

Strata XII & XX

(Release 3)

PROGRAMMING PROCEDURES

Strata XII & XX

PROGRAMMING PROCEDURES

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01 INTRODUCTION

01.01 The data governing overall system operation and feature execution for the **Strata XII & XX** systems 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 pre-determined 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- 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 MCAU/AMMU are changed, the system must be initialized. See Paragraph 03.

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- or a 20-key EKT. However, all tables and procedures that follow assume station 17 has the "standard" 20-key pattern (INT, CO 1 ~ 17, DND and MW/FL). See Paragraph 02.30 for instructions regarding the use of a 10-key EKT.

- 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 LEDs, verifies the entered data by displaying the number in Binary format. The data is also displayed on an LCD display, if the system is so equipped.

02.03 The programming mode is activated by locking in the **SET** switch on the MCAU 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:

CO 10 LED on station 17 will flash continuously. Actual data can be reviewed without alteration by multiple depressions of the [#] 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 an LCD display, 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

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effective immediately after the **[HOLD]** key is depressed. However, it is recommended that the data transfer procedures per Paragraph **02.06** be utilized for increased 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 MCAU, and cycle (rock) the MPRU 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]** **[#]** **[*]** **[9]** **[INT]** **[CO 1]** **[CO 4]** **[CO 5]** **[CO 8]** **[CO 9]** **[CO 12]** **[CO 13]** **[HOLD]**. This code will secure the data in working memory without cancelling any calls. Release the **SET** switch on the MCAU.

02.10 Programming CO 18 ~ 21

02.11 Some Type 1 programs use the CO key/LEDs to represent themselves. The EKT at station 17 has a maximum of 17 CO line keys in a **Strata XX** system. In order to program CO 18 ~ 21, it is necessary to dial a **[*]** after the first digit of the program number. CO key/LEDs 1 ~ 4 will then function as CO 18 ~ 21. For example:

For **Program 04**: Dial **[0]** **[*]** **[4]**

For **Program 7XX**: Dial **[7]** **[*]** **[X]** **[X]**

02.20 Multiple Station Programming

02.21 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.

02.22 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
[0] [3]	: Stations 26 ~ 33
[0] [4]	: Stations 34 ~ 41
[0] [5]	: Stations 42 ~ 49
[0] [6]	: Stations 50 ~ 57
[0] [7]	: Stations 58 ~ 65

02.23 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.

02.24 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.

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

02.30 Using 10-key EKT for Programming

02.31 If station 17 is equipped with a 10-key EKT, the system must be so informed by setting the CO 7 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.

02.32 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.

02.33 As shown in Figure 1, the key/LEDs represent INT, and CO 1 ~ 9 when the handset is on-hook and CO 10 ~ 17, DND, MW/FL when the handset is off-hook. It is possible to switch back and forth an unlimited number of times without disturbing the data.

NOTE:

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

02.40 Preparation

02.41 Before **Strata** system data can be programmed, option selections must be made and then indicated on the System Record Sheet

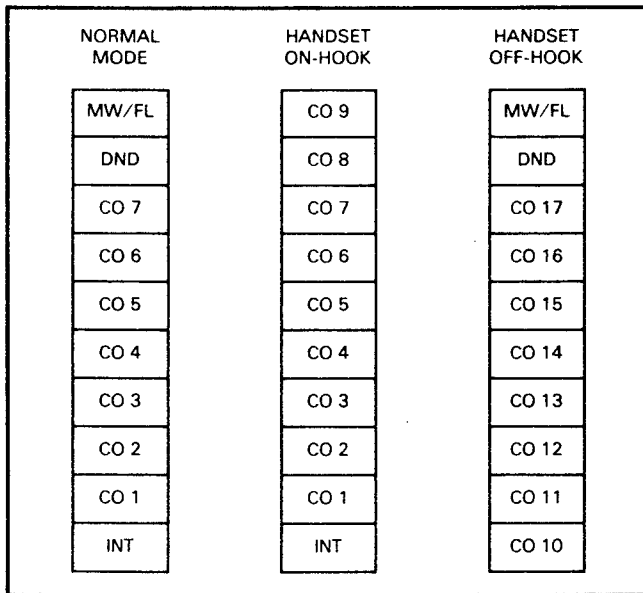


FIGURE 1—10-key EKT KEY FORMAT

(shown in Table 3). The Record Sheet, one of which accompanies each MKSU, will then serve as a programming guide and installation record.

02.42 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 Outputpulsing Selection
- 05:** Automatic Recall From Hold Timing
- 0#5:** Camp-on Timeout

B) CO Line Options

- 06:** Automatic Release On Hold Enable
- 07:** Automatic Release On Hold Timing
- 08:** Tenant Service Selection
- 09:** Single CO (Dial 9) Group Selection (OPX, Trunk Queing)
- 09X:** Four 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 and Flexible Key Assignment
- 5XX:** Station Class of Service

- 6XX:** Toll Restriction Classification
- 7XX:** Station Outgoing Call Restriction
- 8XX:** CO Ringing Assignments-DAY
- 8#XX:** CO Ringing Assignments-DAY 2
- 9XX:** CO Ringing Assignments-NITE

02.43 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.

02.44 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.

02.50 System Options:

01 Program—System Assignments (Basic)

Eleven options are selected with this program, using the [INT] and various [CO] 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 CO 17 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 CO 16 if addresses 60~99 of the System Automatic Dial are to be allowed to override Toll Restriction.
- 3) CO Line Groups—mark an X next to CO 15 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 CO 14 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 CO 7 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.

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- 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—mark an X next to CO 3 if a 3-second pause (for dial tone delay) is required. The pause is manually inserted with either the MW/FL or PAU key when programming an Auto Dial number. When the Repeat Last Number Dialed feature is used, the pause is automatically inserted after a recognized PBX access code (**Program 1X**). 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)

Seven options are selected with this program, using the INT and various CO keys to change the status of their respective LEDs. For the options selected, mark an X as indicated.

- 1) Station 24/25 OPX—mark an X next to CO 10 if MOPU #3 is equipped and *only* station 24 is to be used. (Has no meaning if MOPU #3 is not equipped.)
- 2) Station 22/23 OPX—mark an X next to CO 9 if MOPU #2 is equipped and *only* station 22 is to be used. (Has no meaning if MOPU #2 is not equipped.)
- 3) Station 20/21 OPX—mark an X next to CO 8 if MOPU #1 is equipped and *only* station 20 is to be used. (Has no meaning if MOPU #1 is not equipped.)

NOTE:

If an MOPU is installed, both station numbers announced with that position are set for OPX operation. An EKT cannot be used at those station numbers regardless of the selections made with the CO 10 CO 9 CO 8 keys.

- 4) 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.

- 5) Nite Ring over External Page—mark an X next to CO 2 if Nite Ringing over External Page is required.
- 6) Background Music over External Page—mark an X next to CO 1 if BGM is to be heard over the External Page circuit.
- 7) 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 Assignments (Options)

Nine options are selected with this program using the INT and various CO keys to change the status of their respective LEDs. For the options selected, mark an X as indicated.

- 1) Station 10 DND/NT Key—mark an X next to CO 9 if the DND/NT key on station 10 is to be a DND key. Leave blank if NT key is required.
- 2) NITE Ringing Modes—mark an X next to CO 8 if three ringing modes are used, leave blank if two ringing modes are required.
- 3) Tenant Service—mark an X next to CO 7 if the system is to be equipped with Tenant Service.

NOTE:

Both DSS consoles must be installed for Tenant Service and Program 08 to be activated.

- 4) Tone First—mark an X next to CO 6 if tone first signalling is to be used with the DSS.
- 5) Message Center Station 12—mark an X next to CO 4 if station 12 is to be the message center.
- 6) Message Center Station 11—mark an X next to CO 3 if station 11 is to be the message center.
- 7) 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.

- 8) DSS 2—mark an X next to CO 1 if the system is to be equipped with DSS 2.

- 9) DSS 1—mark an X next to INT if the system is to be equipped with DSS 1.

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 (for example: CO 1 = CO 1, CO 2 and CO 3; CO 4 = CO 4, CO 5 and CO 6 etc.) 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 CO 9, CO 10, and CO 11 LEDs are all "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 recall, to the originating station of 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.

02.60 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**.*

08 Program—Tenant Service Selection

Informs the system which CO lines are assigned to which tenant. Night ringing transfer of lines assigned to Tenants #1 and #2 will be controlled by DSS #1 (station 10) and DSS #2 (station 11), respectively. Only lines assigned to Tenant #1 will activate Nite Ringing over External Page. Each CO key represents itself.

- Mark an X next to each CO line that is to belong to the second tenant. Leave blank if the line is to belong to Tenant #1.

NOTE:

*This selection will have no meaning if Tenant Service was not selected in **Program 03**.*

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 CO 15 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 CO 15 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 func-

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tion 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* 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.

02.70 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 and Flexible Key Assignment

Informs the system of what type and style telephone (or DSS) is being used at each station, also provides for flexible CO line assignment. (See Figures 2 and 2A for the various key designation strips.)

a) 10-key EKT:

- #5 Mark an X next to CO 17 if EKT is equipped with INT, CO 20 ~ 14 (numbered in reverse order), DND, MW/FL.
- #4 Mark an X next to CO 16 if EKT is equipped with INT, CO 14 ~ 20, DND, MW/FL.
- #3 Mark an X next to CO 15 if EKT is equipped with INT, CO 10 ~ 16, DND, MW/FL.
- #2 Mark an X next to CO 14 if EKT is equipped with INT, CO 6 ~ 12, DND, MW/FL.
- #1 Mark an X next to CO 13 if EKT is equipped with INT, CO 1 ~ CO DND, MW/FL.

b) 20-Key EKT:

- #13 Mark an X next to CO 12 if EKT is equipped with INT, CO 20 ~ 9 (numbered in reverse order), AD 1 ~ 5, DND, MW/FL.
- #12 Mark an X next to CO 11 if EKT is equipped with INT, CO 1 ~ 12, AD 1 ~ 5, DND, MW/FL.
- #11 Mark an X next to CO 10 if EKT is equipped with INT, CO 5 ~ 12, AD 1 ~ 7, RDL, REP, DND, MW/FL.
- #10 Mark an X next to CO 9 if EKT is equipped with INT, CO 1 ~ 8, AD 1 ~ 7, RDL, REP, DND, MW/FL.

- #9 Mark an X next to CO 8 if EKT is an attendant station (accompanies DSS console) and is equipped with CO 20 ~ 1 (numbered in reverse order).
- #8 Mark an X next to CO 7 if EKT is an attendant station (accompanies DSS console) and is equipped with CO 1 ~ 20.
- #7 Mark an X next to CO 6 if EKT is equipped with INT, CO 20 ~ 4 (numbered in reverse order), DND, MW/FL.
- #6 Mark an X next to CO 5 if EKT is equipped with INT, CO 1 ~ 13 plus CO 18 ~ 21, DND, MW/FL.
- #5 Mark an X next to CO 4 if EKT is equipped with INT, CO 1 ~ 16 plus CO 21, DND, MW/FL.
- #4 Mark an X next to CO 3 if EKT is equipped with INT, CO 1 ~ 16 plus CO 20, DND, MW/FL.
- #3 Mark an X next to CO 2 if EKT is equipped with INT, CO 1 ~ 16 plus CO 19, DND, MW/FL.
- #2 Mark an X next to CO 1 if EKT is equipped with INT, CO 1 ~ 16 plus CO 18, DND, MW/FL.
- #1 Mark an X next to INT if EKT is equipped with INT, CO 1 ~ 17 DND, MW/FL.

5XX Program—Station Class of Service

Twelve options are selected with this program, using [INT] and [CO] 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 CO 17 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 CO 16 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 [CO9], [CO10] and [CO11] keys 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.
CO 11				X	X	X	X
CO 10		X	X			X	X
CO 9	X		X		X		X

- 4) Microphone Control—mark an X next to CO 8 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 CO 7 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) Automatic 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 CO 13 if the station **will be allowed** to dial the #5 4-digit exception code.
- 2) Mark an X next to CO 12 if the station **will be allowed** to dial the #4 4-digit exception code.
- 3) Mark an X next to CO 11 if the station **will be allowed** to dial the #3 4-digit exception code.

PROGRAM 4XX
 STATION TYPE and KEY ASSIGNMENT

Below are representative Designation Strips with their respective assignment numbers for both 10- and 20-key EKTs.

10-key EKT

20-key EKT

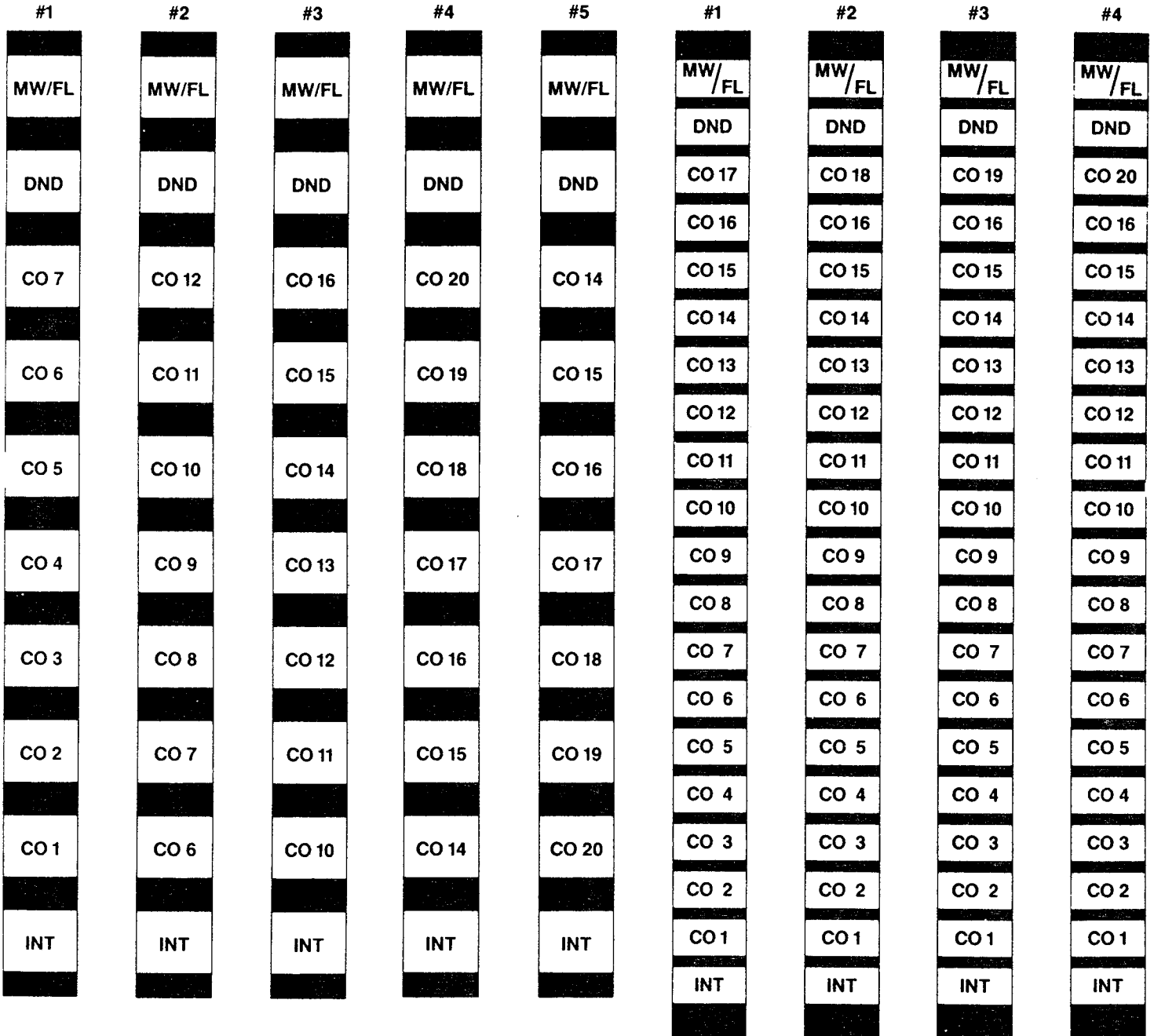


FIGURE 2

PROGRAM 4XX (continued)
STATION TYPE and KEY ASSIGNMENT

Below are representative Designation Strips with their respective assignment numbers for the 20-key EKT.

20-key EKT

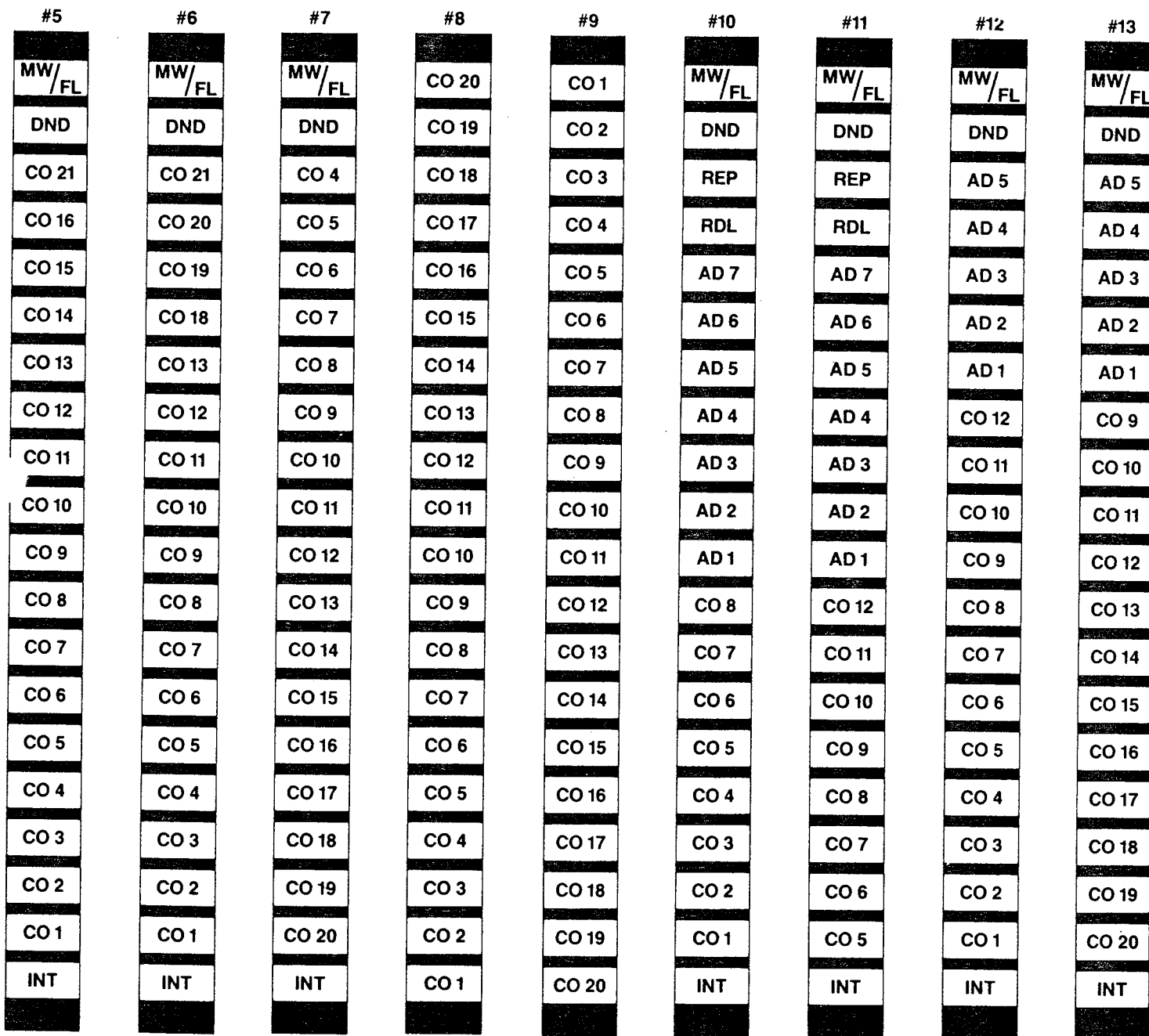


FIGURE 2A

PROGRAMMING PROCEDURES
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- 4) Mark an X next to CO 10 if the station **will be allowed** to dial the #2 4-digit exception code.
- 5) Mark an X next to CO 9 if the station **will be allowed** to dial the #1 4-digit exception code.
- 6) Mark an X next to CO 8 if the station **will be allowed** to dial **411**.
- 7) Mark an X next to CO 7 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 is allowed if 411, 911, 800, or Exception Code #1, 2 or 3 was dialed first. A maximum of 29 digits is 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-DAY 2

Selects which CO lines will ring at a given station when the system is in the "DAY 2" mode.

- Selections must be made for each station—mark an X next to the 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.*

**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.*

03 INITIALIZATION

03.00 General

03.01 Strata has a list of standard system data assignments stored in ROM that can be entered anytime by initializing the system. The system must be initialized when it is first installed or whenever the MCAU 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 1.

03.02 To initialize the **Strata** system:

- a) Make sure the power switch on the MPRU PCB is in the **ON** position.
- b) Verify that the battery on the AMMU is connected (and CRDUs if equipped) to ensure that data entered after the system initialization will

not be lost due to power failure. The MCAU SET LED will not function if the battery on the AMMU is not connected.

- SET LED goes off.
- Station 17, INT, CO 1 ~ 17, DND, and MW/FL LEDs stop flashing.*

- c) Depress and hold in the **INT** switch on the MCAU.
- d) Depress the **SET** switch and allow it to lock.
 - SET LED on.
 - Station 17, INT, CO 1 ~ 17, DND, and MW/FL LEDs all begin winking.
- e) Depress and release the **SET** switch again.

***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**.

TABLE 1
INITIALIZED DATA
SYSTEM OPTIONS

01 Program
System Assignment (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 24 & 25 are OPX
 Stations 22 & 23 are OPX
 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
 Tenant Service = Not equipped
 DSS Console Signalling = Voice first
 Message Center—station 12 = Not equipped
 Message Center—station 11 = Not equipped
 Message Center—station 10 = Equipped
 DSS #2 = Not equipped
 DSS #1 = 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

08 Program
Tenant Service Selection
 Tenant #1 = 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

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**1X Program
PBX Access Codes**

No Codes Assigned

**20 Program
Toll Restriction Disable**

**3XX Program
Station CO Line Access**

Access Allowed = All lines, all stations

**4XX Program
Station Key Assignments**

Assignment #1 20-key EKT = all stations

**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

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

**2X Program
Toll Restriction Exception Codes**
No Codes Assigned

STATION OPTIONS

Automatic 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

03.10 Clearing Automatic Dialing Memory

03.11 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.

03.12 The Automatic Dialing features occupy the same basic system memory and up to three optional modules (see Table 2 for the possible CRDU locations). It is necessary to clear the basic system memory and, if applicable, the optional modules individually as follows:

**TABLE 2
CRDU POSITIONS**

	None	MCBU #1	MDSU	MCBU #1 MDSU	MCBU #2	MCBU #1 MCBU #2	MCBU #1 MCBU #2 MDSU
System List	24 (60 ~ 83)	40 (60 ~ 99)	24 (60 ~ 83)	40 (60 ~ 99)	24 (60 ~ 83)	40 (60 ~ 99)	40 (60 ~ 99)
Stations 10 ~ 46*	---	20 (10 ~ 29)	20 (30 ~ 49)	40 (10 ~ 49)	---	20 (10 ~ 29)	40 (10 ~ 49)
Stations 47 ~ 65	---	---	---	---	40 (10 ~ 49)	40 (10 ~ 49)	40 (10 ~ 49)

*Stations 10 ~ 41 for **Strata XII**.

NOTE:

The quantity of Automatic Dialing numbers (**Strata XII & XX**) provided the system and stations by the available options are listed in Table 2. A CRDU is equipped on each PCB mentioned and the respective address codes are indicated in parenthesis.

- a) Lock in the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go on.
- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED lights steadily.
- c) Dial **[#] [*] [*]** on the dial pad.
 - The SPKR LED flashes continuously.
- d) Depress the **[INT] [CO 4] [CO 8]** and **[CO 12]** keys.
 - The corresponding LEDs light steadily.
- e) Depress the **[HOLD]** key.
 - All station 17 LEDs (except MW/FL) go off.
- f) Release the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go off.

03.13 To clear the first optional Automatic Dialing memory (CRDU on MCBU #1):

- a) Lock in the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go on.
- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED lights steadily.
- c) Dial **[#] [*] [1]** on the dial pad.
 - SPKR LED flashes continuously.
- d) Depress the **[CO1] [CO5] [CO9] [CO13]** keys.
 - The corresponding LEDs light steadily.
- e) Depress the **[HOLD]** key.
 - All station 17 LEDs (except MW/FL) go off.
- f) Release the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go off.

03.14 To clear the second optional Automatic Dialing memory (CRDU on MDSU):

- a) Lock in the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go on.
- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED lights steadily.
- c) Dial **[#] [*] [2]** on the dial pad.
 - SPKR LED flashes continuously.

- d) Depress the **[CO2] [CO6] [CO10] [CO14]** keys.
 - The corresponding LEDs light steadily.
- e) Depress the **[HOLD]** key.
 - All station 17 LEDs (except MW/FL) go off.
- f) Release the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go off.

03.15 To clear the third optional Automatic Dialing memory (CRDU on MCBU #2):

- a) Lock in the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go on.
- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED lights steadily.
- c) Dial **[#] [*] [3]** on the dial pad.
 - SPKR LED flashes continuously.
- d) Depress the **[CO3] [CO7] [CO11] [CO15]** keys.
 - The corresponding LEDs light steadily.
- e) Depress the **[HOLD]** key.
 - All station 17 LEDs (except MW/FL) go off.
- f) Release the **SET** switch on the MCAU.
 - The MCAU LED and the MW/FL LED on station 17 go off.

03.20 System Data Entry

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

03.22 The system is placed in the programming mode by locking in the **SET** switch on the MCAU. The MCAU LED and MW/FL LED on station 17 will light while the system is in the programming mode.

03.23 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.

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

TABLE LIST

Table	Title	Program	Page
3	System Record Sheet	—	15
4	System Data Printout Selection Codes	—	28
5	Speed Dial Memory Printout Selection Codes	—	29
6	System Assignments (Basic)	01	34
7	System Assignments (Options)	02	35
8	System Assignments (Options)	03	36
9	MCOU MF/DP Outpulsing Selection	04	37
10	Automatic Recall From Hold Timing	05	38
11	Camp-on Timeout	0#5	39
12	AROH Enable	06	40
13	AROH Timing	07	41
14	Tenant Service Selection	08	42
15	Single CO Line (Dial 9) Group Selection	09	43
16	Four CO Line Group Selections	09X	44
17	OPL Line Hunting	0#9	45
18	PBX Backup	10	46
19	PBX Access Codes	1X	47
20	Toll Restriction Disable	20	48
21	Toll Restriction Exception Codes	2X	49
22	Station CO Access	3XX	50
23	Station Type & Flexible Assignment	4XX	51
24	Station Class of Service	5XX	52
25	Toll Restriction Classification	6XX	53
26	Station Outgoing Call Restriction	7XX	54
27	CO Ringing Assignments—DAY	8XX	55
28	CO Ringing Assignments—DAY 2	8#XX	56
29	CO Ringing Assignments—NITE	9XX	57

TABLE 3 (Release 3—MCAU-4) SYSTEM RECORD SHEET

PROGRAM 01-SYSTEM ASSIGNMENTS (Basic)

KEY/LED	X	LED ON	LED OFF
CO 17		Transfer Privacy	Alternate point answer of transferred CO line
CO 16		System Speed Dial (60 ~ 99) Override Toll Restriction	Restricted
CO 15		Four CO Line Groups (91 ~ 94)	One CO Line Group (9)
CO 14		Two CO Conferencing—Inhibit	Allowed
CO 7		Station 17 is 10-key EKT	20-key EKT
CO 6		Incoming Call Abandon—8 seconds	6 seconds
CO 5		3.0-sec. Pause After Flash	1.5-sec. Pause
CO 4		Insert Pause After Flash	No Pause
CO 3		3.0-sec. Pause After PBX Access Code	1.5 sec. Pause
CO 2		0.5-sec. Flash	2.0-sec. Flash
INT		Tone First	Voice First

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

PROGRAM 02-SYSTEM ASSIGNMENTS (Options)

KEY/LED	X	LED ON	LED OFF
CO 10		Station 24 is OPX	Stations 24 & 25 are OPX
CO 9		Station 22 is OPX	Stations 22 & 23 are OPX
CO 8		Station 20 is OPX	Stations 20 & 21 are OPX
CO 4		Display the dialed number for 1 min.	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
CO 9		Station 10 [DND] key	Station 10 [NT] key
CO 8		Three Ring Mode	Two Ring Mode
CO 7		Tenant Service*	Non-tenant
CO 6		Tone First (DSS)	Voice First (DSS)
CO 4		Message Center—Station 12	Not Equipped
CO 3		Message Center—Station 11	Not Equipped
CO 2		Message Center—Station 10	Not Equipped
CO 1		DSS #2	Not Equipped
INT		DSS #1	Not Equipped

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

*Tenant Service with DSS consoles #1 & #2

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 19		COs 19 ~ 21 have DP	COs 19 ~ 21 have MF
CO 16		COs 16 ~ 18 have DP	COs 16 ~ 18 have MF
CO 13		COs 13 ~ 15 have DP	COs 13 ~ 15 have MF
CO 10		COs 10 ~ 12 have DP	COs 10 ~ 12 have MF
CO 7		COs 7 ~ 9 have DP	COs 7 ~ 9 have MF
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

(Used only if CO 9 ~ 11 LEDs are off in Program 5XX)

KEY/LED	X	TIME
CO 7		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

**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**

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

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

**PROGRAM 07
AUTOMATIC RELEASE ON HOLD TIMING**

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

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

**PROGRAM 08
TENANT SERVICE SELECTION**

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

X = Belongs to 2nd tenant
Blank = Belongs to 1st tenant
Initialized Data: All LEDs off

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

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

X (LED on) = Include in Dial 9
Group
Initialized Data: All LEDs on
NOTE:
*Used only if CO 15 LED is off
in Program 01 (Single CO
Line Group).*

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

CO LINE	GROUP			
	091	092	093	094
CO 21				
CO 20				
CO 19				
CO 18				
CO 17				
CO 16				
CO 15				
CO 14				
CO 13				
CO 12				
CO 11				
CO 10				
CO 9				
CO 8				
CO 7				
CO 6				
CO 5				
CO 4				
CO 3				
CO 2				
CO 1				

X (LED on) = Include in group

Initialized Data:

091—All LEDs on 092 ~ 094—All LEDs off
 *NOTE:

Used *only* if CO 15 LED is on in Program 01
 (Four CO Line Groups).

