BOGEN®
COMMUNICATIONS, INC.

MULTICOM 2000™
Administrative Communication System

Installation and Setup Instructions

Table of Contents

List of Illustrations

Schematic Diagrams

Introduction

This manual provides installation and setup information for the Bogen MULTICOM 2000™ Administrative Communication System.

Other documentation related to the MULTICOM 2000 system is listed on the inside front cover of this publication.

In this publication, the MULTICOM 2000 System is also referred to as the MC2K System.

Configurations

The MC2K system is available in the following configurations:

Self-contained, wall-mounted system. Station capacity is 120 stations (or 96 stations plus 8 incoming outside-line stations when telephone access option is included).

Rack mounted system. Station capacity is up to 240 stations. If the telephone access option is included, the system supports up to 8 outside line stations (when capacity does not exceed 120 stations) or 15 outside line stations (when capacity is between 120 and 240 stations).

Rack-mounted system integrated with Bogen Multi-Graphic® Series 2223, or Series 2233 equipment. MC2K station capacity is the same as rack mounted

The Multi-Graphic equipment provides redundant system (1 to 2) program channels, custom emergency page amplification, control of satellite systems, and control of ... ons.

system described above. ... capabilities, additional (u... capabilities, high-power am... Multi-Graphic system funct...
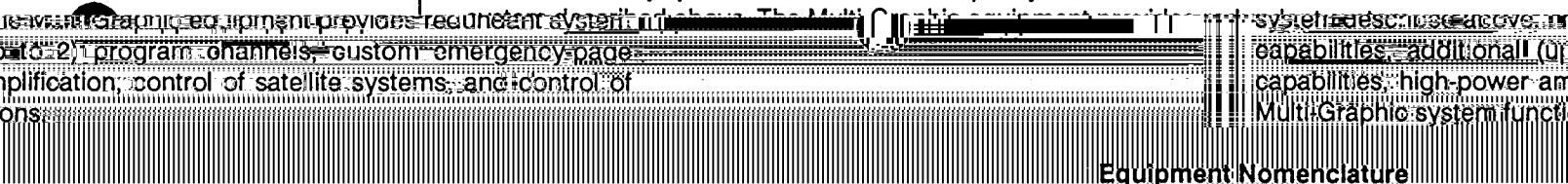
Equipment Nomenclature

...uipment used in the MC2K system is interchangeable ...system and rack mounted system. There are, however, ...omponents. Non-interchangeable components are:

... mainframe assembly holds the functional circuit cards ... a printed circuit backplane. The **wall-mounted** system ...me. The **rack-mounted** system uses the **MCRMF**

...bly. The **wall-mounted** system used the **MCRC Relay** ...ystem uses the **MCRM Relay Module.**

...re and block diagrams for the wall mounted system and ...re supplied on the next 6 pages.

Most of the *functional* equ... between the wall-mounted ... two non-interchangeable co...

Mainframe assembly. The ... for the system and includes ... uses the **MCMF mainfra...** **mainframe.**

Relay card/module assem... **Card.** The **rack-mounted** s...

The equipment nomenclatu... the rack mounted system a...

Wall-Mounted System Equipment

MCBBC   Back Box Assembly, Complete

MCMP*   **Mounting Plate with the following components:**

    MCMF*   Mainframe assembly with the following circuit cards:

        MCPC   Processor Card (1 per system)

        MCAC   Analog Card (1 per 24-stations)

        MCSC   Station Card (1 per 24 stations)

    MC512*   Power Supply (1 per system)

    MC2626*   Power Supply (1 per system)

    MCAPI*   Audio Program Interface Assembly

    MCRC   Relay Card (1 per 24 stations)

    MCCA   Ribbon Cable Assembly

    *Part of MCSA System Assembly

MCTC   Optional Telco Access Card (occupies one MCSC Station Card slot). Includes **MCOC** Connector Card and **MCOCA** Cable Assembly

