill battery acid or accidentally short the battery terminals.
- Two-Wire Connecting Cable—a 2-wire connecting cable, terminating at one end with 3/8-in. ring terminals and at the other end with

1/8-in. spade terminals, is required to connect the batteries and the EPSA. The minimum wire gauge must be determined by the loop length of the connecting cable (as indicated in Table A).

TABLE A—MINIMUM WIRE GAUGE

LOOP LENGTH	RECOMMENDED SIZE
12 ft.	16 gauge
20 ft.	14 gauge
30 ft.	12 gauge
50 ft.	10 gauge

- Single-Wire Cable—a 16 AWG single-wire cable, approximately 18 inches in length and equipped with ring terminals, is required to connect the two batteries in series.

- Cable Clamp—a cable clamp should be used to prevent cable movement from affecting the batteries.
- Battery Protection—a 10-amp, 32V fuse, or a 10-amp DC instantaneous-tripping circuit breaker, is required to protect the batteries from power surge or short circuit damage.
- Bolts—four 3/8x1/2-in. hex head bolts are required to connect the cable terminals to the batteries.
- Washers—eight 3/8-in. flat washers and four 3/8-in. internal-tooth lock washers are required for the above cable terminal connections.
- Battery Cabinet—if the batteries are not located in a well-ventilated closet or other secure area, protected from fire or sparks, a properly ventilated protective cabinet is required to safeguard them.

NOTE:

The EPSA-104 is being supplied with some STRATA VI systems; however, an EPSA-103 is shown in the illustrations. Installation with each of these EPSAs is similar except for minor differences in the location of harnesses or connectors. If required by local code, see the permanent wiring instructions on the tag attached to the power cord. Attaching the "Warning" tag at the same location is always required.

CAUTION:

The EPSA, battery, battery rack, and the interconnecting wiring shall be installed only by qualified installers, in accordance with all applicable electrical codes and

Article 480 of the National Electrical Code. Before installing see the "Installation Instructions" enclosed with each item.

WARNING:

Only trained personnel may service or install the PBBU and EPSA-104.

02.10 EPSA Preparation

02.11 Verify that the power switch on the MTOU is in the **OFF** position, and then disconnect the 115VAC power cord.

02.12 Remove the terminal strip cover from the **OUTPUT/24V, 8A-24V/BATTERY** terminals (Figure 9).

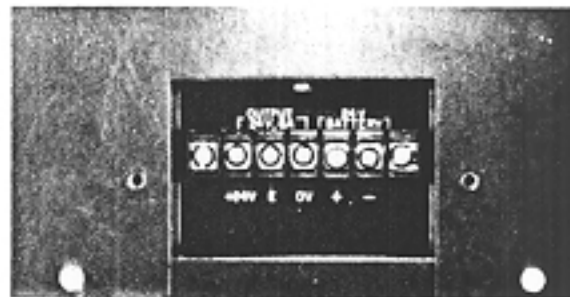


FIGURE 9

02.13 The EPSA cover is secured by seven screws. Viewing the EPSA as if it is wall-mounted, two screws will be located at the rear edge of the top, three on the side facing outward and two on the rear edge of the bottom.

02.14 Remove all seven screws.

02.15 Remove and set cover aside.

02.16 Locate and trace the multi-wire harness in the lower portion of the EPSA (the area away from the built-in mounting bracket). The harness originates from the transformer and the terminals mounted in the control pa-

nel. This harness terminates in a rust-colored square connector.

02.17 The harness is secured to the chassis with a cable clamp (Figure 10). Loosen the screw and nut slightly to allow movement of the harness.

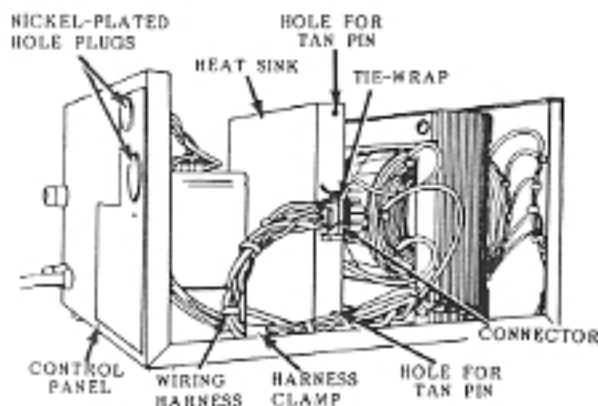


FIGURE 10

02.20 Installing the PBBU

02.21 Mounted in the EPSA control panel are two nickel-plated hole plugs. Bend in the retaining tabs on both plugs; remove and discard them.

02.22 Unwrap the PBBU. Remove and save the screw located in the mounting bracket (Figure 11).

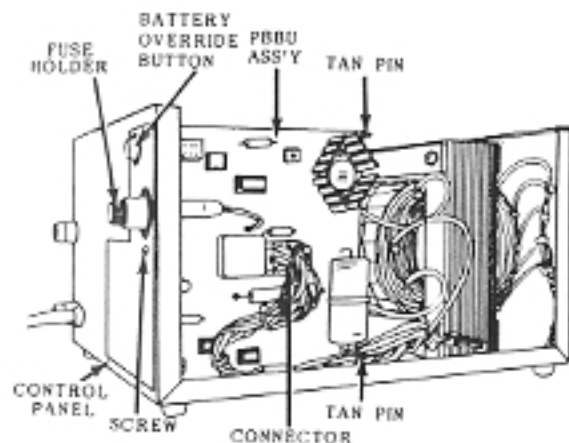


FIGURE 11

02.23 Slip the PBBU fuse holder and battery override button through their respective ports in the control panel (Figure 11). The PBBU mounting bracket should be flush against the rear of the control panel. The harness should flow around the PBBU PCB, with no wires beneath it.

02.24 Align the two tan-colored PBBU pins with the two holes in the heat sink (Figure 10). Press the pins into the holes until they catch.

02.25 Use the previously removed screw and secure the mounting bracket to the control panel (Figure 11).

02.26 Plug the rust-colored connector into the nine-hole jack in the center of the PBBU. **Do not** force the prongs into the jack, they are keyed so that they can be mated in only one position.

02.27 Replace the EPSA cover and secure it with the seven screws originally removed.

02.28 Depress the battery override button (Figure 11). If it catches and stays in, press it again to cause it to release and protrude out of the control panel. The button must be out for the EPSA to operate normally.

02.29 Remove the spare fuse from the PBBU kit, and put it in the holder located on the side of the EPSA.

02.30 Required Labels and Warning Tags

02.31 Remove the warning tag from the kit and tie it to the power cord where it emerges from the EPSA.

02.32 A "PBBU-3 REV A" decal must be placed on the control panel of the EPSA. Remove the decal from the kit, peel the backing off, and place it on the control panel (Figure 8).

02.40 Battery Connection

CAUTION:

Do not attempt to connect the batteries to the EPSA while the AC power cord is plugged in, or without the EPSA being connected to the MKSU. Do not connect the two-wire cable to the batteries before connecting it to the EPSA. Once the batteries are connected to the EPSA the 24V output terminals are live.

02.41 Select a location for the batteries near the power supply. The loop length of the cable connecting them to the power supply will determine the minimum gauge wire which can be used in the cable. See Table A.

NOTE:

The area in which the batteries are to be located must be well ventilated to prevent a dangerous accumulation of battery gases. The batteries must also be protected from moisture and extreme temperatures.

02.42 Secure the batteries in the battery rack and separator, which should be located in a minimum access area, such as a closet or a well ventilated cabinet.

02.43 Verify that the battery override button is in the **OFF** position (out).

02.44 Loosen the two screws on the terminal strip identified as 24V/BATTERY.

02.45 See Figure 12; match positive to positive and negative to negative.

02.46 Connect the battery fuse (or circuit breaker) lead to the negative terminal on battery #1 (Figure 13).

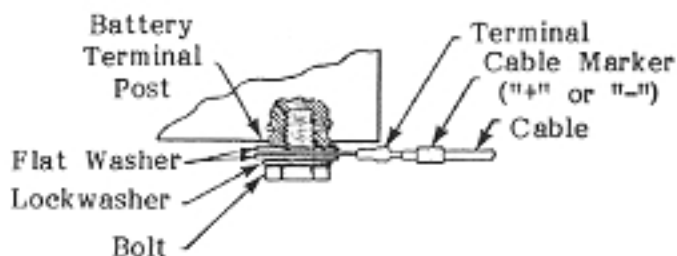


FIGURE 13

02.47 Attach the negative wire of the 2-wire cable to the battery fuse

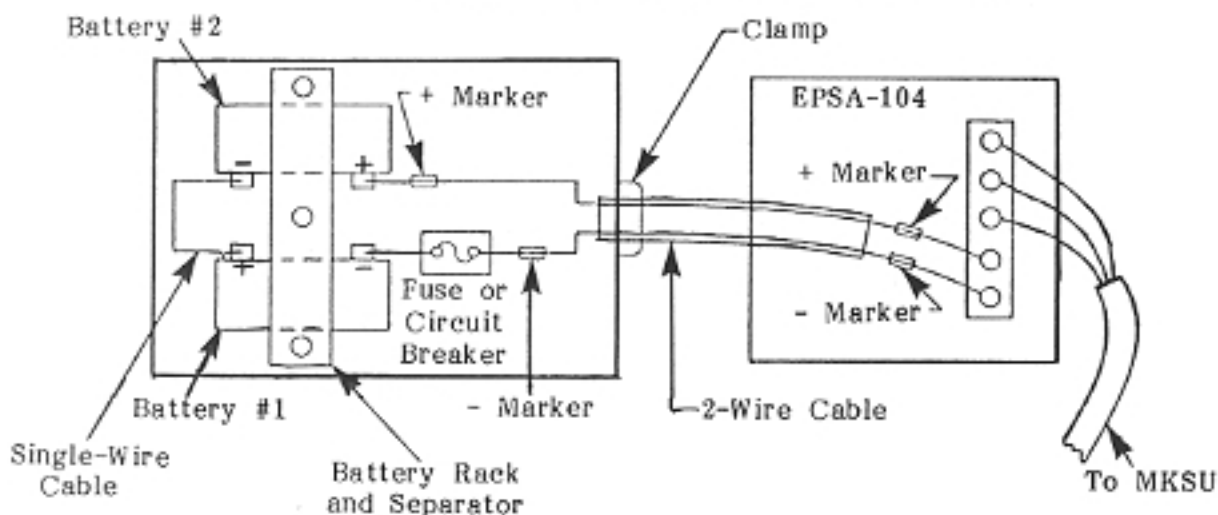


FIGURE 12

(or circuit breaker).

02.48 Connect the positive wire to the positive terminal of battery #2 (see Figure 13).

02.49 Connect the two batteries with the single-wire cable—one end to the positive terminal on battery #1 and the other end to the negative terminal on battery #2 (Figure 12).

NOTE:

Place the cable clamp over the two-wire cable and secure it to either the battery rack or the protective cabinet. Adjust the clamp to relieve strain on the cable.

02.50 Installation Finalization

02.51 Plug the AC power cord in, and verify that the **AC ON** indicator is lit.

02.52 Unplug the AC power cord, and verify that the **DC ON** indicator is lit to indicate the batteries are supplying electrical power.

02.53 Replace the terminal strip cover and test the STRATA VI system functions under both AC and battery back-up power.

CAUTION:

When testing is complete, make certain that the battery override button is in the OFF position and that the AC ON indicator is lit.

Strata VI

(Release 3)

PROGRAMMING PROCEDURES

Strata VI

PROGRAMMING PROCEDURES

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Strata VI

PROGRAMMING PROCEDURES

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01 INTRODUCTION

01.01 The data governing overall system operation and feature execution for the **Strata VI** system is stored in read-only-memory (ROM) and cannot be altered in the field. However, the data controlling operation of the various options, both system and station, is stored in random-access-memory (RAM) and can easily be changed according to individual installation requirements.

01.02 All **Strata** options are controlled by selections made in the system data tables. An initialization process is provided for verifying predetermined system assignments. The installer can then proceed with any necessary changes.

01.03 All system data changes are made via station 17 (as the input-output device), which may be equipped with either a 10-key or a 20-key EKT. Whenever the system is placed in the programming mode, the keys on station 17 are used to enter data while its LEDs display the current data. While station 17 is in the programming mode, the remainder of the system may still be used in the usual fashion.

01.04 Internal battery power is provided to prevent loss of system data memory in the event of a power failure.

NOTE:

Whenever a system is installed or the MCDU is changed, the system must be initialized. See Paragraph 02.70.

02 PROGRAMMING PROCEDURES

02.00 General

02.01 The **Strata** system must be in the programming mode before system data can be verified or altered. With the exception of station 17, normal system functions are not suspended while in the programming mode.

02.02 When the system is in the programming mode, station 17 is used to enter the system data in one of two ways:

IMPORTANT!

Station 17 may be equipped with either a 10-key or a 20-key EKT. In all tables and procedures that follow a single key designation is given if it is the same for both EKT types. If a difference exists (such as Programs 01, 5XX, and 6XX), the key designations of the 20-key EKT are given first, and the designation of the upper 10-key EKT

keys (EKT off-hook, see Paragraph 02.20 for further explanation) is given secondly, inside brackets.

- In the majority of programs (Type 1), the various keys are used to change "bits" of system data. The LEDs associated with the keys show the status of that "bit" before and after key depression. A particular key and LED will have a different meaning, depending upon the program number being used.
- In Type 2 programs, the dial pad is used to enter data. In this case, the system, using the INT and selected CO and AD LEDs, verifies the entered data by displaying the number in Binary format. The data is also displayed on the LCD, if equipped.

02.03 The programming mode is activated by locking in the **SET** switch on the MCDU and then depressing the [SPKR] key on station 17. After the station has been activated, a program number is dialed on the station dial pad, and the system will respond as follows:

Type 1 programs:

Station 17 LEDs will display the existing data in these categories.

Type 2 programs:

AD 1 [INT] LED on station 17 will flash continuously. Actual data can be reviewed without alteration by multiple depressions of the [H] key.

02.04 Data can be altered while it is being displayed. To input new data via station 17, perform the following:

Type 1 program:

The state of an LED is altered by depressing its associated key. Depressing the key while the LED is "on" will turn it off and vice-versa.

Type 2 program:

Data is entered via the dial pad. The LEDs will display the data and digit number in Binary format. The data is also displayed on the LCD, if equipped.

02.05 Once the desired data is entered and displayed, it is written into memory by depressing the [HOLD] key on station 17.

- System and CO line options are written into temporary storage when the [HOLD] key is depressed. After all changes in these categories have been made, transfer the data into working memory per Paragraph 02.06.

- Station option data (with the exception of CO line access assignments) are written into the main data memory; therefore, all changes are effective immediately after the [HOLD] key is depressed. However, it is recommended that the data transfer procedures per Paragraph 02.06 be utilized for added programming protection.

02.06 Data may be secured in working memory in one of two ways:

- 1) If the system is not in service, release the SET switch on the MCDU, and cycle (rock) the MTOU power switch off and on to transfer all data into the main data memory. Note: all calls are dropped when this occurs.
- 2) If the system is in service and no calls should be dropped, depress the following keys, in the order given here, on station 17: [SPKR] [H] [X] [7] [INT] [CO 1] [CO 4] [CO 5] [DND] [MW/FL] [AD 3] [CO 2] [AD 4] [CO 3] [HOLD]. This code will secure the data in working memory without cancelling any calls. Release the SET switch on the MCDU.

02.10 Multiple Station Programming

02.11 Programs 3XX through 9XX are used to select options for individual stations (where XX represents the station number of the station being programmed). To save time, it is possible to program all stations simultaneously or groups of stations.

02.12 Multiple station programming is accomplished by substituting a special group code for the station number part of the program number (XX). The codes are:

- [0][0]: All stations
- [0][1]: Stations 10 ~ 17
- [0][2]: Stations 18 ~ 25

02.13 When the multiple station group code is entered, the LEDs will display existing data as follows:

- Steady LED: Data is the same for all stations in dialed group.
- Flashing LED: Data is selected for at least one, but not all stations in that group.

02.14 The state of an LED is altered by depressing its associated key. LEDs that are flashing can

be cycled through three states (flashing, on, off) by multiple key depressions. Other LEDs will cycle between on and off states only. Select data as follows:

- LED ON: Selects LED "ON" for all the stations in the group.
- LED OFF: Selects LED "OFF" for all the stations in the group.

LED flash: No change to any station in the group.

02.15 Once the proper data is selected, depress the [HOLD] key in the usual manner to write it into memory.

02.20 Using 10-key EKT for Programming

02.21 If station 17 is equipped with a 10-key EKT, the system must be so informed by setting the ACB LED to "ON" in Program 01. This change is effective immediately after the [HOLD] key is depressed, making it easy to switch between EKT types.

02.22 Once the system recognizes a 10-key EKT, the handset hookswitch can be used as a shift signal to make the 10-key LEDs compatible with the 20-key programming format.

02.23 See Figure 1, the key/LEDs represent INT, CO 1 ~ CO 6, ACB, DND and MW/FL when the handset is on-hook and AD 1 ~ AD 7, PAU, RDL and REP when the handset is off-hook. It is possible to switch back and forth an unlimited number of times without disturbing the data.

PROGRAMMING MODE		
NORMAL MODE	HANDSET ON-HOOK	HANDSET OFF-HOOK
MW/FL	MW/FL	REP
DND	DND	RDL
ACB	ACB	PAU
CO 6	CO 6	AD 7
CO 5	CO 5	AD 6
CO 4	CO 4	AD 5
CO 3	CO 3	AD 4
CO 2	CO 2	AD 3
CO 1	CO 1	AD 2
INT	INT	AD 1

FIGURE 1—10-key EKT KEY FORMAT

NOTE:

This procedure is for programming purposes only! For normal operation the station 17 EKT type must be set using Program 4XX.

02.24 In all procedures that follow a single key designation is given if it is the same for both EKT types. If a difference exists, the matching 10- and 20-key designations are given first and the upper 10-key designations (off-hook) are then indicated inside brackets.

02.25 In the tables that follow two columns of key designations are given when a difference exists. Brackets are used to indicate a 10-key off-hook designation.

02.26 In the System Record Sheet, the shadowed key/LED area indicates a 10-key off-hook designation.

02.30 Preparation

02.31 Before **Strata** system data can be programmed, option selections must be made and then indicated on the System Record Sheet (shown in Table 1). The Record Sheet, one of which accompanies each MKSU, will then serve as a programming guide and installation record.

02.32 Programming options are grouped according to the three categories listed below, with several program numbers associated with each category. A different program number is used for each option or group of options being selected.

A) System Options

- 01: System Assignments (Basic)
- 02: System Assignments (Options)
- 03: System Assignments (Options)
- 04: MCOU MF/DP Outputting Selection
- 05: Automatic Recall From Hold Timing
- 0#5: Camp-on Timeout

B) CO Line Options

- 06: Automatic Release On Hold (AROH) Enable
- 07: Automatic Release On Hold Timing
- 09: Single CO (Dial 9) Group Selection (OPX, Trunk Queing)
- 09X: Four (4) CO Line Groups (Dial 91, 92, 93, 94) Selection (OPX, Trunk Queing)
- 0#9: OPL Line Hunting
- 10: PBX Backup
- 1X: PBX Access Codes
- 20: Toll Restriction Disable
- 2X: Toll Restriction Exception Codes

C) Station Options

- 3XX: Station CO Line Access
- 4XX: Station Type
- 5XX: Station Class of Service
- 6XX: Toll Restriction Classification
- 7XX: Station Outgoing Restriction
- 8XX: CO Ringing Assignments-DAY
- 8#XX: CO Ringing Assignments-DAY 2
- 9XX: CO Ringing Assignments-NITE

02.33 The System Record Sheet is used to record the assignment of each key/LED for any given program number. For Type 1 programs an "X" placed in the record indicates that the associated LED should be turned on (lit) during the programming process. For Type 2 programs the actual data is recorded.

02.34 After making the system option selections per the following instructions, record the various choices in the System Record Sheet. Use the tables at the end of this section for detailed programming instructions.

02.40 System Options:

01 Program—System Assignments (Basic)

Eleven options are selected with this program, using the [PAU] [AD 7] [AD 6] [AD 5] [ACB] [CO 6] [CO 5] [CO 4] [CO 3] [CO 2] [INT] keys to change the status of their respective LEDs. For the options selected, mark an X as indicated.

- 1) Transfer Privacy—mark an X next to PAU [ACB] if privacy is to be in effect on a transferred call. Leave blank if Alternate Point Answer of a transferred call is to be permitted.
- 2) Automatic Dial Override Toll Restriction—mark an X next to AD 7 [CO 6] if addresses 60 – 99 of the System Automatic Dial is to be allowed to override Toll Restriction. Leave blank if Toll Restriction is to remain in effect.
- 3) CO Line Groups—mark an X next to AD 6 [CO 5] if four CO line groups (dial 91, 92, 93, and 94) are required. Leave blank if one group (dial 9) is sufficient.
- 4) Two CO Line Conference—mark an X next to AD 5 [CO 4] to inhibit two CO line conference. Leave blank if two CO line conferencing is to be permitted.
- 5) Station 17 10/20-key EKT—mark an X next to ACB if station 17 is equipped with a 10-key EKT. Leave blank if a 20-key EKT is used.

- 6) Incoming Call Abandon Timeout—mark an X next to CO 6 if the system should wait for 8 seconds after the last ring to consider an incoming call abandoned. Leave blank if 6 seconds is sufficient.
- 7) Pause Timing (After Flash)—mark an X next to CO 5 if a 3-second pause (for dial tone delay) is required after a FLASH. Leave blank if a 1.5-second pause is sufficient.
- 8) Pause After Flash—mark an X next to CO 4 if the system is to insert a pause (defined by CO 5, this program) between a FLASH and an automatically dialed number.
- 9) Pause Timing (MW/FL or PAU key)—mark an X next to CO 3 if a 3-second pause (for dial tone delay) is required after a PBX—CO access code is dialed by the Automatic Dialing feature. Leave blank if a 1.5-second pause is sufficient.
- 10) Flash Time—mark an X next to CO 2 if the line-open interval produced by the MW/FL key is to be 0.5 seconds for behind PBX operation. Leave blank if the 2.0-second pause for dial tone recall is required.
- 11) Tone First—mark an X next to INT if Tone First intercom signalling is required. Leave blank if Voice First signalling is required.