PROGRAM 10
PBX BACKUP

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

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

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

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

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

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

EXAMPLE $\frac{1X}{119*}$ HOLD
 1st DIGIT
 2nd DIGIT

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**

CO LINE	X
CO 12	
CO 11	
CO 10	
CO 9	
CO 8	
CO 7	
CO 6	
CO 5	
CO 4	
CO 3	
CO 2	
CO 1	

CO LINE	X
CO 21	
CO 20	
CO 19	
CO 18	
CO 17	
CO 16	
CO 15	
CO 14	
CO 13	

X (LED on) = Disable
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.

**PROGRAMMING PROCEDURES
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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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 21	Allow Access																																								
CO 20	Allow Access																																								
CO 19	Allow Access																																								
CO 18	Allow Access																																								
CO 17	Allow Access																																								
CO 16	Allow Access																																								
CO 15	Allow Access																																								
CO 14	Allow Access																																								
CO 13	Allow Access																																								
CO 12	Allow Access																																								
CO 11	Allow Access																																								
CO 10	Allow Access																																								
CO 9	Allow Access																																								
CO 8	Allow Access																																								
CO 7	Allow Access																																								
CO 6	Allow Access																																								
CO 5	Allow Access																																								
CO 4	Allow Access																																								
CO 3	Allow Access																																								
CO 2	Allow Access																																								
CO 1	Allow Access																																								

KEY/LED	FEATURE	STATION NUMBERS																							
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
CO 21	Allow Access																								
CO 20	Allow Access																								
CO 19	Allow Access																								
CO 18	Allow Access																								
CO 17	Allow Access																								
CO 16	Allow Access																								
CO 15	Allow Access																								
CO 14	Allow Access																								
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CO 10	Allow Access																								
CO 9	Allow Access																								
CO 8	Allow Access																								
CO 7	Allow Access																								
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 & FLEXIBLE KEY ASSIGNMENT

KEY/LED	FEATURE	STATION NUMBERS																																							
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 17	10-key #5																																								
CO 16	10-key #4																																								
CO 15	10-key #3																																								
CO 14	10-key #2																																								
CO 13	10-key #1																																								
CO 12	20-key #13																																								
CO 11	20-key #12																																								
CO 10	20-key #11																																								
CO 9	20-key #10																																								
CO 8	20-key #9																																								
CO 7	20-key #8																																								
CO 6	20-key #7																																								
CO 5	20-key #6																																								
CO 4	20-key #5																																								
CO 3	20-key #4																																								
CO 2	20-key #3																																								
CO 1	20-key #2																																								
INT	20-key #1																																								

KEY/LED	FEATURE	STATION NUMBERS																																					
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65														
CO 17	10-key #5																																						
CO 16	10-key #4																																						
CO 15	10-key #3																																						
CO 14	10-key #2																																						
CO 13	10-key #1																																						
CO 12	20-key #13																																						
CO 11	20-key #12																																						
CO 10	20-key #11																																						
CO 9	20-key #10																																						
CO 8	20-key #9																																						
CO 7	20-key #8																																						
CO 6	20-key #7																																						
CO 5	20-key #6																																						
CO 4	20-key #5																																						
CO 3	20-key #4																																						
CO 2	20-key #3																																						
CO 1	20-key #2																																						
INT	20-key #1																																						

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

NOTES:

1. Select one type of EKT per station only.
2. If the system is equipped with a DSS, 20-key #8 type is selected automatically.

PROGRAM 5XX—STATION CLASS OF SERVICE

KEY/LED	FEATURE	STATION NUMBERS																																							
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 17	Privacy Override Allowed																																								
CO 16	DND Override Allowed																																								
CO 11	Hold Recall Time Code*																																								
CO 10	Hold Recall Time Code*																																								
CO 9	Hold Recall Time Code*																																								
CO 8	MIC Push-on/Push-off																																								
CO 7	Group Page #4																																								
CO 6	Group Page #3																																								
CO 5	Group Page #2																																								
CO 4	Group Page #1																																								
CO 3	Speakerphone Enable																																								
CO 2	Automatic Dialing Allowed																																								
CO 1	Ringling Line Preference Enable																																								
INT	Include in All Call Page																																								

X (LED on) = Select Initialized Data: CO 1, 2, 3 & INT LEDs on; all other LEDs off

KEY/LED	FEATURE	STATION NUMBERS																																									
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65																		
CO 17	Privacy Override Allowed																																										
CO 16	DND Override Allowed																																										
CO 11	Hold Recall Time Code*																																										
CO 10	Hold Recall Time Code*																																										
CO 9	Hold Recall Time Code*																																										
CO 8	MIC Push-in/Push-off																																										
CO 7	Group Page #4																																										
CO 6	Group Page #3																																										
CO 5	Group Page #2																																										
CO 4	Group Page #1																																										
CO 3	Speakerphone Enable																																										
CO 2	Automatic Dialing Allowed																																										
CO 1	Ringling Line Preference Enable																																										
INT	Include in All Call Page																																										

X (LED on) = Select Initialized Data: CO 1, 2, 3, & INT LEDs on; all other LEDs off

***Hold Recall Time Code**

KEY/LED	Prog. 05	16 Sec.	32 Sec.	48 Sec.	64 Sec.	96 Sec.	128 Sec.	160 Sec.
CO 11					X	X	X	X
CO 10			X	X			X	X
CO 9		X		X		X		X

PROGRAM 6XX—TOLL RESTRICTION CLASSIFICATION

KEY/LED	FEATURE	STATION NUMBERS																																									
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41										
CO 13	Allow Exception Code #5*																																										
CO 12	Allow Exception Code #4*																																										
CO 11	Allow Exception Code #3**																																										
CO 10	Allow Exception Code #2**																																										
CO 9	Allow Exception Code #1**																																										
CO 8	Allow 411**																																										
CO 7	Allow 911**																																										
CO 6	Allow 800**																																										
CO 5	Restrict 0 as 1st digit																																										
CO 4	Restrict 0 as 2nd digit																																										
CO 3	Restrict 1 as 1st digit																																										
CO 2	Restrict 1 as 2nd digit																																										
CO 1	Allow 1 + 7 digits																																										
INT	Allow 7 digits																																										

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

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

NOTE:

See explanation in Paragraph 02.50, Program 6XX, for order of preference.

KEY/LED	FEATURE	STATION NUMBERS																																											
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65																				
CO 13	Allow Exception Code #5*																																												
CO 12	Allow Exception Code #4*																																												
CO 11	Allow Exception Code #3**																																												
CO 10	Allow Exception Code #2**																																												
CO 9	Allow Exception Code #1**																																												
CO 8	Allow 411**																																												
CO 7	Allow 911**																																												
CO 6	Allow 800**																																												
CO 5	Restrict 0 as 1st digit																																												
CO 4	Restrict 0 as 2nd digit																																												
CO 3	Restrict 1 as 1st digit																																												
CO 2	Restrict 1 as 2nd digit																																												
CO 1	Allow 1 + 7 digits																																												
INT	Allow 7 digits																																												

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

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

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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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41											
CO 21	Restricted																																											
CO 20	Restricted																																											
CO 19	Restricted																																											
CO 18	Restricted																																											
CO 17	Restricted																																											
CO 16	Restricted																																											
CO 15	Restricted																																											
CO 14	Restricted																																											
CO 13	Restricted																																											
CO 12	Restricted																																											
CO 11	Restricted																																											
CO 10	Restricted																																											
CO 9	Restricted																																											
CO 8	Restricted																																											
CO 7	Restricted																																											
CO 6	Restricted																																											
CO 5	Restricted																																											
CO 4	Restricted																																											
CO 3	Restricted																																											
CO 2	Restricted																																											
CO 1	Restricted																																											

KEY/LED	FEATURE	STATION NUMBERS																							
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
CO 21	Restricted																								
CO 20	Restricted																								
CO 19	Restricted																								
CO 18	Restricted																								
CO 17	Restricted																								
CO 16	Restricted																								
CO 15	Restricted																								
CO 14	Restricted																								
CO 13	Restricted																								
CO 12	Restricted																								
CO 11	Restricted																								
CO 10	Restricted																								
CO 9	Restricted																								
CO 8	Restricted																								
CO 7	Restricted																								
CO 6	Restricted																								
CO 5	Restricted																								
CO 4	Restricted																								
CO 3	Restricted																								
CO 2	Restricted																								
CO 1	Restricted																								

X (LED on) = Select 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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 21	Ring in DAY																																								
CO 20	Ring in DAY																																								
CO 19	Ring in DAY																																								
CO 18	Ring in DAY																																								
CO 17	Ring in DAY																																								
CO 16	Ring in DAY																																								
CO 15	Ring in DAY																																								
CO 14	Ring in DAY																																								
CO 13	Ring in DAY																																								
CO 12	Ring in DAY																																								
CO 11	Ring in DAY																																								
CO 10	Ring in DAY																																								
CO 9	Ring in DAY																																								
CO 8	Ring in DAY																																								
CO 7	Ring in DAY																																								
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																																								

KEY/LED	FEATURE	STATION NUMBERS																																					
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65														
CO 21	Ring in DAY																																						
CO 20	Ring in DAY																																						
CO 19	Ring in DAY																																						
CO 18	Ring in DAY																																						
CO 17	Ring in DAY																																						
CO 16	Ring in DAY																																						
CO 15	Ring in DAY																																						
CO 14	Ring in DAY																																						
CO 13	Ring in DAY																																						
CO 12	Ring in DAY																																						
CO 11	Ring in DAY																																						
CO 10	Ring in DAY																																						
CO 9	Ring in DAY																																						
CO 8	Ring in DAY																																						
CO 7	Ring in DAY																																						
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 (LED on) = Select 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.

**PROGRAMMING PROCEDURES
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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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 21	Ring in DAY 2																																								
CO 20	Ring in DAY 2																																								
CO 19	Ring in DAY 2																																								
CO 18	Ring in DAY 2																																								
CO 17	Ring in DAY 2																																								
CO 16	Ring in DAY 2																																								
CO 15	Ring in DAY 2																																								
CO 14	Ring in DAY 2																																								
CO 13	Ring in DAY 2																																								
CO 12	Ring in DAY 2																																								
CO 11	Ring in DAY 2																																								
CO 10	Ring in DAY 2																																								
CO 9	Ring in DAY 2																																								
CO 8	Ring in DAY 2																																								
CO 7	Ring in DAY 2																																								
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																																								

KEY/LED	FEATURE	STATION NUMBERS																																						
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65															
CO 21	Ring in DAY 2																																							
CO 20	Ring in DAY 2																																							
CO 19	Ring in DAY 2																																							
CO 18	Ring in DAY 2																																							
CO 17	Ring in DAY 2																																							
CO 16	Ring in DAY 2																																							
CO 15	Ring in DAY 2																																							
CO 14	Ring in DAY 2																																							
CO 13	Ring in DAY 2																																							
CO 12	Ring in DAY 2																																							
CO 11	Ring in DAY 2																																							
CO 10	Ring in DAY 2																																							
CO 9	Ring in DAY 2																																							
CO 8	Ring in DAY 2																																							
CO 7	Ring in DAY 2																																							
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 (LED on) = Select 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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41								
CO 21	Ring in NIGHT																																								
CO 20	Ring in NIGHT																																								
CO 19	Ring in NIGHT																																								
CO 18	Ring in NIGHT																																								
CO 17	Ring in NIGHT																																								
CO 16	Ring in NIGHT																																								
CO 15	Ring in NIGHT																																								
CO 14	Ring in NIGHT																																								
CO 13	Ring in NIGHT																																								
CO 12	Ring in NIGHT																																								
CO 11	Ring in NIGHT																																								
CO 10	Ring in NIGHT																																								
CO 9	Ring in NIGHT																																								
CO 8	Ring in NIGHT																																								
CO 7	Ring in NIGHT																																								
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																																								

KEY/LED	FEATURE	STATION NUMBERS																																						
		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65															
CO 21	Ring in NIGHT																																							
CO 20	Ring in NIGHT																																							
CO 19	Ring in NIGHT																																							
CO 18	Ring in NIGHT																																							
CO 17	Ring in NIGHT																																							
CO 16	Ring in NIGHT																																							
CO 15	Ring in NIGHT																																							
CO 14	Ring in NIGHT																																							
CO 13	Ring in NIGHT																																							
CO 12	Ring in NIGHT																																							
CO 11	Ring in NIGHT																																							
CO 10	Ring in NIGHT																																							
CO 9	Ring in NIGHT																																							
CO 8	Ring in NIGHT																																							
CO 7	Ring in NIGHT																																							
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 (LED on) = Select Initialized Data: Station 11, 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.

04 SYSTEM DATA PRINTOUT

04.00 System Data Printout Via SMDR

04.01 If the *Strata* 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.

04.02 The data printout should be done during a low traffic period since this procedure interferes with normal SMDR output. Any call records generated during a printout will be lost.

04.03 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

04.04 To request a printout:

- a) Depress the **SET** switch on the MCAU.
 - SET LED goes on.

- Station 17 MW/FL LED goes on.

- b) Depress the **[SPKR]** key on station 17.
 - SPKR LED goes on.
- c) Dial **[#][#]**.
 - The SPKR LED will begin to flash.
- d) The INT, CO 1 ~ 8 LEDs will switch on and off in response to operations of the associated keys. Refer to Tables 4 and 5 and set the INT and CO 1 ~ 8 LEDs to the proper pattern for the printout required.
- e) Depress the **[HOLD]** key.
 - SPKR LED goes off.
 - INT & CO LEDs go off.
 - Printout begins (see Figures 2 ~ 6 for examples of the printout format).
- 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 MCAU.

04.05 To stop a printout before it is complete:

- a) Depress the **[SPKR]** key on station 17.
 - SPKR LED goes on.
- b) Dial **[#][#]**.
 - SPKR LED stays on.
 - LEDs illuminated in step d) above light.
- c) Depress the **[INT]** and/or **[CO]** keys necessary to extinguish all LEDs.
- 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 4
SYSTEM DATA PRINTOUT SELECTION CODES

PROGRAM NUMBER

LED	01 — 0#9	10 & 1X	20 & 2X	3XX	4XX	5XX	6XX	7XX	8XX	8#XX	9XX	Print out all
CO 8	X	X	X	X	X	X	X	X	X	X	X	X
CO 7	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

LED on=X LED off=0

TABLE 5
SPEED DIAL MEMORY PRINTOUT
SELECTION CODES

SPEED DIAL LISTS

LED	SYS	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19
CO 8	X	X	X	X	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0	0	0	0	0
CO 6	X	0	0	0	0	0	0	0	0	0	0
CO 5	X	0	0	0	0	0	0	0	0	0	0
CO 4	X	X	X	X	X	X	X	X	X	X	X
CO 3	0	0	0	0	0	0	0	0	0	X	X
CO 2	0	0	0	0	0	X	X	X	X	0	0
CO 1	0	0	0	X	X	0	0	X	X	0	0
INT	0	0	X	0	X	0	X	0	X	0	X

SPEED DIAL LISTS (Stations 20-29)

LED	#20	#21	#22	#23	#24	#25	#26	#27	#28	#29
CO 8	X	X	X	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0	0	0	0
CO 6	0	0	0	0	0	0	0	0	0	0
CO 5	X	X	X	X	X	X	X	X	X	X
CO 4	0	0	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	X	X
CO 2	0	0	0	0	X	X	X	X	0	0
CO 1	0	0	X	X	0	0	X	X	0	0
INT	0	X	0	X	0	X	0	X	0	X

SPEED DIAL LISTS (Stations 30-39)

LED	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39
CO 8	X	X	X	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0	0	0	0
CO 6	0	0	0	0	0	0	0	0	0	0
CO 5	X	X	X	X	X	X	X	X	X	X
CO 4	X	X	X	X	X	X	X	X	X	X
CO 3	0	0	0	0	0	0	0	0	X	X
CO 2	0	0	0	0	X	X	X	X	0	0
CO 1	0	0	X	X	0	0	X	X	0	0
INT	0	X	0	X	0	X	0	X	0	X

SPEED DIAL LISTS (Stations 40-49)

LED	#40	#41	#42	#43	#44	#45	#46	#47	#48	#49
CO 8	X	X	X	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0	0	0	0
CO 6	X	X	X	X	X	X	X	X	X	X
CO 5	0	0	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	X	X
CO 2	0	0	0	0	X	X	X	X	0	0
CO 1	0	0	X	X	0	0	X	X	0	0
INT	0	X	0	X	0	X	0	X	0	X

SPEED DIAL LISTS (Stations 50-59)

LED	#50	#51	#52	#53	#54	#55	#56	#57	#58	#59
CO 8	X	X	X	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0	0	0	0
CO 6	X	X	X	X	X	X	X	X	X	X
CO 5	0	0	0	0	0	0	0	0	0	0
CO 4	X	X	X	X	X	X	X	X	X	X
CO 3	0	0	0	0	0	0	0	0	X	X
CO 2	0	0	0	0	X	X	X	X	0	0
CO 1	0	0	X	X	0	0	X	X	0	0
INT	0	X	0	X	0	X	0	X	0	X

SPEED DIAL LISTS (Stations 60-65)

LED	#60	#61	#62	#63	#64	#65	All Output
CO 8	X	X	X	X	X	X	X
CO 7	0	0	0	0	0	0	0
CO 6	X	X	X	X	X	X	0
CO 5	X	X	X	X	X	X	0
CO 4	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0
CO 2	0	0	0	0	X	X	0
CO 1	0	0	X	X	0	0	0
INT	0	X	0	X	0	X	0

LED on=X LED off=0

**PROGRAMMING PROCEDURES
SECTION 200-020-300
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```

## 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 00000010
0      7   000000  00000000 00000000
0      8   000000  00000000 00000000
0      9   000000  00000000 01111110
0     91   000000  00000000 01111110
0     92   000000  00000000 00000000
0     93   000000  00000000 00000000
0     94   000000  00000000 00000000
0     #9   000000  00000000 00001110

## END OF PRINT ##

```

*NOTE:
MSMU-2 PCB will output a blank space
in place of the # for 0#5 and 0#9*

FIGURE 3—SAMPLE PRINTOUT OF 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 4—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 5—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
3      26     111111  11111111  11111110
3      27     111111  11111111  11111110
3      28     111111  11111111  11111110
3      29     111111  11111111  11111110
3      30     111111  11111111  11111110
3      31     111111  11111111  11111110
3      32     111111  11111111  11111110
3      33     111111  11111111  11111110
3      34     111111  11111111  11111110
3      35     111111  11111111  11111110
3      36     111111  11111111  11111110
3      37     111111  11111111  11111110
3      38     111111  11111111  11111110
3      39     111111  11111111  11111110
3      40     111111  11111111  11111110
3      41     111111  11111111  11111110

```

(continued on next page)

FIGURE 6—SAMPLE PRINTOUT OF PROGRAM 3XX (Stations 10 ~ 41)

**PROGRAMMING PROCEDURES
SECTION 200-020-300
DECEMBER 1984**

(System Programming Continued)

MM/DD/YY

3	42	111111	11111111	11111110
3	43	111111	11111111	11111110
3	44	111111	11111111	11111110
3	45	111111	11111111	11111110
3	46	111111	11111111	11111110
3	47	111111	11111111	11111110
3	48	111111	11111111	11111110
3	49	111111	11111111	11111110
3	50	111111	11111111	11111110
3	51	111111	11111111	11111110
3	52	111111	11111111	11111110
3	53	111111	11111111	11111110
3	54	111111	11111111	11111110
3	55	111111	11111111	11111110
3	56	111111	11111111	11111110
3	57	111111	11111111	11111110
3	58	111111	11111111	11111110
3	59	111111	11111111	11111110
3	60	111111	11111111	11111110
3	61	111111	11111111	11111110
3	62	111111	11111111	11111110
3	63	111111	11111111	11111110
3	64	111111	11111111	11111110
3	65	111111	11111111	11111110

END OF PRINT

##

FIGURE 6A—SAMPLE PRINTOUT OF PROGRAM 3XX (Stations 42 ~ 65)

##	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
#00	*84	17145551212
#00	*85	17147305000
#00	*86	19142731750
#00	*87	12135551212
#00	*88	17148531212
#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 6
PROGRAM 01
SYSTEM ASSIGNMENTS (BASIC)

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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) 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 their associated key will turn it off and vice-versa. LEDs may be turned off and on until the desired pattern is set.	
NOTE: <i>If any key/LED is not shown, it is not used.</i>		
KEY/LED	LED ON	LED OFF
CO 17	Transfer Privacy	Alternate point answer of transferred CO line
CO 16	System Speed Dial Override Toll Restriction	Restricted
CO 15	Four CO Line Groups (91 ~ 94)	One CO Line Group
CO 14	Two CO Conferencing—Inhibit	Allowed
CO 7	Station 17 is 10-key EKT	20-key EKT
CO 6	Incoming Call Abandon (8 seconds)	6 seconds
CO 5	3-second Pause After Flash	1.5-second Pause
CO 4	Insert Pause After Flash	No Pause
CO 3	3-second Pause ([MW/FL] key)	1.5-second Pause
CO 2	0.5-second Flash	2.0-second Flash
INT	Tone First	Voice First
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except 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 MW/FL LED goes off. New data is stored, previous data is erased.	

***NOTE:**
*Station 17 EKT type selection (CO 7) is effective immediately after **[HOLD]** key is depressed.*

TABLE 7
PROGRAM 02
SYSTEM ASSIGNMENTS (OPTIONS)

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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) indicate 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/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>																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">KEY/LED</th> <th style="width: 40%;">LED ON</th> <th style="width: 45%;">LED OFF</th> </tr> </thead> <tbody> <tr> <td>CO 10</td> <td>Station 24 is OPX</td> <td>Stations 24 & 25 are OPX</td> </tr> <tr> <td>CO 9</td> <td>Station 22 is OPX</td> <td>Stations 22 & 23 are OPX</td> </tr> <tr> <td>CO 8</td> <td>Station 20 is OPX</td> <td>Stations 20 & 21 are OPX</td> </tr> <tr> <td>CO 4</td> <td>Display dialed number (1.0 minute)</td> <td>Display 15 seconds</td> </tr> <tr> <td>CO 2</td> <td>Night Ringing over External Page Allowed</td> <td>Not Allowed</td> </tr> <tr> <td>CO 1</td> <td>BGM over External Page Allowed</td> <td>Not Allowed</td> </tr> <tr> <td>INT</td> <td>External Page Included with All Call Page</td> <td>Not Included</td> </tr> </tbody> </table>	KEY/LED	LED ON	LED OFF	CO 10	Station 24 is OPX	Stations 24 & 25 are OPX	CO 9	Station 22 is OPX	Stations 22 & 23 are OPX	CO 8	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
KEY/LED	LED ON	LED OFF																							
CO 10	Station 24 is OPX	Stations 24 & 25 are OPX																							
CO 9	Station 22 is OPX	Stations 22 & 23 are OPX																							
CO 8	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 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 MW/FL LED goes off. New data is stored, previous data is erased.																								

TABLE 8
PROGRAM 03
SYSTEM ASSIGNMENTS (OPTIONS)

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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. The various LEDs (see below) indicate 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/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>																															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">KEY/LED</th> <th style="width: 40%;">LED ON</th> <th style="width: 45%;">LED OFF</th> </tr> </thead> <tbody> <tr> <td>CO 9</td> <td>Station 10 has [DND] key</td> <td>Station 10 has [NT] key</td> </tr> <tr> <td>CO 8</td> <td>Night Ringing—3-ring mode</td> <td>2-ring mode</td> </tr> <tr> <td>CO 7</td> <td>Tenant Service</td> <td>Non-tenant</td> </tr> <tr> <td>CO 6</td> <td>Tone First (DSS)</td> <td>Voice First (DSS)</td> </tr> <tr> <td>CO 4</td> <td>Message Center—Station 12</td> <td>Not Equipped</td> </tr> <tr> <td>CO3</td> <td>Message Center—Station 11</td> <td>Not Equipped</td> </tr> <tr> <td>CO 2</td> <td>Message Center—Station 10</td> <td>Not Equipped</td> </tr> <tr> <td>CO 1</td> <td>DSS #2</td> <td>Not Equipped</td> </tr> <tr> <td>INT</td> <td>DSS #1</td> <td>Not Equipped</td> </tr> </tbody> </table>	KEY/LED	LED ON	LED OFF	CO 9	Station 10 has [DND] key	Station 10 has [NT] key	CO 8	Night Ringing—3-ring mode	2-ring mode	CO 7	Tenant Service	Non-tenant	CO 6	Tone First (DSS)	Voice First (DSS)	CO 4	Message Center—Station 12	Not Equipped	CO3	Message Center—Station 11	Not Equipped	CO 2	Message Center—Station 10	Not Equipped	CO 1	DSS #2	Not Equipped	INT	DSS #1	Not Equipped
KEY/LED	LED ON	LED OFF																													
CO 9	Station 10 has [DND] key	Station 10 has [NT] key																													
CO 8	Night Ringing—3-ring mode	2-ring mode																													
CO 7	Tenant Service	Non-tenant																													
CO 6	Tone First (DSS)	Voice First (DSS)																													
CO 4	Message Center—Station 12	Not Equipped																													
CO3	Message Center—Station 11	Not Equipped																													
CO 2	Message Center—Station 10	Not Equipped																													
CO 1	DSS #2	Not Equipped																													
INT	DSS #1	Not Equipped																													
5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except 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 MW/FL LED goes off. New data is stored, previous data is erased.																														

TABLE 9
PROGRAM 04
MCAU OUTPUTSING SELECTION

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 indicate 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 outputted. 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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 10

PROGRAM 05
AUTOMATIC RECALL FROM HOLD TIMING

(This program is used only if CO 9 ~ 11 LEDs in Program 5XX are off.)

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 or CO LED will indicate 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> If any key/LED is not shown, it is not used.</p>																				
	<table border="1"> <thead> <tr> <th>KEY/LED</th> <th>LED ON</th> </tr> </thead> <tbody> <tr> <td>CO 7</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	CO 7	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																			
CO 7	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 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 MW/FL LED goes off. New data is stored, previous data is erased.																			

TABLE 11
PROGRAM 0#5
CAMP-ON TIMEOUT

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 or CO LED will indicate 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 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 MW/FL LED goes off. New data is stored, previous data is erased.		