Modules   Up to 3 D-Series modules per system. Modules install in the MCAPI Assembly and interface with program sources (microphone, cassette tape player, tuner, etc.)
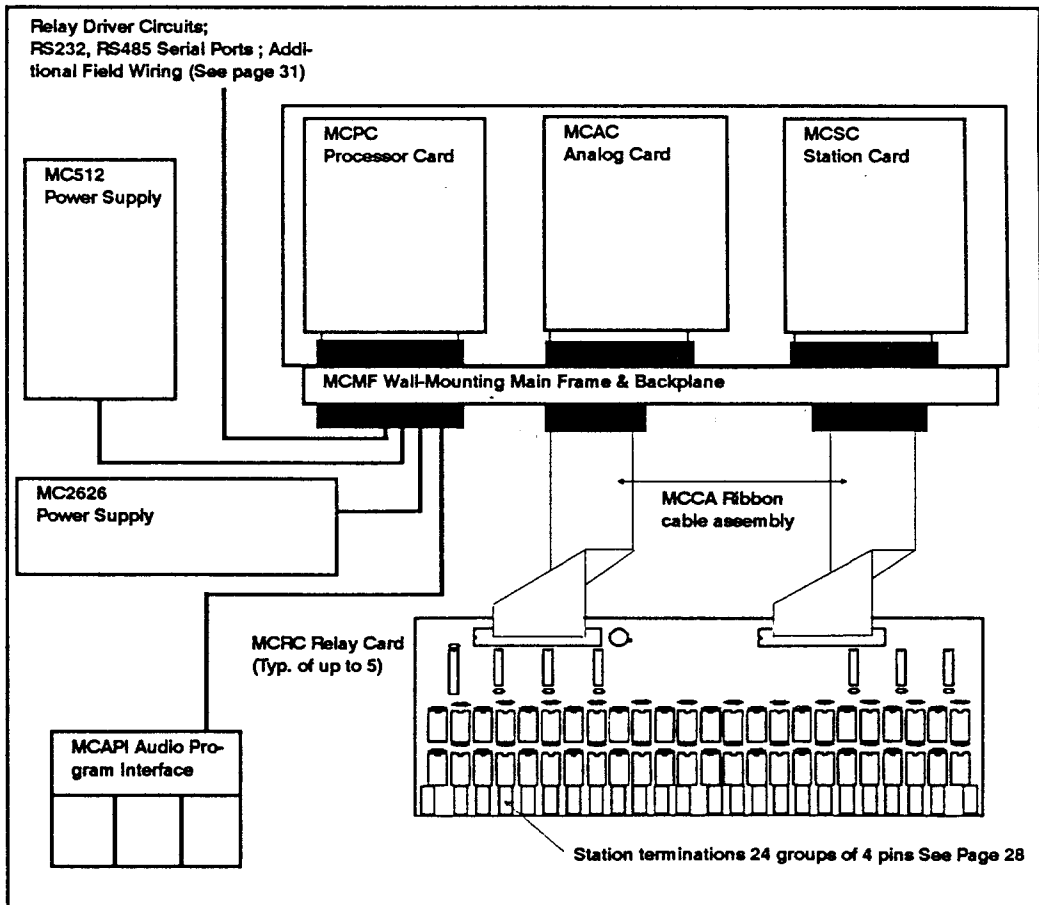
Block Diagram — MC2K System, Wall-Mounted Configuration

Rack-Mounted System Equipment

TCPER42 Equipment Rack, 42" High

TCPER61 Equipment Rack, 61" High

TCPER70 Equipment Rack, 70" High

RCRMP **Rack-Mounting Panel with the following components**
    MC512 Power Supply (1 per system)
    MC2626 Power Supply (1 for up to 120 stations, 2 for more than 120 stations)
    MCAPI Audio Program Module Interface Assembly (1 per system)

RCRMF **Rack-Mounting Mainframe (1 per 120 stations).**
Includes built-in ventilation fans and the following circuit cards:
    MCPC Processor Card (1 per MCRMF)
    MCAC Analog Card (1 per 24 stations)
    MCSC Station Card (1 per 24 stations)
    MCJCA Ribbon Cable Assembly interconnects 2 mainframes

RCRM Relay Module (1 per 24 stations). RCRM is mounted to **RCRRP** in stand-alone system, or **SBA225/325** Switchbank in systems incorporating Bogen Multi-Graphic Equipment

MCRCA Ribbon Cable Assemblies.

MCTC Optional Telco Access Card (1 per RCRMF). Includes:
MCOC Connector Card
MCOCA Cable Assembly

Modules Up to 3 D-Series modules per system. Modules install in MCAPI Assembly and interface with program sources (microphone, cassette tape player, tuner, etc.)

Relay Driver Circuits;
RS232, RS485 Serial Ports;
Additional Field Wiring
(See page 31)