02 Program—System Assignments (Options)

Five options are selected with this program, using the [DND] [CO 4] [CO 2] [CO 1] [INT] keys to change the status of their respective LEDs. For the options selected, mark an X as indicated.

- 1) Station 20/21 OPX—mark an X next to DND if the MOPU is equipped and *only* station 20 is to be used. (Has no meaning if MOPU is not equipped.)

NOTE:

If the MOPU is installed, both station numbers are set for OPX operation. An EKT cannot be used at those station numbers regardless of the selections made with the [DND] key.

- 2) LCD Timer—mark an X next to CO 4 if the Dialed Number display on the LCD EKTs is to persist for 1 minute before changing to Elapsed Time. Leave blank if 15 seconds are sufficient.
- 3) Nite Ring over External Page—mark an X next to CO 2 if Nite Ringing over External Page is required.

- 4) Background Music over External Page—mark an X next to CO 1 if BGM is to be heard over the External Page circuit.
- 5) External Page with All Call—mark an X next to INT if the External Page circuit is to be included in an All Call Page.

03 Program—System Assignment (Options)

Five options are selected with this program using the [MW/FL] [DND] [CO 4] [CO 3] [CO 2] keys to change the status of their respective LEDs. For the options selected, mark an X as indicated.

- 1) Station 10 [DND/NITE] Key—mark an X next to MW/FL if the [DND] key on station 10 is to be a [DND] key. Leave blank if a [NITE] key is required.
- 2) Nite Ringing Modes—mark an X next to DND if three ringing modes are used, leave blank if two ringing modes are required.
- 3) Message Center-Station 12—mark an X next to CO 4 if station 12 is to be the message center.
- 4) Message Center-Station 11—mark an X next to CO 3 if station 11 is to be the message center.
- 5) Message Center-Station 10—mark an X next to CO 2 if station 10 is to be the message center.

NOTE:

Only one message center is permitted; if more than one station is chosen as a message center, the lowest numbered station will have priority.

04 Program—MCOU MF/DP Outpulsing Selection

Selects MF or rotary dial outpulsing using each third CO line key to represent its group of three lines.

- Mark an X next to the appropriate key that represents its group (CO 1 = CO 1, CO 2 and CO 3; CO 4 = CO 4, CO 5 and CO 6) if DP is required. Leave blank if MF is required.

05 Program—Automatic Recall from Hold Timing

Sets the timing for the Automatic Recall from Hold feature. (Used only if MW/FL, AD 1 [INT] and AD 2 [CO 1] LEDs are "off" in Program 5XX.)

- 1) If recall is desired, select a time period of 16 ~ 160 seconds and mark an X next to the appropriate key/LED in the System Record Sheet. The times are not accumulative—only one key/LED can be selected.
- 2) If no recall is required, mark an X next to INT.

0#5 Program—Camp-on Timeout

Sets the timing for the originating station to be recalled by a CO line that was transferred to a busy station and remains unanswered.

- Select a period of time (16 ~ 64 seconds) and mark an X next to the appropriate key/LED on the System Record Sheet. The times are not accumulative—only one key/LED can be selected.

02.50 CO Line Options:

06 Program—Automatic Release on Hold Enable

Selects whether or not the Automatic Release on Hold (AROH) feature is to function on a given CO line; the CO line keys represent themselves.

- Mark an X next to each CO line that requires AROH.

07 Program—Automatic Release on Hold Timing

Selects Cross Bar (XB) or ESS timing for the AROH feature using each CO line key to represent itself.

- Mark an X next to each CO line that requires XB timing; leave blank if ESS timing is required.

NOTE:

This selection will have no meaning if AROH was rejected in Program 06.

09 Program—Single CO (Dial 9) Group Selection (OPX, Trunk Queing)

Informs the system of the CO lines that should be considered for selection when a station dials "9". Each CO key represents itself. (Used only if the AD 6 [CO 5] LED in Program 01 is "off".)

- Mark an X next to each CO key that is to be included in the "Dial 9" group.

09X Program—Four CO Line Groups (Dial 91, 92, 93 & 94) Selection (OPX, Trunk Queing)

Informs the system of the CO lines that should be considered for selection when a station dials 91, 92, 93 or 94. Each CO key/LED represents

itself. (Used only if the AD 6 [CO 5] LED in Program 01 is "on".)

- 1) Mark an X next to each CO key/LED that is to be included in the 91 group.
- 2) Mark an X next to each CO key/LED that is to be included in the 92 group.
- 3) Mark an X next to each CO key/LED that is to be included in the 93 group.
- 4) Mark an X next to each CO key/LED that is to be included in the 94 group.

0#9 Program—OPL Line Hunting

Selects which lines will hunt in order to ring the lowest station in a group of three stations whenever an incoming call rings. The lines must function in the same groups of three in which they appear on the MPLU PCB. Lines selected will hunt to the lowest numbered line in their groups (3 & 2 hunt to #1, 6 & 5 hunt to #4). An MPLU (MF-4 or DP-4) must be equipped. See Section 200-006-200, *Installation Instructions*.

- Mark an X next to each CO key/LED that is to be included in a hunt group. (The lowest number in each group of three must be selected.)

10 Program—PBX Backup

Informs the system if the CO line key is actually connected to a PBX station line. The system will recognize PBX access codes on selected line(s).

- Mark an X next to each CO key/LED that is to be connected to a PBX station line.

1X Program—PBX Access Codes

Informs the system of the access codes used by the PBX that is connected to the lines selected in Program 10. *Strata VI* will recognize the access codes and react appropriately for Toll Restriction, Automatic Dialing and Repeat Last Number Dialed.

- Enter the actual access codes (maximum: 8).

NOTE:

If the access code is a single digit, enter "" in the second column. If all combinations following a particular 1st digit are to be considered access codes (e.g. 91, 92, 93, etc.), enter "D" (do not care) in the second column.

20 Program—Toll Restriction Disable

Selects whether or not the Toll Restriction feature is to function on a given CO line; the CO key/LEDs represent themselves.

- Mark an X next to each CO key/LED on which Toll Restriction is **not** to function.

2X Program—Toll Restriction Exception Codes

Informs the system of a maximum of five 4-digit codes (area codes or office codes) that are **allowed** to be dialed by Toll Restricted stations.

- Enter the actual 4-digit codes (maximum: 5).

NOTES:

1. Stations allowed access to codes 1, 2 and 3 may dial up to seven digits following the 4-digit codes.
2. Stations allowed access to codes 4 and 5 may dial up to 29 digits (for MCI, SPRINT, etc.) following the 4-digit codes.

02.60 Station Options:

3XX Program—Station CO Line Access

The ability of an individual station to access any of the CO lines is determined by selections made using this program. A station denied access to a CO line by this program will have neither key nor LED functions for that CO line.

- Selections must be repeated for all stations—mark an X next to each CO key/LED that is to be accessed by the station in question.

4XX Program—Station Type

Informs the system of what type telephone is being used at each station.

- 1) Mark an X next to CO 1 if a 20-key EKT is equipped.
- 2) Mark an X next to INT if a 10-key EKT is equipped.

5XX Program—Station Class of Service

Twelve options are selected with this program, using the various keys to change the status of their respective LEDs. The selections listed below must be repeated for each station. In all cases, mark an X where indicated.

- 1) Privacy Override—mark an X next to PAU [ACB] if the station is **allowed** the Privacy Override feature.

NOTE:

A maximum of two stations are permitted to use the Privacy Override feature. If more than two are programmed, only the two lowest numbered stations will be allowed to use this feature and the others will be ignored.

- 2) DND Override—mark an X next to AD 7 [CO 6] if the station is **allowed** the DND Override feature.
- 3) Hold Recall Time—referring to the table below, mark an X next to the combination of AD 2 [CO 1], AD 1 [INT] and MW/FL that corresponds to the recall time desired for each station. If all locations are left blank, the timing for that station will be according to **Program 05**.

HOLD RECALL TIME CODE

Key/LED	16 sec.	32 sec.	48 sec.	64 sec.	96 sec.	128 sec.	160 sec.
AD 2 [CO 1]				X	X	X	X
AD 1 [INT]		X	X			X	X
MW/FL	X		X		X		X

- 4) Microphone Control—mark an X next to DND if the [MIC] (MUTE) key on the EKT is to operate in the Push-on/Push-off mode. Leave blank if Momentary operation is required.
- 5) Group Page 4—mark an X next to ACB if the station is to be included in Group Page 4.
- 6) Group Page 3—mark an X next to CO 6 if the station is to be included in Group Page 3.
- 7) Group Page 2—mark an X next to CO 5 if the station is to be included in Group Page 2.
- 8) Group Page 1—mark an X next to CO 4 if the station is to be included in Group Page 1.
- 9) Speakerphone—mark an X next to CO 3 if the station is **allowed** to use the Speakerphone feature.
- 10) Automatic Dialing—mark an X next to CO 2 if the station is **allowed** the Automatic Dialing feature.
- 11) Ringing Line Preference—mark an X next to CO 1 if the station is **allowed** the Automatic Line Preference feature.
- 12) All Call—mark an X next to INT if the station is **included** in an All Call page.

6XX Program—Toll Restriction Classification

Defines the **type** of Toll Restriction that will be functional on individual stations. Selections must be made for each station:

- 1) Mark an X next to AD 4 [CO 3] if the station will be allowed to dial the #5 4-digit exception code.
- 2) Mark an X next to AD 3 [CO 2] if the station will be allowed to dial the #4 4-digit exception code.
- 3) Mark an X next to AD 2 [CO 1] if the station will be allowed to dial the #3 4-digit exception code.
- 4) Mark an X next to AD 1 [INT] if the station will be allowed to dial the #2 4-digit exception code.
- 5) Mark an X next to MW/FL if the station will be allowed to dial the #1 4-digit exception code.
- 6) Mark an X next to DND if the station will be allowed to dial 411.
- 7) Mark an X next to ACB if the station will be allowed to dial 911.
- 8) Mark an X next to CO 6 if the station will be allowed to dial 800.

NOTE:

A maximum of eleven digits are allowed if 411, 911, 800, or Exception Code #1, 2 or 3 was dialed first. A maximum of 29 digits are allowed if Exception Code 4 or 5 was dialed first.

- 9) Mark an X next to CO 5 if the station will be restricted from dialing 0 as the first number.
- 10) Mark an X next to CO 4 if the station will be restricted from dialing 0 as the second number.
- 11) Mark an X next to CO 3 if the station will be restricted from dialing 1 as the first number.
- 12) Mark an X next to CO 2 if the station will be restricted from dialing 1 as the second number.
- 13) Mark an X next to CO 1 if the station will be allowed to dial 1 + 7-digit number.
- 14) Mark an X next to INT if the station will be restricted to dialing 7-digit numbers.

NOTES:

1. If "Allow 1 + 7-digits" and "Restrict 1 as first digit" LEDs are on, Program 6XX will restrict 1 as the first digit and will not allow 1 + 7-digits to be outpulsed.
2. If "Allow 1 + 7-digits" and "Allow 7 digits" LEDs are on, Program 6XX will allow 1 + 7-digits or any 7-digit numbers.
3. If "Allow 800" and "Restrict 0 as second digit" LEDs are on, Program 6XX will allow 800 to be outpulsed, but will restrict any other number that has 0 as the second digit.

7XX Program—Station Outgoing Call Restriction

Restricts a station from outgoing access to any number of CO lines while leaving it free to answer these lines when they are ringing or on hold. Selections must be made for each station.

- Mark an X next to the CO line that is to have restricted access by the station in question.

8XX Program—CO Ringing Assignments-DAY

Selects which CO lines will ring at a given station when the system is in the "DAY" mode. Selections must be made for each station.

- Mark an X next to each CO line that is to ring at the station in question.

8#XX Program—CO Ringing Assignments-AY 2

Selects which CO lines will ring at a given station when the system is in the "DAY 2" mode. This program is applicable only when the Three Ring Mode option was selected in Program 03. Selections must be made for each station.

- Mark an X next to each CO line that is to ring at the station in question.

9XX Program—CO Ringing Assignments-NITE

Selects which CO lines will ring at a given station when the system is in the "NITE" mode. Selections must be made for each station.

- Mark an X next to each CO line that is to ring at the station in question.

NOTE:

Each line can ring on only eight stations. If more than eight are programmed, only the eight stations with the lowest station numbers will ring.

TABLE 1 SYSTEM RECORD SHEET

PROGRAM 01-SYSTEM ASSIGNMENTS (Basic)

KEY/LED		X	LED ON	LED OFF
20-key	10-key			
PAU	ACB		Transfer Privacy	Alternate point answer of transferred CO line
AD 7	CO 6		System Speed Dial (60 -- 99) Override Toll Restriction	Restricted
AD 6	CO 5		Four CO Line Groups (91 -- 94)	One CO Line Group (9)
AD 5	CO 4		Two CO Conferencing—Inhibit	Allowed
ACB	ACB		Station 17 is 10-key EKT	20-key EKT
CO 6	CO 6		Incoming Call Abandon (8 seconds)	6 seconds
CO 5	CO 5		3-sec. Pause After Flash	1.5-sec. Pause
CO 4	CO 4	X	Insert Pause After Flash	No Pause
CO 3	CO 3		3-sec. Pause ([MW/FL] or [PAU] key)	1.5 sec. Pause
CO 2	CO 2	X	0.5-sec. Flash	2.0-sec. Flash
INT	INT		Tone First	Voice First

X = Select (LED on) Initialized Data: All LEDs off
 = 10-key EKT off-hook

PROGRAM 02-SYSTEM ASSIGNMENTS (Options)

KEY/LED	X	LED ON	LED OFF
DND		Station 20 is OPX	Stations 20 & 21 are OPX
CO 4		Display the dialed number (1.0 minute)	15 seconds
CO 2		Night Ringing over External Page Allowed	Not Allowed
CO 1		BGM over External Page Allowed	Not Allowed
INT		External Page Included with All Call Page	Not Included

X = Select (LED on) Initialized Data: All LEDs off

PROGRAM 03-SYSTEM ASSIGNMENTS (Options)

KEY/LED	X	LED ON	LED OFF
MW/FL		Station 10 [DND] key	Station 10 [INT] key
DND		Three Ring Mode	Two Ring Mode
CO 4		Message Center—Station 12	Not Equipped
CO 3		Message Center—Station 11	Not Equipped
CO 2		Message Center—Station 10	Not Equipped

X = Select (LED on) Initialized Data: CO 2 LED on; all other LEDs off

NOTE:

Only one message center is permitted; if more than one station is chosen as a message center, the lowest numbered station will have priority.

PROGRAM 04-MCOU OUTPUTSING SELECTION

KEY/LED	X	LED ON	LED OFF
CO 4		COs 4 ~ 6 have DP	COs 4 ~ 6 have MF
CO 1		COs 1 ~ 3 have DP	COs 1 ~ 3 have MF

X = Select (LED on) Initialized Data: All LEDs off

**PROGRAM 05
AUTOMATIC RECALL FROM HOLD TIMING**

KEY/LED	X	TIME
ACB		160 seconds
CO 6		128 seconds
CO 5		96 seconds
CO 4		64 seconds
CO 3		48 seconds
CO 2		32 seconds
CO 1		16 seconds
INT		No Recall

X = Select (LED on) Initialized Data: CO 2 LED on
NOTE:
Used only if MW/FL, AD 1 [INT] and AD 2 [CO 1] LEDs
in Program 5XX are all off.

**PROGRAM 0#5
CAMP-ON TIMEOUT**

KEY/LED	X	TIME
CO 3		64 seconds
CO 2		48 seconds
CO 1		32 seconds
INT		16 seconds

X = Select (LED on) Initialized Data: CO 1 LED on

**PROGRAM 06
AUTOMATIC RELEASE
ON HOLD ENABLE**

KEY/LED	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = Enable (LED on)
Initialized Data:
All LEDs off

**PROGRAM 07
AUTOMATIC RELEASE
ON HOLD TIMING**

KEY/LED	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = XB (LED on)
Blank = ESS
Initialized Data:
All LEDs off

PROGRAM 09*
SINGLE CO LINE (DIAL 9)
GROUP SELECTION (OPX, Trunk Queing)

KEY/LED	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = Include in "Dial 9" group (LED on)
Initialized Data: All LEDs on

**NOTE:*
Used only if AD 6 (CO 5) LED is off in Program 01
(Single CO Line Group).

PROGRAM 09X
FOUR CO LINE GROUP SELECTION
(Dial 91, 92, 93, 94—OPX, Trunk Queing)

CO LINE	GROUP			
	091	092	093	094
CO 6				
CO 5				
CO 4				
CO 3				
CO 2				
CO 1				

X = Include in group (LED on)
Initialized Data:

091—All LEDs on 092 ~ 094—All LEDs off
**NOTE:*
Used only if AD 6 (CO 5) LED is on in Program 01
(Four CO Line Groups).

PROGRAM 0#9
OPL LINE HUNTING
(MPLU PCB—MF-4 or DP-4)

CO LINE	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = Hunting
Initialized Data: All LEDs off

PROGRAM 10
PBX BACKUP

KEY/LED	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = Connected to
PBX line (LED on)
Initialized Data:
All LEDs off

PROGRAM 1X
PBX ACCESS CODES

CODES	1st DIGIT	2nd DIGIT
#1 (11)		
#2 (12)		
#3 (13)		
#4 (14)		
#5 (15)		
#6 (16)		
#7 (17)		
#8 (18)		

Enter the Access Codes (Maximum: 8)
Initialized Data: None

NOTE:
If the access code is a single digit, enter "*" in the second column. If all combinations following a particular 1st digit are to be considered access codes (e.g., 91, 92, 93, etc.), enter "D" (don't care) in the 2nd column.

**PROGRAM 20
TOLL RESTRICTION DISABLE**

KEY/LED	X
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

X = Disable (LED on)
Initialized Data:
All LEDs off

**PROGRAM 2X
TOLL RESTRICTION EXCEPTION CODES**

CODES	DIGITS			
	1st	2nd	3rd	4th
#1 (21)				
#2 (22)				
#3 (23)				
#4 (24)				
#5 (25)				

Enter Actual Exception Codes (Maximum: 5)
Initialized Data: None

NOTE:
If codes are less than four digits, enter "" in the remaining spaces.

PROGRAM 3XX—STATION CO LINE ACCESS

KEY/LED	FEATURE	STATION NUMBERS																								
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25									
CO 6	Allow Access																									
CO 5	Allow Access																									
CO 4	Allow Access																									
CO 3	Allow Access																									
CO 2	Allow Access																									
CO 1	Allow Access																									

X = Select (LED on) Initialized Data: All LEDs on

PROGRAM 4XX—STATION TYPE

KEY/LED	FEATURE	STATION NUMBERS																								
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25									
CO 1	20-key EKT																									
INT	10-key EKT																									

X = Select (LED on) Initialized Data: INT LED on; all others off

PROGRAM 5XX—STATION CLASS OF SERVICE

KEY/LED		FEATURE	STATION NUMBERS																								
20-key	10-key		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25									
PAU	ACB	Privacy Override Allowed																									
AD 7	CO 6	DND Override Allowed																									
AD 2	CO 1	Hold Recall Time Code*																									
AD 1	INT	Hold Recall Time Code*																									
MW/FL	MW/FL	Hold Recall Time Code*																									
DND	DND	MIC Control Push-on/ Push-off																									
ACB	ACB	Group Page 4																									
CO 6	CO 6	Group Page 3																									
CO 5	CO 5	Group Page 2																									
CO 4	CO 4	Group Page 1																									
CO 3	CO 3	Speakerphone Enable																									
CO 2	CO 2	Automatic Dialing Allowed																									
CO 1	CO 1	Ringing Line Preference Enabled																									
INT	INT	Include in All Call Page																									

X = Select (LED on) Initialized Data: CO 1, 2, 3 and INT LEDs on; all others off
 ■ = 10-key EKT off-hook

***Hold Recall Time Code**

KEY/LED		Prog. 05	16 Sec.	32 Sec.	48 Sec.	64 Sec.	96 Sec.	128 Sec.	160 Sec.
20-key	10-key								
AD 2	CO 1					X	X	X	X
AD 1	INT			X	X			X	X
MW/FL	MW/FL		X		X		X		X

PROGRAM 6XX—TOLL RESTRICTION CLASSIFICATION

KEY/LED		CLASSIFICATION	STATION NUMBERS																										
20-key	10-key		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25											
AD 4	CO 3	Allow Exception Code #5*																											
AD 3	CO 2	Allow Exception Code #4*																											
AD 2	CO 1	Allow Exception Code #3**																											
AD 1	INT	Allow Exception Code #2**																											
MW/FL	MW/FL	Allow Exception Code #1**																											
DND	DND	Allow 411**																											
ACB	ACB	Allow 911**																											
CO 6	CO 6	Allow 800**																											
CO 5	CO 5	Restrict 0 as 1st digit																											
CO 4	CO 4	Restrict 0 as 2nd digit																											
CO 3	CO 3	Restrict 1 as 1st digit																											
CO 2	CO 2	Restrict 1 as 2nd digit																											
CO 1	CO 1	Allow 1 + 7 digits																											
INT	INT	Allow 7 digits																											

X = Select (LED on) Initialized Data: No Restrictions

*A maximum of 29 digits allowed. **A maximum of 11 digits allowed.

NOTE:

See explanation in Paragraph 02.60, Program 6XX, for order of preference.

■ = 10-key EKT off-hook

PROGRAM 7XX—STATION OUTGOING CALL RESTRICTION

KEY/LED	FEATURE	STATION NUMBERS																											
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25												
CO 6	Restricted																												
CO 5	Restricted																												
CO 4	Restricted																												
CO 3	Restricted																												
CO 2	Restricted																												
CO 1	Restricted																												

X = Select (LED on) Initialized Data: All LEDs off

PROGRAM 8XX—CO RINGING ASSIGNMENTS-DAY

KEY/LED	FEATURE	STATION NUMBERS																									
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25										
CO 6	Ring in DAY																										
CO 5	Ring in DAY																										
CO 4	Ring in DAY																										
CO 3	Ring in DAY																										
CO 2	Ring in DAY																										
CO 1	Ring in DAY																										

X = Select (LED on) Initialized Data: Station 10—all LEDs on; all other LEDs off

NOTE:

Each line can ring on only eight stations. If more than eight are programmed, only the eight stations with the lowest station numbers will ring.