TABLE 12
PROGRAM 06
AUTOMATIC RELEASE ON HOLD ENABLE

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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][6] on dial pad. To program CO 18 ~ 21, dial [0][*][6], then CO 1 ~ 4 = CO 18 ~ 21.</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. 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.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 13

PROGRAM 07
AUTOMATIC RELEASE ON HOLD (AROH) TIMING

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 07 on dial pad. To program CO 18 ~ 21, dial 0*7 then CO 1 ~ 4 = CO 18 ~ 21.</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. 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.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

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

TABLE 14
PROGRAM 08
TENANT SERVICE SELECTION

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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][8] on dial pad. To program CO 18 ~ 21, dial [0][*][8] then CO 1 ~ 4 = CO 18 ~ 21.</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. Each CO key/LED represents itself—that is, if CO 1 LED is on, CO 1 will belong to tenant #2. If CO 1 LED is off, CO 1 will belong to tenant #1.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

NOTE:
This program will have no meaning unless Tenant Service was selected in Program 03.

TABLE 15
PROGRAM 09
SINGLE CO LINE (DIAL 9) GROUP SELECTION

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 09 on dial pad. To program CO 18 ~ 21, dial 0*9, then CO 1 ~ 4 = CO 18 ~ 21.</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. 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 701 at the OPX station or by the CO 2 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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 16
PROGRAM 09X
FOUR CO LINE (DIAL 91, 92, 93, 94) GROUP SELECTION

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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. To program CO 18 ~ 21, dial [0][*][9][X] then CO 1 ~ 4 = CO 18 ~ 21.</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. 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 Queuing. 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 2] 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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 17
PROGRAM 0#9
OPL LINE HUNTING

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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. To program CO 18 ~ 21, dial [0][*][#][9] then CO 1 ~ 4 = CO 18 ~ 21.</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. Each CO key/LED represents itself—that is, if the LEDs for COs 1 & 2 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.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 18
PROGRAM 10
PBX BACK-UP

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 [1][0] on dial pad. To program CO 18 ~ 21, dial [1][*][0] then CO 1 ~ 4 = CO 18 ~ 21.</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. 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.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 19
PROGRAM 1X
PBX ACCESS CODES

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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. CO 10 LED flashes.																																																												
4) Refer to the System Record Sheet. Using the dial pad, enter the required access code (two digits must be entered.) <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 [DND] key for the second digit. 	INT, CO 2, 4 & 6 LEDs will light to display data in Binary format. CO 10 or 12 LED will light steadily to indicate which digit is being displayed.																																																												
	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Key/LED</th> <th style="padding: 2px;">Start</th> <th style="padding: 2px;">1st Digit</th> <th style="padding: 2px;">2nd Digit</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">CO 12</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">Steady</td> </tr> <tr> <td style="padding: 2px;">CO 10</td> <td style="padding: 2px;">Flash</td> <td style="padding: 2px;">Steady</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">CO 6</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">Binary Data</td> <td style="padding: 2px;">Binary Data</td> </tr> <tr> <td style="padding: 2px;">CO 4</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">Binary Data</td> <td style="padding: 2px;">Binary Data</td> </tr> <tr> <td style="padding: 2px;">CO 2</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">Binary Data</td> <td style="padding: 2px;">Binary Data</td> </tr> <tr> <td style="padding: 2px;">INT</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">Binary Data</td> <td style="padding: 2px;">Binary Data</td> </tr> </tbody> </table>	Key/LED	Start	1st Digit	2nd Digit	CO 12			Steady	CO 10	Flash	Steady		CO 6		Binary Data	Binary Data	CO 4		Binary Data	Binary Data	CO 2		Binary Data	Binary Data	INT		Binary Data	Binary Data																																
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	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																																																		
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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 MW/FL LED goes off. New data is stored, previous data is erased.																																																												

TABLE 20
PROGRAM 20
TOLL RESTRICTION DISABLE

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 2 0 on dial pad. To program CO 18 ~ 21, dial 2 * 0 then CO 1 ~ 4 = CO 18 ~ 21.</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. 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.</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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 21

PROGRAM 2X
TOLL RESTRICTION EXCEPTION CODES

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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. CO 10 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). <ul style="list-style-type: none"> • 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. COs 10 and/or 12 or 14 LEDs indicate which digit is being displayed.																																																												
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 10%;">Key/LED</th> <th style="width: 10%;">Start</th> <th style="width: 15%;">1st Digit</th> <th style="width: 15%;">2nd Digit</th> <th style="width: 15%;">3rd Digit</th> <th style="width: 15%;">4th Digit</th> </tr> </thead> <tbody> <tr> <td>CO 14</td> <td></td> <td></td> <td></td> <td></td> <td>Steady</td> </tr> <tr> <td>CO 12</td> <td></td> <td></td> <td>Steady</td> <td>Steady</td> <td></td> </tr> <tr> <td>CO 10</td> <td>Flash</td> <td>Steady</td> <td></td> <td>Steady</td> <td></td> </tr> <tr> <td>CO 6</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>CO 4</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>CO 2</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> </tr> <tr> <td>INT</td> <td></td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> <td>Binary Data</td> </tr> </tbody> </table>	Key/LED	Start	1st Digit	2nd Digit	3rd Digit	4th Digit	CO 14					Steady	CO 12			Steady	Steady		CO 10	Flash	Steady		Steady		CO 6		Binary Data	Binary Data	Binary Data	Binary Data	CO 4		Binary Data	Binary Data	Binary Data	Binary Data	CO 2		Binary Data	Binary Data	Binary Data	Binary Data	INT		Binary Data	Binary Data	Binary Data	Binary Data													
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	INT	X		X		X		X		X																																																			
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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 MW/FL LED goes off. New data is stored, previous data is erased.																																																												

TABLE 22

**PROGRAM 3XX
STATION CO LINE ACCESS**

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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. To program CO 18 ~ 21, dial [3][*][X][X] then CO 1 ~ 4 = CO 18 ~ 21. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.20.</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 = 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 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 MW/FL LED goes off. New data is stored, previous data is erased.</p>

TABLE 23
PROGRAM 4XX
STATION TYPE and KEY ASSIGNMENT

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 [4][X][X] on the dial pad. XX = the station number of the station to be programmed. <i>NOTE:</i> <i>For multiple station programming, refer to Paragraph 02.20.</i>	SPKR LED flashes continuously. An INT or CO LED indicates the present data.																																																																																
4) Refer to the System Record Sheet. Using either an [INT] or [CO] key, turn its associated LED on or off, as required, depending upon the type and style of the EKT being used at that station. The detailed meaning of each key is shown below.	An X on the record sheet means the LED should be on. Only one LED is permitted to be on per station, depressing another key will turn that LED on and turn off the previous LED.																																																																																
<i>NOTES:</i> 1. If any key/LED is not shown, it is not used. 2. See Paragraph 02.70 for the definition of the assignment numbers. 3. If a station is equipped with a DSS (Program 03), key assignment "20-key #8" is selected automatically.																																																																																	
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>KEY ASSIGN.</th> <th>KEY</th> <th>LED ON</th> <th>LED OFF</th> <th>KEY ASSIGN.</th> <th>KEY</th> <th>LED ON</th> <th>LED OFF</th> </tr> </thead> <tbody> <tr><td>10-key #5</td><td>CO 17</td><td>Equipped</td><td>Not equipped</td><td>20-key #9</td><td>CO 8</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>10-key #4</td><td>CO 16</td><td>Equipped</td><td>Not equipped</td><td>20-key #8</td><td>CO 7</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>10-key #3</td><td>CO 15</td><td>Equipped</td><td>Not equipped</td><td>20-key #7</td><td>CO 6</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>10-key #2</td><td>CO 14</td><td>Equipped</td><td>Not equipped</td><td>20-key #6</td><td>CO 5</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>10-key #1</td><td>CO 13</td><td>Equipped</td><td>Not equipped</td><td>20-key #5</td><td>CO 4</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>20-key #13</td><td>CO 12</td><td>Equipped</td><td>Not equipped</td><td>20-key #4</td><td>CO 3</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>20-key #12</td><td>CO 11</td><td>Equipped</td><td>Not equipped</td><td>20-key #3</td><td>CO 2</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>20-key #11</td><td>CO 10</td><td>Equipped</td><td>Not equipped</td><td>20-key #2</td><td>CO 1</td><td>Equipped</td><td>Not equipped</td></tr> <tr><td>20-key #10</td><td>CO 9</td><td>Equipped</td><td>Not equipped</td><td>20-key #1</td><td>INT</td><td>Equipped</td><td>Not equipped</td></tr> </tbody> </table>	KEY ASSIGN.	KEY	LED ON	LED OFF	KEY ASSIGN.	KEY	LED ON	LED OFF	10-key #5	CO 17	Equipped	Not equipped	20-key #9	CO 8	Equipped	Not equipped	10-key #4	CO 16	Equipped	Not equipped	20-key #8	CO 7	Equipped	Not equipped	10-key #3	CO 15	Equipped	Not equipped	20-key #7	CO 6	Equipped	Not equipped	10-key #2	CO 14	Equipped	Not equipped	20-key #6	CO 5	Equipped	Not equipped	10-key #1	CO 13	Equipped	Not equipped	20-key #5	CO 4	Equipped	Not equipped	20-key #13	CO 12	Equipped	Not equipped	20-key #4	CO 3	Equipped	Not equipped	20-key #12	CO 11	Equipped	Not equipped	20-key #3	CO 2	Equipped	Not equipped	20-key #11	CO 10	Equipped	Not equipped	20-key #2	CO 1	Equipped	Not equipped	20-key #10	CO 9	Equipped	Not equipped	20-key #1	INT	Equipped	Not equipped	
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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 MW/FL LED goes off. New data is stored, previous data is erased.																																																																																

TABLE 24

PROGRAM 5XX—STATION CLASS OF SERVICE

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 02.20</i>	SPKR LED flashes continuously. The INT & CO LEDs indicate 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.

NOTE:
If any key/LED is not shown, it is not used.

KEY	FEATURE	LED ON	LED OFF
CO 17	Privacy Override Allowed	Yes	No
CO 16	DND Override Allowed	Yes	No
CO 11	Hold Recall Time Code*	See table	See table
CO 10	Hold Recall Time Code*	See table	See table
CO 9	Hold Recall Time Code*	See table	See table
CO 8	MIC Control—Push-on/Push-off	Yes	No
CO 7	Group Page 4	Included	Excluded
CO 6	Group Page 3	Included	Excluded
CO 5	Group Page 2	Included	Excluded
CO 4	Group Page 1	Included	Excluded
CO 3	Speakerphone Enable	Allowed	Not Allowed
CO 2	Automatic Dialing	Allowed	Not Allowed
CO 1	Ringing Line Preference	Allowed	Not Allowed
INT	Include in All Call Page	Included	Excluded

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

Key/LED	Prog. 05	16	32	48	64	96	128	160
CO 11					X	X	X	X
CO 10			X	X			X	X
CO 9		X		X		X		X

5) Depress the [HOLD] key to place new data in memory.	All station 17 LEDs (except 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 MW/FL LED goes off. New data is stored, previous data is erased.

TABLE 25
PROGRAM 6XX
TOLL RESTRICTION CLASSIFICATION

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 02.20.</i>	SPKR LED flashes continuously. The various LEDs (see below) indicate 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.																																																												
<i>NOTE:</i> <i>See the explanation in Paragraph 02.60, Program 6XX for order of preference.</i>																																																													
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">KEY/LED</th> <th style="width: 45%;">FEATURE</th> <th style="width: 15%;">LED ON</th> <th style="width: 25%;">LED OFF</th> </tr> </thead> <tbody> <tr><td>CO 13</td><td>Exception Code #5*</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 12</td><td>Exception Code #4*</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 11</td><td>Exception Code #3**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 10</td><td>Exception Code #2**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 9</td><td>Exception Code #1**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 8</td><td>Dial 411**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 7</td><td>Dial 911**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 6</td><td>Dial 800**</td><td>Allowed</td><td>Not Allowed</td></tr> <tr><td>CO 5</td><td>Restrict 0 as 1st digit</td><td>Yes</td><td>No</td></tr> <tr><td>CO 4</td><td>Restrict 0 as 2nd digit</td><td>Yes</td><td>No</td></tr> <tr><td>CO 3</td><td>Restrict 1 as 1st digit</td><td>Yes</td><td>No</td></tr> <tr><td>CO 2</td><td>Restrict 1 as 2nd digit</td><td>Yes</td><td>No</td></tr> <tr><td>CO 1</td><td>Allow 1 + 7 digits</td><td>Yes</td><td>No</td></tr> <tr><td>INT</td><td>Allow 7 digits only</td><td>Yes</td><td>No</td></tr> </tbody> </table>	KEY/LED	FEATURE	LED ON	LED OFF	CO 13	Exception Code #5*	Allowed	Not Allowed	CO 12	Exception Code #4*	Allowed	Not Allowed	CO 11	Exception Code #3**	Allowed	Not Allowed	CO 10	Exception Code #2**	Allowed	Not Allowed	CO 9	Exception Code #1**	Allowed	Not Allowed	CO 8	Dial 411**	Allowed	Not Allowed	CO 7	Dial 911**	Allowed	Not Allowed	CO 6	Dial 800**	Allowed	Not Allowed	CO 5	Restrict 0 as 1st digit	Yes	No	CO 4	Restrict 0 as 2nd digit	Yes	No	CO 3	Restrict 1 as 1st digit	Yes	No	CO 2	Restrict 1 as 2nd digit	Yes	No	CO 1	Allow 1 + 7 digits	Yes	No	INT	Allow 7 digits only	Yes	No
KEY/LED	FEATURE	LED ON	LED OFF																																																										
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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 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 26
PROGRAM 7XX
STATION OUTGOING CALL RESTRICTION**

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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: For multiple station programming, refer to Paragraph 02.20.</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 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 MW/FL LED goes off.</p>

TABLE 27

PROGRAM 8XX
CO RINGING ASSIGNMENTS-DAY

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 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 02.20.</i></p>	<p>SPKR LED flashes continuously. CO LEDs indicate present data.</p>
<p><i>NOTES:</i> 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>	
<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 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. 	<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 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 MW/FL LED goes off.</p>

TABLE 28
PROGRAM 8#XX
CO RINGING ASSIGNMENTS-DAY 2

1) Lock in the SET switch on the MCAU.	SET LED on. Station 17 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 [8][#][X][X] on the dial pad. XX = the number of the station(s) to be programmed. NOTE: For multiple station programming, refer to Paragraph 02.20.	SPKR LED flashes continuously. CO LEDs indicate present data.
NOTES: 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.	
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 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. 	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 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 MW/FL LED goes off.

TABLE 29

PROGRAM 9XX
CO RINGING ASSIGNMENTS-NITE

<p>1) Lock in the SET switch on the MCAU.</p>	<p>SET LED on. Station 17 MW/FL LED on.em 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 [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 02.20.</i></p>	<p>SPKR LED flashes continuously. CO LEDs indicate present data.</p>
<p><i>NOTES:</i> 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>	
<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 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. 	<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 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 MW/FL LED goes off.</p>

Strata ***XII & XX***

INSTALLATION

INSTALLATION

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01 GENERAL

01.01 This section describes the installation procedures necessary to ensure proper operation of the STRATA XII & XX systems. The installation procedures for the two systems vary only in relation to size; all other factors are the same.

02 PACKING

02.01 When a STRATA 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 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 a CRDU, AMMU, or MSMU, ensure the following:

Do not use plastic or any type of conductive material for packing either a CRDU, AMMU, 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 a CRDU, AMMU or MSMU always ensure that the battery strap is in the OFF position. See Figure 1 for the CRDU, Figure 2 for the AMMU, Figure 3 for the MSMU.

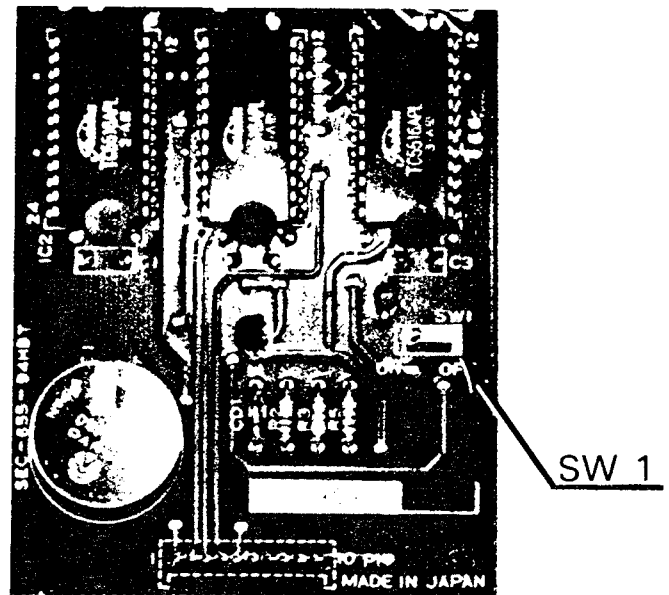


FIGURE 1—CRDU BATTERY STRAP

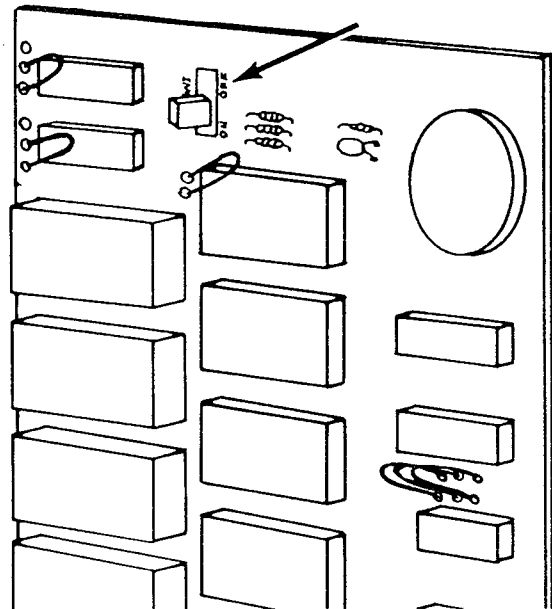


FIGURE 2—AMMU BATTERY STRAP

NOTE:

Always make sure the battery strap on the AMMU is in the "ON" position just prior to installation. If not, the SET LED on the MCAU will not operate. Also, if equipped, ensure that the battery straps on the CRDU(s) and MSMU are in the "ON" position.

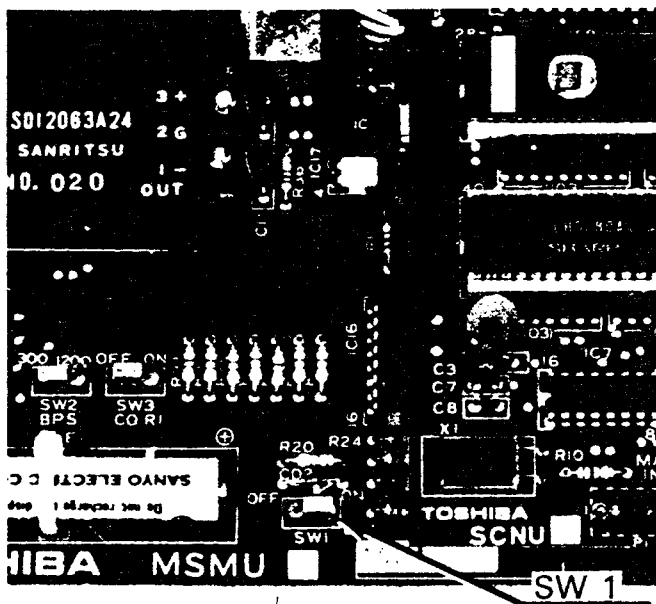


FIGURE 3—MSMU BATTERY STRAP

03 MKSU LOCATION REQUIREMENTS

03.00 Power Requirements

03.01 The STRATA MKSU (both XII & XX) requires 24 VDC. This is provided by the power supply (EPSA), 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 same EPSA power supply is used with both STRATA systems.

03.03 The 54-inch cord provided to connect the EPSA 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 either STRATA 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. The DSS console must be located within 500 cable feet (152.5 m) of the MKSU. Acceptable cable is 22 or 24 AWG inside telephone station cable, jacketed but not shielded, having two or more twisted wire pairs.

04 MKSU MOUNTING

04.01 The MKSU is designed for either table or wall mounting (using the MKWM Wall Mounting Kit), but is factory-configured for table mounting. For wall mounting instructions, refer to Paragraph 04.20.

04.10 Table Mounting the MKSU

04.11 Since the MKSU is already configured for table mounting, the only requirement is to choose a suitable location and proceed to Section 100-020-250, *Power Supply Installation*.

04.20 Wall Mounting the MKSU

IMPORTANT:

If one or more MOPU PCBs are required in the system, review Paragraph 07.20, MOPU Installation, prior to mounting the MKSU. An MCBL (MOPU receiving connector) for each MOPU to be equipped must be installed before the MKSU is mounted on the wall.

04.21 The same MKWM Wall Mounting Kit is used for both MKSUs. Each kit consists of:

- 1 Drilling Template
- 1 Back Plate
- 1 Side Plate A
- 1 Side Plate B
- 2 Side Angles
- 12 Binding-head Screws

04.22 Be certain that all parts are included before proceeding.

04.23 In addition to those items supplied in the MKWM kit, six fasteners, suitable for the type of wall chosen, must be supplied by the installer. The fasteners will be used to secure the wall mount bracket and MKSU to the wall. A typical fastener would be:

- 1/4-in. Toggle Bolt
- 1/4-in. Molly Fastener
- 1/4-in. Lag Screw

04.24 Choose a suitable location for the MKSU on a surface of sufficient strength to support its weight. The MKSUs (fully equipped) weigh:

- STRATA XII: 52.0 lb (23.6 kg)
- STRATA XX: 72.6 lb (32.9 kg)

04.25 Secure the template (Figure 4) to the mounting surface with tape, and perform the following steps:

- a) Be sure the template is at the proper height and use a spirit level to make sure it is level.
- b) Mark the locations of the six mounting holes. Use the locations marked "A" for STRATA XII and "B" for STRATA XX.
- c) Remove the template, and at each point marked, drill a hole suitable for the chosen fastener.

04.26 Assemble and secure the wall mount bracket as follows:

- a) Attach the two side plates (A & B) to the back plate using four of the binding-head screws supplied with the kit (Figure 5). Note that three holes are provided on the right side of the back plate. Use the inner two holes for STRATA XII and the outer two for STRATA XX. (When arranged for STRATA XX mounting, the side plate will extend beyond the

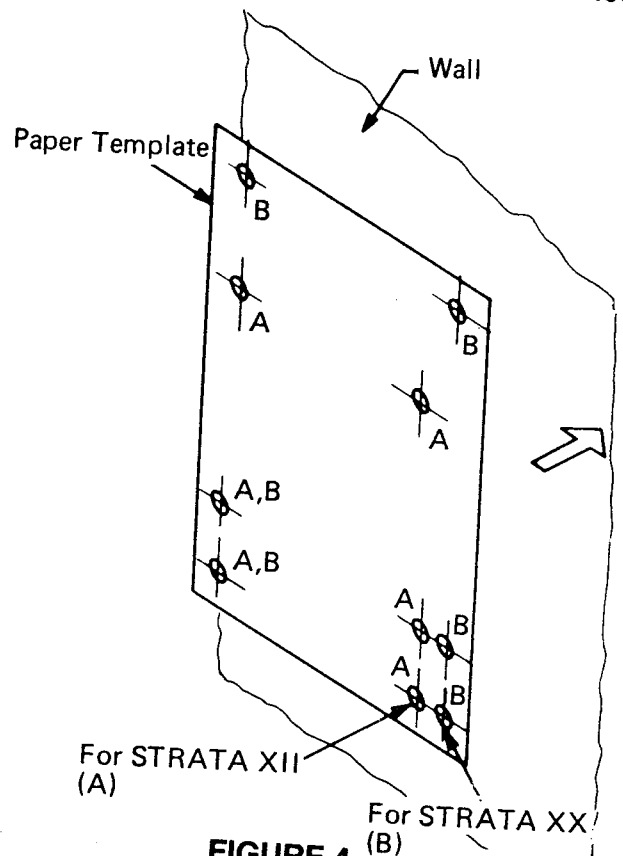


FIGURE 4
MKSU WALL MOUNTING KIT TEMPLATE

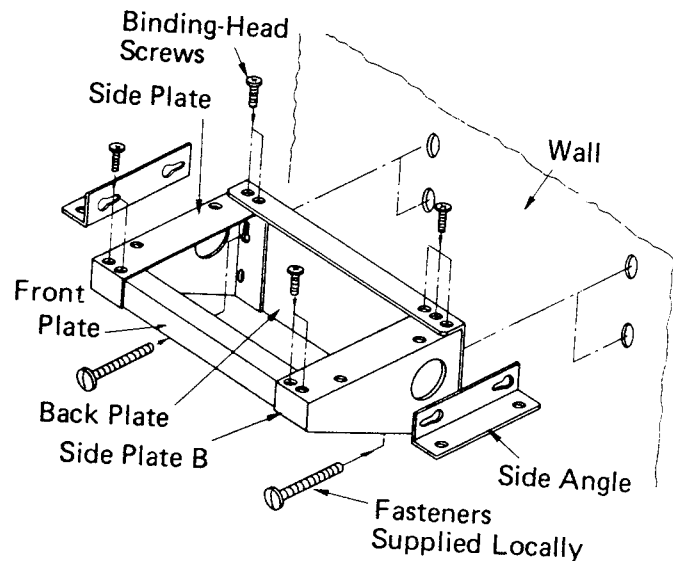


FIGURE 5—ASSEMBLED
MKSU WALL MOUNTING KIT
(back plate.)

- b) Attach front plate to side plates with four binding-head screws.
- c) Insert two fasteners into the holes in the mounting surface that correspond to the key-

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holes in the back plate. Tighten them loosely so that approximately 3/8-in. gap remains between the head of the fastener and the mounting surface.

- d) Install the wall mount assembly by slipping the two keyholes in the back plate over the two fasteners installed in Step C.
- e) Install the lower two fasteners in the back plate and tighten all four fasteners securing the wall mount assembly.

04.27 The MKSU must be prepared for wall mounting by reversing the back cover. This will locate the two mounting holes at the top of the MKSU. To reverse the back cover, proceed as follows:

- a) Loosen all seven screws securing the back cover (Figure 6).
- b) Remove and save the three screws indicated in Figure 6, lift the back cover off.

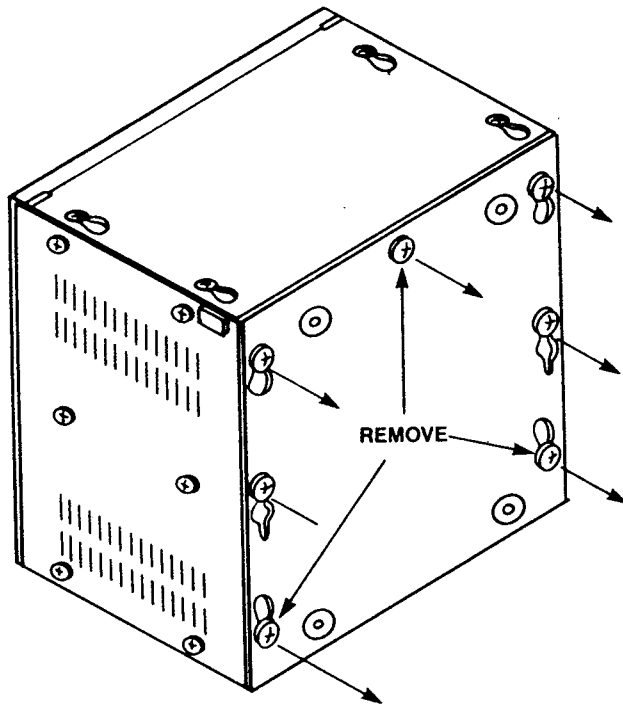


FIGURE 6—MKSU

- c) Rotate the back cover 180° and realign it so the two mounting holes project above the MKSU (Figure 7).