MCPC
Processor Card

MCAC
Analog Card

MCSC
Station Card

MCRMF Rack-Mounting Main Frame & Backplane

MCRCA Rack
Ribbon Cable
Assembly

MCRM Relay Module

Station terminations 24 groups of 4 pins

MCAPI Audio Pro-
gram Interface

MC512
Power Supply

MC2626
Power Supply

MCRMP Rack Mounting Plate

Booster Amplifier (Optional for each Relay Module)
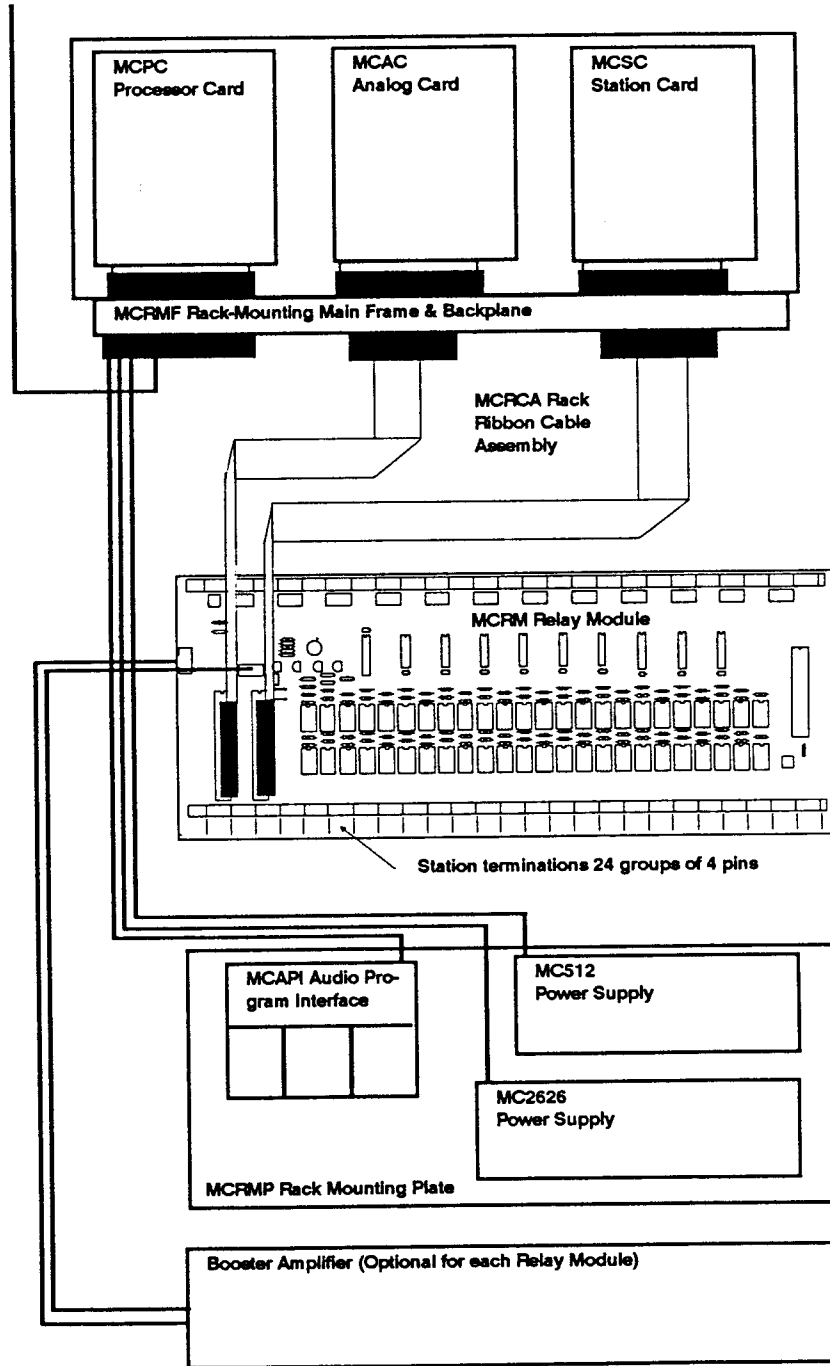
Block Diagram — MC2K System, Basic Rack-Mounted Configuration

Bogen Multi-Graphic System Equipment

MCP35A	Master Control Panel
MCP-B	Channel "B" Control Panel (Used in 2233-Series Systems only)
SBA225	Switchbank for use in 2223-Series Systems (25 3-position lever-action switches)
SBA325	Switchbank for use in 2233-Series Systems (25 3-position lever-action switches and 25 2-position pushbutton switches)
Amplifiers	BPA60/HTA-125A/HTA-250A, as required by system capacity
CPT1B	Cassette Tape Player/AM/FM Tuner

Relay Driver Circuits; RS232, RS485 Serial Ports; Additional Field Wiring (See page 31)

MCP35A/MCP-B(Series 2233) Control Panels

Pgm. Source, MIC, etc.

MCPC Processor Card

MCAC Analog Card

MCSC Station Card

MCRMF Rack-Mounting Main Frame & Backplane

MCRCA Rack Ribbon Cable Assembly

SBA225 (Series 2223) or SBA325 (Series 2233) Switchbank

MCRM Relay Module

Aux. Call-in Switch

Station terminations 24 groups of 4 pins

MCAPI Audio Program Interface

MC512 Power Supply

MC2626 Power Supply

MCRMP Rack Mounting Plate

Booster Amplifier (Optional for each Relay Module)

Booster Amplifier For MCP35A

Block Diagram — MC2K System with Multi-Graphic Equipment

Components

Circuit Cards

The following circuit cards (Processor/Station/Analog) can be used in the wall-mounted system and the rack-mounted system. Circuit card are mounted in the mainframe assembly.