PROGRAM 8#XX—CO RINGING ASSIGNMENTS-DAY 2

KEY/LED	FEATURE	STATION NUMBERS																									
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25										
CO 6	Ring in DAY 2																										
CO 5	Ring in DAY 2																										
CO 4	Ring in DAY 2																										
CO 3	Ring in DAY 2																										
CO 2	Ring in DAY 2																										
CO 1	Ring in DAY 2																										

X = Select (LED on) Initialized Data: All LEDs off

NOTE:

Each line can ring on only eight stations. If more than eight are programmed, only the eight stations with the lowest station numbers will ring.

PROGRAM 9XX—CO RINGING ASSIGNMENTS-NIGHT

KEY/LED	FEATURE	STATION NUMBERS																									
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25										
CO 6	Ring in NIGHT																										
CO 5	Ring in NIGHT																										
CO 4	Ring in NIGHT																										
CO 3	Ring in NIGHT																										
CO 2	Ring in NIGHT																										
CO 1	Ring in NIGHT																										

X = Select (LED on) Initialized Data: Station 10—all LEDs on; all other LEDs off

NOTE:

Each line can ring on only eight stations. If more than eight are programmed, only the eight stations with the lowest station numbers will ring.

02.70 Initialization

02.71 **Strata VI** has a list of standard system data assignments stored in ROM that can be entered any time by initializing the system. The system must be initialized when it is first installed or whenever the MCDU is changed. This allows the system to be tested and any faults corrected before time is spent on programming. Standard data assignments are listed in Table 2.

02.72 To initialize the **Strata VI** system:

- a) Make sure the power switch on the MTOU PCB is in the **ON** position.
- b) Verify that the battery on the MCDU is connected to ensure that data entered after the system initialization will not be lost due to power failure. (The MCDU SET LED will not function if the battery is not connected.)
- c) Depress and hold in the **INT** switch on the MCDU.
- d) Depress the **SET** switch and allow it to lock.
 - The SET LED lights.
 - All LEDs on station 17 (except SPKR and MIC) begin winking.
- e) Depress and release the **SET** switch again.
 - SET LED goes off.
 - Station 17 LEDs stop flashing.*

IMPORTANT!

Verify that ALL proper LEDs begin winking and go off as indicated in steps d) and e) before proceeding.

- f) Release the **INT** switch.
- g) Cycle the power switch **OFF** and **ON**.

02.73 The Automatic Dialing memory will contain random numbers when the system is powered up initially. Therefore, it is necessary to clear the memory to prevent meaningless numbers from being dialed.

02.74 The Automatic Dialing memory is cleared as follows:

- a) Lock in the **SET** switch on the MCDU.
 - The MCDU SET LED goes on.
 - The REP [MW/FL] LED on station 17 goes on.
- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED will light steadily.

- c) Dial **[#] [*] [*]** on the dial pad.
 - The SPKR LED will flash continuously.
- d) Depress the **[INT]** **[CO 4]** **[DND]** and **[AD 3]** **[CO 2]** keys.
 - The corresponding LEDs will light steadily.
- e) Depress the **[HOLD]** key.
 - All station 17 LEDs—except REP [MW/FL] go off.
- f) Release the **SET** switch on the MCDU.
 - The SET LED goes off.
 - The REP [MW/FL] LED on station 17 goes off.

02.80 System Data Entry

02.81 System Data is entered via station 17 while the system is in the "Programming Mode".

02.82 The system is placed in the programming mode by locking in the **SET** switch on the MCDU. The MCDU LED and REP [MW/FL] LED on station 17 will light while the system is in the programming mode.

02.83 Once the system is in the programming mode, refer to the System Record Sheet for the changes that must be made and select the required program number. Refer to the proper table for detailed instructions for using each different program. Each program should be accomplished sequentially until all necessary changes are made.

TABLE 2
INITIALIZED DATA

SYSTEM OPTIONS

01 Program

System Assignments (Basic)

Alternate point answer of transferred CO line = Allowed
System Speed Dial override of Toll Restriction = Not allowed
CO line groups = 1 (dial 9)
Two-CO conference = Allowed
Station 17 = 20-key EKT
Incoming Call Abandon = 6.0 seconds
Pause Timing After Flash = 1.5 seconds
Pause After Flash = None
Pause Timing After PBX Access Code = 1.5 seconds
Flash Key Timing = 2 seconds
Intercom Signalling = Voice first

02 Program

System Assignments (Options)

Stations 20 & 21 are OPX
Display dialed number timeout = 15 seconds
Night Ringing = excluded from External Page
Background Music = excluded from External Page
External Page = not included in All Call Page

03 Program

System Assignments (Options)

Station 10 DND/NT (night) key = NT key
Ringing Modes = 2
Message Center—station 12 = Not equipped
Message Center—station 11 = Not equipped
Message Center—station 10 = Equipped

04 Program

MCOU Outpulsing Selection

DTMF = Equipped

05 Program

Automatic Recall From Hold Timing

32 Seconds

0#5 Program

Camp-on Timeout

32 Seconds

CO LINE OPTIONS

06 Program

Automatic Release On Hold Assignment

Disabled = All CO lines

07 Program

Automatic Release On Hold Timing

ESS Timing = All CO lines

09, 09X Program

CO Line Group Selection

Dial 9 group = All CO lines

0#9 Program

OPL Line Hunting

No Hunting Assigned

10 Program

PBX Backup

CO Operation = All CO lines

1X Program

PBX Access Codes

No Codes Assigned

20 Program

Toll Restriction Disable

Toll Restriction = All CO lines (ineffective if Program 6XX not utilized)

2X Program

Toll Restriction Exception Codes

No Codes Assigned

STATION OPTIONS

3XX Program

Station CO Line Access

Access Allowed = All lines, all stations

4XX Program

Station Type

10-key EKT

5XX Program

Station Class of Service

Privacy Override = Not allowed all stations

DND Override = Not allowed all stations

Hold Recall Time = Per Program 05

Microphone Push-on/Push-off = Disabled all stations

Group Page #4 = Not included

Group Page #3 = Not included

Group Page #2 = Not included

Group Page #1 = Not included

Speakerphone = Allowed all stations

Automatic Dialing = Allowed all stations

Ringling Line Preference = Enable all stations
All Call = Include all stations

6XX Program
Toll Restriction Classification
No Restrictions = All lines, all stations

7XX Program
Station Outgoing Call Restrictions
No Restrictions = All stations

8XX Program
CO Ringing Assignments-Day
All lines ring station 10

8#XX Program
CO Ringing Assignments-Day 2
No CO ringing assigned

9XX Program
CO Ringing Assignments-Nite
All lines ring station 11

02.84 The table and page numbers for the various programs are listed below:

TABLE LIST

Table	Title	Program	Page
3	System Data Printout Selection Codes	—	18
4	Speed Dial Memory Printout Selection Codes	—	18
5	System Assignments (Basic)	01	22
6	System Assignments (Options)	02	23
7	System Assignments (Options)	03	24
8	MCOU MF/DP Outpulsing Selection	04	25
9	Automatic Recall From Hold Timing	05	26
10	Camp-on Timeout	0#5	27
11	AROH Enable	06	28
12	AROH Timing	07	29
13	Single CO Line (Dial 9) Group Selection	09	30
14	Four CO Line Group Selection	09X	31
15	OPL Line Hunting	0#9	32
16	PBX Backup	10	33
17	PBX Access Codes	1X	34
18	Toll Restriction Disable	20	35
19	Toll Restriction Exception Codes	2X	36
20	Station CO Access	3XX	37
21	Station Type	4XX	38
22	Station Class of Service	5XX	39
23	Toll Restriction Classification	6XX	40
24	Station Outgoing Call Restriction	7XX	41
25	CO Ringing Assignments—DAY	8XX	42
26	CO Ringing Assignments—DAY 2	8#XX	43
27	CO Ringing Assignments—NITE	9XX	44

03 SYSTEM DATA PRINTOUT

03.00 System Data Printout Via SMDR

03.01 If the **Strata VI** system is equipped with an MSMU (SMDR) PCB, it is possible to obtain a printout of the system data and speed dialing memory via a printer that is connected to the SMDR output port.

03.02 The data printout should be done during a low traffic period since this procedure interferes with normal SMDR output. Any call records gen-

erated during a printout will be lost.

03.03 Commands to print system data are entered by station 17 while it is in the programming mode. It is possible to print out all or parts of the system data and speed dial memory. The possible choices are:

- System Data:
- 1 = All data
 - 2 = Programs 01 ~ 0#9
 - 3 = Programs 10 & 1X
 - 4 = Programs 20 & 2X

- 5 = Program 3XX
- 6 = Program 4XX
- 7 = Program 5XX
- 8 = Program 6XX
- 9 = Program 7XX
- 10 = Program 8XX
- 11 = Program 8#XX
- 12 = Program 9XX

Speed Dial Memory:

- 1 = All data
- 2 = System list
- 3 = Any individual station list

03.04 To request a printout:

- a) Depress the **SET** switch on the MCDU.
 - SET LED goes on.
 - Station 17 REP [MW/FL] LED goes on.
- b) Depress the [SPKR] key on station 17.
 - SPKR LED goes on.
- c) Dial [H][H].
 - The SPKR LED will begin to flash.
- d) The INT, CO 1 ~ 6, ACB and DND LEDs will switch on and off in response to operations of the associated keys. Refer to Tables 3 and 4 and set the appropriate LEDs to the proper pattern for the printout required.
- e) Depress the [HOLD] key.
 - All station 17 LEDs (except REP [MW/FL]) go off.

- Printout begins (see Figures 2 ~ 6 for examples of the printout format).

NOTE:

Since the MSMUPCB is common to **Strata VI, XII & XX**, a universal output format of INT & CO 1 ~ CO 21 is used. For **Strata VI** these numbers must be translated per Figure 6.

- f) Normal SMDR operation will return when the printout is complete.
- g) Repeat from step b) until all printouts have been obtained.
- h) Release the **SET** switch on the MCDU.

03.05 To stop a printout before it is complete:

- a) Depress the [SPKR] key on station 17.
 - SPKR LED goes on.
- b) Dial [H][H].
 - SPKR LED stays on.
 - LEDs illuminated in step d) above light.
- c) Depress the appropriate keys necessary to extinguish all LEDs but the SPKR.
- d) Depress the [HOLD] key.
 - The SPKR LED goes off.
 - After a short delay the printout will stop.
- e) Normal SMDR functions will return.

TABLE 3
SYSTEM DATA PRINTOUT SELECTION CODES

KEY/ LED	PROGRAM NUMBERS											Printout all
	01 ~ 0#9	10 & 1X	20 & 2X	3XX	4XX	5XX	6XX	7XX	8XX	8#XX	9XX	
DND	X	X	X	X	X	X	X	X	X	X	X	X
ACB	X	X	X	X	X	X	X	X	X	X	X	X
CO 6	X	X	X	X	X	X	X	X	X	X	X	X
CO 5	0	0	0	0	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	X	X	X	X
CO 2	0	0	0	0	X	X	X	X	0	0	0	X
CO 1	0	0	X	X	0	0	X	X	0	X	0	X
INT	0	X	0	X	0	X	0	X	0	0	X	X

X = LED on 0 = LED off

TABLE 4
SPEED DIAL MEMORY PRINTOUT SELECTION CODES

KEY/LED	SPEED DIAL LISTS																
	System	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DND	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ACB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO 6	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO 5	X	0	0	0	0	0	0	0	0	0	0	X	X	X	X	X	X
CO 4	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	X	X	0	0	0	0	0	0
CO 2	0	0	0	0	0	X	X	X	X	0	0	0	0	0	0	X	X
CO 1	0	0	0	X	X	0	0	X	X	0	0	0	0	X	X	0	0
INT	0	0	X	0	X	0	X	0	X	0	X	0	X	0	X	0	X

X = LED on 0 = LED off

```

## SYSTEM PROGRAMMING ##
                                1:SELECT(LED ON)
                                21 16 15 8 7 1INT
0 1 000000 00000000 00000001
0 2 000000 00000000 00000000
0 3 000000 00000001 10010000
0 4 000000 00000000 00000000
0 5 000000 00000000 00000100
0 #5 000000 00000000 00000010
0 6 000000 00000000 00000000
0 7 000000 00000000 00000000
0 8 000000 00000000 00000000
0 9 000000 00000000 01111110
0 #1 000000 00000000 01111110
0 #2 000000 00000000 00000000
0 #3 000000 00000000 00000000
0 #4 000000 00000000 00000000
0 #9 000000 00000000 00001110
## END OF PRINT ##

```

NOTE:
Program 08 not used in **Strata VI**

FIGURE 2—SAMPLE PRINTOUT FOR PROGRAMS 01 ~ 0#9

```

## SYSTEM PROGRAMMING ##
                                1:SELECT(LED ON)
                                21 16 15 8 7 1INT
1 0 000000 00000000 00000000
                                (DATA = DIAL NUMBER)
1 1 91
1 2 85
1 3
1 4
1 5
1 6
1 7
1 8
## END OF PRINT ##

```

FIGURE 3—SAMPLE PRINTOUT OF PROGRAMS 10 & 1X

```

## SYSTEM PROGRAMMING ##
                                     1:SELECT (LED ON)
      21 16 15 8 7 1INT
2 0 000000 00000000 00000000
      (DATA = DIAL NUMBER)
2 1 1234
2 2 5678
2 3
2 4
2 5
## END OF PRINT ##

```

FIGURE 4—SAMPLE PRINTOUT OF PROGRAMS 20 & 2X

```

## SYSTEM PROGRAMMING ##
                                     1:SELECT (LED ON)
      21 16 15 8 7 1INT
3 10 111111 11111111 11111110
3 11 111111 11111111 11111110
3 12 111111 11111111 11111110
3 13 111111 11111111 11111110
3 14 111111 11111111 11111110
3 15 111111 11111111 11111110
3 16 111111 11111111 11111110
3 17 111111 11111111 11111110
3 18 111111 11111111 11111110
3 19 111111 11111111 11111110
3 20 111111 11111111 11111110
3 21 111111 11111111 11111110
3 22 111111 11111111 11111110
3 23 111111 11111111 11111110
3 24 111111 11111111 11111110
3 25 111111 11111111 11111110
## END OF PRINT ##

```

FIGURE 5—SAMPLE PRINTOUT OF PROGRAM 3XX (Stations 10 ~ 25)

Printout Designation	<i>Strata VI</i> 20-key	Meaning 10-key	Printout Designation	<i>Strata VI</i> 20-key	Meaning 10-key
CO 21	None	None	CO 10	AD 1	[INT]
CO 20	None	None	CO 9	MW/FL	MW/FL
CO 19	REP	[MW/FL]	CO 8	DND	DND
CO 18	RDL	[DND]	CO 7	ACB	ACB
CO 17	PAU	[ACB]	CO 6	CO 6	CO 6
CO 16	AD 7	[CO 6]	CO 5	CO 5	CO 5
CO 15	AD 6	[CO 5]	CO 4	CO 4	CO 4
CO 14	AD 5	[CO 4]	CO 3	CO 3	CO 3
CO 13	AD 4	[CO 3]	CO 2	CO 2	CO 2
CO 12	AD 3	[CO 2]	CO 1	CO 1	CO 1
CO 11	AD 2	[CO 1]	INT	INT	INT

FIGURE 6—PRINTOUT TRANSLATION

```
## REPERTORY DIAL ##  
#00 *60 17147305000  
#00 *61 19142731750  
#00 *62 12135551212  
#00 *63 17148531212  
#00 *64 17145551212  
#00 *65 17147305000  
#00 *66 19142731750  
#00 *67 12135551212  
#00 *68 17148531212  
#00 *69 17145551212  
#00 *70 17147305000  
#00 *71 19142731750  
#00 *72 12135551212  
#00 *73 17148531212  
#00 *74 17145551212  
#00 *75 17147305000  
#00 *76 19142731750  
#00 *77 12135551212  
#00 *78 17148531212  
#00 *79 17145551212  
#00 *80 17147305000  
#00 *81 19142731750  
#00 *82 12135551212  
#00 *83 17148531212  
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#00 *89 17145551212  
#00 *90 17147305000  
#00 *91 19142731750  
#00 *92 12135551212  
#00 *93 17148531212  
#00 *94 17145551212  
#00 *95 17147305000  
#00 *96 19142731750  
#00 *97 12135551212  
#00 *98 17148531212  
#00 *99 17145551212  
## END OF PRINT ##
```

FIGURE 7—SAMPLE PRINTOUT OF SPEED DIAL—SYSTEM

TABLE 13
PROGRAM 09
SINGLE CO LINE (DIAL 9) GROUP SELECTION

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [0][9] on dial pad.</p>	<p>SPKR LED flashes continuously. CO LEDs go on according to present data.</p>
<p>4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, CO 1 will be included in the "Dial 9" group for random selection by a single line (OPX) extension or by any station using Trunk Queing. If CO 1 LED is off, CO 1 can be accessed only by dialing [7][0][1] at the OPX station or by the [CO 1] key on an EKT.</p>	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>

TABLE 14
PROGRAM 09X
FOUR CO LINE (DIAL 91, 92, 93, 94) GROUP SELECTION

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [0] [9] [X] on dial pad. (X = 1, 2, 3 or 4 depending upon the group being defined). Dial [0] [9] [1] for "dial 91" group; [0] [9] [2] for "dial 92" group, etc.</p>	<p>SPKR LED flashes continuously. CO LEDs go on according to present data.</p>
<p>4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, CO 1 will be included in the "Dial 9X" group for random selection by a single line (OPX) extension or by any station using Trunk Queing. If CO 1 LED is off, CO 1 can be accessed only by dialing [7] [0] [1] at the OPX station or by the [CO 1] key on an EKT.</p>	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>

TABLE 15
PROGRAM 0#9
OPL LINE HUNTING

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [0][#][9] on dial pad.	SPKR LED flashes continuously. CO LEDs go on according to present data.
4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if COs 1 & 2 LEDs are on, an incoming call at CO 2 will ring the CO 1 OPL station if CO 1 is idle. Lines must function in groups of three as they appear on the MPLU, and the lowest numbered line <i>must</i> be selected.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

TABLE 16
PROGRAM 10
PBX BACK-UP

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [1][0] on dial pad.	SPKR LED flashes continuously. CO LEDs go on according to present data.
4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, the system assumes that the CO 1 line is connected to a PBX line and will cause features such as Toll Restriction and Automatic Dialing to function accordingly.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

TABLE 17
PROGRAM 1X
PBX ACCESS CODES

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.																																																												
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.																																																												
3) Dial [1][X] on the dial pad. X = 1, 2, 3, etc.—the system will store a maximum of eight codes. Dial [1][1] (X = 1) to program first access code, [1][2] (X = 2) to program second access code, etc.	SPKR LED flashes continuously. AD 1 [INT] LED will flash.																																																												
<p>4) Refer to the System Record Sheet. Using the dial pad, enter the required access code (two digits must be entered.)</p> <ul style="list-style-type: none"> • If the access code is a single digit, enter [] as the second digit. • If all combinations following a particular first digit are to be considered access codes (e.g. 91, 92, 93, etc.), depress the [RDL] [DND] key for the second digit. 	<p>INT, CO 2, 4 & 6 LEDs will light to display data in Binary format. AD 1 [INT] or AD 3 [CO 2] LED will light steadily to indicate which digit is being displayed.</p> <table border="1" data-bbox="805 793 1455 1066"> <thead> <tr> <th>20-key</th> <th>10-key</th> <th>Start</th> <th>1st Digit</th> <th>2nd Digit</th> </tr> </thead> <tbody> <tr> <td>AD 3</td> <td>CO 2</td> <td></td> <td></td> <td>Steady</td> </tr> <tr> <td>AD 1</td> <td>INT</td> <td>Flash</td> <td>Steady</td> <td></td> </tr> <tr> <td>CO 6</td> <td>CO 6</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>CO 4</td> <td>CO 4</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>CO 2</td> <td>CO 2</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>INT</td> <td>INT</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> </tr> </tbody> </table>	20-key	10-key	Start	1st Digit	2nd Digit	AD 3	CO 2			Steady	AD 1	INT	Flash	Steady		CO 6	CO 6		Binary Data	Binary Data	CO 4	CO 4		Binary Data	Binary Data	CO 2	CO 2		Binary Data	Binary Data	INT	INT		Binary Data	Binary Data																									
20-key	10-key	Start	1st Digit	2nd Digit																																																									
AD 3	CO 2			Steady																																																									
AD 1	INT	Flash	Steady																																																										
CO 6	CO 6		Binary Data	Binary Data																																																									
CO 4	CO 4		Binary Data	Binary Data																																																									
CO 2	CO 2		Binary Data	Binary Data																																																									
INT	INT		Binary Data	Binary Data																																																									
<p>NOTES:</p> <ol style="list-style-type: none"> 1. Depressing the [H] key displays the data without changing it. The first [H] will display the first digit; the second [H] will display the second digit, etc. 2. To clear existing data without entering a new number, depress the [] key two times. 3. Shadowed area (■) indicates off-hook 10-key EKT. 																																																													
<p>Binary Numbers:</p> <p>X = LED on</p> <p>All LEDs off = no data</p>	<table border="1"> <thead> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>0</th> <th>DND</th> </tr> </thead> <tbody> <tr> <td>CO 6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>CO 4</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>CO 2</td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>INT</td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td> </tr> </tbody> </table>		1	2	3	4	5	6	7	8	9	0	DND	CO 6								X	X	X	X	CO 4				X	X	X	X				X	CO 2		X	X			X	X			X		INT	X		X		X		X		X		X
	1	2	3	4	5	6	7	8	9	0	DND																																																		
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CO 4				X	X	X	X				X																																																		
CO 2		X	X			X	X			X																																																			
INT	X		X		X		X		X		X																																																		
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.																																																												
<p>6A) Return to Step 2 in order to continue with this program ... or ...</p> <p>6B) Go to Step 2 in another program table ... or ...</p> <p>6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>																																																												

TABLE 18
PROGRAM 20
TOLL RESTRICTION DISABLE

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [2][0] on dial pad.	SPKR LED flashes continuously. CO LEDs go on according to present data.
4) Refer to the System Record Sheet. Using the [CO] keys, turn the associated LEDs on or off, as required. Each CO key/LED represents itself—that is, if CO 1 LED is on, Toll Restriction will not function on CO 1. If CO 1 LED is off, Toll Restriction will function on CO 1, etc.	An X on the record sheet means the LED should be on. If the LED is already on, depressing the associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

TABLE 19
PROGRAM 2X—TOLL RESTRICTION EXCEPTION CODES

1) Lock in the SET switch on the MCDU.		SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.										
2) Depress the [SPKR] key on station 17.		SPKR LED steady on.										
3) Dial [2][X] on the dial pad. X = 1, 2, 3, etc.—the system will store a maximum of five codes. Dial [2][1] (X = 1) to program first exception code, [2][2] (X = 2) to program second exception code, etc.		SPKR LED flashes continuously. AD 1 [INT] LED will flash.										
4) Refer to the System Record Sheet. Using the dial pad, enter the required 4-digit exception code (four digits must be entered). • If less than four digits are used, enter [*] for remaining digits.		INT, CO 2, 4 & 6 LEDs will light to display data in Binary format. AD 1 [INT], AD 3 [CO 2] and/or AD 5 [CO 4] LEDs will light steadily to indicate which digit is being displayed.										
	20-key	10-key	Start	1st Digit	2nd Digit	3rd Digit	4th Digit					
	AD 5	CO 4					Steady					
	AD 3	CO 2			Steady	Steady						
	AD 1	INT	Flash	Steady		Steady						
	— —	— —										
	CO 6	CO 6		Binary Data	Binary Data	Binary Data	Binary Data					
	CO 4	CO 4		Binary Data	Binary Data	Binary Data	Binary Data					
	CO 2	CO 2		Binary Data	Binary Data	Binary Data	Binary Data					
	INT	INT		Binary Data	Binary Data	Binary Data	Binary Data					
NOTES:												
1. Depressing the [H] key displays the data without changing it. The first [H] will display the first digit; the second [H] will display the second digit, etc.												
2. To clear existing data without entering a new number, depress the [*] key two times.												
3. Shadowed area (■) indicates off-hook 10-key EKT.												
	Binary Numbers:		1	2	3	4	5	6	7	8	9	0
		CO 6								X	X	X
	X = LED on	CO 4				X	X	X	X			
	All LEDs off = no data	CO 2		X	X			X	X			X
		INT	X		X		X		X		X	
5) Depress the [HOLD] key to place new data in memory.		All station 17 LEDs (except REP [MW/FL]) go off.										
6A) Return to Step 2 in order to continue with this program ... or ...		SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.										
6B) Go to Step 2 in another program table ... or ...												
6C) Transfer data into working memory per Paragraph 02.06.												