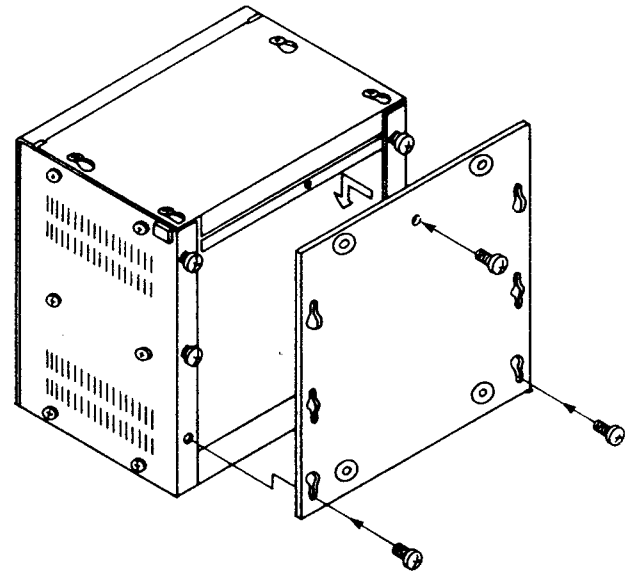


FIGURE 7—MKSU

- d) Reinstall the back cover. Secure it with the four loosened screws.
- e) Reinstall and tighten the three screws removed earlier.

04.28 Refer to Figure 8, and complete the wall mount installation as follows:

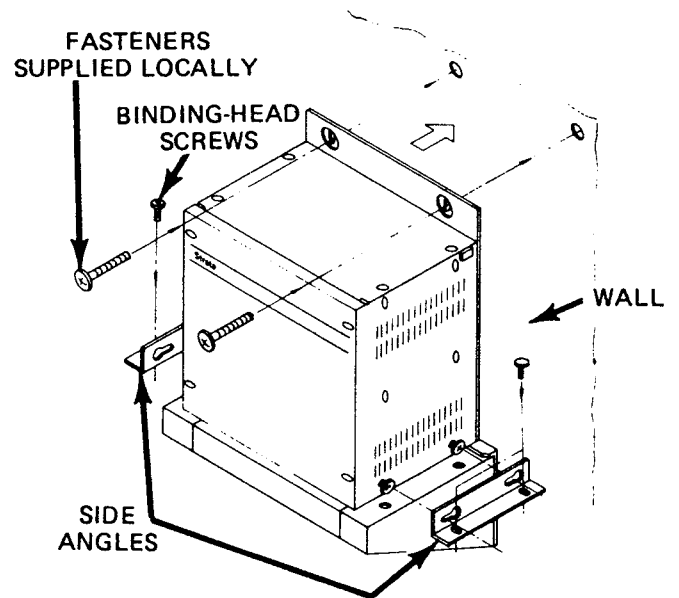


FIGURE 8—MKSU

- a) Rest the MKSU on the wall mount assembly and loosen the two screws located near the bottom of each side of the MKSU.

- b) Loosely attach the side angles to the lower sides of the MKSU by sliding their keyholes over the previously mentioned screws.
- c) Ensure that the side angles are properly aligned with the holes in the mounting bracket and that the two top holes are aligned with the holes in the mounting surface.
- d) Fasten the MKSU to the mounting surface loosely, using the locally-supplied fasteners through the upper mounting holes.
- e) Using four of the provided binding-head screws, secure the side angles to the wall mounting bracket.
- f) Tighten the screws holding the side angles to the sides of the MKSU.
- g) Tighten the fasteners securing the MKSU to the mounting surface.

04.29 Prior to installing any printed circuit boards, install the power supply per instructions in Section 100-020-250, *Power Supply Installation*.

05 PRINTED CIRCUIT BOARDS

05.01 Complete with all available options, both STRATA systems utilize 15 different PCBs, with a maximum of 18 for STRATA XII and 32 for STRATA XX. They are:

MPRU – 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.

MCAU/AMMU:

The AMMU is required and mounts directly on the MCAU to form a single unit. All system control functions are performed by the single chip microprocessor located on the MCAU. The system program stored in ROM, RAM for

system operations and battery-protected RAM for system data storage are located on the AMMU.

CRDU:

This optional PCB provides the additional memory capacity required for the Automatic Dialing-Station feature. The RAM containing the additional memory capacity is battery-protected. The CRDU mounts directly on the MCBU and/or MDSU. A maximum of two CRDUs are used in STRATA XII, while STRATA XX may use as many as three.

MCBU:

Contains a microprocessor and serves to off-load the main CPU by processing routine and repetitive data transmission tasks to and from the peripheral equipment. One MCBU is used in STRATA XII, while two are required in any STRATA XX system that is equipped with more than 32 stations.

MINU:

Generates system tones and provides the switching matrix for the delivery of tones for both paging and intercom connections (one per system).

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 a portion of the system's solid-state space division matrix. Each MSTU PCB services up to eight EKTs.

MXPU:

Contains the solid-state crosspoints that make up the remainder of the space division switching matrix. Each MXPU services up to 16 stations and provides access to 12 CO lines plus intercom or nine CO lines, depending upon its position in the system.

MDSU:

An optional PCB that serves as an interface between the DSS console(s) and the MKSU

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(each system uses only one MDSU). The MDSU serves up to two fully functional DSS consoles and two DSS consoles which are used as Busy Lamp Field terminals only.

MSMU/SCNU:

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 (MF/DP or DP):

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. Each MOPU services two extensions. A maximum of two MOPUs can be installed in STRATA XII and three in STRATA XX.

NOTE 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 system) with a conventional telephone. "OPL" telephones thus connected will then automatically cause a busy indication within the STRATA system and establish system privacy when initiating or answering a call on the dedicated CO line. Each MPLU serves up to three CO/PBX line/OPL combinations and replaces the MCOU PCB that would usually serve these lines. Maximum is one MPLU per system.

05.10 MPRU PCB Options

05.11 The MPRU 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 9), if installed, provides a dry contact at the **BR** terminals on the front of the MPRU 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 a page amplifier mounted externally.)

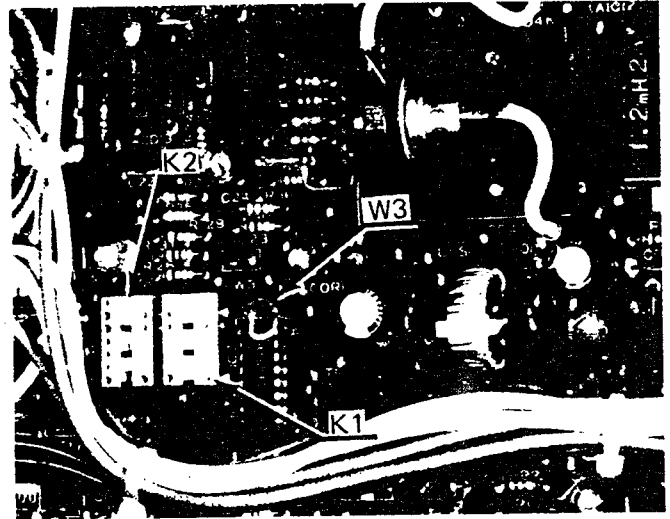


FIGURE 9

MPRU RELAY SOCKETS & W3 STRAP

Night Relay Service:

An optional NR relay (K2 socket, Figure 9), if installed, provides a dry contact at the **NR** terminals on the front of the MPRU. The **W3** strap option (Figure 9) 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 MPRU. The output impedance can be selected

to be either 8 ohms or 600 ohms. If 8 ohms is selected, the output will be via a 3-watt amplifier on the MPRU, and the voice path will be one way. If 600 ohms is selected, an external PA amplifier or talkback amplifier is required and the internal voice path will be 2-way.

05.12 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 MPRU, per Figure 10.

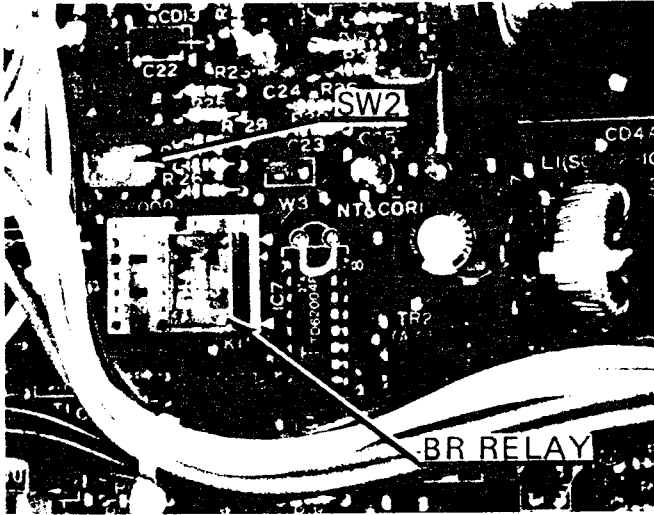


FIGURE 10
RELAY INSTALLED WITH SW2 SWITCH

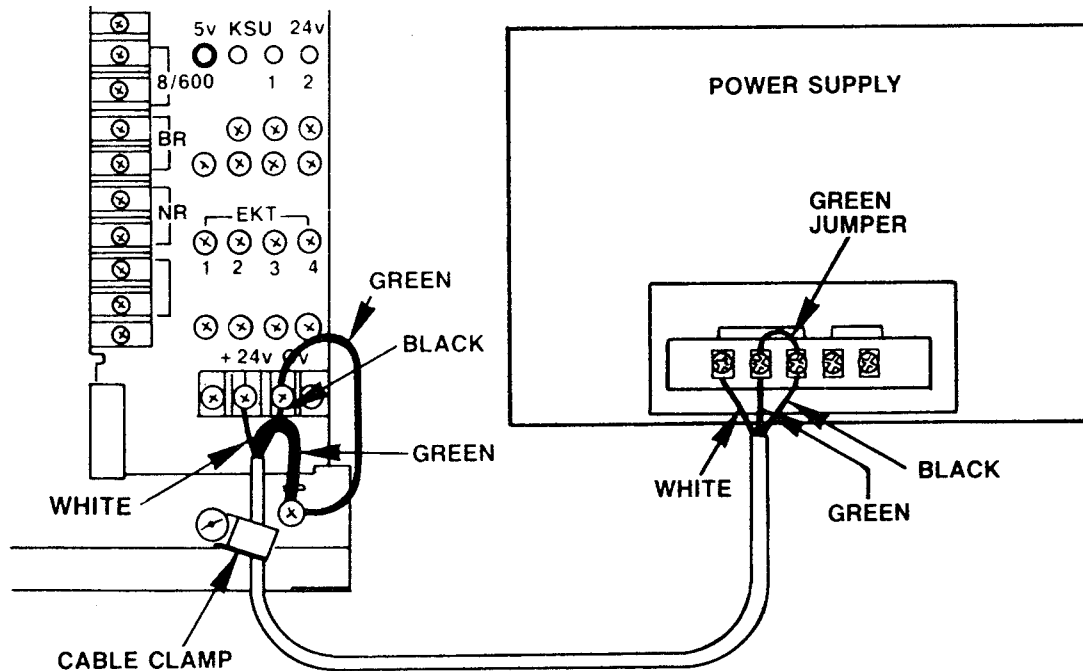


FIGURE 11—POWER SUPPLY WIRING—MKSU

05.13 External page impedance is selected with the SW2 switch located adjacent to the relay sockets on the MPRU (Figure 10). Decide if 8- or 600-ohm impedance is required, then make the selection by positioning the SW2 switch to "8" or "600", whichever is required. Figure 10 shows the switch in the 8-ohm position.

06 POWER CONNECTIONS

06.00 MPRU PCB Installation

06.01 The MPRU front panel provides the connection point for the 24 VDC input from the external power supply. Therefore, the MPRU must be installed first.

06.02 Install the MPRU PCB in its proper slot in the MKSU (Figures 15 & 16).

06.10 Power Connection

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

06.12 Disconnect the power supply from the 115 VAC outlet. Remove the plastic protective

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cover from the power terminal strip on the MPRU, 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.

White: "24V"
Black: "OV"
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 plastic cable clamp that is provided.

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

06.14 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 "OV" terminal on the MPRU power strip. Reinstall the plastic protective cover on the power strip at this time.

06.15 Both Toshiba STRATA electronic key telephone systems require 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 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 (maximum: 1 ohm), or by using a commercially available earth ground indicator. If neither procedure is possible, then the test procedures outlined in Paragraph **06.16** should be performed.

WARNING!:

Hazardous voltage that may cause death or injury is exposed during the following test. Use great care when working with AC powerline voltage.

06.16 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 OV, leave one probe on the GND terminal and move other probe to the 2nd voltage terminal. If a reading of OV 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 OV 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 OV 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 OV. A reading of less than 1 ohm should be obtained. If a reading of less than 1 ohm 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 STRATA is connected.

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

07 PCB INSTALLATION

07.00 Memory Protection

07.01 Mount the AMMU on the MCAU (Figure

12). Locate the SW3 battery strap on the AMMU (Figure 2) and connect the memory back-up battery. 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.

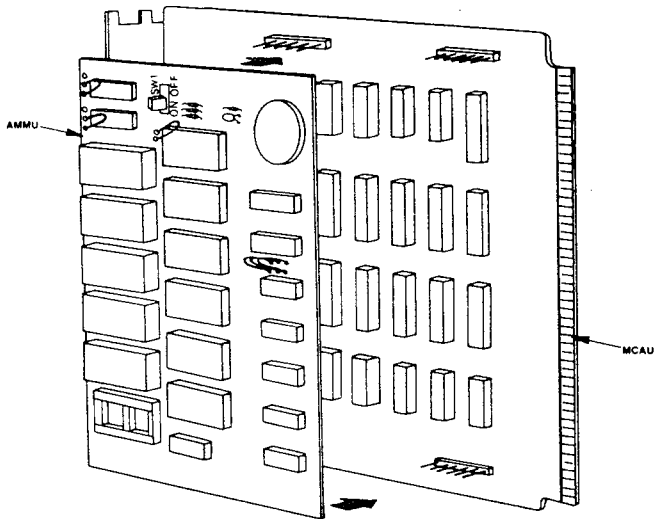


FIGURE 12—AMMU ONTO MCAU

07.02 Mount the CRDU(s) on the MCBU and MDSU (see Figures 13 and 14). Locate the SW1 battery strap on the CRDUs (Figure 1) and connect the memory back-up battery. The strap is shown in the OFF or disconnected position. To connect each battery, remove and reinstall the strapping plugs so that they bridge the center pin with the pin labeled ON. Ascertain the number and position(s) of CRDU PCBs required for your system per Table A—dedicated Automatic Dialing key codes reside at the lower end of the station register (that is: 10, 11, etc).

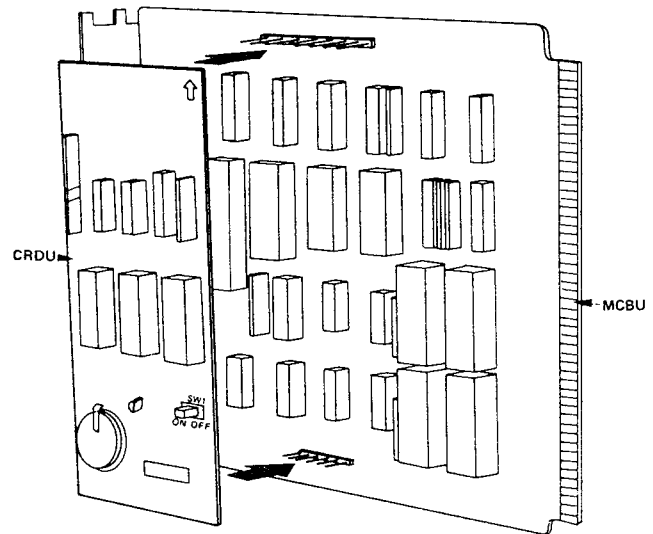


FIGURE 13—CRDU ON MCBU

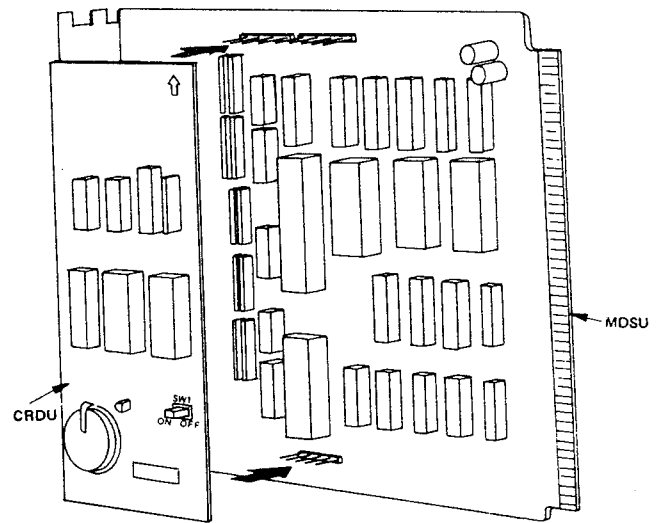


FIGURE 14—CRDU ON MDSU

TABLE A—CRDU POSITIONS

NOTE:

The quantity of Automatic Dialing numbers (STRATA XII & XX) provided the system and stations by the available options are listed in Table A. A CRDU is equipped on each PCB mentioned and the respective address codes are indicated in parenthesis.

	None	MCBU #1	MDSU	MCBU #1 MDSU	MCBU #2	MCBU #1 MCBU #2	MCBU #1 MCBU #2 MDSU
System List	24 (60~83)	40 (60~99)	24 (60~83)	40 (60~99)	24 (60~83)	40 (60~99)	40 (60~99)
Stations 10~46*	—	20 (10~29)	20 (30~49)	40 (10~49)	—	20 (10~29)	40 (10~49)
Stations 47~65	—	—	—	—	40 (10~49)	40 (10~49)	40 (10~49)

*Stations 10~41 for STRATA XII.

07.10 PCB Installation Sequence

PCBs (Figures 15 and 16).

07.11 Install the MCAU/AMMU and MCBU PCBs in their correct MKSU positions (Figures 15 and 16).

07.12 Install the MINU in the correct MKSU position (Figures 15 and 16).

07.13 Install the appropriate number of MXPU

- a) For STRATA XII; install #1 MXPU for 16 or less stations (for MSTU #1, 2), add #2 MXPU for more than 16 stations (for MSTU #3, 4).
- b) For STRATA XX; select the number and positions of the MXPU PCBs required for your system per Table B.

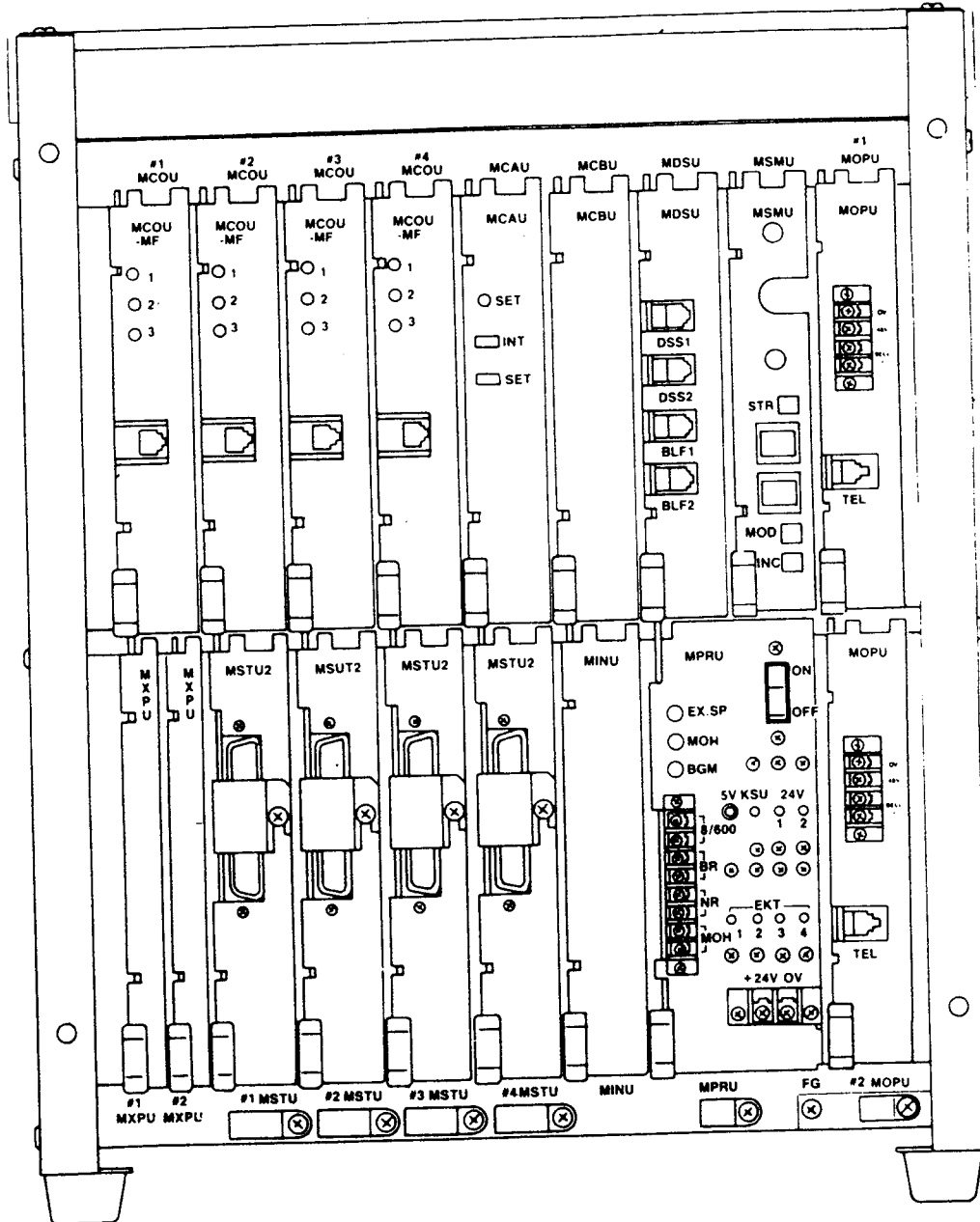


FIGURE 15—PCBs IN MKSU (STRATA XII)

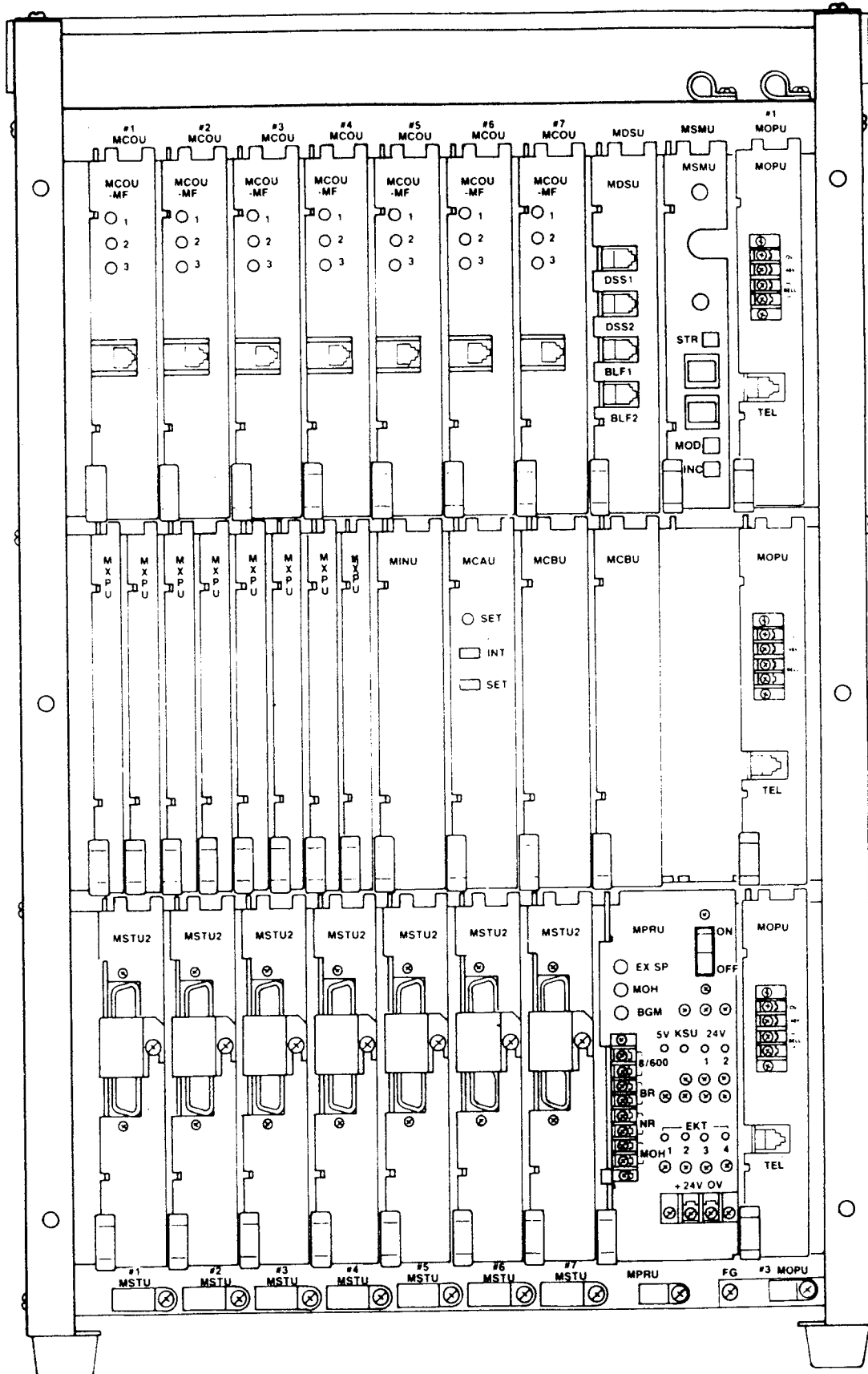


FIGURE 16—PCBs IN MKSU (STRATA XX)

**TABLE B
MXPU POSITIONS**

Stations in the system	MSTU equipped	Up to 12 CO/PBX lines & 4 intercoms	13 to 21 CO/PBX lines & 6 intercoms
10~25	1, 2	#1	#1, 2
10~41	1~4	#1, 3	#1~4
10~57	1~6	#1, 3, 5	#1~6
10~65	1~8	#1, 3, 5, 7	#1~8

07.14 Follow the position arrangements indicated in Figures 15 and 16, and install the required MSTU PCBs.

- a) STRATA XII & XX:
 #1 MSTU serves stations 10~17
 #2 MSTU serves stations 18~25
 #3 MSTU serves stations 26~33
 #4 MSTU serves stations 34~41
- b) STRATA XX:
 #5 MSTU serves stations 42~49
 #6 MSTU serves stations 50~57
 #7 MSTU serves stations 58~65

07.15 Select the proper type of MCOU PCB (MF or DP) and install the required number in the positions shown in Figures 15 and 16.

- a) STRATA XII & XX:
 #1 MCOU serves CO lines 1~3
 #2 MCOU serves CO lines 4~6
 #3 MCOU serves CO lines 7~9
 #4 MCOU serves CO lines 10~12
- b) STRATA XX:
 #5 MCOU serves CO lines 13~15
 #6 MCOU serves CO lines 16~18
 #7 MCOU serves CO lines 19~21

07.16 If the system is to be equipped with a DSS console, install an MDSU in the correct MKSU position (Figures 15 and 16).

07.17 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. (Maximum is one MPLU per system.)

07.20 MSMU Installation

07.21 If the system is to be equipped with Station Message Detail Recording (SMDR), an MSMU must be installed in the correct location per Figures 15 and 16. Install the MSMU as follows:

07.22 Locate the SW1 battery strap on the MSMU (Figure 17) 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.

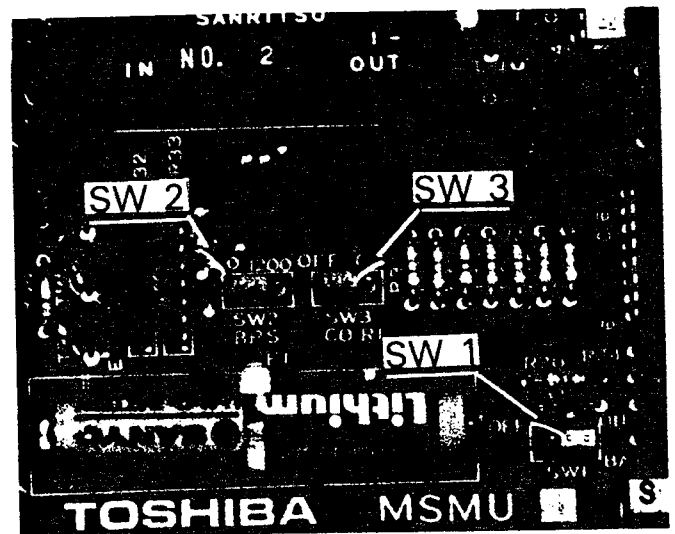


FIGURE 17—MSMU CONNECTION STRAPS

07.23 Select the data output speed using the SW2 strap (Figure 17). 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.