Processor Card (Model MCPC)

MCPC Type 1

- E2PROM
- RAM
- EPROM
- Microprocessor
- Clock

MCPC Type 2

- E2PROM
- RAM
- EPROM
- Microprocessor
- Clock
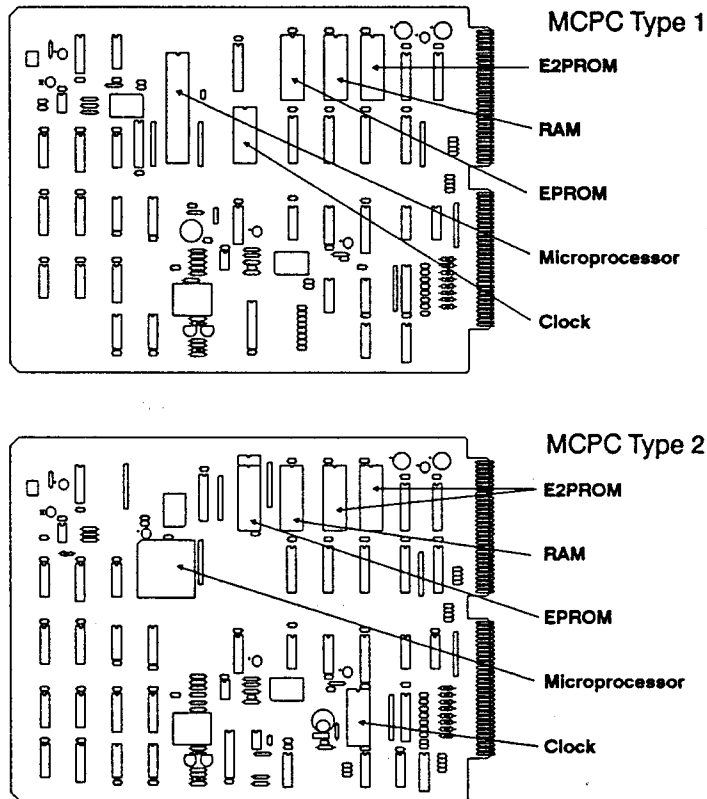
The processor card is the functional heart of the MC2K system. It contains the microprocessor, DTMF encoder, memory, and system clock. One card is used per system regardless of system capacity and is installed in the first position of the MCMF mainframe (wall-mount) or MCRMF mainframe (rack-mount). (In rack-mount systems with greater than 120 stations, there are 2 MCRMF mainframes. In this case, the processor card is installed in the first position of the *upper* mainframe.)

Your system may have either of 2 different processor cards:

Type 1 uses the 8098 microprocessor.

Type 2 uses the 80C196 microprocessor.

Station Card (Model MCSC)

MCSC Type 1

FUSE (1A Slo-Blo)
Bogen Part #
94-0001-30

DTMF Decoders

Crosspoint Switches

MCSC Type 2

FUSE (1A Slo-Blo)
Bogen Part #
94-0001-30

DTMF Decoders

Crosspoint Switches
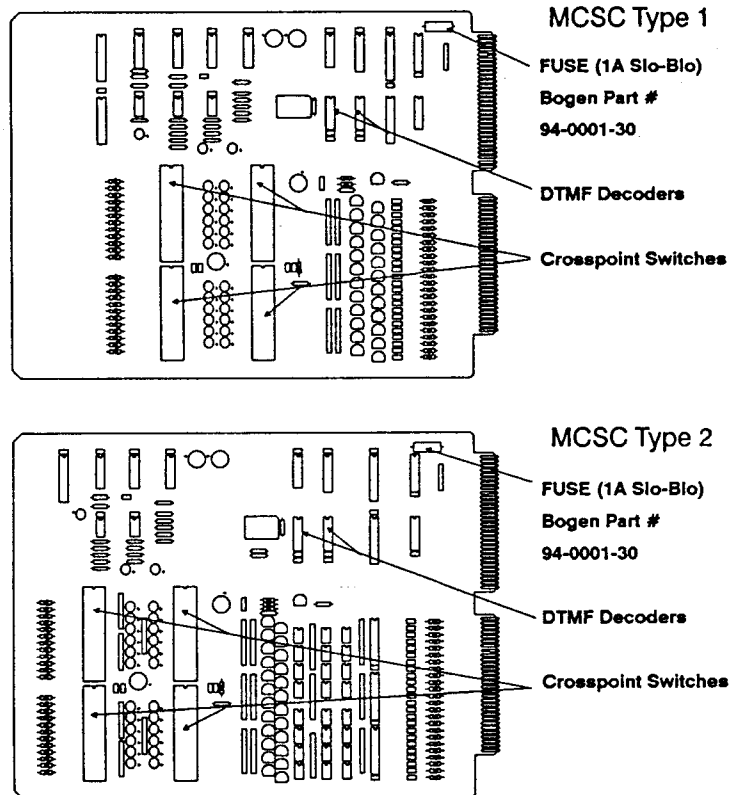
The station card contains crosspoint switches, DTMF decoder, and talk battery circuits. The card handles the telephonic switching between the stations on that card and the system (one card is used for each 24 stations).