TABLE 20
PROGRAM 3XX
STATION CO LINE ACCESS

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [3][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i></p>	<p>SPKR LED flashes continuously. CO LEDs go on according to present data.</p>
<p>4) Refer to the System Record Sheet. Using the [CO] keys, turn their associated LEDs on or off, as required.</p> <ul style="list-style-type: none"> • LED on = Access allowed. • Each CO key/LED represents itself—that is, if the CO 1 LED is on, then the station being programmed (XX) is allowed access to CO 1, etc. 	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5. Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off.</p>
<p>6A. Return to Step 2 in order to continue with this program ... or ... 6B. Go to Step 2 in another program table ... or ... 6C. Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>

TABLE 21
PROGRAM 4XX
STATION TYPE

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [4] [X] [X] on the dial pad. XX = the station number of the station to be programmed. NOTE: For multiple station programming, refer to Paragraph 02.12.</p>	<p>SPKR LED flashes continuously. INT or CO 1 LED indicates the present data.</p>
<p>4) Refer to the System Record Sheet. Using either the [INT] key or the [CO 1] key, turn its associated LED on or off, as required. If CO 1 LED is on, the system assumes the EKT at station 17 is a 20-key. If the INT LED is on, the EKT is a 10-key.</p>	<p>An X on the record sheet means the LED should be on. Only one LED is permitted to be on, depressing another key will turn that LED on and turn off the previous LED.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.</p>

TABLE 22
PROGRAM 5XX—STATION CLASS OF SERVICE

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [5][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i>	SPKR LED flashes continuously. The various LEDs (see below) will indicate the present data.
4) Refer to the System Record Sheet. Using the various keys, turn their associated LEDs on or off, as required. The detailed meaning of each key is shown below.	An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.

NOTES:

1. If any key/LED is not shown, it is not used.
2. Shadowed area (■) indicates an off-hook 10-key EKT.

20-key	10-key	FEATURE	LED ON	LED OFF
PAU	ACB	Privacy Override Allowed	Yes	No
AD 7	CO 6	DND Override Allowed	Yes	No
AD 2	CO 1	Hold Recall Time Code*	See table	See table
AD 1	INT	Hold Recall Time Code*	See table	See table
MW/FL	MW/FL	Hold Recall Time Code*	See table	See table
DND	DND	MIC Control—Push-on/Push-off	Yes	No
ACB	ACB	Group Page 4	Included	Excluded
CO 6	CO 6	Group Page 3	Included	Excluded
CO 5	CO 5	Group Page 2	Included	Excluded
CO 4	CO 4	Group Page 1	Included	Excluded
CO 3	CO 3	Speakerphone Enable	Allowed	Not Allowed
CO 2	CO 2	Automatic Dialing	Allowed	Not Allowed
CO 1	CO 1	Ringing Line Preference	Allowed	Not Allowed
INT	INT	Include in All Call Page	Included	Excluded

***Hold Recall Time Code Table
(times in seconds)**

20-key	10-key	Prog.	05	16	32	48	64	96	128	160
AD 2	CO 1						X	X	X	X
AD 1	INT				X	X			X	X
MW/FL	MW/FL			X		X		X		X

5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ...	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.
6B) Go to Step 2 in another program table ... or ...	
6C) Transfer data into working memory per Paragraph 02.06.	

TABLE 23
PROGRAM 6XX—TOLL RESTRICTION CLASSIFICATION

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [6][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i>	SPKR LED flashes continuously. The various LEDs (see below) will indicate the present data.
4) Refer to the System Record Sheet. Using the various keys, turn their associated LEDs on or off, as required. The detailed meaning of each key is shown below.	An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.

NOTES:

1. See the explanation in Paragraph 02.60, Program 6XX for order of preference.
2. Shadowed area (■) indicates an off-hook 10-key EKT.

20-key	10-key	FEATURE	LED ON	LED OFF
AD 4	CO 3	Exception Code #5*	Allowed	Not Allowed
AD 3	CO 2	Exception Code #4*	Allowed	Not Allowed
AD 2	CO 1	Exception Code #3**	Allowed	Not Allowed
AD 1	INT	Exception Code #2**	Allowed	Not Allowed
MW/FL	MW/FL	Exception Code #1**	Allowed	Not Allowed
DND	DND	Dial 411**	Allowed	Not Allowed
ACB	ACB	Dial 911**	Allowed	Not Allowed
CO 6	CO 6	Dial 800**	Allowed	Not Allowed
CO 5	CO 5	Restrict 0 as 1st digit	Yes	No
CO 4	CO 4	Restrict 0 as 2nd digit	Yes	No
CO 3	CO 3	Restrict 1 as 1st digit	Yes	No
CO 2	CO 2	Restrict 1 as 2nd digit	Yes	No
CO 1	CO 1	Allow 1 + 7 digits	Yes	No
INT	INT	Allow 7 digits only	Yes	No

5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off. New data is stored, previous data is erased.

*A maximum of 29 digits is allowed

**A maximum of 11 digits is allowed

TABLE 24
PROGRAM 7XX
STATION OUTGOING CALL RESTRICTION

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [7][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i></p>	<p>SPKR LED flashes continuously. CO LEDs indicate present data.</p>
<p>4) Refer to the System Record Sheet. Using the [CO] keys, turn their associated LEDs on or off, as required.</p> <ul style="list-style-type: none"> • LED on = Restricted outgoing calls. • Each CO key/LED represents itself—that is, if the CO 1 LED is on, then the station being programmed (XX) is restricted from outgoing calls on CO 1, etc. 	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off. New data is stored, previous data is erased.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off.</p>

TABLE 25
PROGRAM 8XX
CO RINGING ASSIGNMENTS-DAY

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [B][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i>	SPKR LED flashes continuously. CO LEDs indicate present data.
<p><i>NOTES:</i></p> <p>1. Any station(s) designated to ring must be allowed access via Program 3XX.</p> <p>2. A maximum of eight stations may be assigned to ring for any given CO line. If more are assigned, the lowest eight station numbers will ring—the others will be ignored.</p>	
4) Refer to the System Record Sheet. Using the [CO] keys, turn their associated LEDs on or off, as required. <ul style="list-style-type: none"> • LED on = Ring in DAY mode. • Each CO key/LED represents itself—that is, if CO 1 LED is on, then the station being programmed (XX) will ring when a call comes in on CO 1 in the DAY mode, etc. 	An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off. New data is stored, previous data is erased.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off.

TABLE 26
PROGRAM 8#XX
CO RINGING ASSIGNMENTS-DAY 2

<p>1) Lock in the SET switch on the MCDU.</p>	<p>SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.</p>
<p>2) Depress the [SPKR] key on station 17.</p>	<p>SPKR LED steady on.</p>
<p>3) Dial [8][#][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i></p>	<p>SPKR LED flashes continuously. CO LEDs indicate present data.</p>
<p><i>NOTES:</i></p> <ol style="list-style-type: none"> 1. Any station(s) designated to ring must be allowed access via Program 3XX. 2. A maximum of eight stations may be assigned to ring for any given CO line. If more are assigned, the lowest eight station numbers will ring—the others will be ignored. 	
<p>4) Refer to the System Record Sheet. Using the [CO] keys, turn their associated LEDs on or off, as required.</p> <ul style="list-style-type: none"> • LED on = Ring in DAY 2 mode. • Each CO key/LED represents itself—that is, if CO 1 LED is on, then the station being programmed (XX) will ring when a call comes in on CO 1 in the DAY 2 mode, etc. 	<p>An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.</p>
<p>5) Depress the [HOLD] key to place new data in memory.</p>	<p>All station 17 LEDs (except REP [MW/FL]) go off. New data is stored, previous data is erased.</p>
<p>6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.</p>	<p>SET LED goes off. Station 17 REP [MW/FL] LED goes off.</p>

TABLE 27
PROGRAM 9XX
CO RINGING ASSIGNMENTS-NITE

1) Lock in the SET switch on the MCDU.	SET LED on. Station 17 REP [MW/FL] LED on. System is in program mode. Normal functions halt on station 17.
2) Depress the [SPKR] key on station 17.	SPKR LED steady on.
3) Dial [9][X][X] on the dial pad. XX = the number of the station(s) to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.12.</i>	SPKR LED flashes continuously. CO LEDs indicate present data.
<p><i>NOTES:</i></p> <p>1. Any station(s) designated to ring must be allowed access via <i>Program 3XX</i>.</p> <p>2. A maximum of eight stations may be assigned to ring for any given CO line. If more are assigned, the lowest eight station numbers will ring—the others will be ignored.</p>	
4) Refer to the System Record Sheet. Using the [CO] keys, turn their associated LEDs on or off, as required. <ul style="list-style-type: none"> • LED on = Ring in NITE mode. • Each CO key/LED represents itself—that is, if CO 1 LED is on, then the station being programmed (XX) will ring when a call comes in on CO 1 in the NITE mode, etc. 	An X on the record sheet means the LED should be on. If the LED is already on, depressing its associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except REP [MW/FL]) go off. New data is stored, previous data is erased.
6A) Return to Step 2 in order to continue with this program ... or ... 6B) Go to Step 2 in another program table ... or ... 6C) Transfer data into working memory per Paragraph 02.06.	SET LED goes off. Station 17 REP [MW/FL] LED goes off.

Strata VI

OPERATING PROCEDURES **(Release 3)**

Strata VI
OPERATING PROCEDURES
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01 INTRODUCTION

01.00.1 The operation of the various pieces of equipment for the **Strata VI** electronic key telephone system will be described in this section. The EKTs are specially designed units incorporating as standard features, handsfree answering and (with the exception of the S-type EKT), full speakerphone capabilities. Each EKT is connected to the system using industry-standard 2-pair wiring.

02 EKT INFORMATION

02.00.0 Standard Key Functions

02.00.1 The **Strata VI** EKT has either 13, 14 or 24 line and feature keys, depending upon model used, and a push-button dial pad. The following is a general description of each key.

CENTRAL OFFICE LINE KEY [CO]

- Accesses an outside line.

INTERCOM KEY [INT]

- Accesses an intercom line.

AUTOMATIC CALLBACK KEY [ACB]

- Activates the Automatic Callback feature for Trunk Queuing or intercom.

DO NOT DISTURB KEY [DND]

- Locks the individual EKT in or out of the Do Not Disturb mode.

MESSAGE WAITING & FLASH KEY [MW/FL]

- Used by the station that is designated as the Message Center to indicate when a message is waiting for any other station. When used as a Flash key, it disconnects and recalls dial tone on a CO line, or is used to access PBX features.

SPEAKER KEY [SPKR]

- Turns the speaker and Background Music (BGM) ON/OFF.

MICROPHONE KEY [MIC] (Speakerphone EKTs only)

- Cuts off the speakerphone's microphone for private conversation (this key is labeled MUTE on some EKTs).

CONFERENCE KEY [CONF]

- Used to transfer calls and set up conference calls.

HOLD KEY [HOLD]

- Places an outside call on hold.

NIGHT TRANSFER [NT]

- Takes the place of the [DND] key on the operator's station and is used to control the system's CO/PBX line ringing pattern.

02.01.0 Optional Key Functions

02.01.1 The two optional 20-key EKTs provide, via ten additional feature keys; seven one-button automatic dialing (AD 1 ~ 7) telephone numbers, automatic redial, pause and automatic dialing access. The following applies only if your EKT is so equipped.

AUTOMATIC DIALING KEYS [AD 1 ~ 7]

- One-key automatic dialing for seven different telephone numbers after accessing a CO line.

REDIAL KEY [RDL]

- Will automatically redial the last telephone number dialed after accessing a CO line. (Serves the same function as the [R] key on the standard EKT.)

REPERTORY KEY [REP]

- Provides access to automatic dialing address codes. (Serves the same function as the [*] key on the standard EKT.)

PAUSE KEY [PAU]

- Applies a pause (when the system is installed behind a PBX) after the CO line access code in automatic dialing telephone numbers. The [MW/FL] key will not perform this function on a unit equipped with this key (the [MW/FL] key is used to store a timed flash).

NOTE:

The remaining function keys retain the same functions as their counterparts on the standard EKT.

03 VOLUME CONTROLS

03.00.0 10-key S-type EKT

03.00.1 The dial tone volume level on the standard 10-key S-type EKT is controlled by the sliding volume control located on the faceplate of the telephone. A 3-position switch on the bottom of the EKT adjusts the ringing tone and intercom voice-announcement volume.

03.01.0 Optional EKTs

03.01.1 The voice and ring tone volume levels on the optional EKTs are controlled by separate volume controls located on the rear of each tele-

phone. The control on the right adjusts speaker volume for dial tone and voice level; the left control adjusts ring tone and intercom voice-announcement volume.

04 TONE & LED ILLUMINATING INDICATIONS

I-Use: A steady-double flash rate (2 seconds on— $\frac{1}{8}$ sec. off— $\frac{1}{8}$ sec. on— $\frac{1}{8}$ sec. off) indicates the CO line presently in use at the EKT that originated the call. Other stations' LEDs will be steady-on for that line.

I-Called: A pulsating on/off flash rate (10 impulses per second (IPS) for 1 second on and 1 second off) will appear on the INT LED at the EKT being called.

I-Hold: A fast (4 IPS) flash rate ($\frac{1}{8}$ sec. on— $\frac{1}{8}$ sec. off) indicates the CO line placed on hold at that EKT. The LEDs of the CO line on hold will flash at a medium rate ($\frac{3}{4}$ sec. on— $\frac{1}{4}$ sec. off) at the other stations.

Hold Recall: A quick flash rate matching the tones (2 IPS for 1 second—10 IPS for 1 second) will remind a station which line has been on hold for the programmed period of time.

Conference: A very fast flash rate (10 IPS)

indicates the CO line presently in the Conference mode. Other stations' LEDs will show the same indication for that line.

CO Incoming Call: A slow flash rate ($\frac{1}{2}$ sec. on— $\frac{1}{2}$ sec. off) indicates which CO line has an incoming call.

05 MESSAGE WAITING

05.00.0 Message Center (Programmable option)

- 1) The Message Center calls the station on intercom.
 - If no answer, depress the **MW/FL** key on the Message Center EKT. This causes the MW/FL LED on the called station to illuminate.
- 2) Called station user lifts handset and calls Message Center on intercom.
 - After receiving the message(s), hang up.
- 3) To clear the MW/FL LED at the called station, lift the handset (do not depress **INT** or **CO** line key) and depress the **MW/FL** key.
- 4) To clear the MW/FL LED from the Message Center, call station and depress **MW/FL** key twice.

TABLE A
TELEPHONE TONES

Ringling Tone	
CO Line (idle station)	600 Hz/800 Hz, modulated by 16 Hz, 1 second on, 3 seconds off
(busy station)	2400 Hz, modulated by 10 Hz, 1 second on, 3 seconds off
Intercom Line	600 Hz, 1 second on, 3 seconds off
Ringback Tone	600 Hz, 1 second on, 3 seconds off
Intercom Dial Tone	600 Hz, continuous
Busy Tone	600 Hz, $\frac{1}{4}$ second on, $\frac{1}{4}$ second off
Do Not Disturb Tone	600 Hz, $\frac{1}{8}$ second on, $\frac{1}{8}$ second off
Busy & DND Override Tone	2400 Hz, 1 second on, 3 seconds off
Voice Page Warning Tone	600 Hz, 1 second on only (via EKT speaker)
Executive Override Warning Tone	600 Hz, $\frac{1}{2}$ second on only (via handset)
Hold Recall	2400 Hz, modulated by 10 Hz—1 second on, 1 second off

06 EKT OPERATING PROCEDURES

06.00.0 Outside Calls

06.00.1 To make an outside call (off-hook dialing):

- 1) Lift the handset.
- 2) Depress any available [CO] key.
 - Listen for dial tone.
 - The CO LED will flash at the I-use rate.
- 3) Dial the desired telephone number.
- 4) Hang up when the call is completed.

06.00.2 To receive an incoming call:

- 1) You will hear a ringing tone.
 - The CO LED will flash at the CO incoming call rate.
- 2) Lift the handset.
 - The CO LED will flash at the I-use rate.
- 3) Hang up when the call is completed.

06.01.0 Intercom Calls

06.01.1 To make an intercom call:

- 1) Lift the handset.
- 2) Depress the [INT] key.
 - You will hear intercom dial tone.
 - The INT LED will flash at the I-use rate.
- 3) Dial the desired station number.
 - You will hear a single ring tone.
- 4) Speak when the ring tone ends.
- 5) Hang up when the call is completed.

NOTE:

Tone signalling is accomplished by dialing [] after the station number. An intercom call may be answered at any station.

06.01.2 To receive an intercom call:

- 1) You will hear a single long tone, followed by the caller's voice.
 - The INT LED will flash at the I-called rate.
- 2) Lift the handset.
 - The INT LED will flash at the I-use rate.
- 3) Hang up when the call is completed.

06.02.0 Call Pick-up

06.02.1 To use Call Pick-up:

- 1) Lift the handset—do not depress a key.
- 2) Dial the station number of the telephone that is being called.
 - The call will be transferred to your telephone.
 - The INT LED will flash at the I-use rate.
- 3) converse with the calling party as in usual call.
- 4) Hang up when the call is completed.

NOTES:

1. *An External Page may only be picked up by substituting the page access code for the station number in the above steps.*
2. *Group Page may be answered by using Call Pick-up on any station number in the group other than your own.*

06.03.0 Trunk Queuing

06.03.1 This feature provides a means for station users to be placed in a waiting queue for a busy outgoing trunk group, and to be called back when a trunk in the group is available.

06.03.2 To use Trunk Queuing:

- 1) Lift the handset.
- 2) Depress the [INT] key.
 - You will hear intercom dial tone.
 - The INT LED will flash at the I-use rate.
- 3) Dial the desired trunk group access code:

4A) If there is an idle trunk, you will be connected.

- You will hear CO dial tone.
- The CO LED will flash at the I-use rate.
- The INT LED goes off.

4B) If all trunks are busy, you will hear busy tone.

5B) Depress the [ACB] key to set Automatic Callback.

- Busy tone will stop, you will hear dial tone for 2 sec. and then busy tone again.
- You may go on-hook or make other calls while waiting for a trunk to become available.*

**NOTE:*

You may cancel the request at anytime prior

to the actual callback by depressing the [INT] key and dialing [7][9].

6B) When a trunk becomes idle:

- Your telephone will ring at a fast rate.
- The CO LED will flash at the I-called rate.

7B) Lift the handset within 6 seconds to prevent the callback from being cancelled.

- You will hear CO dial tone.
- The CO LED will flash at the I-use rate.

NOTE:

If, after answering a callback, you hear a busy tone, it means the trunk has already been seized or received an incoming call. Your request is not cancelled. You will be called again the next time a trunk becomes idle.

8) Dial the desired telephone number.

9) Hang up when the call is completed.

06.04.0 Automatic Callback

06.04.1 To use Automatic Callback—after reaching a busy or DND station, on an intercom call, you may:

1A) Dial a [2] for Busy Override (see Paragraph 06.18.0, Override) . . .

. . . or . . .

1B) Depress the [ACB] key to set Automatic Callback.

- Busy tone will stop.
- You will hear dial tone for 2 seconds and then busy tone again.

2B) You may go on-hook or make other calls while waiting for the called station to become available.

3B) When the called station becomes idle:

- a) Your telephone will ring at a fast rate.
- b) Answer the call within 9 seconds to prevent the callback from being cancelled.
 - You will hear a single tone.
- c) Proceed to voice-announce.
- d) Proceed with the conversation.

NOTES:

1. You may cancel the request anytime prior to the actual callback by depressing the [INT] key and dialing [7][7].

2. If, after answering a callback, you hear a busy tone, it means the called party has already received or originated another call. Your request is not cancelled. You

will be called again the next time the station becomes idle.

06.05.0 Call Holding

06.05.1 To hold a call:

While connected to an outside call, depress the [HOLD] key.

- The CO LED will flash at the I-hold rate.

NOTES:

1. When a CO line is placed on hold it may be picked up at any station.

2. An on-hold reminder tone is generated within a predetermined time at the station that placed the line on hold. The LED flash rate of the recalling line will synchronize with tone.