07.24 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 17). 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.

07.25 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 MKSU. Secure the printer connector using the two screw holes provided on the PCB connector (Figure 18).

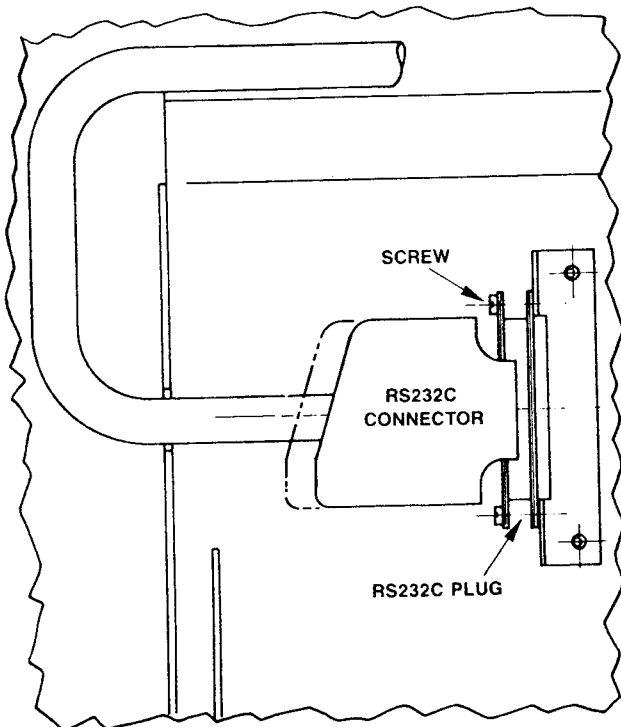


FIGURE 18—MSMU/RS 232C CONNECTOR

07.26 Install the MSMU into the MKSU.

07.30 MOPU Installation

07.31 If the system is to be equipped with conventional telephones or OPX extensions, MOPU PCBs are required; refer to Figures 15 and 16 for proper locations.

- a) STRATA XII & XX
 - #1 MOPU serves stations 20 and 21
 - #2 MOPU serves stations 22 and 23
- b) STRATA XX:
 - #3 MOPU serves stations 24 and 25

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

07.32 Choose the appropriate type of MOPU PCB (MF/DP or DP). If MF/DP, make sure the SW1 and SW2 strapping plugs (Figure 19) 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 100-020-300, *System Programming*, for further information.

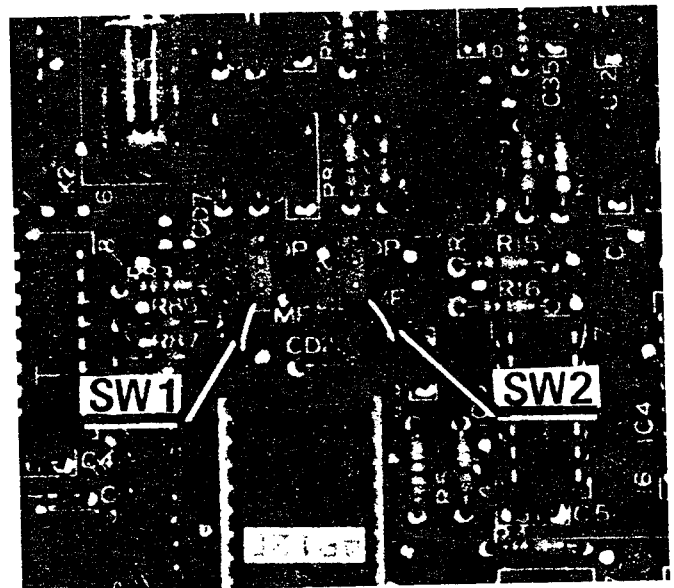


FIGURE 19—MOPU CONNECTING STRAPS

07.33 Install the required number of MOPU PCBs.

07.34 For correct cabling information, refer to Paragraph 08.60.

08 CABLE CONNECTIONS

08.00 System Cable Configuration

08.01 The system (Figure 20) consists of an MKSU, power supply and up to 32 (STRATA XII) or 56 (STRATA XX) electronic key telephones (EKTs). All connections between the MKSU and EKTs are made via a customer-provided main distribution frame (MDF). Using modular line cords, the CO lines are then connected between the MCOU PCBs and the telephone company-provided RJ-25C jacks. An external tuner

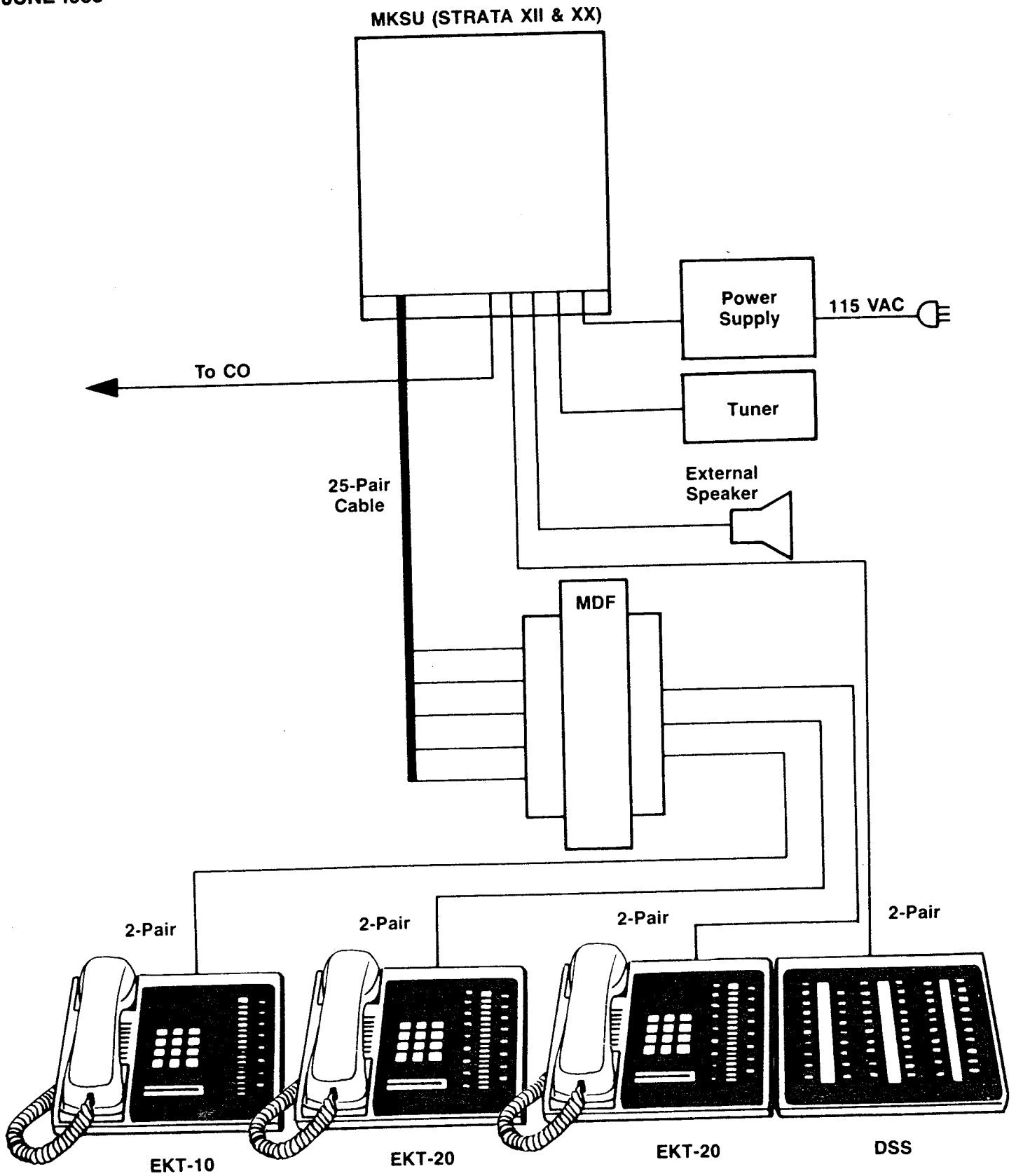


FIGURE 20—SYSTEM DIAGRAM

(or equivalent) is required if the music-on-hold feature is utilized.

08.10 Main Distribution Frame (MDF) Configuration

08.11 Use one split connection block for each group of eight stations; 66MI-50 split connection blocks are recommended for use in the STRATA main distribution frame (MDF).

08.12 A 25-pair male-amphenol-ended cable is connected directly to the front of each MSTU and fastened with the provided metal bracket (Figure 21).

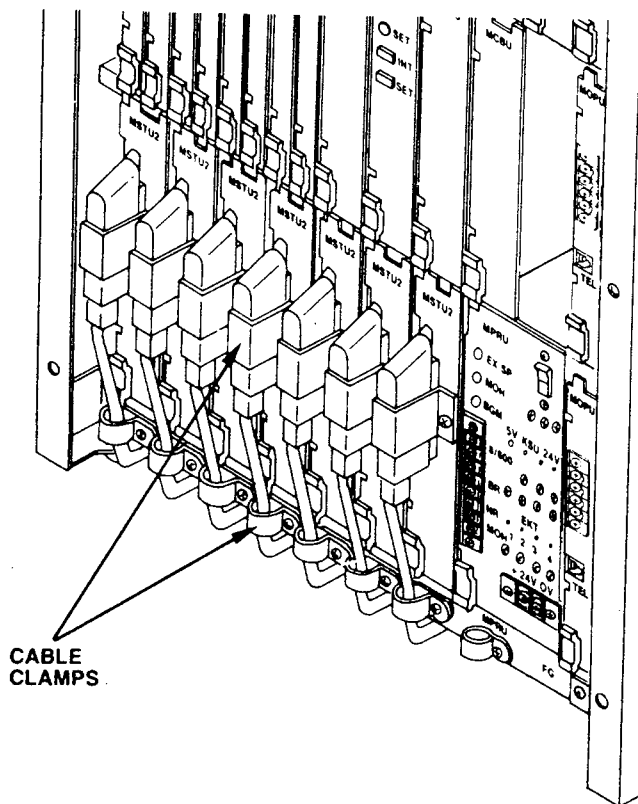


FIGURE 21—MKSU CABLE CLAMPING

08.13 Secure the cables to the bottom of the MKSU shelf (Figure 21) with the provided plastic cable clamps. Route the cables under the MKSU and toward the rear, as shown in Figure 22.

08.14 Refer to Figure 23, and route the cable from #1 MSTU (stations 10~17) to Block 1, cable from #2 MSTU (stations 18~25) to Block 2, etc.

08.15 Use the industry-standard color code sequence and terminate the cables on the MDF

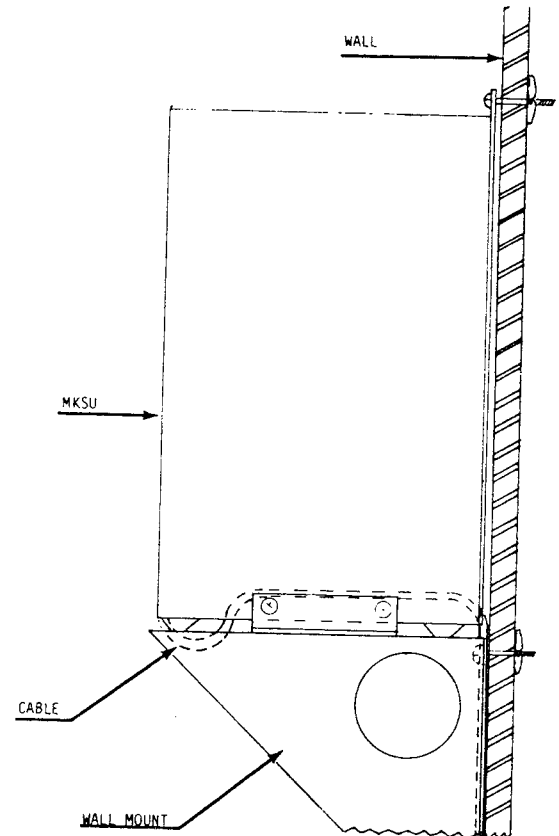


FIGURE 22—MKSU CABLE ROUTING

blocks as shown in Figure 23. (Use one side of each block for each cable.) Figure 23 is generic, in that it shows the basic diagram for each MSTU. Use Tables C and D for correct cross-connect data for all stations in both systems.

NOTE:
The remaining portion of the split block is not used.

08.20 Station Cable Connections

08.21 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.

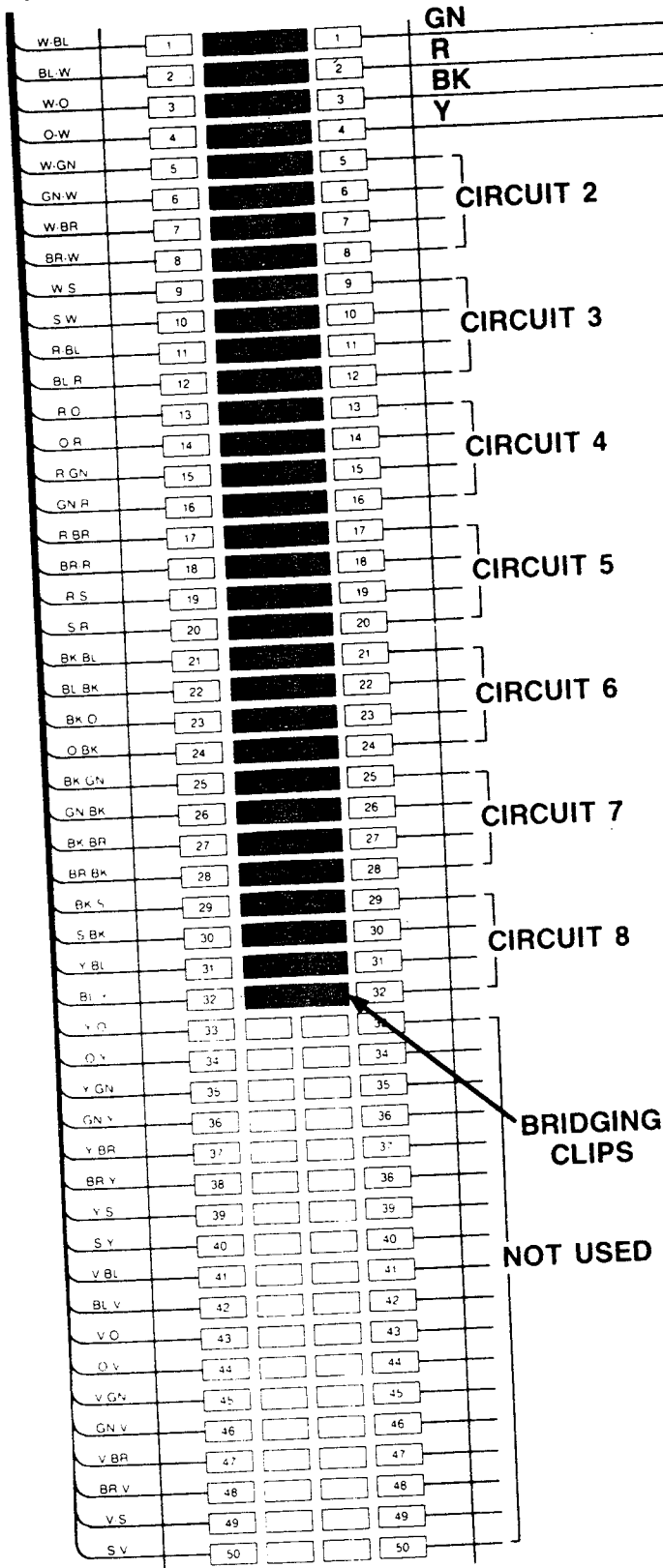
08.22 The cables used for station wiring should be twisted pair.

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

IMPORTANT:
When installing station cable, do not run

2-pair JACKETED
STATION CABLE

TO MSTU



66M150 SPLIT BLOCK

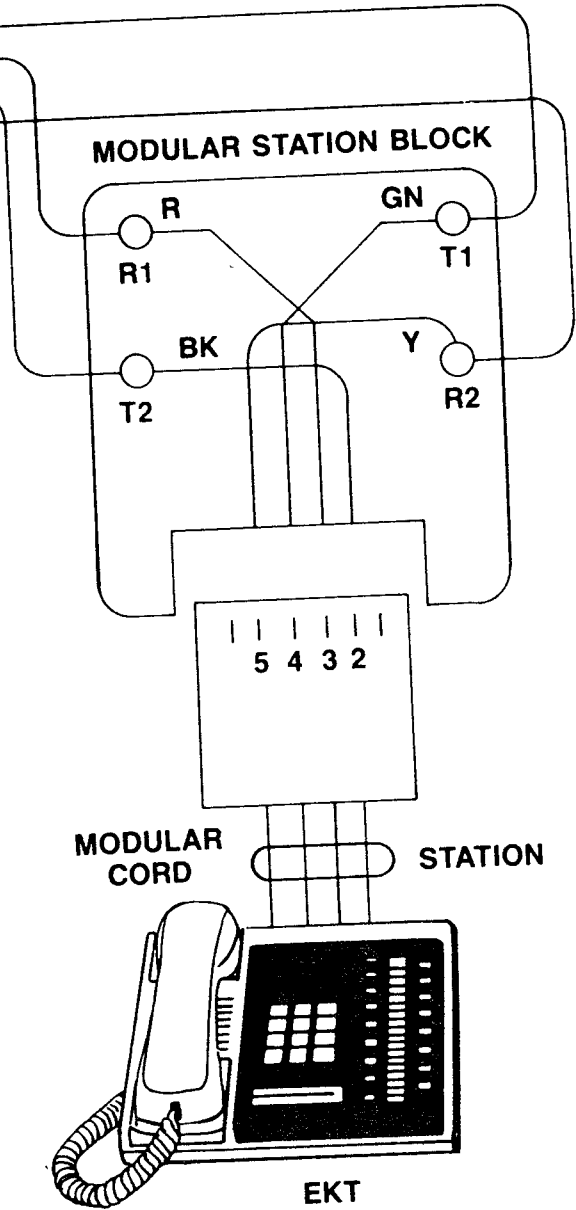


FIGURE 23—MDF/EKT WIRING

parallel to and within 3 ft. of an AC power line. Such power lines should be crossed at right angles (90°) only.

08.24 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.

08.25 Figure 23 shows the EKT wiring arrangement.

08.26 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 Figure 23. Verify the configuration of your modular blocks before connecting the station cables.

TABLE C
STRATA XII & XX CROSS-CONNECT REFERENCE DATA

Color Code	Designation	Station Numbers			
		MSTU #1	MSTU #2	MSTU #3	MSTU #4
W-BI	T	10	18	26	34
BI-W	R				
W-Or	DT				
Or-W	DR				
W-Gr	T	11	19	27	35
Gr-W	R				
W-Br	DT				
Br-W	DR				
W-S	T	12	20	28	36
S-W	R				
R-BI	DT				
BI-R	DR				
R-Or	T	13	21	29	37
Or-R	R				
R-Gr	DT				
Gr-R	DR				
R-Br	T	14	22	30	38
Br-R	R				
R-S	DT				
S-R	DR				
Bk-BI	T	15	23	31	39
BI-Bk	R				
Bk-Or	DT				
Or-Bk	DR				
Bk-Gr	T	16	24	32	40
Gr-Bk	R				
Bk-Br	DT				
Br-Bk	DR				
Bk-S	T	17	25	33	41
S-Bk	R				
Y-BI	DT				
BI-Y	DR				

NOTE:
The remaining portion of the split block is not used.

08.30 Intercom Code Assignment

ly to specific MSTU cable appearances in STRATA. Make sure the station cables are connected to the proper terminals (see Tables C and D).

08.31 Intercom codes are assigned permanent-

**TABLE D
STRATA XX CROSS-CONNECT REFERENCE DATA**

Color Code	Designation	Station Numbers		
		MSTU #5	MSTU #6	MSTU #7
W-BI	T	42	50	58
BI-W	R			
W-Or	DT			
Or-W	DR			
W-Gr	T	43	51	59
Gr-W	R			
W-Br	DT			
Br-W	DR			
W-S	T	44	52	60
S-W	R			
R-BI	DT			
BI-R	DR			
R-Or	T	45	53	61
Or-R	R			
R-Gr	DT			
Gr-R	DR			
R-Br	T	46	54	62
Br-R	R			
R-S	DT			
S-R	DR			
Bk-BI	T	47	55	63
BI-Bk	R			
Bk-Or	DT			
Or-Bk	DR			
Bk-Gr	T	48	56	64
Gr-Bk	R			
Bk-Br	DT			
Br-Bk	DR			
Bk-S	T	49	57	65
S-Bk	R			
Y-BI	DT			
BI-Y	DR			

*NOTE:
The remaining portion of the split block is not used.*

08.40 CO Line Connection

08.41 The CO/PBX lines are introduced into the STRATA 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 an RJ-25C jack (Figure 24).

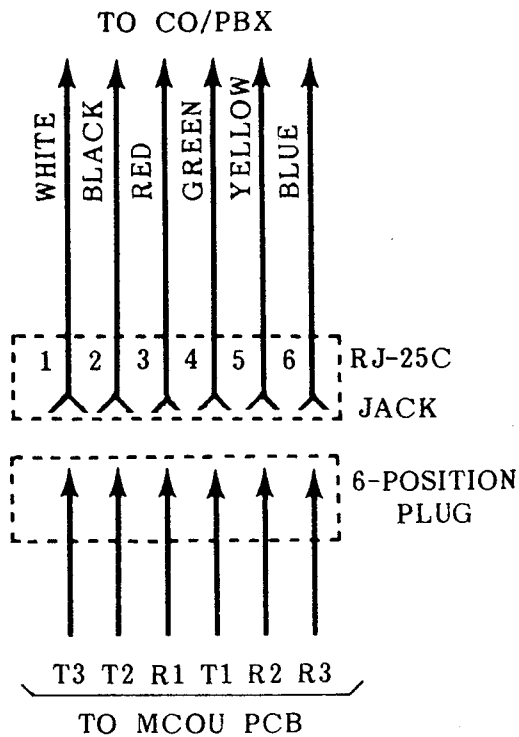


FIGURE 24—RJ25C WIRING

- a) STRATA XII & XX:
 - #1 MCOU serves CO lines 1~3
 - #2 MCOU serves CO lines 4~6
 - #3 MCOU serves CO lines 7~9
 - #4 MCOU serves CO lines 10~12
- b) STRATA XX:
 - #5 MCOU serves CO lines 13~15
 - #6 MCOU serves CO lines 16~18
 - #7 MCOU serves CO lines 19~21

08.42 The modular cords from the MCOU, MDSU, MOPU and MPLU PCBs are routed over the top of the PCB shelf and out through the rubber grommeted hole on the rear right or left side of the MKSU.

08.43 To install the modular cords, proceed as follows:

- a) Loosen the four screws securing the MKSU top cover (Figure 25).
- b) Slide the top cover slightly until the screws clear the keyholes, remove the top cover.
- c) Using a razor blade or sharp knife, cut a vertical slit in the rubber grommet on the side of the MKSU.

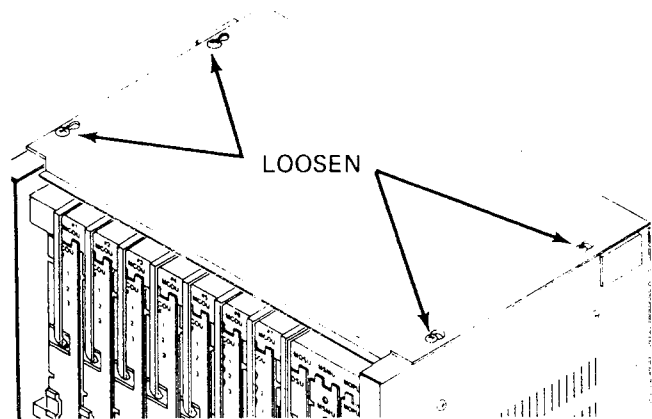
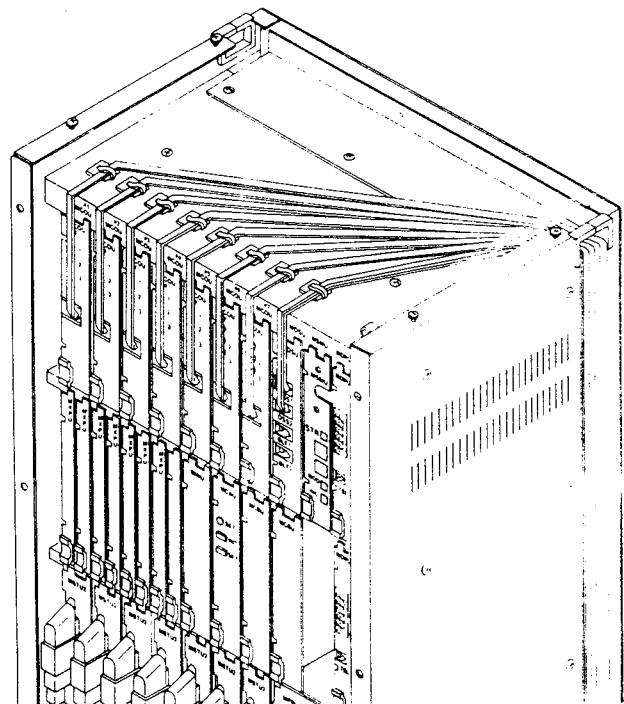


FIGURE 25—MKSU TOP COVER REMOVAL

- d) Plug each cord into the proper PCB, secure it with the cable clamps located on the shelf top immediately above each PCB.
- e) Route the cords across the top of the MKSU (Figure 26) and out through the rubber grommet to appropriate connector or MDF block.



**FIGURE 26
MKSU UPPER CABLE ROUTING**

08.50 DSS/BLF Connection

08.51 The DSS/BLF consoles are connected to jacks on the MDSU PCB via modular cords.

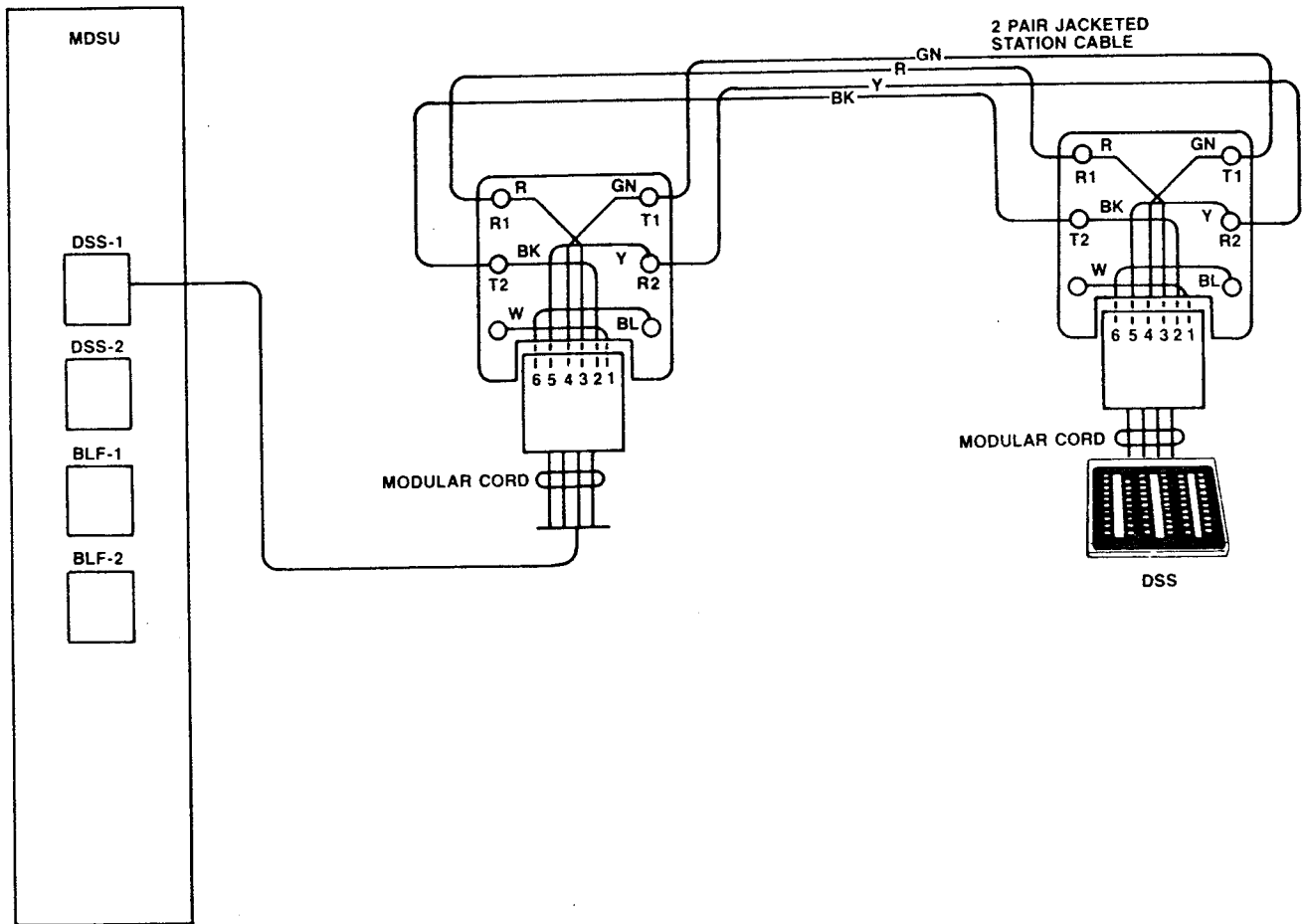


FIGURE 27—MDSU WIRING

A separate 4-wire cord is used for each console (Figure 27). The connectors on the MDSU are plainly marked as to their functions.