The station card is installed in alternating slots of the mainframe, along with its associated analog card. Your system may have either of 2 different Station cards, as shown above.

The fuse (Bogen Part No. 94-0001-30) is a 2AG subminiature with pigtail , 1A Slo-Blo.

Analog Card (Model MCAC)

MCAC Type 1

FUSES (1A Slo-Blo)
Bogen Part #
94-0001-30

R30   R37   R82

MCAC Type 2

FUSES (1A Slo-Blo)
Bogen Part #
94-0001-30

R30 R120 R118 R75 R119 R53
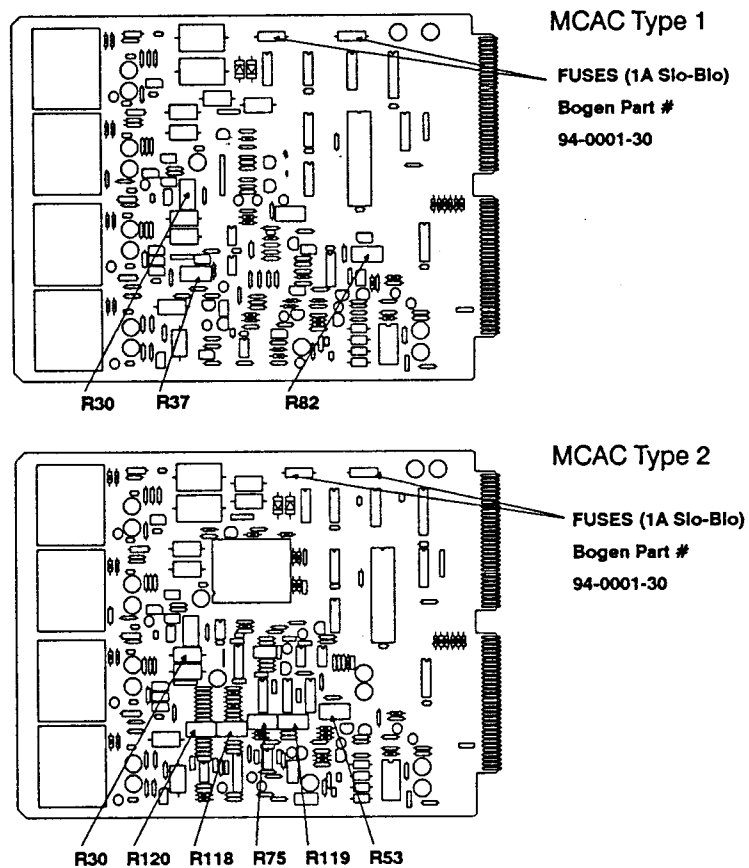
The analog card contains a 20 watt program amplifier, 12 watt intercom amplifier and relay control circuits. The card handles all program amplification and intercom amplification, and talkback operation for the stations on that card (one card is used for each 24 stations). The analog card is installed in alternate slots of the mainframe, along with its associated station card.

There are 2 types of analog cards, each with controls to adjust its performance. The Type 1 card has controls to adjust the Program/Page Volume, Compression, and Speaker Volume. The Type 2 card has controls to adjust the Program/Page Volume, Compression, Talkback Level, Switching Sensitivity and Switching Delay.

Adjustment instructions for the analog cards is given on the next two pages. Note the following before adjusting the cards:

1) Adjustment requires two people, one at a speaker station having the highest background noise level, and one at a telephone at the circuit card location.

2) Do not use a speaker near the telephone that is being used, as this may make it difficult to adjust properly.

3) In wall-mounted systems, the controls can be reached through the slots in the side of the mainframe. In rack-mounted systems, adjustment requires the use of an extender card (available 11-90).

Analog Card Adjustment Instructions

The adjustment instructions listed here are for use by qualified service personnel only.

Caution: System Power must be OFF prior to removing or installing circuit cards.