3. Hold is automatically released if the other party hangs up.

06.06.0 Call Transfer with Camp-on

06.06.1 The Call Transfer with Camp-on feature allows you to transfer an outside call to a station that is either idle or busy. To transfer a call:

1) While connected to an outside call, depress the [CONF] key.

- The CO LED changes to conference flash.
- The INT LED will flash at the I-use flash rate.
- Intercom dial tone is heard.

2) Dial the station number to which the call is to be transferred.

3A) If the called station is idle:

- You will hear a single ring tone.

4A) Announce the call.

5A) Hang up.

- The INT LED goes off.
- The CO LED changes to the I-hold flash rate.
- The CO line rings the called station.
- The CO LED illuminates steadily when the called station connects with the transferred call.
- A ring no answer will recall you after a predetermined time.

3B) If the called station is busy:

- Busy tone is heard.

4B) Hang up.

- The INT LED goes off.

- The CO LED changes to the I-hold flash rate.
- The CO line is camped-on to the called station.
- The called station hears a warning tone.
- The CO LED illuminates steadily when the called station connects with the transferred call.

NOTES:

1. The Busy Override feature may be used instead of the Transfer Camp-on.
2. The call will recall you and camp-on is cancelled if the station does not pick it up within a predetermined time. Inform the caller of the situation, and repeat the procedure (if necessary).
3. You may reconnect to a transferred call (anytime before it is answered) by depressing the appropriate [CO] key.

06.06.2 To receive a transferred call (if your station is idle):

1A) Voice signalling:

2A) You will hear a single long tone, followed by an announcement.

- The INT LED will flash at the I-called rate.

3A) Acknowledge the announcement.

4A) When the transferring station hangs up you will hear a ringing tone.

- The CO LED changes to the I-called flash rate.

5A) Depress the announced [CO] key.

- The CO LED changes to the I-called flash rate.

NOTE:

If your EKT has the ringing line preference feature, you may depress the [SPKR] key or lift the handset instead of depressing the [CO] key.

1B) Tone signalling:

2B) You will hear intercom ringing tones.

- The INT LED will flash at the I-called rate.

3B) Depress the [INT] key and lift the handset (or depress the [SPKR] key).

- The INT LED changes to the I-use flash rate.

4B) Speak to the transferring station.

5B) You will be connected to the outside call

when the transferring station hangs up.

- The INT LED goes off.
- The LED of the transferred CO line changes to the I-use flash rate.

NOTE:

If your EKT has the ringing line preference feature, it is not necessary to depress the [INT] key before lifting the handset or depressing the [SPKR] key.

06.06.3 To answer a transferred call (if your station is busy):

- 1) You will hear a 1-second warning tone.
 - The outside call is camped-on your station.
 - The CO LED flashes at the I-hold rate.
- 2) You have several choices:
 - a) Depress the appropriate [CO] key.
 - The existing call will be terminated.
 - The new line will be answered.
 - The CO LED changes to the I-use flash rate.
 - b1) Hang up.
 - The existing call will be terminated.
 - The camped-on line will ring at your EKT.
 - The CO LED changes to the I-use flash rate.
 - b2) Depress the appropriate [CO] key to answer the call.
 - The CO LED changes to the I-use flash rate.
 - c1) Depress the [HOLD] key (if conversing on a CO line).
 - The existing CO call will be put on hold.
 - The camped-on line will ring at your EKT.
 - The CO LED changes to the I-use flash rate.
 - c2) Depress the appropriate [CO] key to answer the call.
 - The CO LED changes to the I-use flash rate.

NOTE:

If your EKT has the ringing line preference feature, you may depress the [SPKR] key or lift the handset instead of depressing the [CO] key.

06.07.0 On-hook Dialing (non-speakerphone models)

See Paragraph 06.10.0 for speakerphone

model EKTs.

- 1) Leave the handset on-hook.
- 2) Depress any available [CO] key.
 - Listen for dial tone.
 - The CO LED will flash at the I-use rate.
- 3) Dial the desired telephone number.
- 4) Lift the handset when the distant party answers.*
- 5) Hang up when the call is completed.

**If busy tone is heard, depress the [SPKR] key to disconnect.*

06.08.0 Handsfree Monitoring

See Paragraph 06.10.0 for speakerphone model EKTs.

06.08.1 Calls placed on hold by the distant party may be monitored "Handsfree".

- 1) Depress and hold the [SPKR] key.
 - Sounds from the distant party will be heard via the EKT's speaker.
- 2) Place the handset on-hook.
- 3) Release the [SPKR] key.
- 4) Lift the handset to continue the conversation when the distant party returns.

06.09.0 Group Listening

06.09.1 This feature allows all persons present to hear the distant party's responses.

- 1) Depress and hold the [SPKR] key.
 - SPKR LED lights and distant party's voice is heard via the EKT's speaker (handset is off-hook but inoperative).
- 2) When a local response is required, release the [SPKR] key.
 - SPKR LED goes off.
 - EKT speaker is silenced.
 - Handset is activated.

Repeat as required.

06.10.0 Speakerphone

06.10.1 To make an outside call:

- 1) Leave the handset on-hook.
- 2) Depress any available [CO] key.
 - Listen for dial tone.

- CO LED will flash at the I-use rate.

- 3) Dial the desired telephone number.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Depress the [SPKR] key when the call is completed.

06.10.2 To receive an incoming call:

- 1) You will hear a ringing tone.
- 2) Leave the handset on-hook.
- 3) Depress the appropriate [CO] key (LED flashing at the CO incoming call rate).
 - CO LED will flash at the I-use rate.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Depress the [SPKR] key when the call is completed.

06.10.3 To make a call on intercom:

- 1) Leave the handset on-hook.
- 2) Depress the [INT] key.
 - Listen for intercom dial tone.
 - INT LED will flash at the I-use rate.
- 3) Dial the desired station number.
 - You will hear a single ring tone.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Depress [SPKR] key when call is completed.

06.10.4 To answer an intercom call:

- 1) You will hear a single long tone followed by the caller's voice.
 - The INT LED will flash at the I-use rate.
- 2) Leave the handset on-hook.
- 3) To assure a private conversation, depress the [INT] key.
 - The INT LED will flash at the I-use rate.
- 4) Speak at a normal voice level in the direction of the telephone.
- 5) Depress the [SPKR] key when call is completed (if you depressed the [INT] key earlier).

NOTES:

1. To change from speakerphone to handset:

- Lift the handset.
2. To change from handset to speakerphone:
- Depress and hold the [SPKR] key.
 - Return the handset to on-hook.
 - Release the [SPKR] key.

06.11.0 Microphone Control

06.11.1 Your EKT (depending upon the model being used) may be equipped with one or two LEDs on the horizontal keystack. All EKTs have an LED associated with the [SPKR] key but some models also have an LED associated with the [MIC/MUTE] key. Typically, this key is labeled "MIC" if it has an LED and "MUTE" if it does not. (For convenience, we shall use "MIC".) EKTs with [MUTE] keys (no LED) will usually be programmed to operate in the "Momentary" mode described below.

06.11.2 The [MIC] key cuts off the speakerphone's microphone for private conversations. The MIC LED indicates the status of the microphone:

LED	MICROPHONE
ON	ON
OFF	OFF

06.11.3 The [MIC] key can function in one of two modes.

- **Momentary**—The microphone and accompanying LED are always ON when the speakerphone is activated unless the [MIC] key is held down. The MIC LED and microphone will be OFF while the [MIC] key is depressed and return to ON when the key is released.
- **Push-on/Push-off**—The microphone and accompanying LED are OFF during on-hook dialing and ON at all other times while the speakerphone is activated. They can be switched OFF/ON or vice-versa by a momentary depression of the [MIC] key. They will then remain in the same state until the [MIC] key is depressed again or the call is terminated.

06.12.0 Conferencing

06.12.1 To conference three stations and two CO lines, or four stations and one CO line:

- 1) Establish a single-CO line call.

06.12.2 To add a second CO line:

- 1) Depress the [CONF] key.

- You will hear intercom dial tone.
- The CO LED will flash at the conference rate.
- The INT LED will flash at the I-use rate.

- 2) Select a second CO line and dial the next telephone number.

- 3) Depress the [CONF] key after the party answers.*
 - CO LEDs will flash at the I-use rate.
 - All parties will be conferenced.

**If you receive a busy tone or no answer, return to the original connection by depressing the original [CO] key.*

06.12.3 To add another station:

- 1) Depress the [CONF] key.
 - You will hear intercom dial tone.
 - The CO LED will flash at the conference rate.
 - The INT LED will flash at the I-use rate.

- 2) Dial the number of the other station.

- 3) Depress the [CONF] key after the party answers.*
 - CO LED(s) will flash at the I-use rate.
 - All parties will be conferenced.

**If you receive a busy tone or no answer, return to the original connection by depressing the [CONF] key.*

- 4) Repeat to add another party:
 - a) Three stations/two CO lines maximum.
 - b) Four stations/one CO line maximum.
- 5) Hang up when the conference call is completed.

06.12.4 To conference up to four stations on one intercom line

- 1) Establish a two-station intercom call.
- 2) Depress the [CONF] key.
 - You will hear intercom dial tone.
 - The INT LED will flash at the conference rate.
- 3) Dial the third station's number.
- 4) Depress the [CONF] key after the called party answers.*
 - The INT LED will flash at the I-use rate.
 - All parties will be conferenced.

**NOTES:*

1. If you receive a busy tone or no answer, return to the original connection by depressing the [CONF] key.
2. The new station will not be conferenced unless the user lifts the handset or depresses the [INT] key.

5) Repeat to add a fourth station.

06.13.0 Paging

06.13.1 To page:

- 1) Lift the handset.
- 2) Depress the [INT] key and dial the following:
 - [8][0] = All Call
 - [8][1] = Group #1
 - [8][2] = Group #2
 - [8][3] = Group #3
 - [8][4] = Group #4
 - [8][8] = All Call (with External Page)*
 - [8][9] = External Page
- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

**Programmable option Also see Call Pick-up*

06.14.0 Speed Dialing

06.14.1 To automatically dial a frequently called number:

- 1) Lift the handset.
- 2) Depress any available [CO] key.
 - Listen for dial tone.
- 3) Depress the [*] key.
- 4) Dial the 2-digit number that corresponds to the desired telephone number.
 - Your **Strata** system will automatically dial the number for you.
- 5) Hang up when the call completed.



06.14.2 To automatically redial the last number called:

- 1) Lift the handset.
- 2) Depress any available [CO] line key.
 - Listen for dial tone.
- 3) Depress the [R] key.

- Your **Strata** system will automatically redial the last telephone number you dialed.

4) Hang up when the call completed.

06.14.3 To chain dial automatically:

Automatically dials two or more sets of numbers during one call. For use with long distance routing.

- 1) Lift the handset.
- 2) Depress any available [CO] key.
 - Listen for dial tone.
- 3) Depress the [*] key.
- 4) Dial the 2-digit number that corresponds to the first telephone number to be dialed.
- 5) Depress the [*] key again.
- 6) Dial the 2-digit number that corresponds to the second telephone number to be dialed.*

**Only the first number dialed during the chain dial will be repeated by the automatic redial.*

- 7) Repeat the above steps for each subsequent number to be dialed.
 - Your **Strata** system will automatically dial the number for you.

8) Hang up when the call completed.

06.14.4 To output the [*] and [H] tones:

When the [] and [H] tones must be output (for computer input service or other use), the Speed Dialing feature must be disabled to permit manual dialing of the [*] and [H] tones.*

- 1) Lift the handset.
- 2) Depress any available [CO] line key.
- 3) Dial any desired numbers utilizing the Speed Dialing feature in the usual matter.
- 4) To disable the Speed Dialing feature, thereby permitting the [*] and [H] tones to be output manually, press the [*] key and then the [H] key.

Only manual dialing will be possible, and the special [] and [H] tones, as well as digits "0-9", will be output as dialed. The Speed Dialing feature will be restored when the EKT is hung up or placed on hold.*

06.14.5 To store telephone numbers in system memory:*

Telephone numbers can be stored in the system memory by station 10 only.

- 1) Lift the handset (do not activate a [CO] or [INT] line).
- 2) Depress the [#] and [*] keys, respectively.
- 3) Dial a 2-digit address code.
 - Codes run consecutively from 60 ~ 99.
- 4) Dial the telephone number to be stored (up to 16 digits).
- 5) Depress the [#] key to record the number in memory.
- 6) Repeat the above steps with every number (up to 40) to be stored.
- 7) Return the handset to on-hook.
- 8) Write down the address codes and numbers for future reference.

**Repeat this procedure to replace the stored telephone numbers with new numbers.*

***It may be necessary to insert a pause after the trunk access code to allow for dial tone delay. If so, after entering the PBX access code depress the [MW/FL] key to insert a 3-second pause.*

06.14.6 To store a telephone number in station memory:*

Telephone numbers can be stored by each station.

- 1) Lift the handset (do not activate a [CO] or [INT] line).
- 2) Depress the [#] and [*] keys, respectively.
- 3) Dial a 2-digit address code (codes run consecutively from 10 ~ 49).
- 4) Dial the telephone number to be stored (up to 16 digits).**
- 5) Depress the [#] key to record the number in memory.
- 6) Repeat the above steps with every number to be stored (up to 40).
- 7) Return the handset to on-hook.
- 8) Write down the address codes and numbers

for future reference.

**Repeat this procedure to replace the stored telephone numbers with new numbers.*

***It may be necessary to insert a pause after the trunk access code to allow for dial tone delay. If so, depress the [MW/FL] key after entering the PBX access code.*

06.15.0 Automatic Dialing Keys

06.15.1 Dialing a number with the automatic dialing keys.

*Telephone numbers can be accessed by each of the AD 1 ~ 5 or 7 keys, or one of the 2-digit access codes in the usual **Strata** manner.*

- 1) Lift the handset.
- 2) Depress any available [CO] line key.
 - Listen for dial tone.
- 3) Depress one of the [AD] keys (or depress the [REP] key and dial the 2-digit number) that corresponds to the desired telephone number.
 - Your **Strata** system will automatically dial the number for you.

06.15.2 To redial the last number called with the [RDL] key:

- 1) Depress any available [CO] line key.
 - Listen for dial tone.
- 2) Depress the [RDL] key.
 - Your **Strata** system will automatically dial the last telephone number that was dialed by that station.
- 3) Hang up when the call is completed.

06.15.3 To store telephone numbers with automatic dialing keys:*

- 1) Lift the handset (do not activate a [CO] or [INT] line).
- 2) Depress the [RDL] and [REP] keys (or, if these keys do not appear on your EKT, the [#] and [*] keys**), respectively.
- 3) Depress one of the [AD] keys or the [*] key and dial an address code (codes run consecutively from 10 ~ 49, AD numbers reside at 10 ~ 16).
- 4) Dial the telephone number to be stored (up to 16 digits).***

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- 5) Depress the [RDL] key to record the number in memory.
- 6) Repeat the above steps with every number to be stored (up to 40).
- 7) Return the handset to on-hook.
- 8) Write down the address codes and telephone numbers for future reference.

**Repeat this procedure to replace the stored telephone numbers with new numbers.*

***On some EKTs the [RDL] and [REP] keys may not appear. If not, use the [#] and [*] keys for Automatic Dialing access. If the [RDL] and [REP] keys do appear, the [#] and [*] keys will not function for Automatic Dialing access at that station.*

****It may be necessary to insert a pause after the trunk access code to allow for dial tone delay. If so, after entering the PBX access code, depress the [MWW/FL] key to insert a 3-second pause.*

06.16.0 Tone Signalling (programmable option)

06.16.1 To make a Tone Signal call:

- 1) Call another station via intercom.
 - You will hear a ringing tone as the primary method of intercom call signalling (voice-announcing is inoperative).
- 2) Speak to the called party when the call is answered.

3) Voice call can be accomplished by dialing [1].

06.16.2 To answer a Tone Signal call:

- 1) Lift the handset or depress the [SPKR] key (handsfree answerback is inoperative).
- 2) Hang up with the call is completed.

06.17.0 Do Not Disturb

06.17.1 To use Do Not Disturb mode:

- 1) Depress the [DND] key.
 - The DND LED will light steady.

06.17.2 To release the Do Not Disturb mode:

- 1) Depress the [DND] key.
 - The DND LED will go off.

06.18.0 Override

06.18.1 To initiate a Busy Override signal:

- 1) After reaching a busy station, you may signal that station that a call is waiting by dialing [2].
 - A tone signal will be heard at the busy station every 5 seconds.
- 2) After overriding the busy station, remain on the intercom to allow the busy station to respond.

06.18.2 To respond to a Busy Override signal:

- 1) If on intercom:
 - a) Terminate the existing intercom call.
 - b) Depress the [INT] key.
 - c) Speak to the overriding station.
- 2) If on a CO line:
 - a) Place the CO line on hold.
 - b) Depress the [INT] key.
 - c) Speak to the overriding station.

06.18.3 To Override DND (programmable option)

- 1) After reaching a DND station (fast busy tone), you may signal that station that a call is waiting by dialing [2].
 - A tone signal will be heard at the DND station every 5 seconds.
- 2) After overriding the DND station, remain on the intercom to allow the DND station to respond.

06.18.4 To respond to a DND override signal:

- 1) Depress the [INT] key.
- 2) Speak to the overriding station.

06.18.5 To use executive override (programmable option):

Overrides the CO line and intercom privacy feature, and is able to enter any existing conversation within the system. Only two stations can be programmed for this feature.

- 1) You may enter any conversation on any CO/PBX line or the intercom by depressing the appropriate key.
 - A warning tone, however, is sounded before the overriding station is actually connected.

06.19.0 Background Music (BGM)

06.19.1 You may listen to background music via the station's speaker (if music-on-hold is available on your system) by depressing the

[SPKR] key. Control the volume level with the control on the rear-right side (speakerphone models) or lower front (S-type model) of your EKT.

06.20.0 Busy Lamp Field (BLF)

06.20.1 This optional telephone automatically indicates which stations are in use.

06.21.0 Night Transfer (programmable option)

06.21.1 On an optional basis, your **Strata** system can function with two or three ringing patterns. If three patterns are selected, they are designated **Day**, **Day 2**, and **Nite**. If only two patterns are selected, **Day** and **Nite** designations are used.

- In both cases, different ringing patterns are chosen by sequential depressions of the [NT] key on station 10.
- The active pattern is shown by the state of the NT LED as follows:

	Three-pattern	Two-pattern
DAY	OFF	OFF
DAY 2	FLASH	N/A
NITE	ON	ON

06.22.0 Account Number Recording

06.22.1 Station Message Detail Recording (if your system is equipped) allows data to be collected for each outgoing and (optionally) incoming CO line call. This data may then be output to either a printer or recording device. Each call may also be given an account number for filing purposes. The account number can be entered anytime after dialing the outside number on an outgoing call and anytime during the conversation on an incoming call.

06.22.2 To record an account number:

- 1) Dial [x] [5] [0] and the account number (up to 6 digits).

For example: [x] [5] [0] [1] [2] [3] [4] [5] [6]

- 2) Hang up when the call is completed.

NOTES:

1. Caller will not hear any tones until after the sixth account number digit.
2. Repeat the same procedure to reenter in the event an error was made.

07 STANDARD TELEPHONE (OPX) OPERATING PROCEDURES

07.00.0 General

07.00.1 Intercom (INT) dial tone must be heard before dialing; if you have just lifted the

handset, you will hear intercom dial tone. During a conversation, intercom dial tone is obtained by "flashing" the hookswitch (plunger) located in the handset cradle. To flash, depress the hookswitch momentarily (for about a 1/2 second), and in response you will hear intercom dial tone.

07.01.0 Intercom Calls

07.01.1 To make an intercom call:

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the desired station number and you will hear a single ring tone.*

**If you are calling another standard telephone, ring tones will continue. Wait for an answer. Tone signalling over an EKT can be accomplished by dialing [1] after the station number.*

- 3) Speak when the ring tone ends.
- 4) Hang up when the call is complete.

07.01.2 To receive an intercom call:

- 1) You will hear a ringing signal (1 second on—3 seconds off).
- 2) Lift the handset and speak to the caller.
- 3) Hang up when the call is completed.

07.02.0 Outside Calls

07.02.1 To make an outside call:

- 1) Lift the handset.
 - You will hear intercom dial tone.
- 2) Dial the CO line access code:
 - 9 = random access to an available local line.
 - 7XX = selective access to line number "XX".
- 3) Wait for CO dial tone.
- 4) Dial the desired telephone number.
- 5) Hang up when the call is completed.

07.02.2 To receive an incoming call (if the call is transferred from another station):

- 1) You will hear a ringing signal (1 second on—3 seconds off).
- 2) Lift the handset and speak to the station user.

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- 3) You will be connected to the CO line when the transferring station goes on-hook.
- 4) Hang up when the call is completed.

07.02.3 To receive an incoming call (if the call is directly from the CO line):

The station must be programmed to ring on that line and be equipped with the ringing line preference feature.

- 1) You will hear a ringing signal (2 short rings, then 3 seconds off).
- 2) Lift the handset.
- 3) Speak to the outside caller.
- 4) Hang up when the call is completed.

07.03.0 Call Transfer

07.03.1 To transfer a call:

- 1) While connected to an outside line, flash the hookswitch.
 - You will hear intercom dial tone.
- 2) Dial the station number to which the call is to be transferred.
- 3) Announce the call and wait for the called station to come off-hook.

NOTES:

1. *If you hang up before the called station is off-hook, the CO line will be disconnected.*
2. *If you receive a busy tone or no answer, return to the original connection by flashing the hookswitch.*

- 4) Hang up.

07.04.0 Conferencing

07.04.1 To conference four stations and one CO line:

- 1) Establish a standard one-CO line call.
- 2) Flash the hookswitch.
 - You will hear intercom dial tone.
 - The existing call will be on-hold.
- 3) Dial the number of the desired station.
- 4) Flash the hookswitch after the party answers.
 - All parties will be conferenced.

NOTE:

The called party must come off-hook or depress the [INT] key. If you receive a busy tone or no answer, return to the original connection by flashing the hookswitch.

- 5) Repeat to add another station. (Four stations, including yours, and one CO line is maximum.)
- 6) Hang up when the call is completed.