- DSS #1—will function with station 10
- DSS #2—will function with station 11
- BLF 1 & 2—may be used with any station

08.52 Route the modular cord out of the MDSU as in Paragraph **08.43**.

08.53 The cable used for DSS console wiring should be twisted pair.

08.54 The overall length of the cable run must not exceed 500 ft. (152.5 m) for 24 AWG wire.

IMPORTANT:
When installing DSS 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.

08.60 Off Premise Extension / Conventional Telephone Connections

08.61 Off premise/conventional single line telephone (OPX) connections are made via a 4-wire modular cord to the front of the MOPU PCB. One cord is required for each MOPU and serves two OPX connections. See Figure 28.

08.62 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.

08.63 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 PCB):	
Voltage	Loop Range
-48 VDC	1200 ohms
-24 VDC	680 ohms

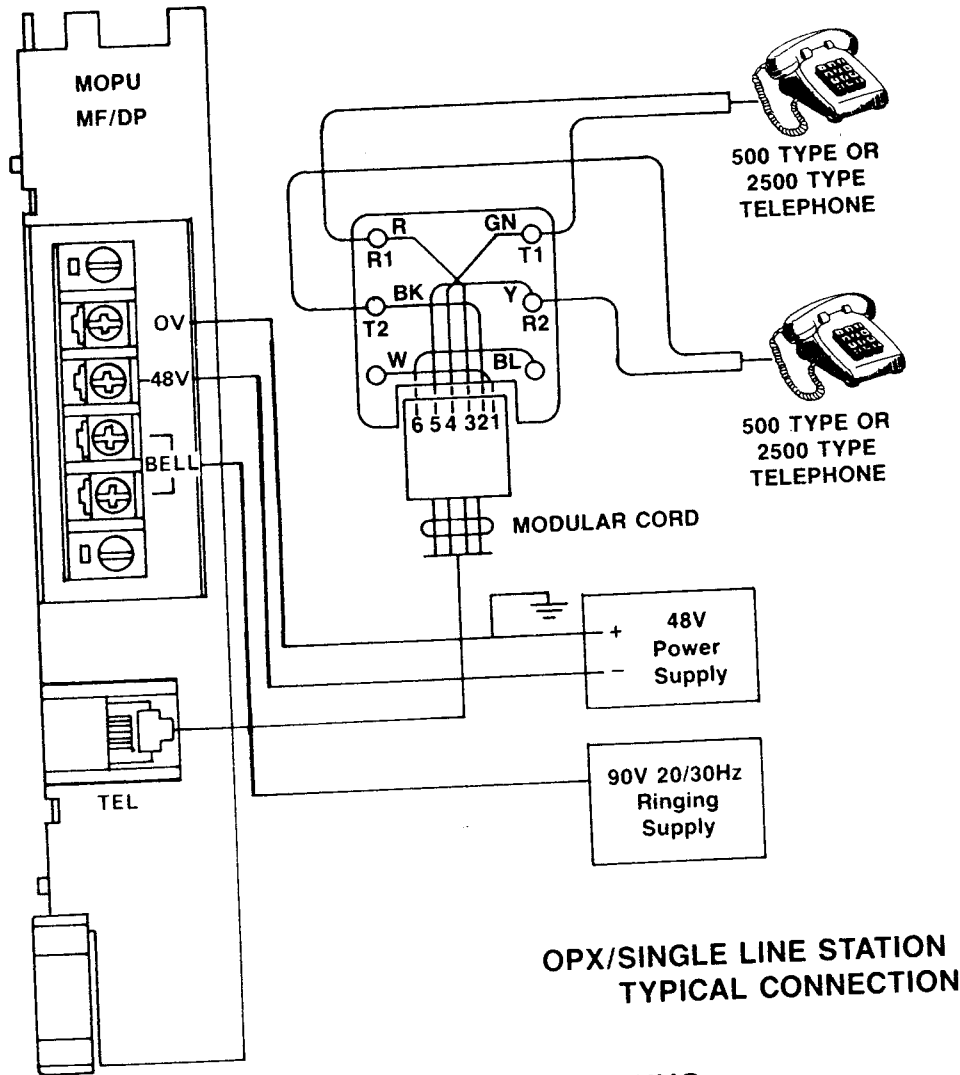


FIGURE 28—MOPU WIRING

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

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

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

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

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08.64 The DC and ringing power supplies are connected to the terminal strip on the front of MOPU #1 using standard station wire. If more than one MOPU is equipped, the power should be "daisy chained" from MOPU #1 to MOPU #2, and, if equipped, to MOPU #3.

08.65 Station and power wires are routed out of the MKSU to the MDF and power supplies as described in Paragraph 08.43.

08.70 Off Premise Line (OPL) Connection

08.71 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 29). The MPLU occupies an MCOU position. Maximum: one MPLU per system.

08.72 Route the cords out of the MKSU as described in Paragraph 08.43.

08.80 Station Message Detail Recording (SMDR) Connections.

08.81 The MSMU PCB is equipped with an RS232C connector to permit attachment of a printer or other recording device. An 80-column printer with an EIA RS232C 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

08.82 The data output is in a 7-bit ASC11 code with one start bit, one parity bit (even parity) and one stop bit.

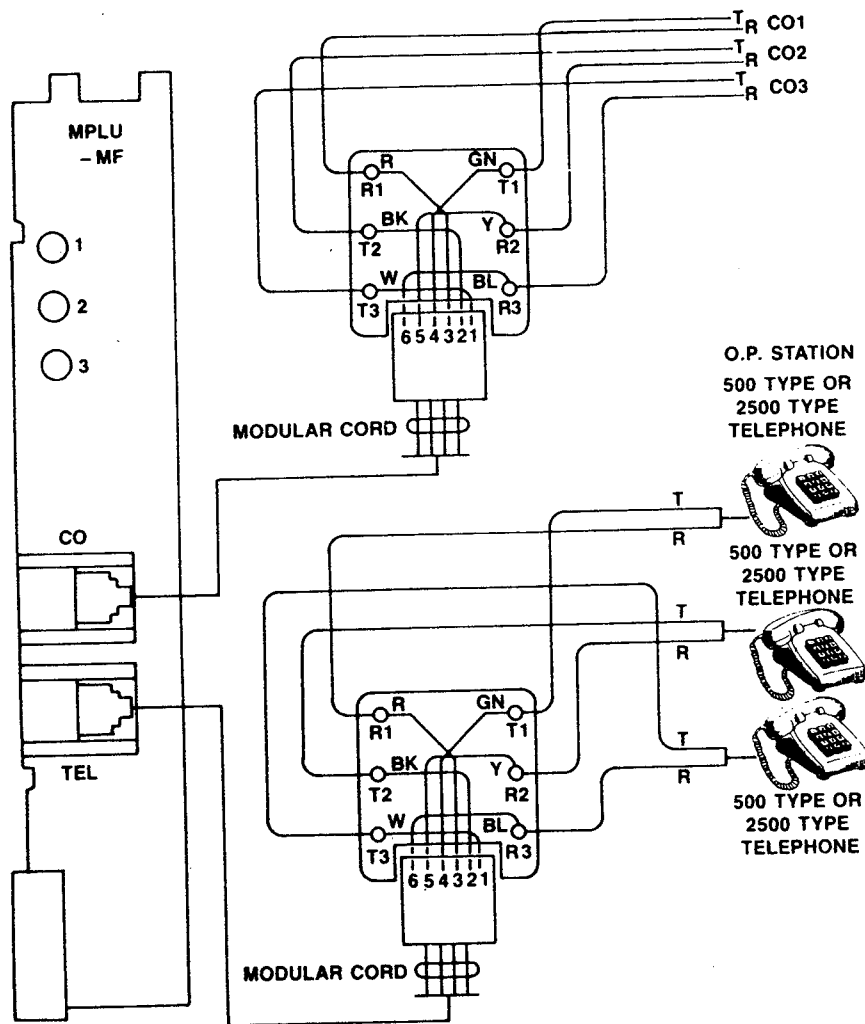


FIGURE 29—MPLU WIRING

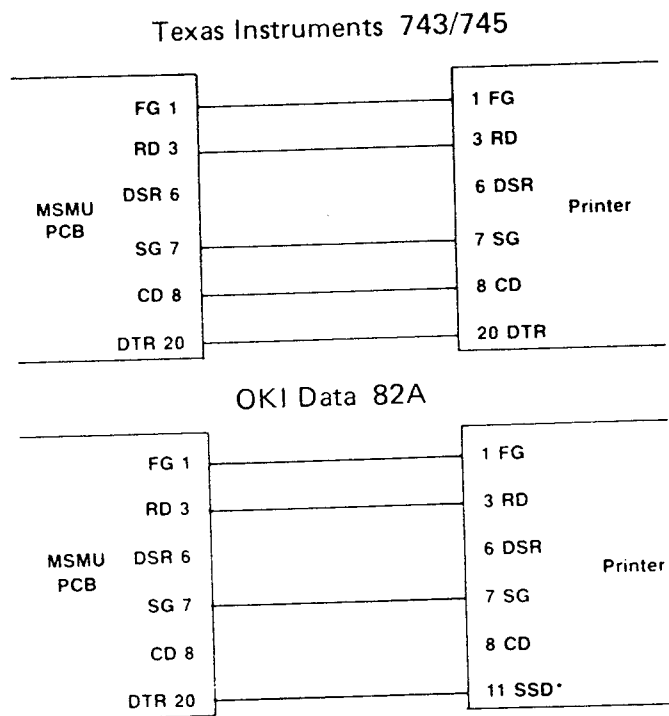
08.83 The pin assignments on the MSMU RS 232C jack are as follows:

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 30 shows the detailed connections for the printers listed above.



*Supervisory Send Data—cable modification required.

FIGURE 30—MSMU-TO-PRINTER CABLING

08.84 Verify that (a) the output cable is connected to the PCB, (b) the battery strap in ON, and (c) the data speed and incoming/outgoing call options are selected per Paragraph 07.20.

08.85 Route the printer cable out of the MKSU per Paragraph 08.43 and connect it to the printer or recording device.

**09 ELECTRONIC
KEY TELEPHONE INFORMATION**

09.00 General

09.01 Three different Electronic Key Telephones (EKTs) may be used in either STRATA system. All three EKTs are equipped with four permanently dedicated keys and either 10 or 20 feature keys. Because of the number of these feature keys these EKTs are known as a 20-key EKT, a 10-key EKT and a 10-key Busy Lamp Field (BLF) EKT.

09.02 The 20-key EKT, Figure 31, measures:

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

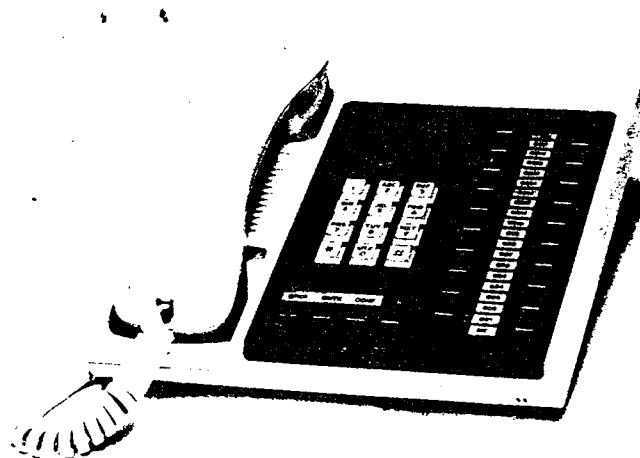


FIGURE 31—20-key EKT

and is equipped with 24 line and feature keys in addition to its push-button dial pad. In initialized mode, seventeen of the keys are utilized for central office/PBX lines, one for intercom access, and the remaining six keys are used for feature operation. System software assignments permit some assignment variations to the CO/PBX keys to facilitate tenant service and private lines, and to allow unused keys to be used for automatic dialing.

09.03 Software assignment permits the 10-key EKT (Figure 32), having the same dimensions as the 20-key EKT, to be alternately assigned to any station (with the exception of station 17). This 10-key EKT has full access to seven CO/PBX lines and can receive transferred calls on the other lines.

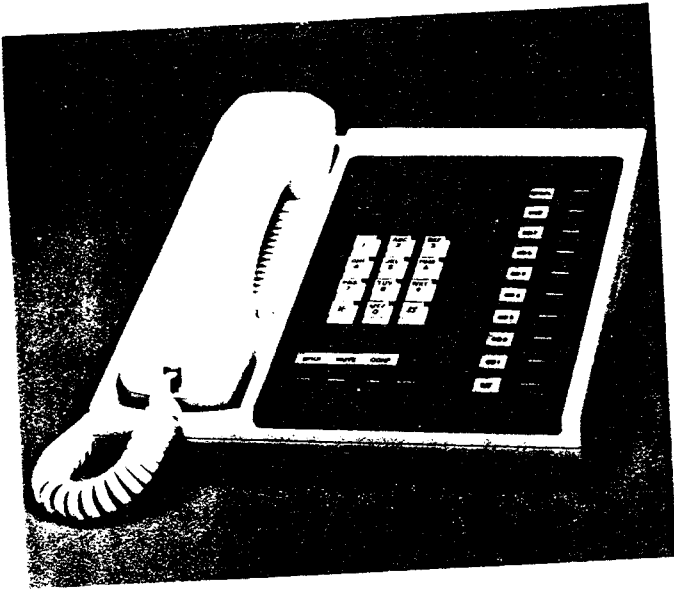


FIGURE 32—10-key EKT

09.04 An optional 10-key BLF EKT may be assigned via software at up to 15 positions (stations 10 through 25, except #17, only). This EKT has the same dimensions and key features as the 10-key.

09.05 See Program 4XX in Section 100-020-300, *Programming*, for inputting information concerning the various EKTs. The system *must* be told which type of EKT is at each station and what key assignment is required. (Station 17 must be equipped with a 20-key EKT.)

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

09.10 EKT Wall Mounting

09.11 An optional handset hanger kit is required to convert either type of EKT for wall mounting. The EKT may be mounted on a wall or any other flat, vertical surface to which the base can be secured.

09.12 When selecting the mounting site, consider the EKT weight and the additional stresses to which the EKT will be subjected.

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

09.14 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 or wall unit (it is factory-configured as a desk unit). Disengage the locking tabs by pushing downward on the base (Figure 33).

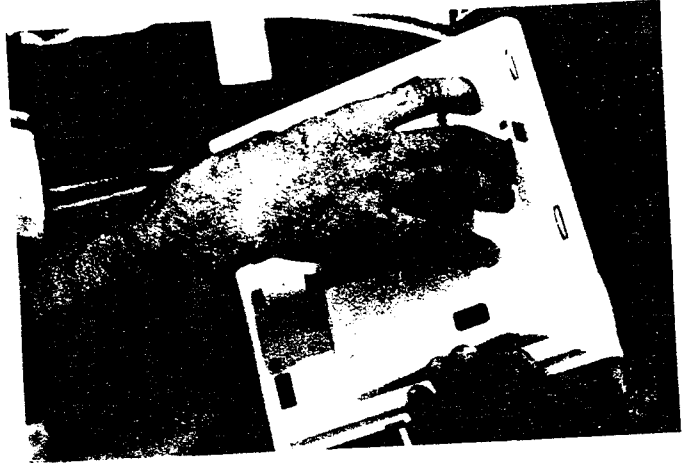


FIGURE 33—REMOVING EKT BASE

09.15 Refer to Figure 34, choose which of the knockouts are appropriate for the tail cord route, and then cut them.

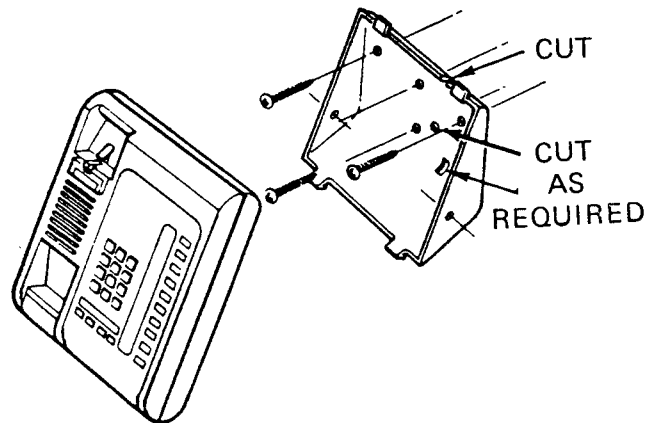


FIGURE 34—EKT WIRE ACCESS

09.16 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.

09.17 Route the tail cord through the holes in the base and secure the EKT (Figure 35).

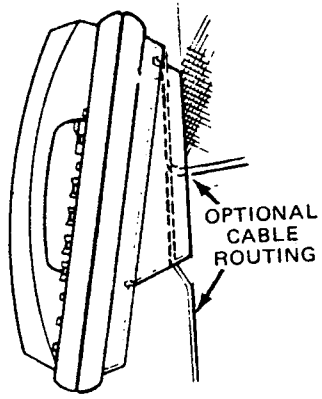


FIGURE 35—EKT WIRE ROUTING

09.20 Converting the EKT

09.21 Refer to Figure 36, the optional handset hanger kit (P/N HWMA, available from your Toshiba supplier) must be used whenever the EKT is wall-mounted.

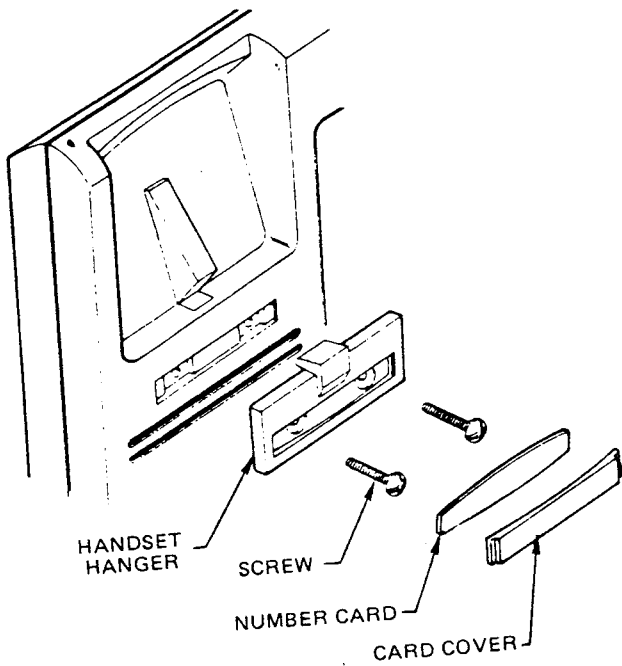


FIGURE 36—HANDSET HANGER KIT

09.22 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.

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

09.24 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.

09.30 EKT Connections

09.31 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 11.00.

10 SYSTEM POWER-UP INITIALIZE

10.01 STRATA has a list of standard system data assignments stored in ROM that can be entered anytime by performing the initialize sequence outlined below. The system must be initialized when it is first installed or whenever the MCAU 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 AMMU.

10.02 Refer to Figure 37 and verify that the battery on the AMMU is connected to ensure that data changes entered after initialization will not be lost due to power failure.

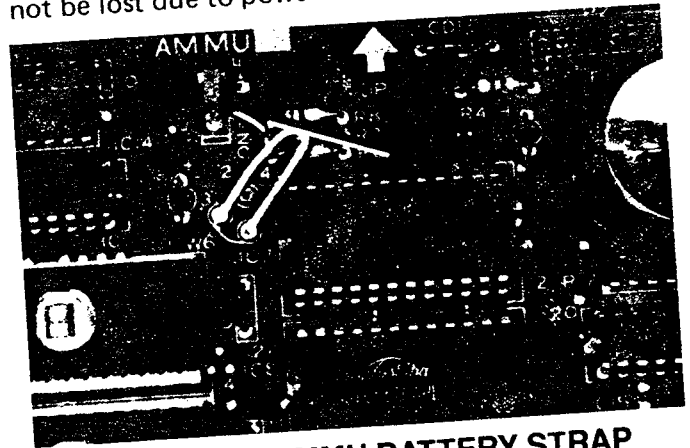


FIGURE 37—AMMU BATTERY STRAP

NOTE:
The SET LED will not function if the AMMU battery is not connected.

10.03 To initialize the system data memory, refer to Figures 38 and 39 and perform the following steps:

- a) Place the power switch on the MPRU PCB in the ON position.

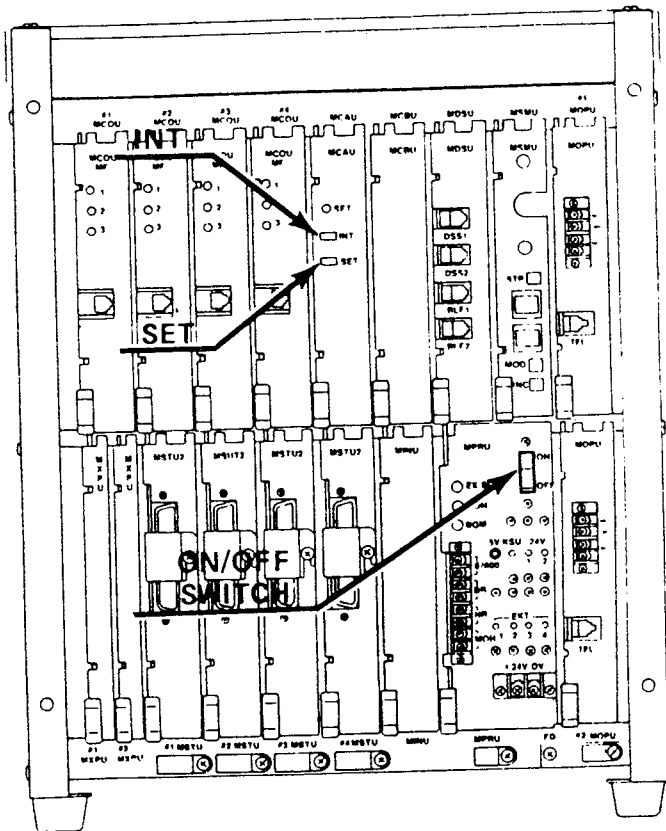


FIGURE 38—SYSTEM INITIALIZING

- b) Depress the INT switch on the MCAU, and hold it in.
- c) Depress the SET switch and allow it to lock.
 - Set LED ON
- d) Depress and release the SET switch again.
 - Set LED OFF
- e) Release the INT switch.
- f) Cycle MPRU power switch OFF and ON.

10.10 Clearing Automatic Dialing

10.11 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:

NOTE:
The use of two or more CRDU PCBs in different locations will cause several different configurations of Automatic Dialing numbers. See Table A for further information on CRDU locations.

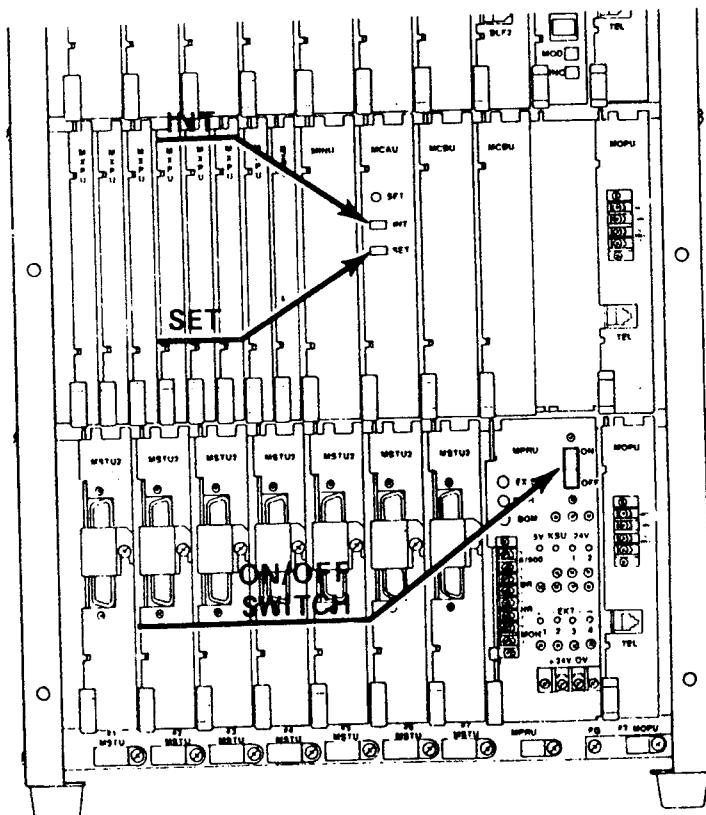


FIGURE 39—SYSTEM INITIALIZING

10.12 To clear the standard Automatic Dial-System memory (24 numbers):

- 1) Lock in the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go on.
- 2) Depress **SPKR** key on station 17:
 - SPKR LED will light steadily.
- 3) Dial **# * *** on dial pad:
 - SPKR LED will flash continuously.
- 4) Depress the following keys:
 - **INT CO 4 CO 8 CO 12** —the corresponding LEDs will light.
- 5) Depress the **HOLD** key:
 - All station 17 LEDs (except MW/FL) will go off.
- 6) Release the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go off.

10.13 To clear first optional Automatic Dialing memory (CRDU on MCBU #1):

- 1) Lock in the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go on.
- 2) Depress SPKR key on station 17:
 - SPKR LED will light steadily.
- 3) Dial * * 1 on dial pad:
 - SPKR LED will flash continuously.
- 4) Depress the following keys:
 - CO 1 CO 5 CO 9 CO 13—the corresponding LEDs will light.
- 5) Depress the HOLD key:
 - All station 17 LEDs (except MW/FL) will go off.
- 6) Release the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go off.

10.14 To clear second optional Automatic Dialing memory (CRDU on MDSU):

- 1) Lock in the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go on.
- 2) Depress SPKR key on station 17:
 - SPKR LED will light steadily.
- 3) Dial * * 2 on dial pad:
 - SPKR LED will flash continuously.
- 4) Depress the following keys:
 - CO 2 CO 6 CO 10 CO 14—the corresponding LEDs will light.
- 5) Depress the HOLD key:
 - All station 17 LEDs (except MW/FL) will go off.
- 6) Release the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go off.

10.15 To clear third optional Automatic Dialing memory (CRDU on MCBU #2):

- 1) Lock in the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go on.

- 2) Depress SPKR key on station 17:
 - SPKR LED will light steadily.
- 3) Dial * * 3 on dial pad:
 - SPKR LED will flash continuously.
- 4) Depress the following keys:
 - CO 3 CO 7 CO 11 CO 15—the corresponding LEDs will light.
- 5) Depress the HOLD key:
 - All station 17 LEDs (except MW/FL) will go off.
- 6) Release the SET switch on the MCAU:
 - The MCAU LED and MW/FL LED on station 17 will go off.

10.20 SMDR Real Time Clock Adjustment

10.21 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.

10.22 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 07.20.

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

10.24 The MSMU faceplate is equipped with three switches and two LED displays (Figure 40). 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
- 2 = month
- 3 = day
- 4 = hour
- 5 = minute
- 6 = start

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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.