Program/Page Volume, Compression, and Speaker Volume Adjustments (Type 1 & Type 2 Analog Cards)

Program Page Volume (R30 on Type 1 & Type 2). Clockwise rotation of this control increases program/page volume.

Compression (Listen) Level (R37 on Type 1, R120 on Type 2) Clockwise rotation of the control increases compression. Generally, this should be set for the minimum amount of compression while maintaining acceptable switching of the talk/talkback circuit. The compression level on the Type 2 card is factory set and not adjustable.

Speaker Volume (R82 on Type 1, R53 on Type 2) Clockwise rotation of the control increases volume at the station loudspeaker.

Type 2 Analog Card Adjustments

Talkback Level (R75): Adjusts the talkback volume level in the handset earpiece. Clockwise rotation increases the level; counterclockwise rotation decreases the level.

Switching Sensitivity (R119): Adjusts the point at which the VOX circuit will switch from talkback to talk modes. Clockwise rotation increases sensitivity; counterclockwise rotation decreases sensitivity.

Switching Delay (R118): Adjusts the release time of the VOX circuit, allowing for short pauses between words without causing the unit to switch to the talkback mode in the middle of a sentence. Clockwise rotation increases the delay; counterclockwise rotation decreases delay.

Adjustment Procedure

Caution: Adjustment requires the use of an extender card in rack-mounted systems. System Power must be OFF prior to removing or installing circuit cards.

1) Set the Switching Sensitivity control (R119) at its full **counterclockwise** position.

2) Set the Switching Delay control (R118) at about **mid-rotation.**

3) Have the person at the speaker location speak in a voice loud enough to overcome the ambient background noise level. Rotate the Talkback Level control (R75) **clockwise** to obtain an acceptable volume level over the handset (should be set on the low side to improve intelligibility).

4) With the person at the loudspeaker silent, rotate Switching Sensitivity control (R119) **clockwise** until the switching becomes unstable (switches back and forth by itself). Rotate the control **counterclockwise** until the switching again becomes stable. At this point, the unit is critically stable; any noise on the telephone side will cause the unit to switch to the talk mode and any loud impulse-type noise at the loudspeaker wall cause the unit to switch to the talkback mode.

5) With the person at the speaker location speaking, rotate the Switching Sensitivity control (R119) **counterclockwise** so that the unit does not switch to the talk mode.

6) Have the person at the speaker location make loud impulse noises (such as hand clapping) that may be characteristic of the environment. If necessary, make additional adjustments to the Switching Sensitivity control so that the unit does not switch momentarily to the talk mode.

7) Speak into the telephone handset in a normal paging voice. The circuit should switch to the talk mode (switching will be apparent by the total absence of background noise in the handset earpiece). If the unit does not switch, increase the sensitivity by rotating the Switching Sensitivity (R119) control **clockwise** until switching becomes consistent. Recheck the unit's response to impulse noises (step 6), making sure that the person at the speaker location is not uncharacteristically close to the speaker.

8) To set the switching delay, start a moderately fast alternate count between the telephone side and the talkback side. Adjust the Switching Delay control (R118) so that the complete response from the talkback side can be heard. **(Clockwise rotation minimizes delay, counterclockwise rotation increases delay.)** Then, while speaking into the telephone handset, check the delay to ensure it will allow short pauses between words without switching into the talkback mode. Adjust for a slightly longer delay if the unit switches between words. A slight pause is generally advisable for speech continuity and intelligibility.

Telephone Access Card (Model MCTC)

The Telephone access option consists of the Model MCTC circuit card, Model MCOC connector card and MCOCA ribbon cable assembly.

In wall-mounted systems, the MCTC is usually installed in slot #11 of the MCMF Mainframe (reduces system capacity).

In rack-mounted systems with one mainframe (MCRMF), the MCTC installs in slot #12 of the MCRMF Mainframe. In rack-mounted systems with two mainframes, a second MCRC card can be installed in slot #12 of the second mainframe to provide additional outside telephone capacity.