07.04.2 To conference up to four stations on intercom:

- 1) Establish a standard two-station intercom call.
- 2) Flash the hookswitch.
 - You will hear intercom dial tone.
 - The existing call will be on-hold.
- 3) Dial the number of the desired station.
- 4) Flash the hookswitch after the party answers.
 - All parties will be conferenced.

NOTE:

The called party must come off-hook or depress the [INT] key. If you receive a busy tone or no answer, return to the original connection by flashing the hookswitch.

- 5) Repeat to add another station. (Four stations, including yours, is maximum.)
- 6) Hang up when the call is completed.

07.05.0 Paging

07.05.1 To page:

- 1) Lift the handset.
- 2) Listen for intercom dial tone and dial the following:

- [8] [0] = All Call
- [8] [1] = Group #1
- [8] [2] = Group #2
- [8] [3] = Group #3
- [8] [4] = Group #4
- [8] [8] = All Call (with External Page)*
- [8] [9] = External Page

- 3) Make your announcement in a normal voice level and repeat it.
- 4) Hang up when you have completed your announcement.

Programmable option.

07.06.0 Override

07.06.1 To initiate a Busy Override signal:

- 1) After reaching a busy station, you may signal that station that a call is waiting by dialing **[2]**.
 - A tone signal will be heard at the busy station.

07.06.2 To override DND (Programmable option):

- 1) After reaching a DND station, you may signal that station that a call is waiting by dialing **[2]**.
 - A tone signal will be heard at the DND station.

07.07.0 Tone Signalling

07.07.1 To make a Tone Signal call:

- 1) Call another station via intercom.
 - You will hear a ringing tone as the primary method of intercom call signalling (voice announcing is inoperative).

2) Speak to the called party when the call is answered.

3) A voice call can be accomplished by dialing **[1]**.

07.08.0 Account Number Recording

07.08.1 Station Message Detail Recording (if your system is equipped) allows data to be collected for each outgoing and (optionally) incoming CO line call. This data may then be output to either a printer or recording device. However, DTMF OPX stations will not record account numbers or telephone numbers (rotary dial telephones will output telephone numbers but not account numbers). When the station user hangs up the station number, telephone number*, time of day and call duration will be output.

**Rotary dial only.*

Strata VI

FAULT FINDING PROCEDURES (Release 3)

Strata VI

FAULT FINDING PROCEDURES

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01 GENERAL

01.01 This section describes the maintenance procedures used for the diagnosis of faults in the **Strata VI** electronic key telephone system. Faults are classified and then cleared by replacing apparatus and performing operational tests in the sequences prescribed by the the fault clearing flow charts in Paragraph 05.

02 FAULT CLASSIFICATION

02.01 A fault classification flow chart is provided to ensure that fault clearing is pursued in a logical sequence (Chart No. 1).

02.02 An assumption is made in the flow charts that the fault was discovered and reported by an EKT user. All faults, therefore, are classified according to the way they would appear at the EKT.

02.03 Faults and their associated flow charts are organized into the following categories:

Table A—Flow Charts	
Title	Number
Fault Classification	1
Power Faults	2
Station Faults	3
MKSU Faults	4
CO Line Faults	5
Intercom Faults	6
Automatic Dialing Faults	7
MOH, BGM, Page, Relay Service Faults	8
SMDR Faults	9
OPX Faults	10
OPL Faults	11

03 FAULT CLEARING PROCEDURES

03.01 Before attempting to clear any fault, ensure that it is in the **Strata VI** system and not caused by associated external equipment such as wiring, MOH source, etc.

IMPORTANT!

Many Strata VI features are assigned, enabled or disabled using software entries described in Section 200-006-300, System Programming. Further, with the exception of Programs 5XX ~ 9XX, programming changes are not effective until the new data has been shifted into working memory (see Paragraph 02.06, Section 200-006-300, System Programming. It is important to verify that the system pro-

gramming is correct and functional before troubleshooting the hardware.

In new systems, or when the MCDU/CMTU has been changed, the initialization procedure must be performed before testing. The system data stored on the original MCDU/CMTU will be protected from loss by the battery on that PCB. Therefore, the initialization sequence should not be performed if the original PCB is reinstalled.

03.02 Faults in **Strata VI** are cleared by replacing PCBs, EKTs or the power supply, as instructed in the flow charts.

03.03 Five symbols are used in the flow charts. These symbols are identified in Figure 1.

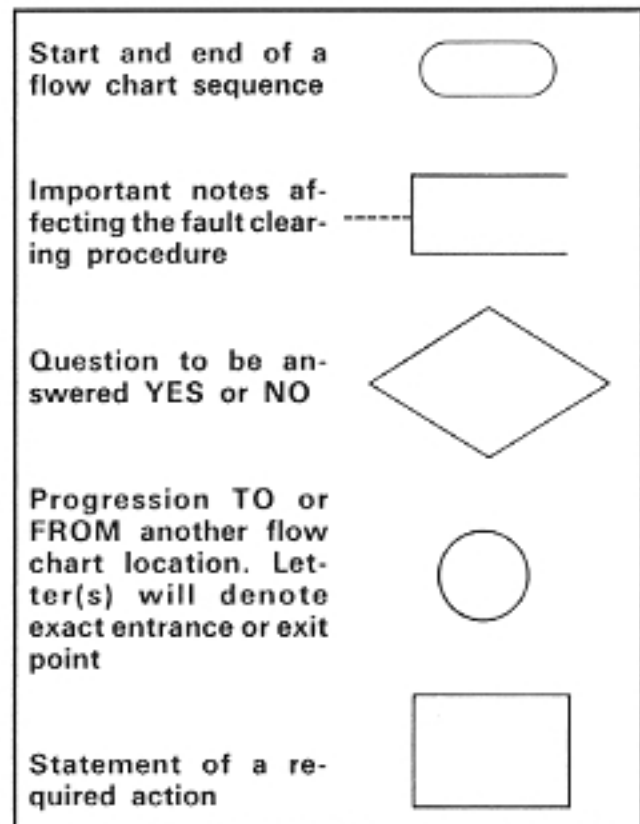


FIGURE 1—FLOW CHART SYMBOLS

03.04 The flow charts are sequentially arranged to permit rapid fault localization within the **Strata VI** system. *All fault clearing must begin with the Fault Classification Flow Chart, which is arranged in the correct fault locating sequence.*

03.05 The following precautions must be observed when handling PCBs.

DO NOT:

- Drop a PCB.
- Stack one PCB on top of another.
- Handle a PCB without discharging any static electricity from your person by touching the grounded MKSU.
- Touch the PCB contacts with your fingers.

IMPORTANT!

If the fault is not cleared by substituting a PCB, the original PCB must be reinserted into the MKSU.

04 DEFECTIVE APPARATUS RETURNS

04.01 When defective **Strata VI** apparatus is shipped for repair, the apparatus must be packed in a suitable container (an original type box is highly recommended).

- a) Anti-static container for the MSTU, MCOU and MTOU PCBs.
- b) Paper container for the MCDU/CMTU PCB.
- c) Plastic bags for EKTs, MKSUs, etc.

04.02 NEVER WRITE ON THE APPARATUS ITSELF! Describe the nature of the defect on a Toshiba RA tag, and attach the tag to the front of the unit with its string (not wire) so that the tag can remain attached during the testing and repair process.

04.03 If different and/or additional faults are created in the system by substituting a PCB, tag and return the substitute PCB as a defective unit.

**05 FAULT IDENTIFICATION
and ELIMINATION PROCEDURES**

05.01 The MCDU/CMTU PCB may contain a "soft" fault due to static electricity. If the MCDU/CMTU is found defective during the fault finding procedures, attempt to clear a soft fault prior to returning the PCB for repair. The correct procedure for this is to reinstall the MCDU/CMTU, perform the initialization procedure and then reprogram the system as necessary to test for the fault. If the fault returns after reinstalling and performing the initialization procedure, tag the defective MCDU/CMTU and return it for repair.

TABLE B
STATION CABLE CONTINUITY CHECK USING VOLTMETER

NOTE:

Perform the following:

- *Modular block—check all station cables.*
- *MDF—check cable from MSTU to MDF.*

- 1) Disconnect the EKT.
- 2) Using a DC voltmeter, measure between the wires of the two pairs to verify the presence of the following readings.

FROM			TO			VOLTAGE*
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	24
1	R	Red	2	T	Black	24
1	T	Green	2	R	Yellow	24
1	R	Red	2	R	Yellow	24
1	T	Green	1	R	Red	0
2	T	Black	2	R	Yellow	0

- 3) An improper reading indicates an open or crossed or shorted wire.
- 4) For the MDF-to-EKT cable, a more precise check is made using an ohmmeter per Table C.

**Nominal voltage—within the power supply limits of 23.2 ~ 28.2 VDC while under AC power.*

TABLE C
STATION CABLE CONTINUITY CHECK USING OHMMETER

- 1) Disconnect the EKT at the wall.
- 2) At the MDF, remove the bridging clips.
- 3) Using an ohmmeter, measure the resistance between all combinations of the four wires at the modular block. All measurements should exceed 1M Ohm.
- 4) At the MDF, place shorting jumper wires between the T and R of pair #1 (green-red) and the T and R of pair #2 (black-yellow).
- 5) At the modular block, measure the resistance between all wire combinations. The proper readings are as follows:

FROM			TO			RESISTANCE
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	1M Ohm
1	R	Red	2	T	Black	1M Ohm
1	T	Green	2	R	Yellow	1M Ohm
1	R	Red	2	R	Yellow	1M Ohm
1	T	Green	1	R	Red	55 ohms*
2	T	Black	2	R	Yellow	55 ohms*

***NOTE:**

The green-red and black-yellow measurements should be within 10% of each other.

CHART NO. 1 FAULT CLASSIFICATION

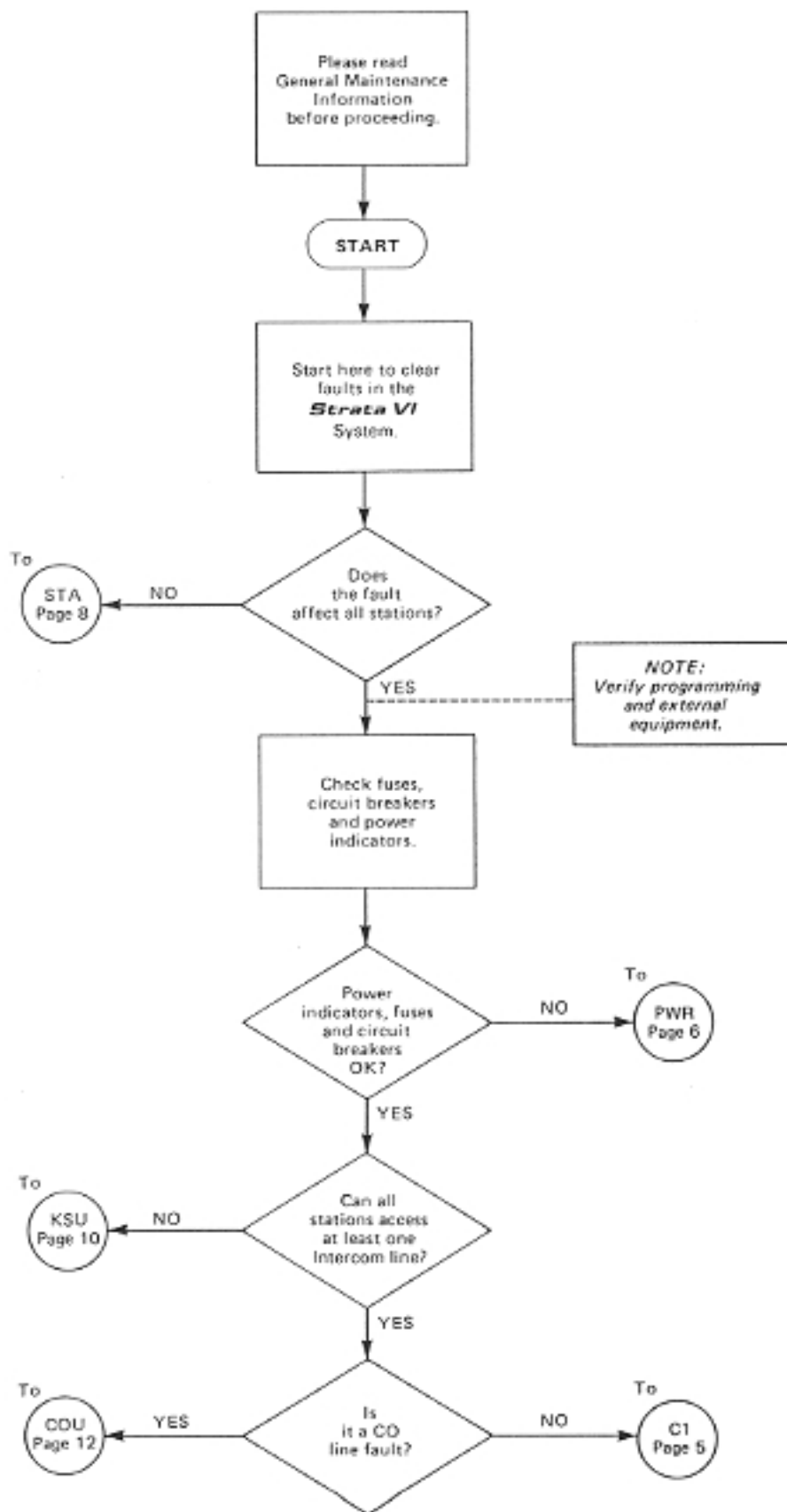


CHART NO. 1
FAULT CLASSIFICATION (con't.)

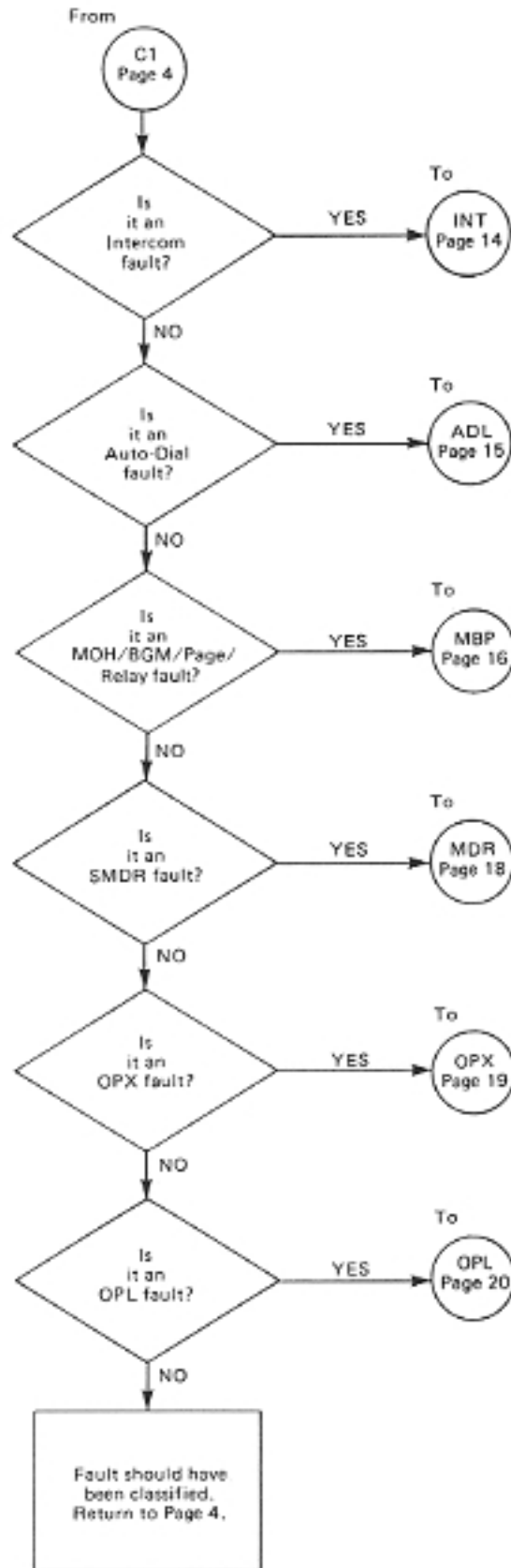


CHART NO. 2
POWER FAULTS

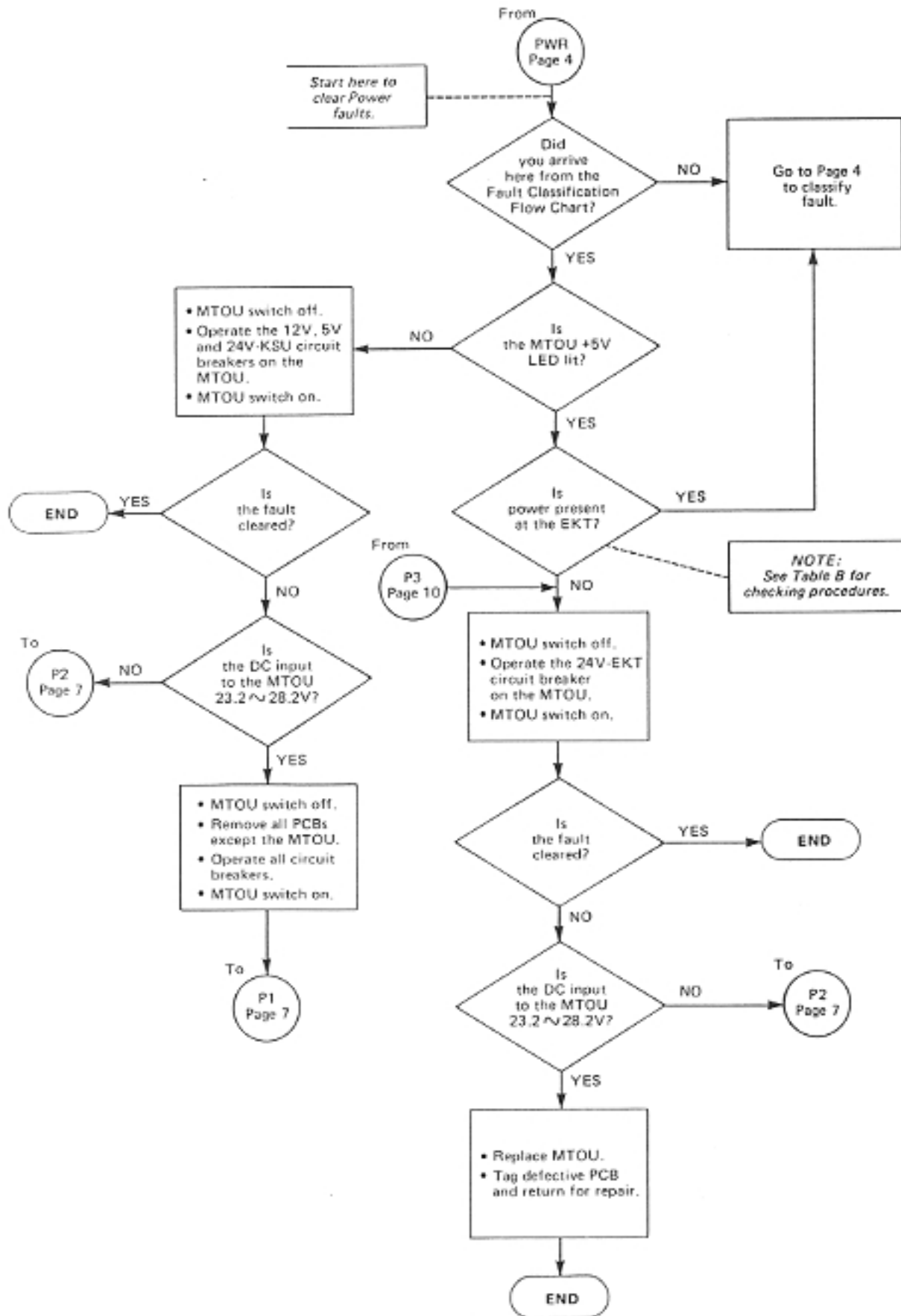


CHART NO. 2
POWER FAULTS (con't.)