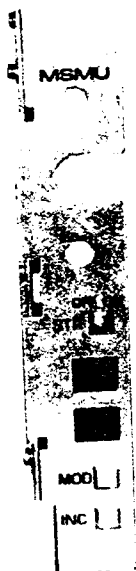


FIGURE 40—MSMU FACEPLATE

10.25 To set clock and calendar:

- 1) Verify that the battery is connected on the MSMU (Figure 17).
- 2) Depress the MOD switch once.
 - LED #1 will display 1 (year)
 - LED #2 will display current data
- 3) Use the INC switch to correct data in LED #2 display.
- 4) Depress the MOD switch once.
 - LED #1 will display 2 (month)
 - LED #2 will display current data
- 5) Use the INC switch to correct data in LED #2 display.
- 6) Depress the MOD switch once.
 - LED #1 will display 3 (day)
 - LED #2 will display current data

- 7) Use the INC switch to correct data in LED #2 display.
- 8) Depress the MOD switch once.
 - LED #1 will display 4 (hour)
 - LED #2 will display current data
- 9) Use the INC switch to correct data in LED #2 display.
- 10) Depress the MOD switch once.
 - LED #1 will display 5 (minute)
 - LED #2 will display current data
- 11) Use the INC switch to correct data in LED #2 display.
- 12) Depress the MOD switch once.
 - LED #1 will display 6 (start)
 - LED #2 has no display
- 13) Slide STR switch to ON and then back to OFF.
 - LEDs will go off
 - Data is transferred to working memory and time keeping starts.

NOTE:

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

10.30 Program Listing

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

10.32 See Section 100-020-300, *Programming*, for printout method and format.

11 SYSTEM TEST PROCEDURES

11.00 EKT Functional Check

11.01 In order to verify basic system functions, and confirm the proper functioning of the EKT itself, perform the following test procedure at each station beginning with station 10.

11.02 With handset on-hook:

- a) Depress the INT key:
 - INT LED: I-use flash

- SPKR LED: on steady
 - Listen for intercom dial tone via EKT speaker
- b) Adjust speaker volume with the volume control on the rear right side 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 EKT speaker
- d) Dial any digit (2~9) on the dial pad and dial tone will stop.
- e) Depress the **MWFL** key:
- Listen for circuit break followed by dial tone after approximately 2 seconds.
- f) Depress each **CO** key in order on every EKT, the following should occur:
- CO LED: I-use flash
 - SPKR LED: on steady
 - Listen for CO/PBX dial tone via 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) Depress 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
 - Listen for CO/PBX dial tone via EKT 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
 - Listen for CO/PBX dial tone via 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 LED: off
 - Dial tone: off
- o) Call EKT 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 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 LED: on
 - Listen for INT dial tone via EKT speaker
- s) Lift 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) Hold down the **SPKR** key, and set the handset back on-hook:
- INT LED: I-use flash
 - SPKR LED: on
- v) Tap the EKT microphone and verify the sound can be heard via the speaker on the called EKT.
- w) Depress the **MUTE** key while tapping the microphone and verify that the sound cannot be heard via called EKT speaker.
- x) Depress the **SPKR** key:
- INT LED: off
 - SPKR LED: off

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11.03 This completes the station functional check; repeat the procedure for all stations in the system.

11.10 Off Premise Extension / Conventional Telephone Functional Check

11.11 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 hook-switch 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 hook-switch 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.

11.20 OPL Circuit Functional Check

11.21 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.
- 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 line 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.
- 11.30 SMDR Feature Functional Check**
- 11.31** 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 07.20.
 - c) Make an outgoing call from any EKT.
 - d) Enter an account code as follows:
 - Dial 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-sec. duration will not be recorded).
 - The call record will be output to the printer in the format shown in Figure 41.
 - 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.
 - 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 42.

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 41—SMDR EXAMPLE PRINTOUT (OUTGOING CALL RECORD)

MM/DD/YY

01	10	HH:MM	00:01;13	00;02	
02	14	HH:MM	00:02;30	00;04	
02	11	HH:MM	00:03;36	00;10	665544

FIGURE 42—SMDR EXAMPLE PRINTOUT (INCOMING CALL RECORD)

11.40 Feature Check

11.41 Verify that all system features function properly per Section 100-020-400, *Operating Procedures*.

**12 MISCELLANEOUS
EQUIPMENT CONNECTIONS**

12.00 Wiring Connections

12.01 All connections to miscellaneous equipment are made via the barrier strip mounted on the front of the MPRU PCB, as shown in Figure 43.

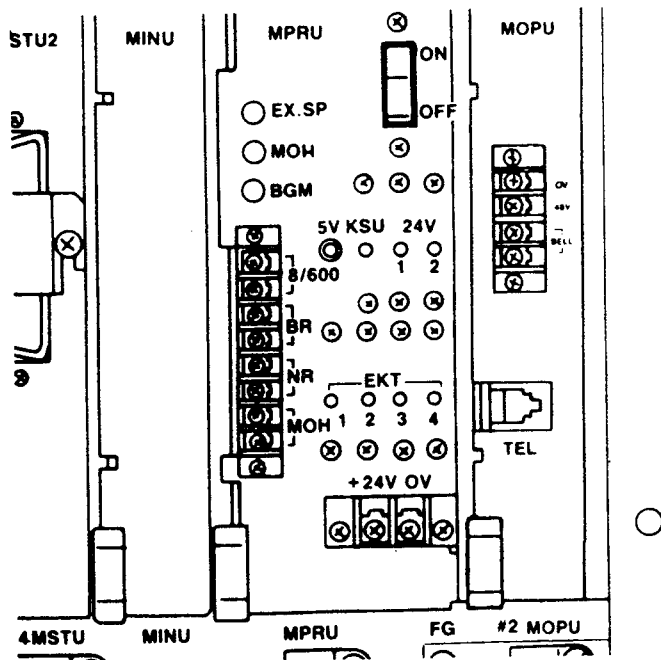


FIGURE 43—MPRU CONNECTION STRIP

12.10 Music-on-Hold/Background Music Source

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

12.20 Music-on-Hold Volume Control

12.21 Adjust the MOH volume with the MOH volume control on the front of the MPRU PCB. Maximum volume is limited by internal circuits in order to comply with FCC regulations. See Paragraph 12.80 for the correct volume setting sequence.

12.30 External Paging Connections

12.31 STRATA 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 MPRU, 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 MPRU 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 12.80 for the correct volume setting sequence.

12.40 Direct External Speaker Connection

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

12.42 The 8-ohm output impedance must be selected with the SW2 switch on the MPRU (Figure 44). The switch must be on the side labeled "8".

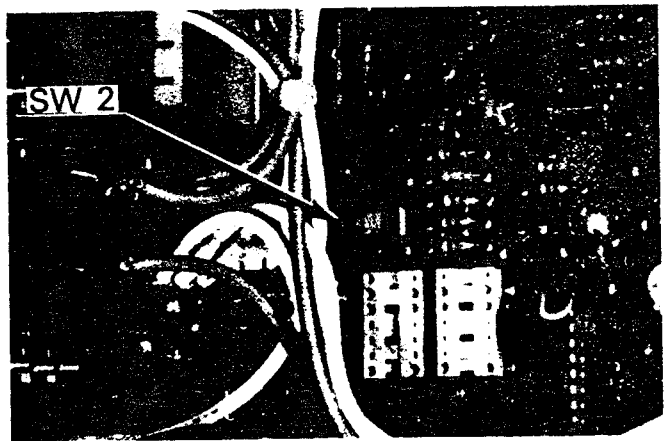


FIGURE 44—IMPEDANCE SWITCH ON MPRU

12.43 Connect the external speaker to the two 8/600 terminals on the MPRU.

12.44 Adjust the speaker volume with the EX.SP volume control on the front of the MPRU.

See Paragraph 12.80 for the correct volume setting sequence.

12.50 External Amplifier Connection

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

12.52 Determine which output impedance is most suitable for the amplifier being used, and make the selection with the SW2 switch on the MPRU (Figure 44).

12.53 If 8-ohm impedance is chosen, the EX.SP volume control may be used to control input level to the external amplifier. If 600-ohm impedance is chosen, the level is fixed and input must be controlled by the external amplifier. See Paragraph 12.80 for the correct volume setting sequence.

12.60 Talkback Amplifier

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

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

12.63 The EX.SP volume control on the front of the MPRU will not function when the 600-ohm mode is selected.

12.70 Background Music

12.71 Background music (BGM) can be provided in two ways through the STRATA system:

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

12.72 Internal BGM uses the music-on-hold program source that is connected to the MOH input terminals on the MPRU. 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.

12.73 As a programmable option, the BGM from the MOH source can be heard via the external speaker (see Section 100-020-300, *Programming*).

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

12.75 Overall system BGM volume is set with the BGM volume control on front of the MPRU (see Paragraph 12.80 for the correct volume setting sequence). The volume at individual stations is set with volume control on the rear right-hand side of the EKT involved.

12.76 If BGM is connected via an external amplifier on the external page, it can be heard from the external speaker(s) only. STRATA, if required, can provide a dry contact control signal for muting the external BGM when a page is in progress.

12.77 To provide external BGM control, obtain and install the optional BR (K1) relay on the MPRU PCB, see Paragraph 05.11. Connect the BR terminals on the MPRU to the control terminals (mute, mike switch, etc) on the amplifier (see Figure 45).

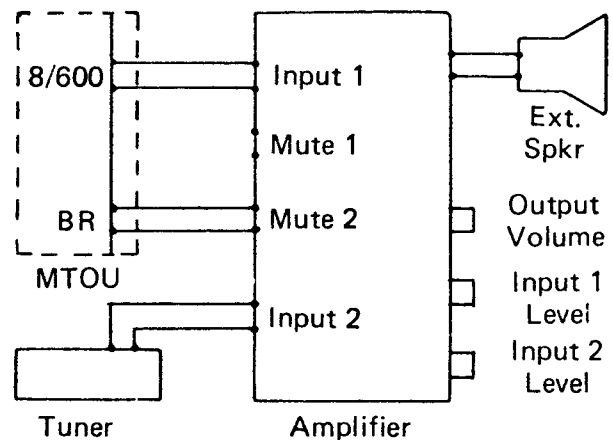


FIGURE 45
EXTERNAL AMPLIFIER HOOK-UP

12.80 Volume Setting Sequence

12.81 Refer to Figure 46. Adjust the volume for MOH, BGM and External Page in the following sequence:

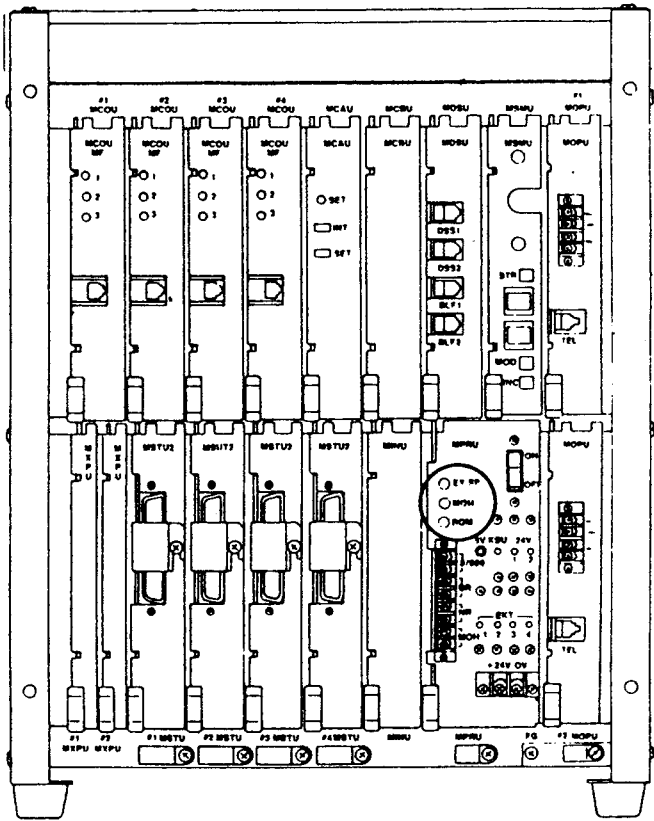


FIGURE 46—VOLUME SETTING CONTROLS

12.82 Adjust the MOH level first using the following procedure:

- 1) Set the MOH volume control on the front of the MPRU to its lowest level (counter-clockwise).
- 2) Lift the handset on one station and call another station using 2 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 MPRU 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.

12.83 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-ohm switch (SW2) on the MPRU:
 - a) 8 ohms with no external amplifier—adjust output level using the EX.SP volume control on the front of the MPRU.
 - b) 8 ohms with external amplifier—adjust output level using the EX.SP volume control on the front of the MPRU along with the controls on the external amplifier.
 - c) 600 ohms—the volume level through STRATA is fixed in this mode; adjustments must be made using the external amplifier controls.

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

- a) Adjust voice page level per above procedure.
- b) With music playing over the speaker(s), adjust the volume to a comfortable level using only the BGM control on the front of the MPRU. 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.

12.84 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 to a comfortable level.

NOTE:

This should be done in an area that has back-

ground noise that is about average for that particular installation.

- 2) Disconnect the CO call and activate BGM at the EKT using the SPKR key.
- 3) Using only the BGM volume control on the front of the MPRU, adjust the BGM to a comfortable level. Do not use the EKT volume control.

12.90 Night Relay Service

12.91 As an option, STRATA 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.

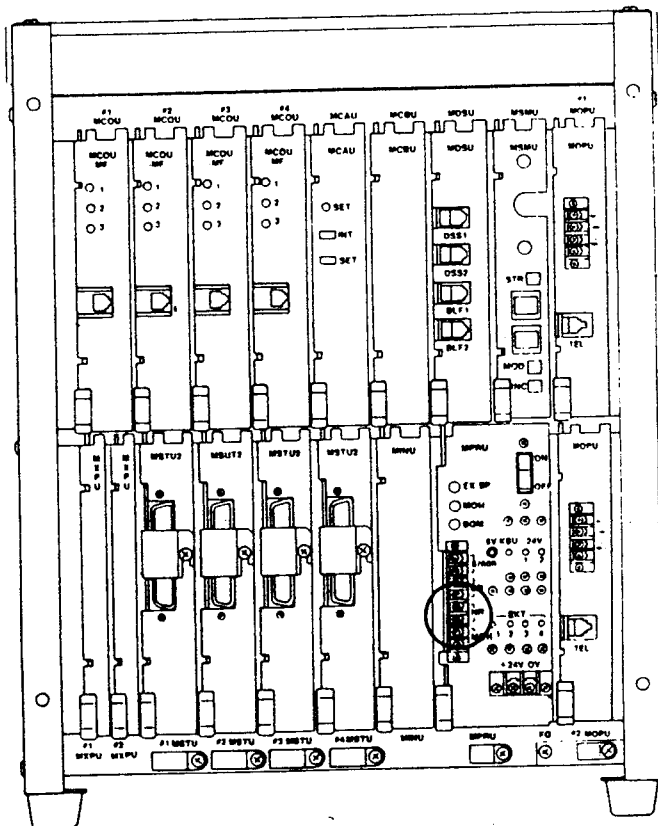


FIGURE 47—NR CONTACTS

12.92 To provide this service, obtain and install the optional NR (K2) relay on the MPRU PCB per Paragraph 05.11. Connect the external device to the NR contacts on the front of the MPRU (see Figure 47).

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

12.93 The W3 strap option on the MPRU 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-sec. on, 3-sec. 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.

Strata ***XII & XX***

POWER SUPPLY

(EPSA-104) INSTALLATION

Strata

XII & XX

POWER SUPPLY (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.

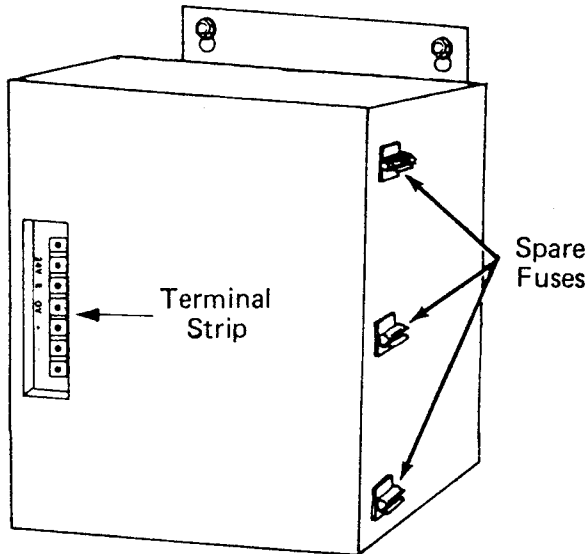


FIGURE 1 — EPSA-104

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)

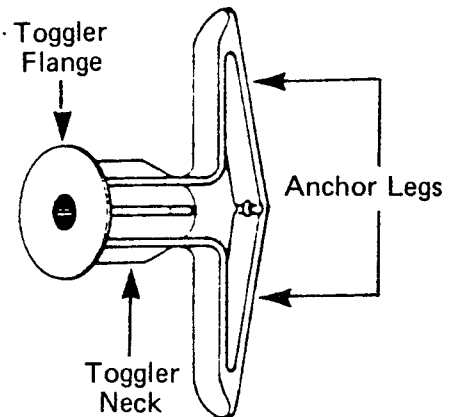


FIGURE 2 — TOGGLER

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-inch 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

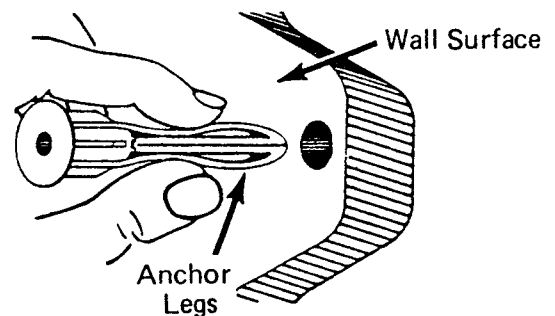


FIGURE 3 — INSTALLING TOGGLER

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with the mounting surface. If insertion is difficult, tap them lightly with a hammer.

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.

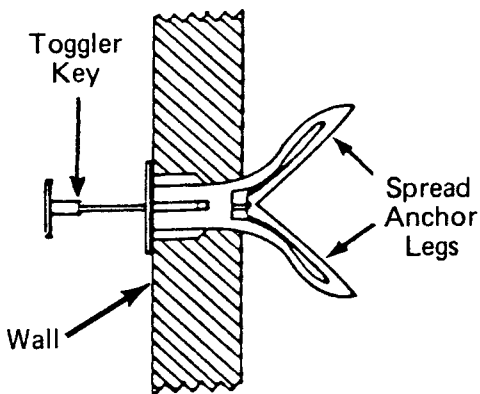


FIGURE 4—TOGGLER PIN

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).

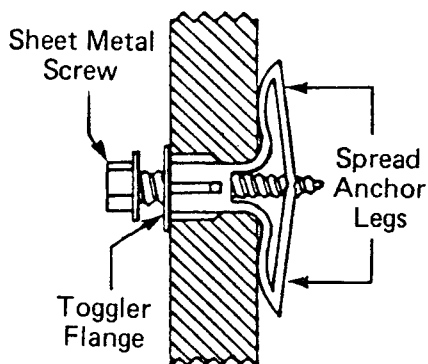


FIGURE 5—TOGGLER & SCREW

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

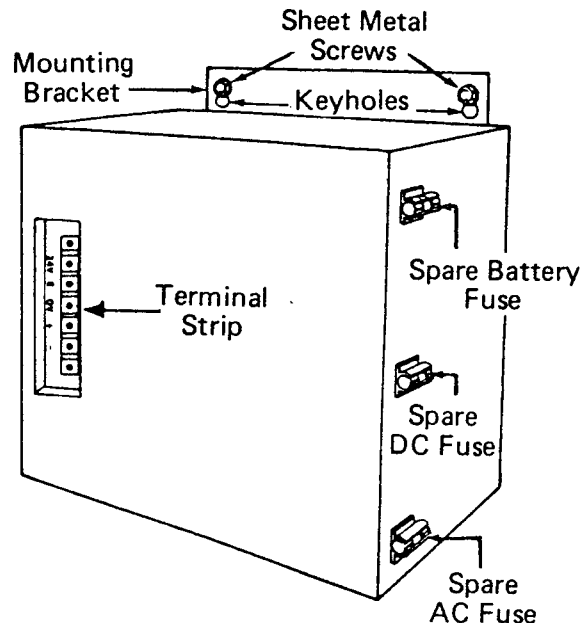


FIGURE 6—WALL MOUNTED EPSA

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 06.10, Section 100-020-200, *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 12 VDC batteries. In the event of an electrical power failure, the PBBU provides an automatic battery power source, permitting a typical STRATA system to continue normal operations for some time (in direct ratio with the type and size of the batteries chosen).

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 21 VDC (at which point system functions would be disrupted and existing calls would be disconnected).

02.03 When the normal source of electrical

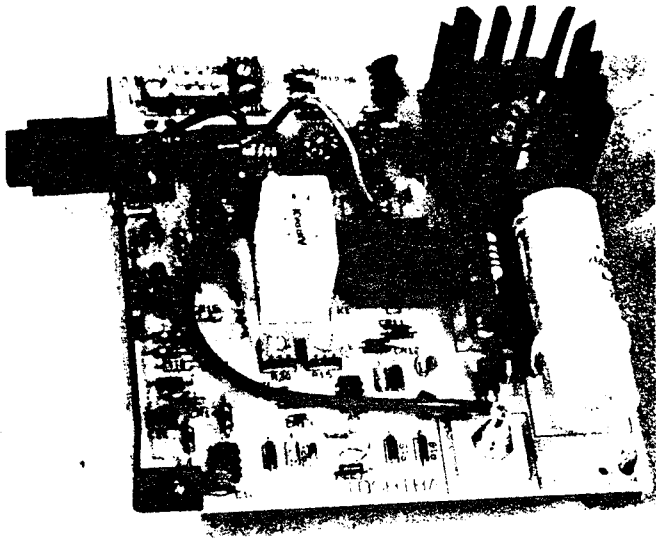


FIGURE 7 — PBBU PCB

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 re-connected 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 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-inch cable clamp which may be needed to secure the wiring harness inside the EPSA.

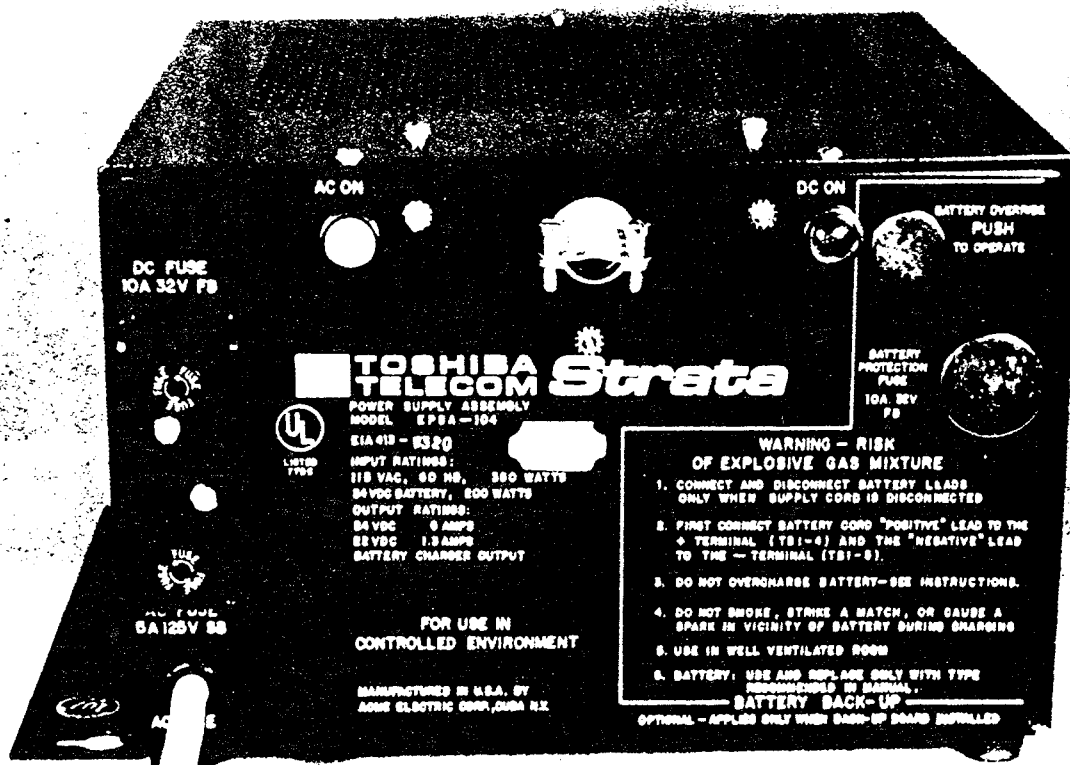


FIGURE 8 — EPSA-104

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- "PBBU-3 REV A"—decals to be placed on the front of the EPSA.
- "WARNING"—warning tag for attachment to the 115 VAC power cord.

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-inch ring terminals and at the other end with 1/8-inch 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 3/8 x 1/2-inch hex head bolts are required to connect the cable terminals to the batteries.

- Washers—eight 3/8-inch flat washers and four 3/8-inch internal-tooth lock washers are required for the above cable terminal connections.
- Battery Cabinet—if the batteries are not located in a well-ventilated closed or other secure area, protected from fire or sparks, a properly ventilated protective cabinet is required to safeguard them.

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.

IMPORTANT:

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 MPRU is in the OFF position, and then disconnect the 115 VAC power cord.

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

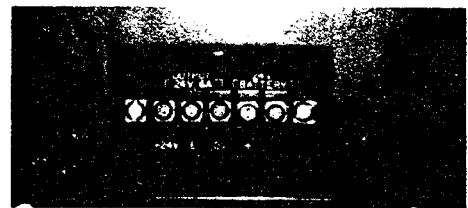


FIGURE 9 — EPSA TERMINALS

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 panel. 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.

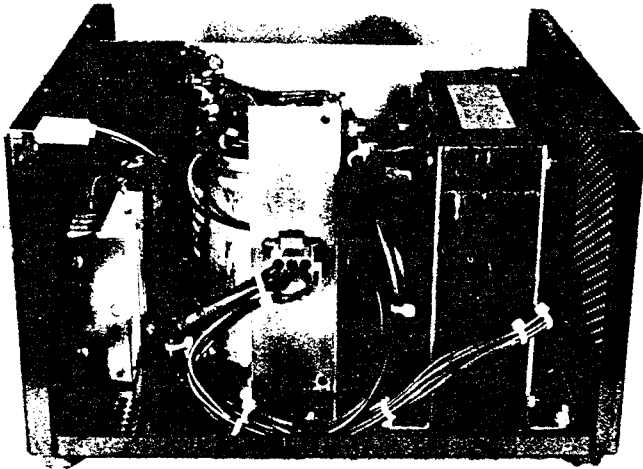


FIGURE 10 — OPEN EPSA

02.20 Installing the PBBU

02.21 Two plugs are mounted in the EPSA control panel; pop them out and discard.

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

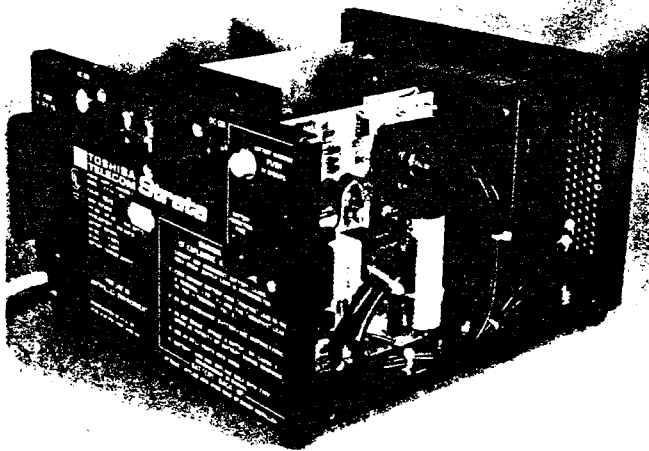


FIGURE 11 — PBBU IN PLACE

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.

02.40 Battery Connection

DANGER!

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.

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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.

DANGER!:

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.

itive 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.