The MCOC card contains eight 6-position modular telephone jacks which can be connected to station ports of a PBX system (the two center conductors are Tip & Ring).
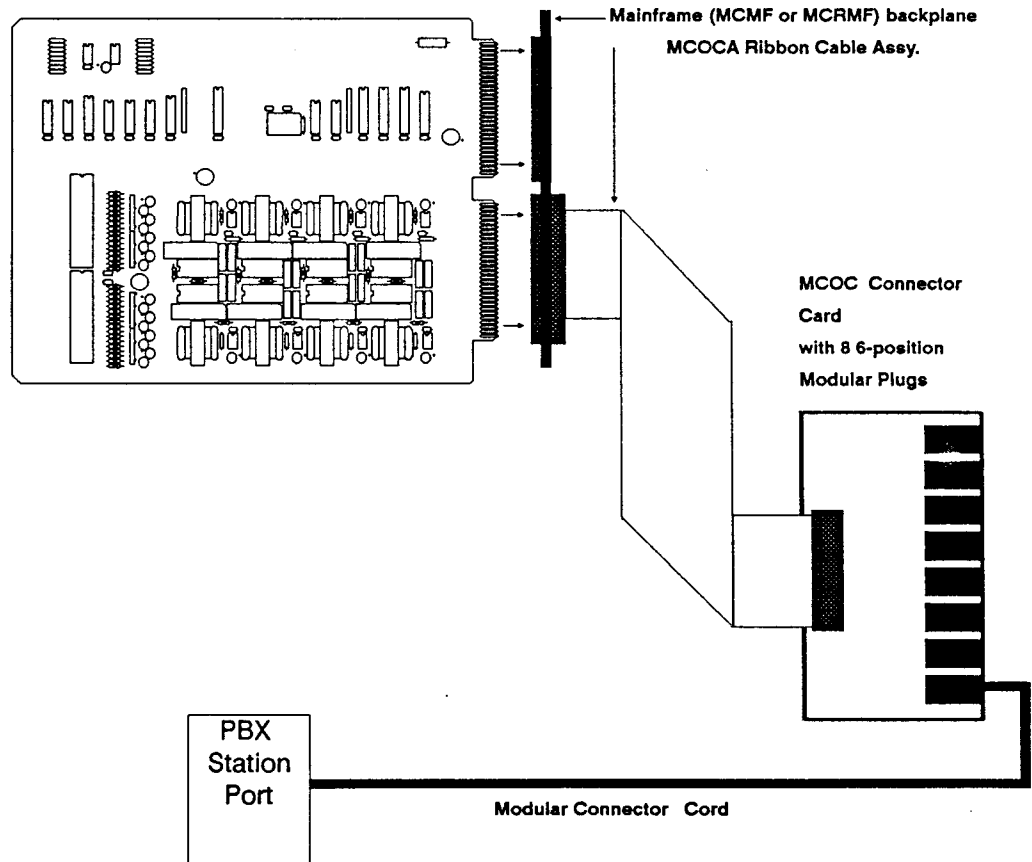
See "Telephone Station" in the **Station Equipment** section of these instructions for a description of how a telephone station works. Also see "Initial System Defaults" in the **System Setup** section of these instructions for additional information.

Instructions for programming the outside line stations are included in the **Station Initialization** programming instructions.

Relay Card (MCRC)

J26 To Analog Card

J25 To Station Card

Program Relay
Intercom Relay

Pin Out
(Use 25-Series Connector)
S   Shielded Cond.
S   Shielded Cond.
A   Unshielded Cond.
G   Cable Shield (gnd)

4-pin connector,
typical of 25

- S
- S
- A
- G

Station No. increases from left to right.
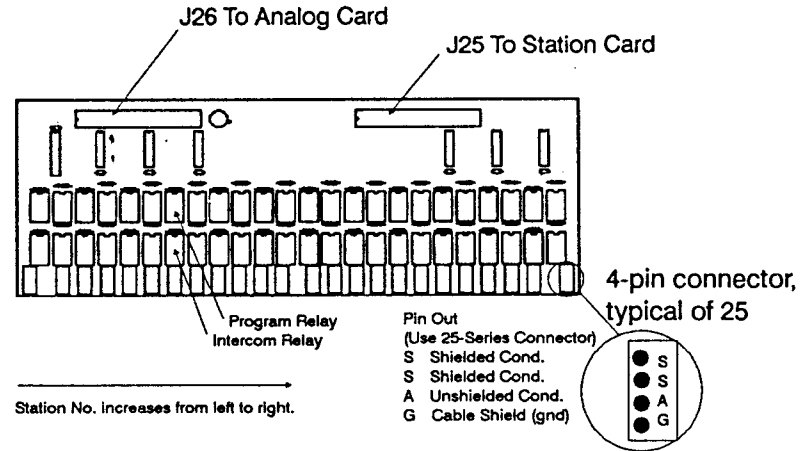
The MCRC Relay Card is used in wall-mounting versions of the MC2K system **only**.

The card contains 24 (each) program and intercom relays and 24 sets of terminals (4-pins per set) for connection with staff station equipment.

Each MCRC card serves 24 stations. Station numbers are assigned to the relay card in ascending order, from left to right.

Connectors J25 & J26 connect to the backplane of the MCMF mainframe (and associated analog and station cards) with MCCA ribbon cable assemblies (see page 19). The location of the connectors and the pin-out designations for the staff station terminations are shown in the diagram above.

Relay Module (MCRM)

The MCRM Relay Module is used in rack-mounting versions of the MC2K systems **only**.