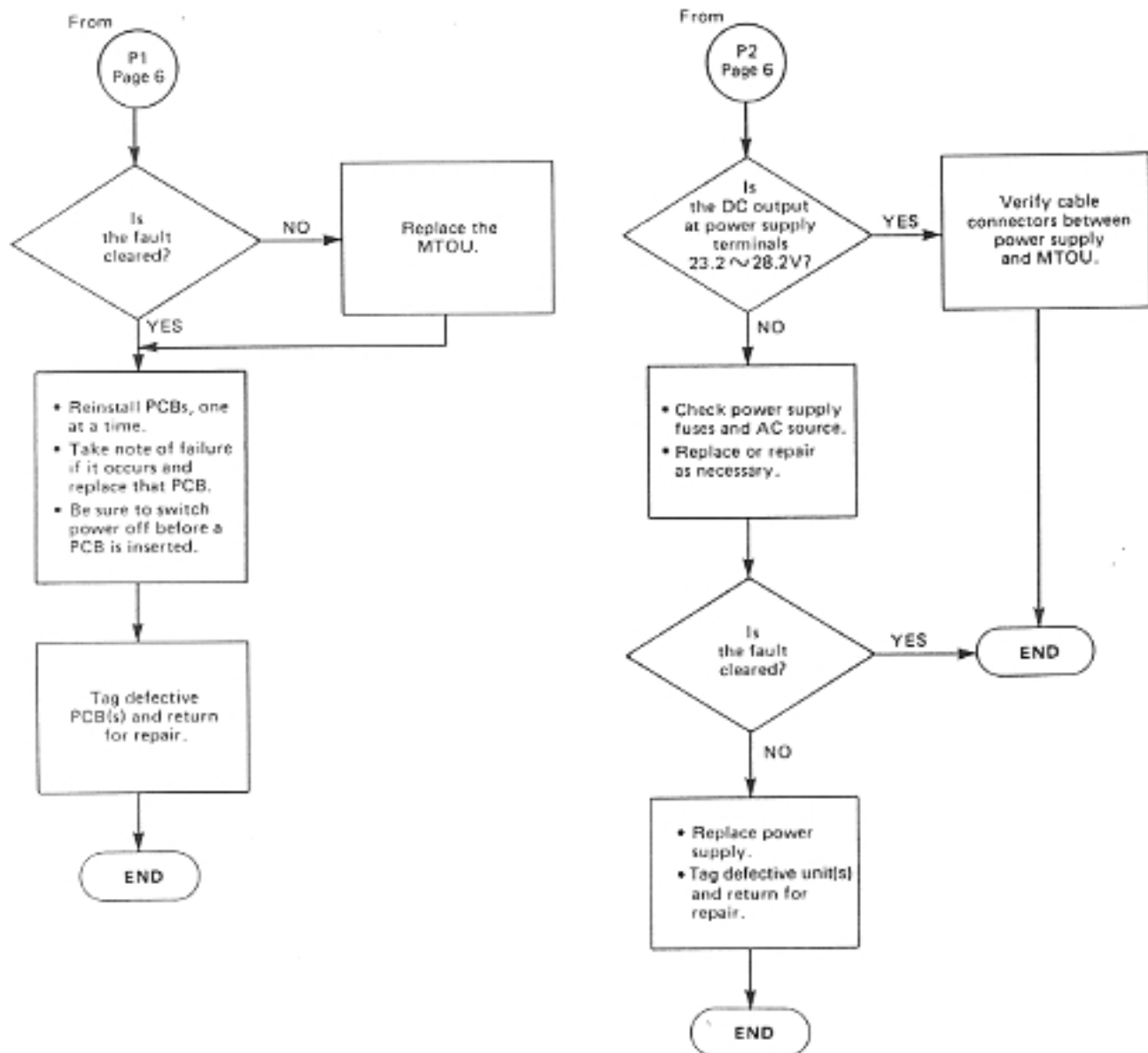


CHART NO. 3
STATION FAULTS

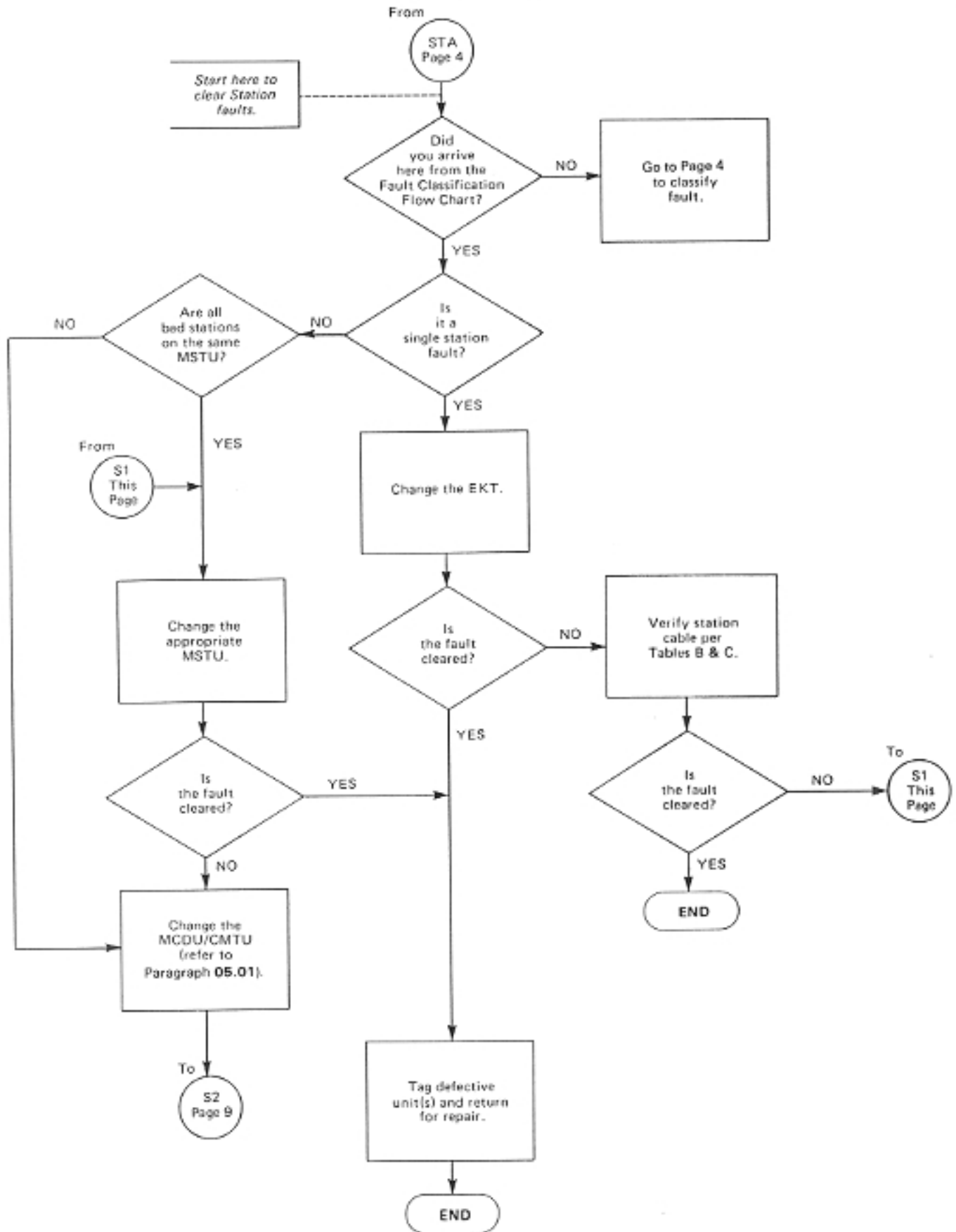


CHART NO. 3
STATION FAULTS (con't.)

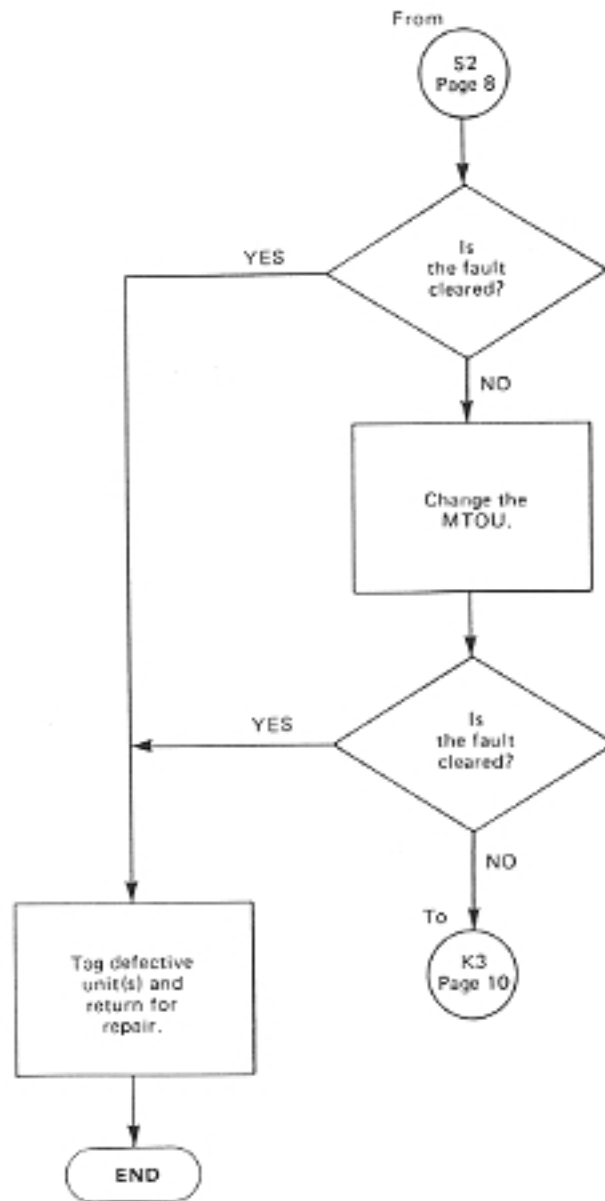


CHART NO. 4
MKSU FAULTS

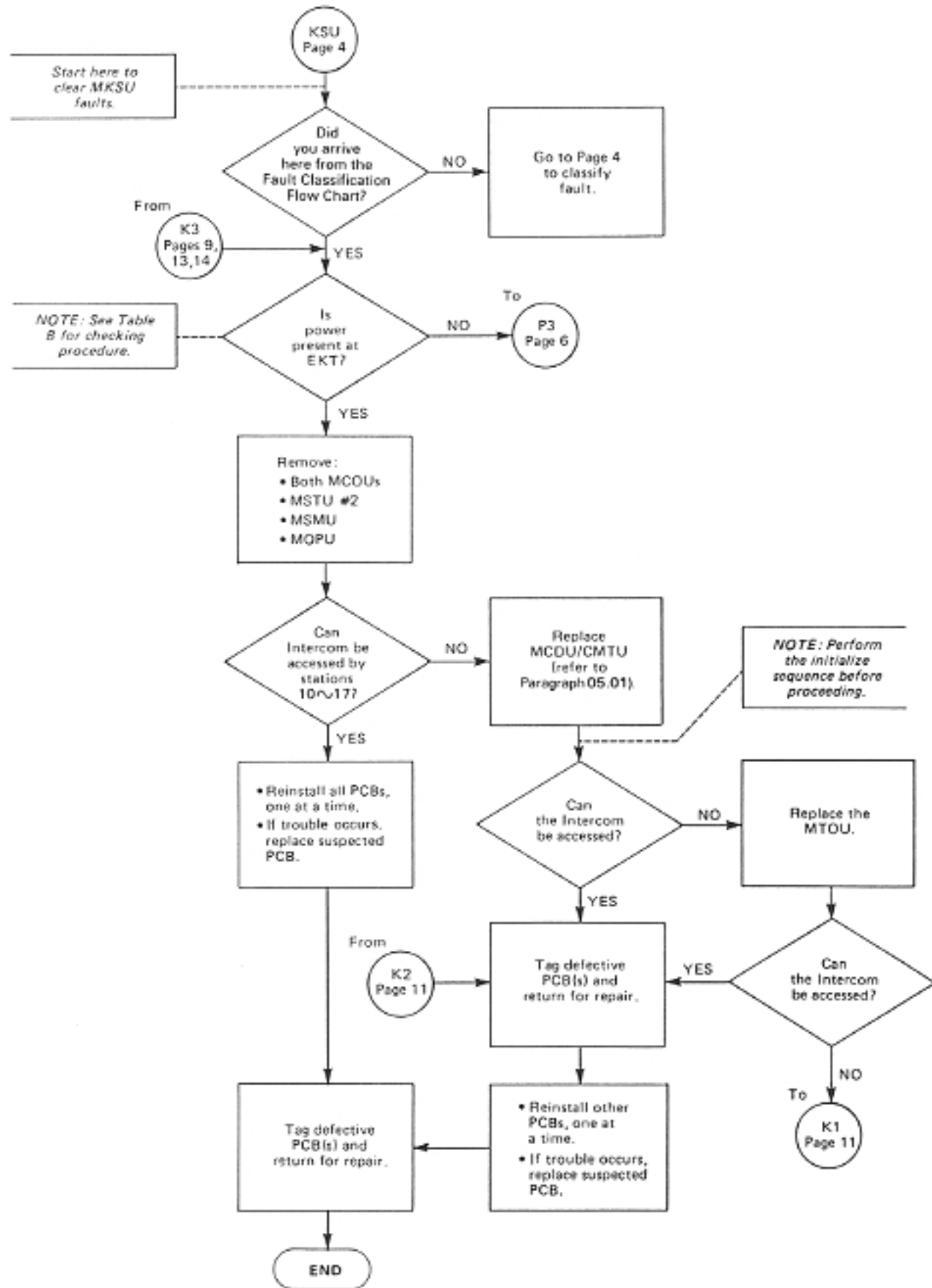


CHART NO. 4
MKSU FAULTS (con't.)

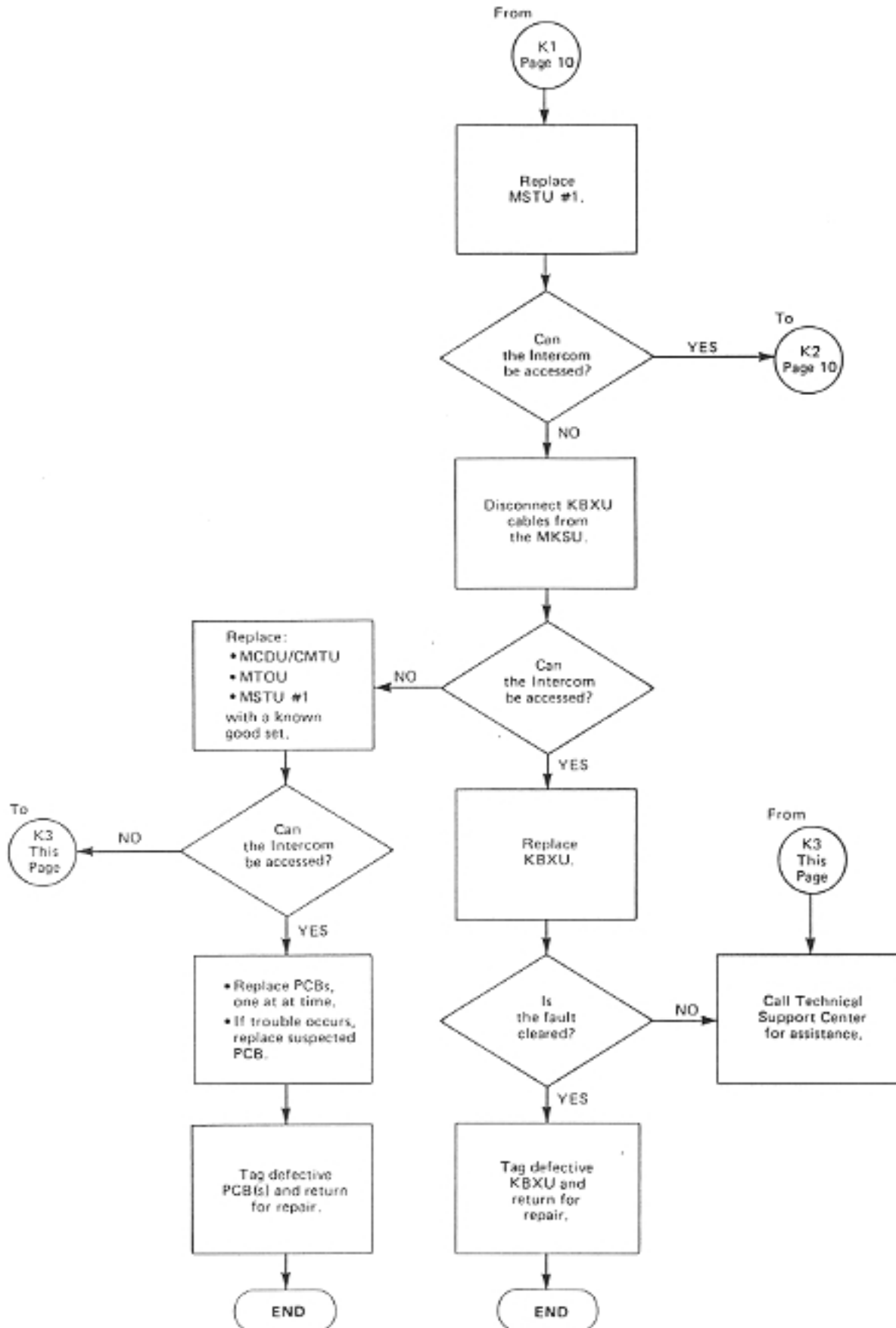


CHART NO. 5
CO LINE FAULTS

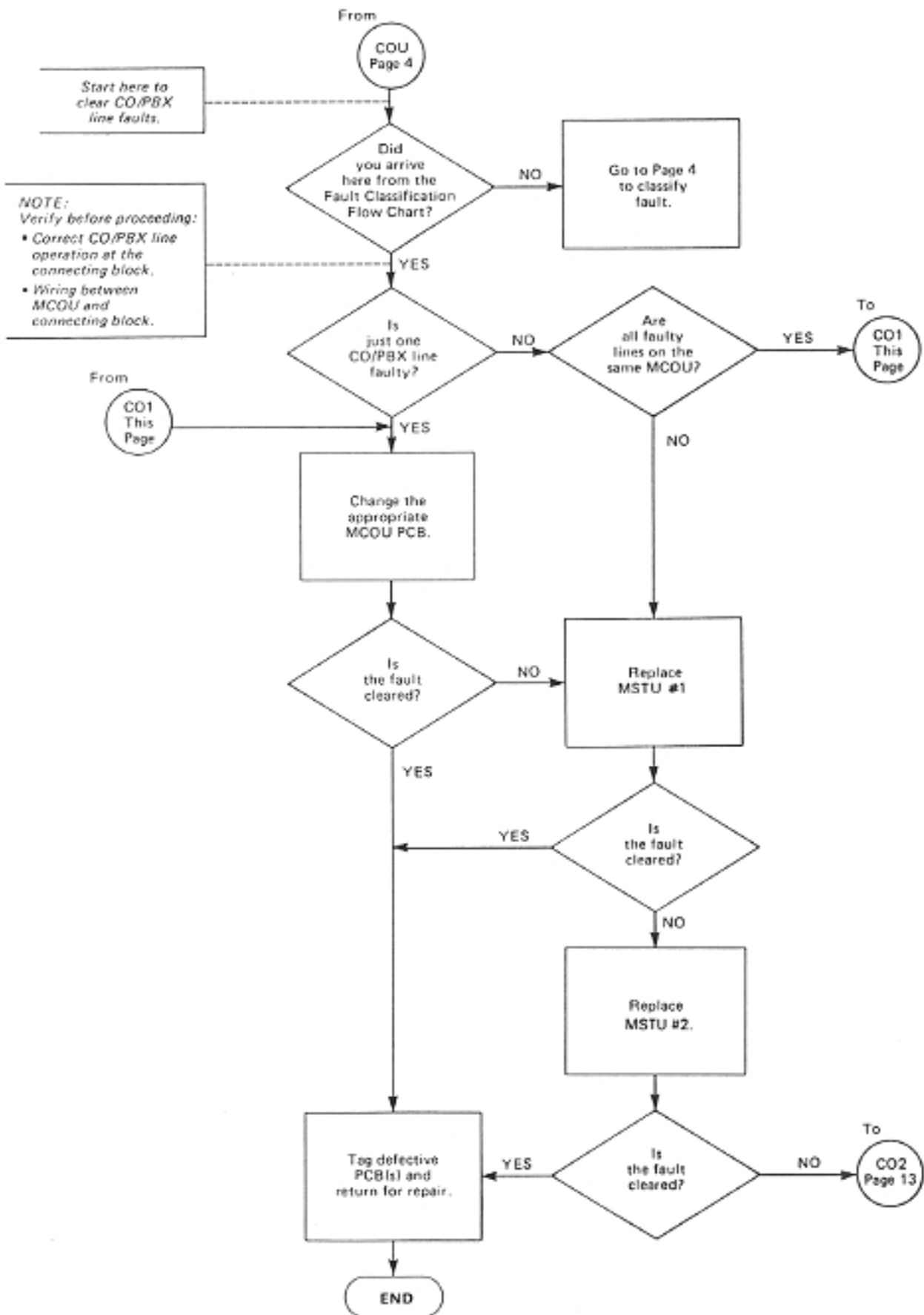


CHART NO. 5
CO LINE FAULTS (con't.)