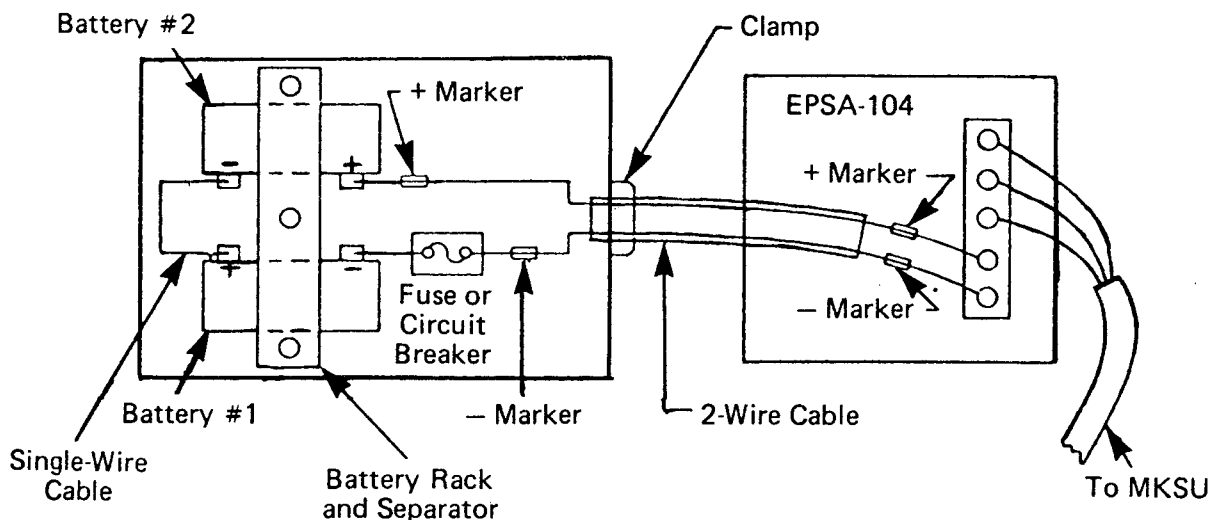


FIGURE 12—BATTERY WIRING DIAGRAM

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).

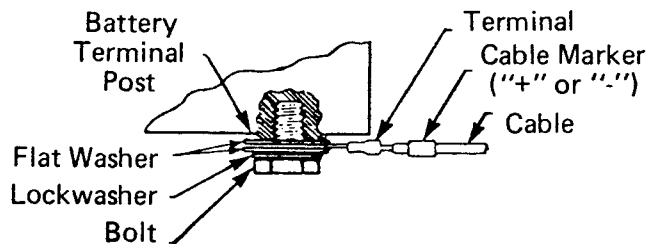
02.44 Loosen the two screws on the terminal strip identified as 24V/BATTERY.

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).

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

02.48 Connect the positive wire to the pos-



**FIGURE 13
BATTERY TERMINAL CONNECTOR**

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 system functions under both AC and battery back-up power.

IMPORTANT:

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

CHART NO. 10
SMDR FAULTS

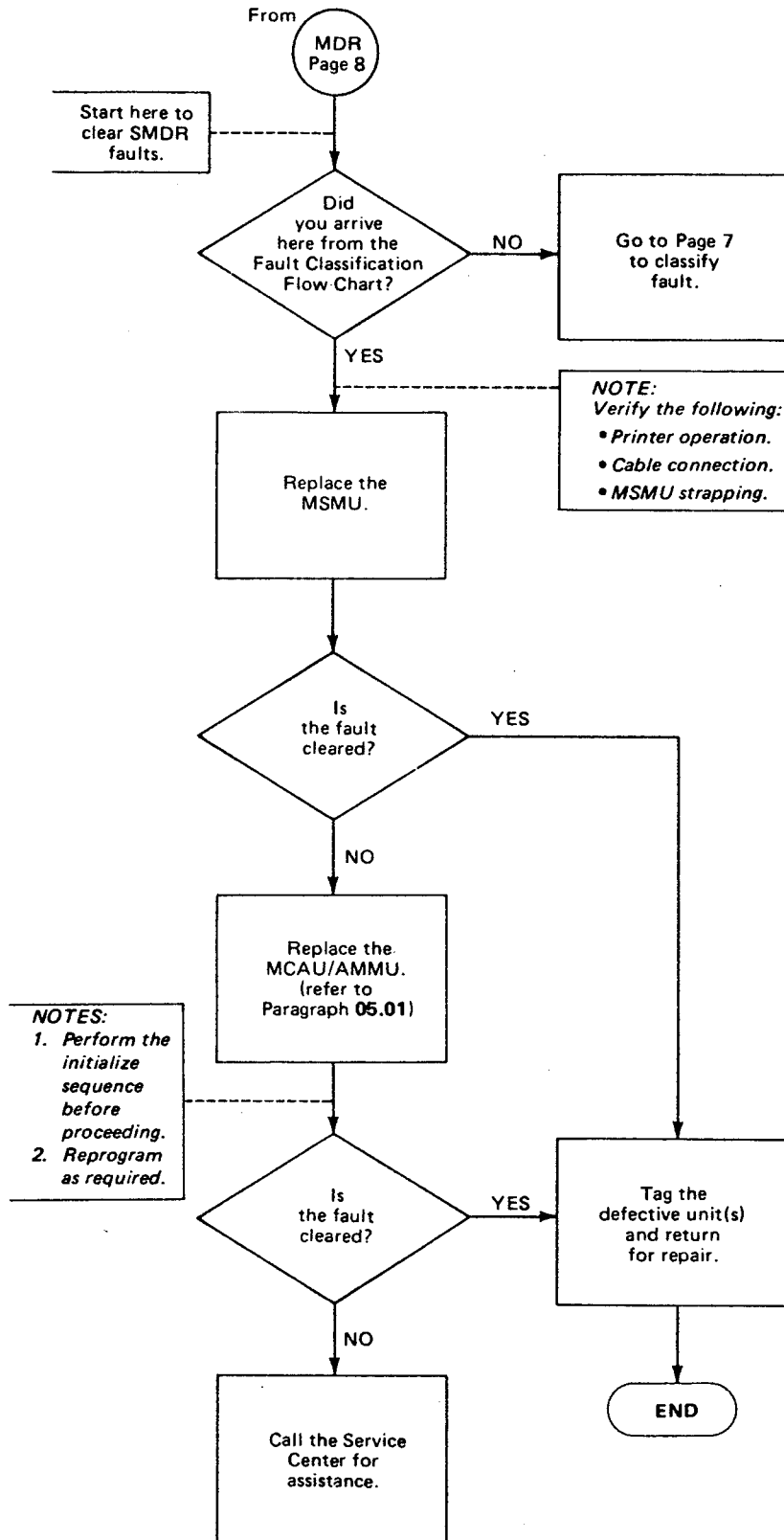
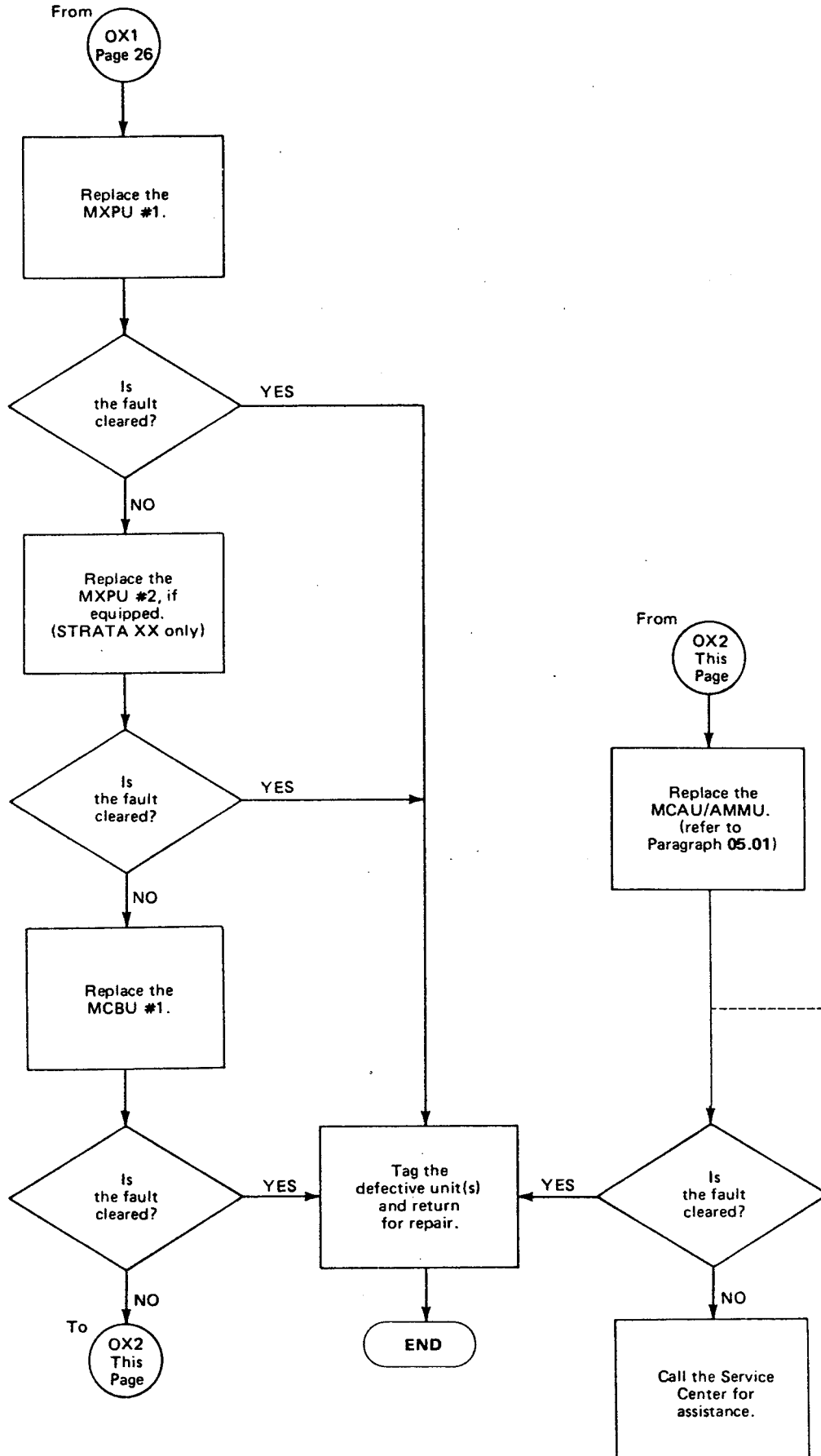


CHART NO. 11
OPX FAULTS (cont'd)



NOTES:
1. Perform the initialize sequence before proceeding.
2. Reprogram as required.

CHART NO. 11
OPX FAULTS

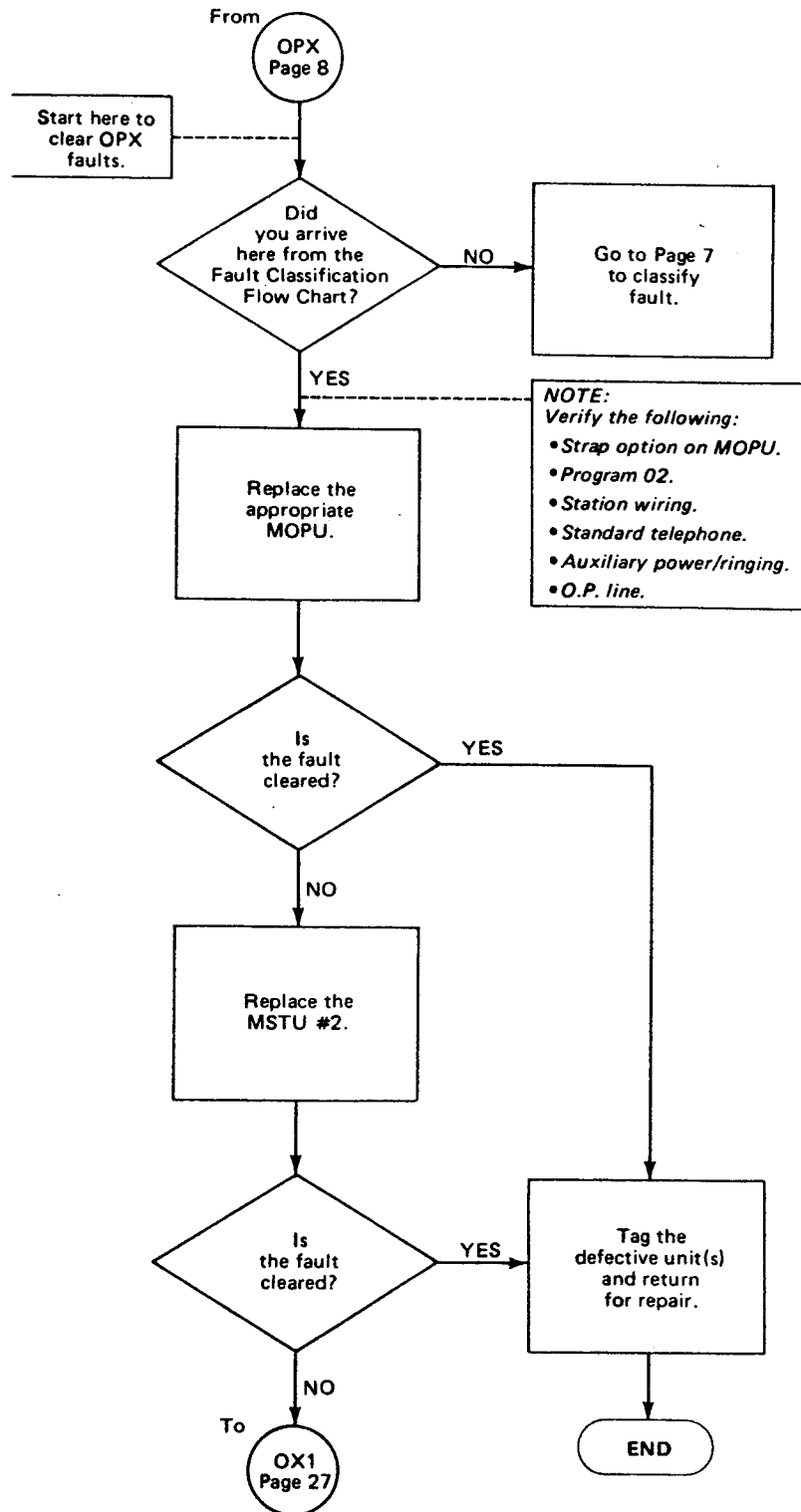


CHART NO. 12
OPL FAULTS

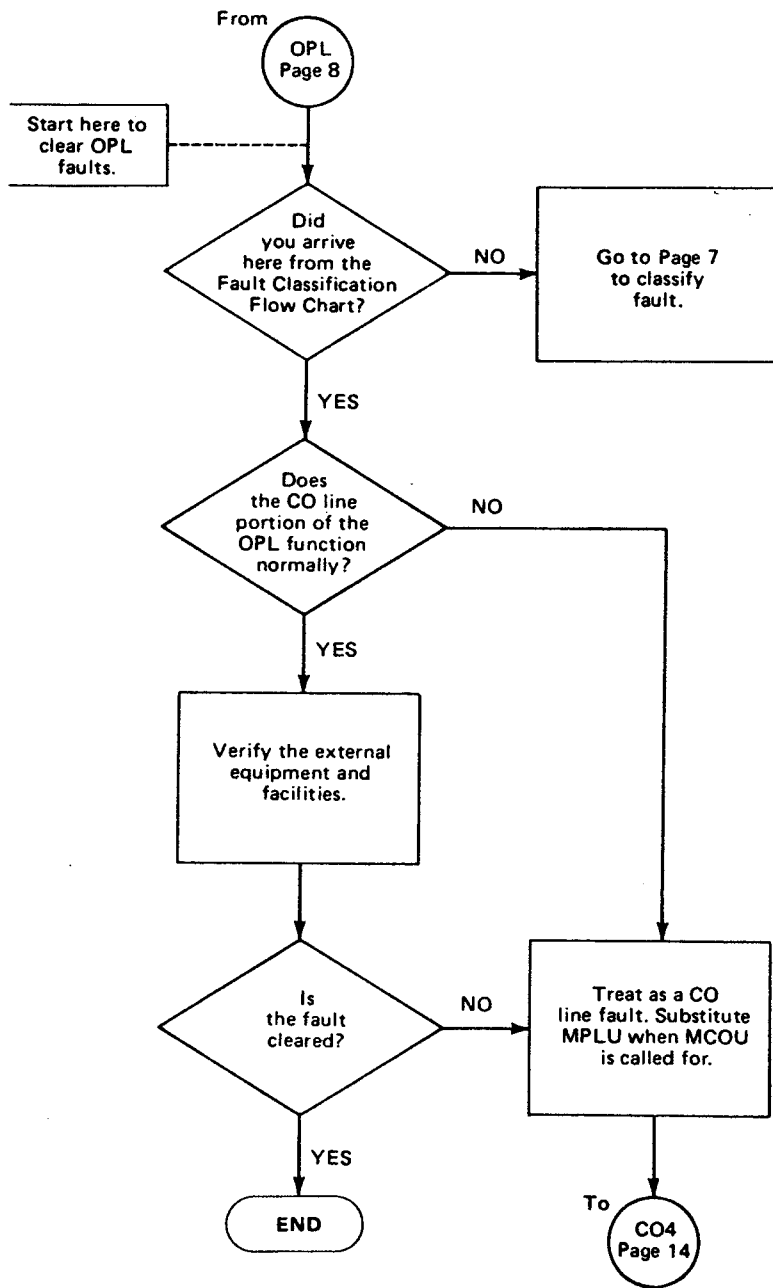


CHART NO. 12
OPL FAULTS

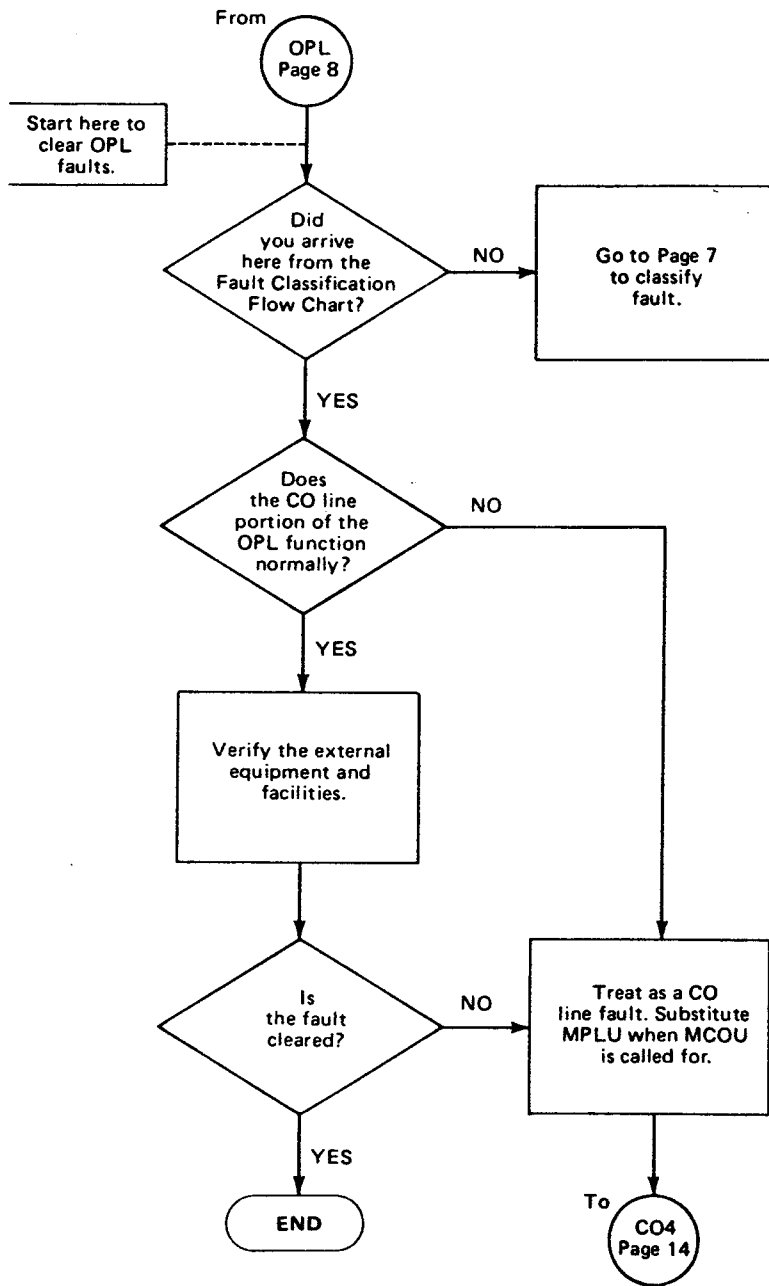
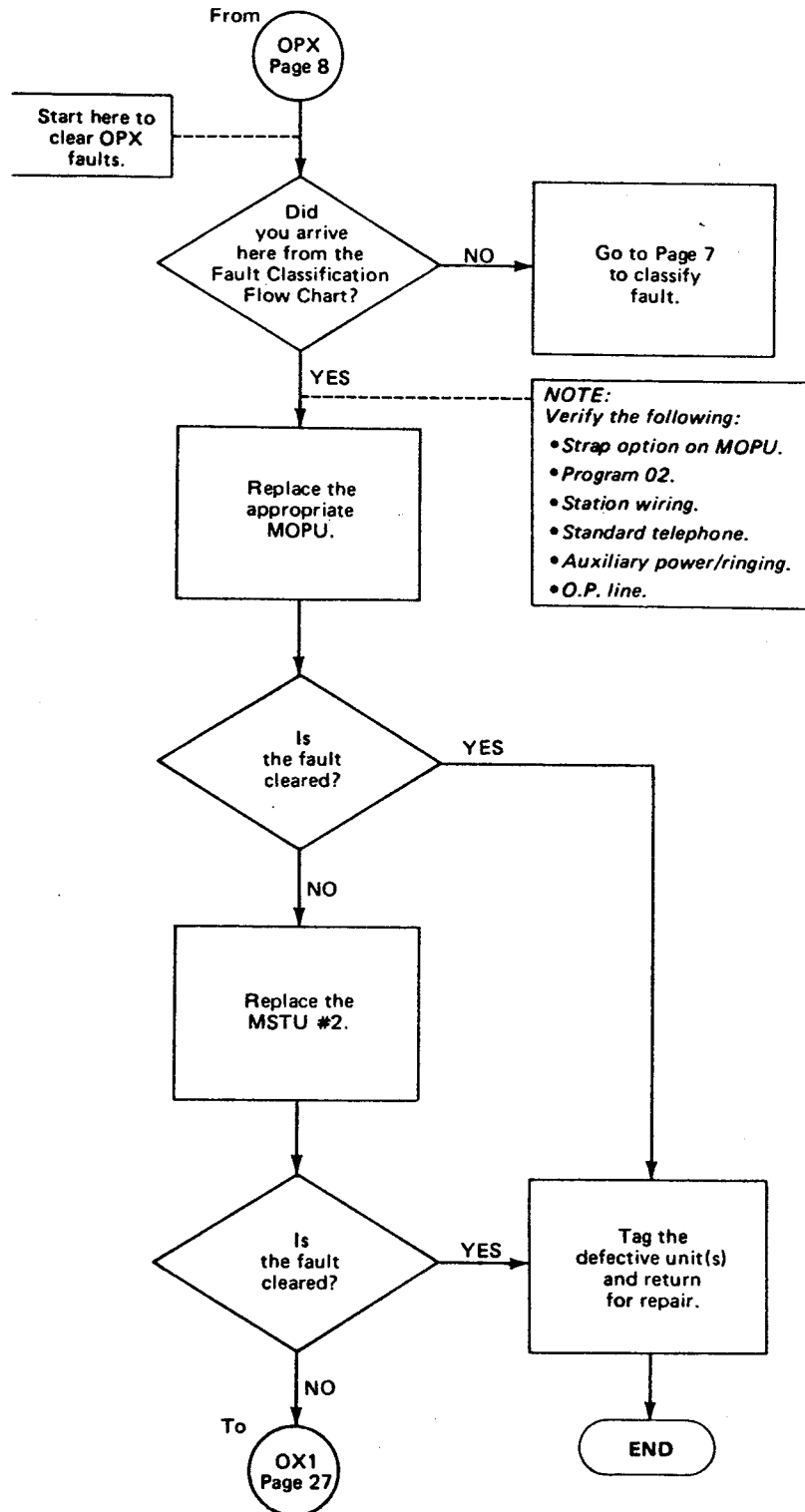


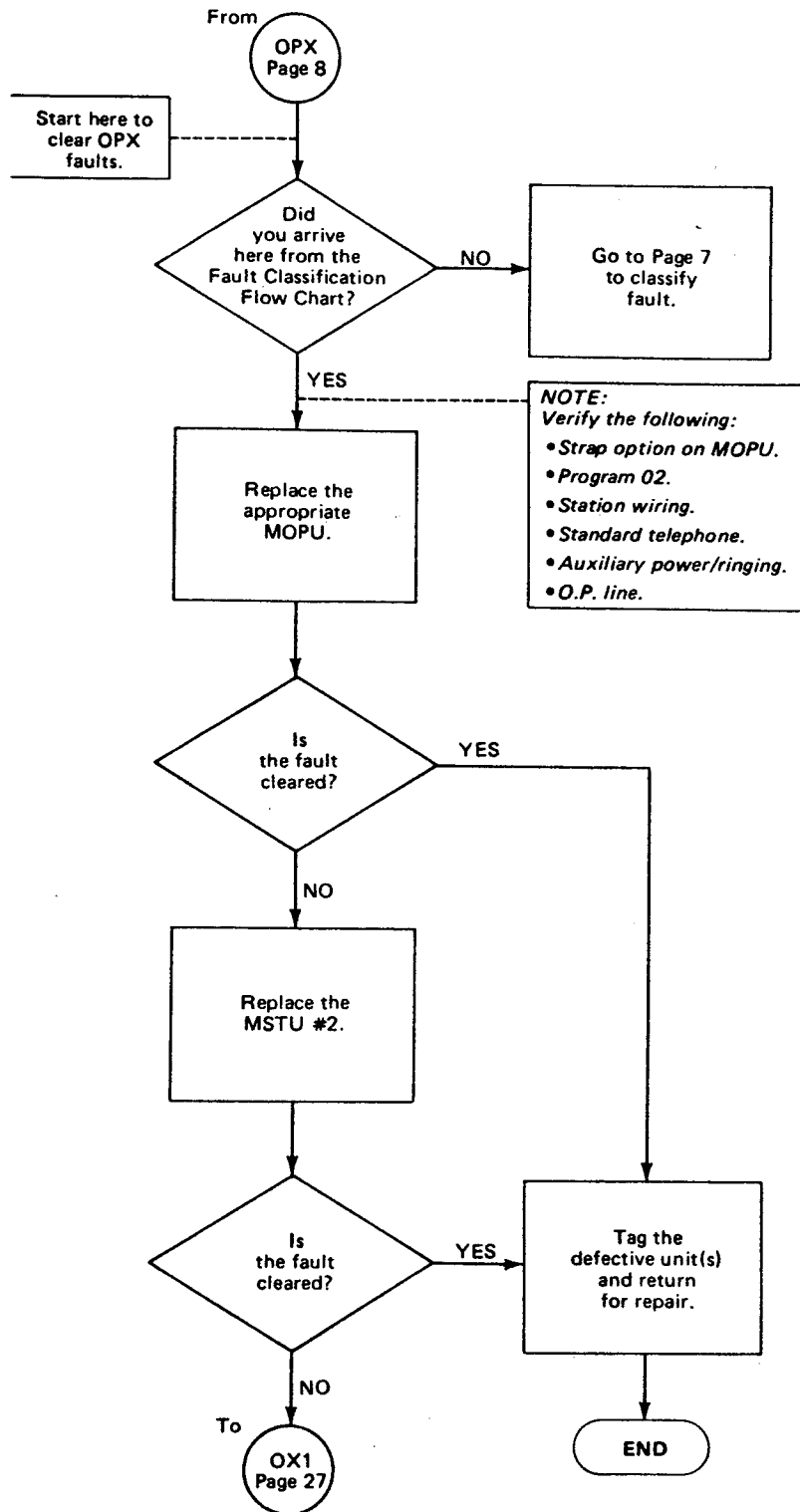
CHART NO. 11
OPX FAULTS



1000

1000

**CHART NO. 11
OPX FAULTS**



100

100

**CHART NO. 10
SMDR FAULTS**