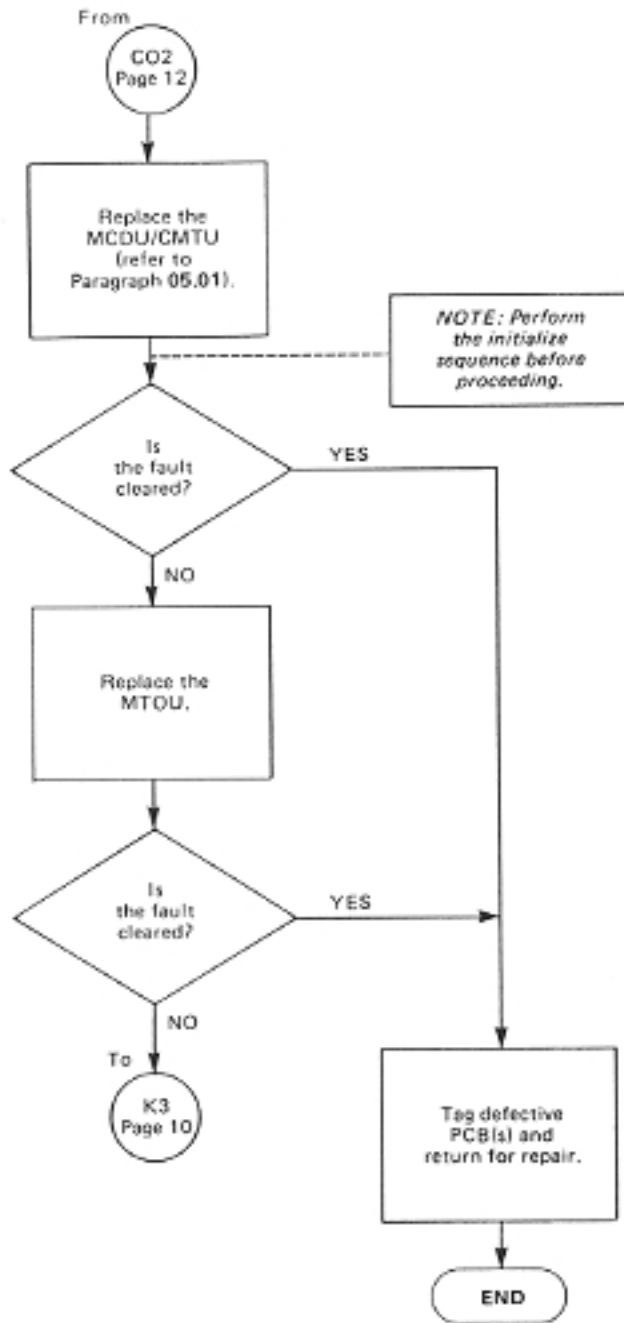


CHART NO. 6
INTERCOM FAULTS

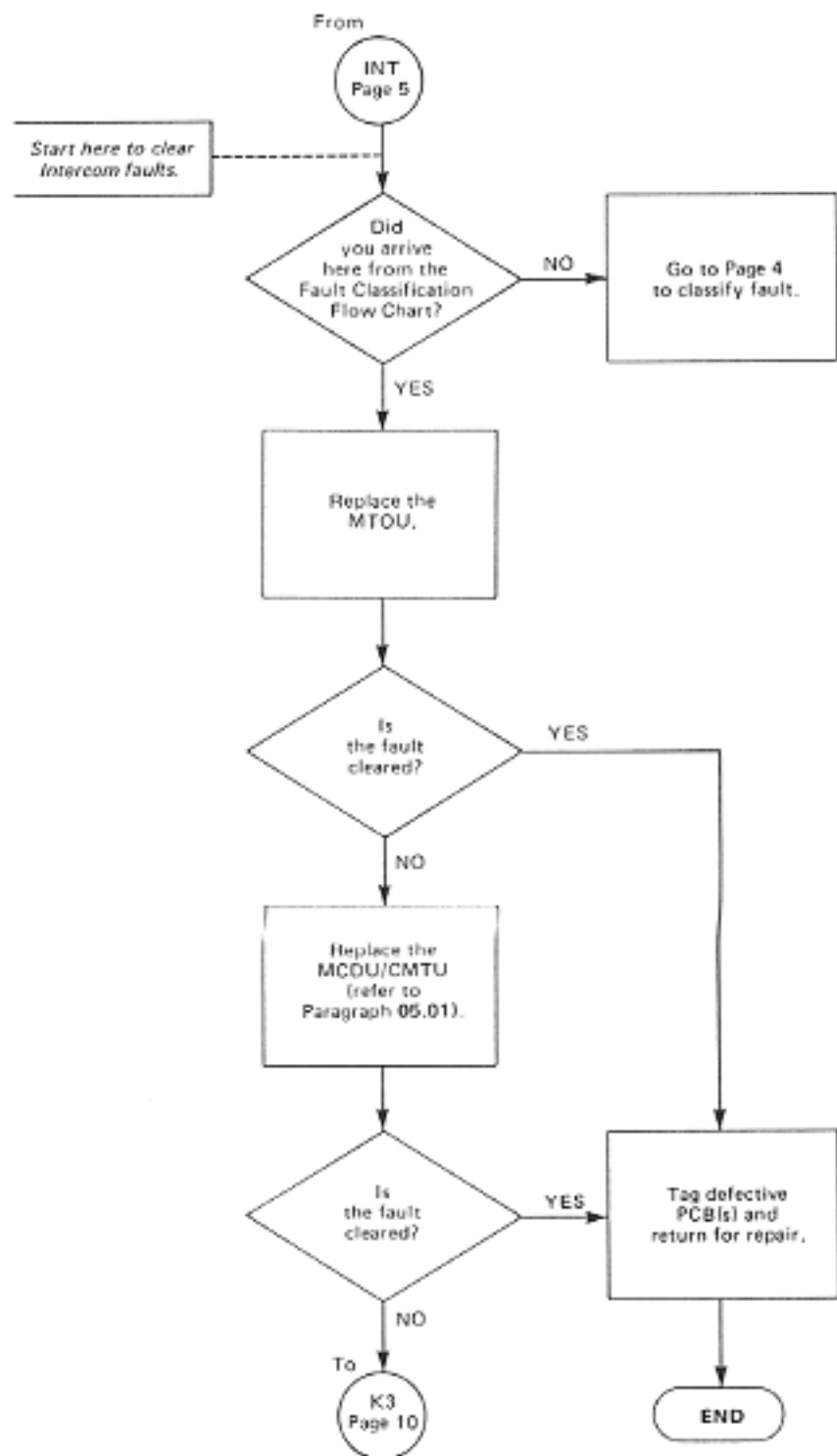


CHART NO. 7
AUTOMATIC DIALING FAULTS

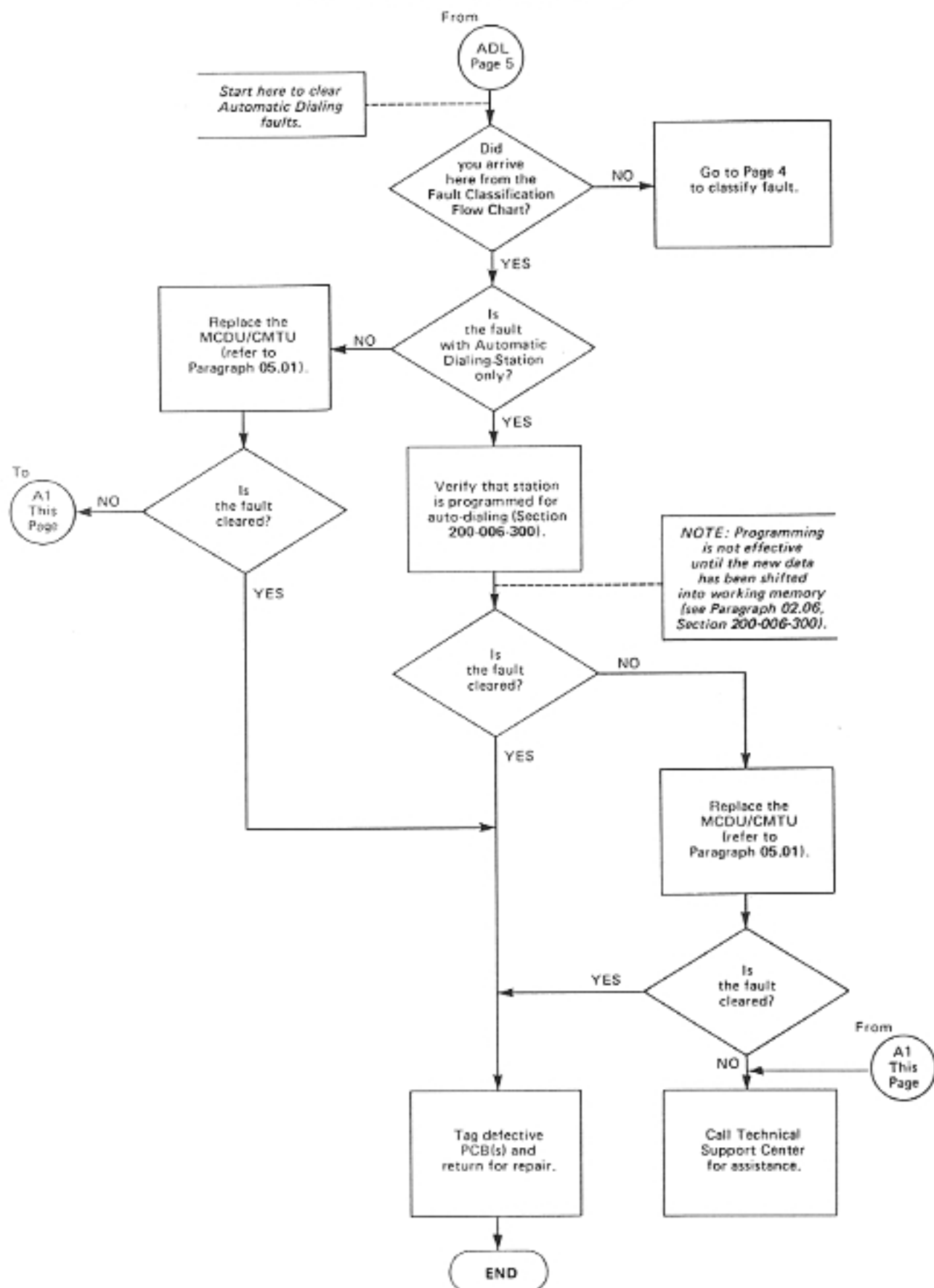


CHART NO. 8
MOH, BGM, PAGE, RELAY SERVICE FAULTS

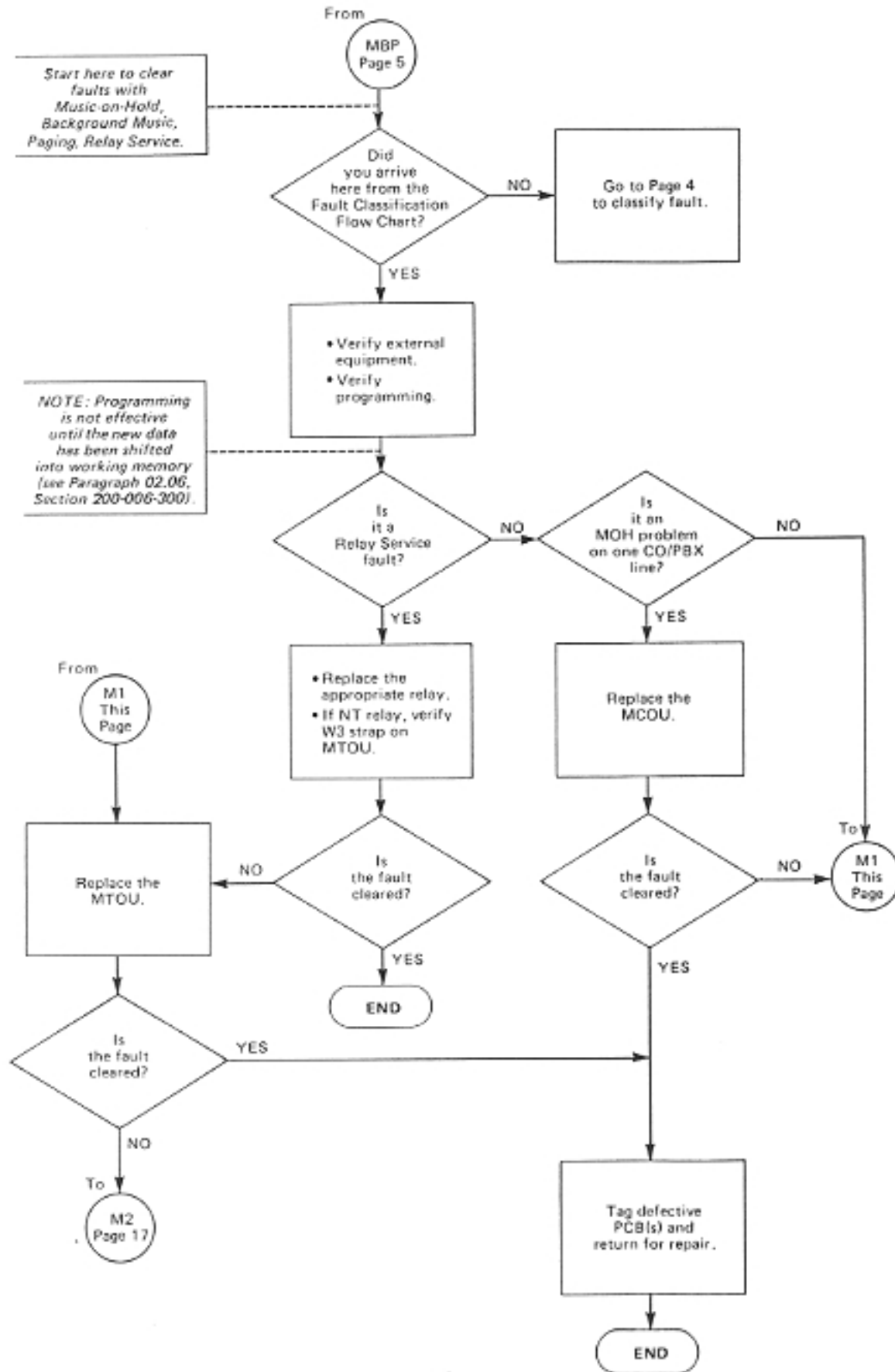


CHART NO. 8
MOH, BGM, PAGE, RELAY SERVICE FAULTS (con't.)

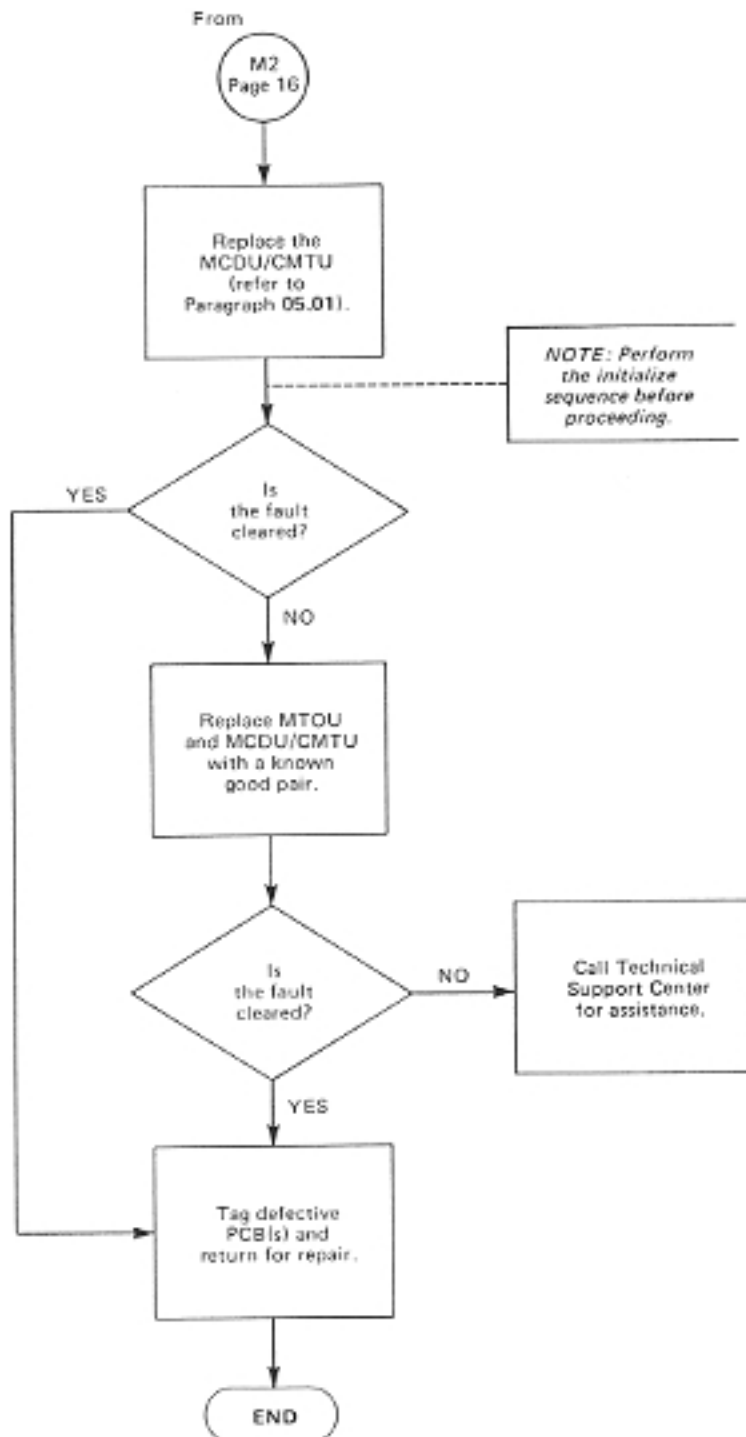


CHART NO. 9
SMDR FAULTS

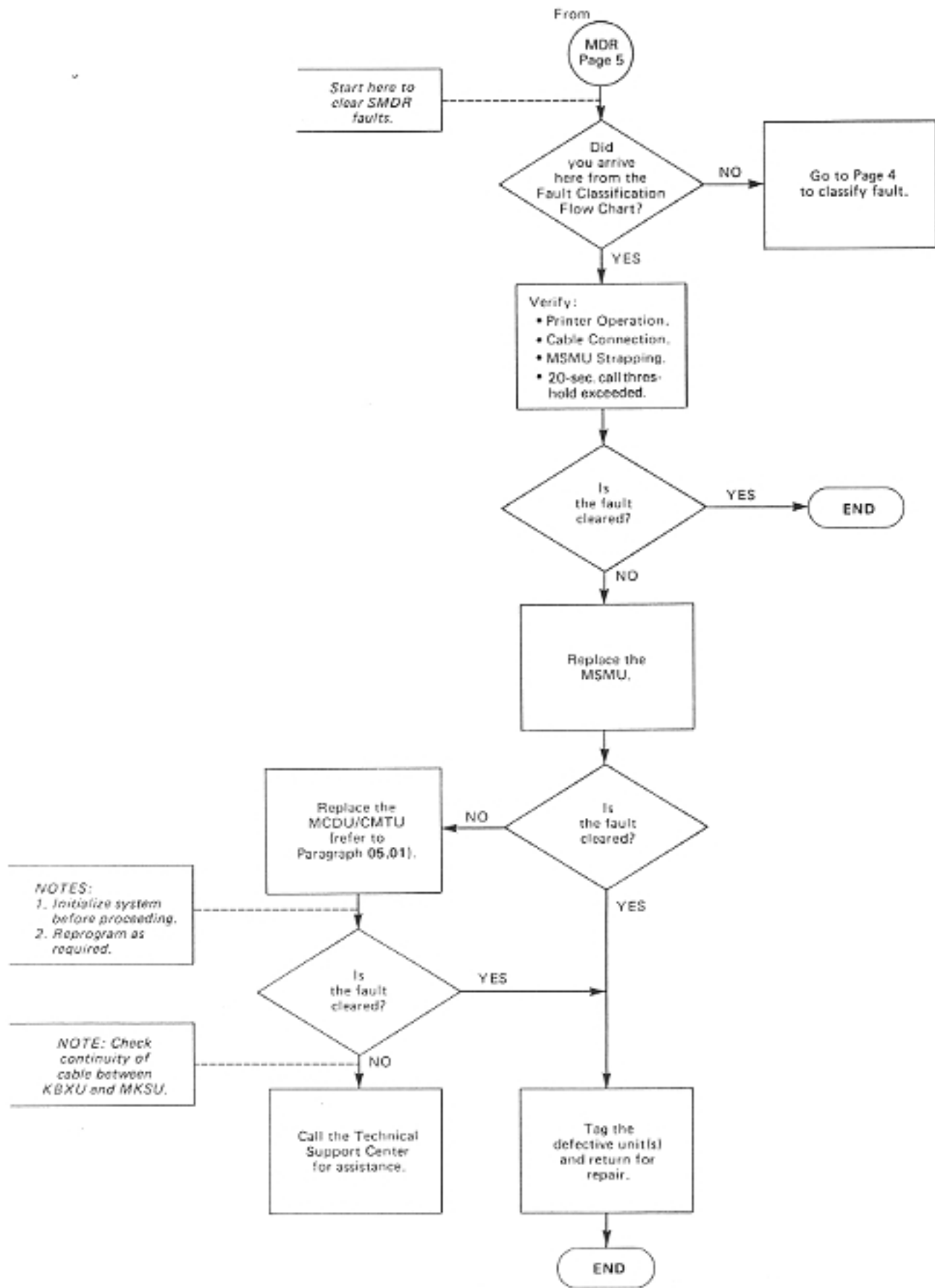


CHART NO. 10
OPX FAULTS

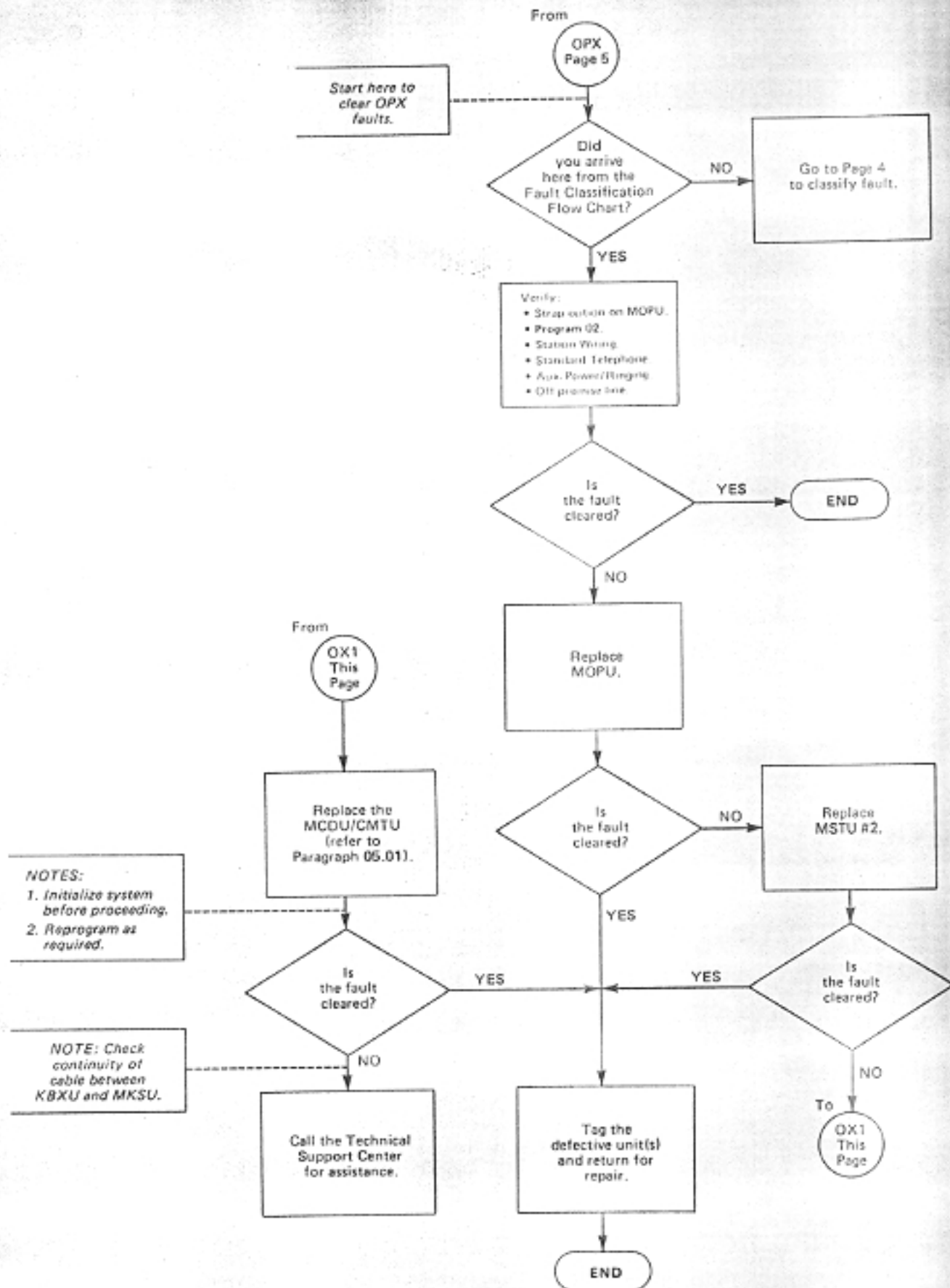


CHART NO. 11
OPL FAULTS