The module contains the program and intercom relays and terminals (4-pins each) for connection with MC2K station equipment. The module has the ability to handle a maximum of 250 watts of power (10 watts per station; connection for a booster amplifier is provided at RCA1 & J39). Station numbers on the card increase from right to left, as shown below. J41 & J42 connect to the backplane of the MCRMF (and associated station and analog cards) with MCRCA ribbon cable assemblies. The module also has connectors to interface with an SBA-Series switchbank, emergency contacts from the MCP35A Master Control Panel, and auxiliary call-in switches. An accessory connector (J40, see next page) provides relay driver capability whenever a station relay goes active. Refer to the illustrations and notes below.
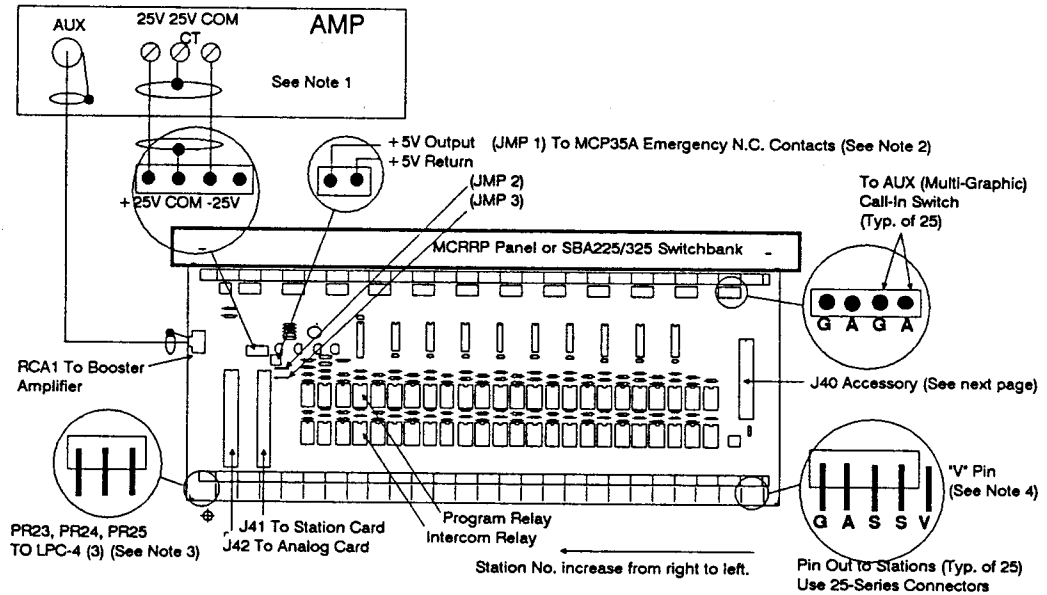
Note 1: When an external booster amplifier is used, remove jumpers JMP2 & JMP3. Each Relay Module must use a separate booster amplifier.

Note 2: If this option is used with multiple relay modules, parallel the "output" and "return" wires to the pins on JMP 1 on each relay module. If only a single relay module is used, connect a wire between the two pins of JMP1.

Note 3: Only the first 24 stations and PR23 & PR24 can be used by the MC2K system.

Note 4: The "V" pin is provided for special applications. **DO NOT connect any station to this pin.**

Connector J40 provides relay driver outputs for each station which goes active whenever the program or intercom relay for that station goes active. The pin-outs for J40 are shown in the schematic diagram. By cutting the proper diode, the output can be made to go active when one or the other relay activates. Refer to the schematic diagram and the following example: If diode D49 (near program relay K1) is removed, the output S1RY (on the J40 connector) will go active only when relay K2 (intercom) is activated. Conversely, if diode D73 (near intercom relay K2) is removed, the output S1RY will go active only when relay K1 (program) is activated.

S1RY
(Pin 1)

GND
(Pin 16,
18, or 20)

Relay
Coil
(with
1 in 4004
Diode)

(+)
Power
Supply
(12VDC)
(−)

J40 Connector (not all pins shown)
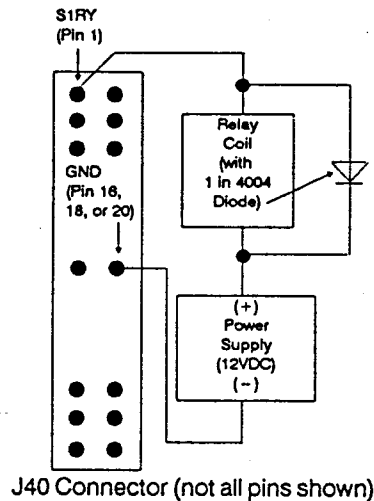
Optional circuitry is available at the J40 accessory which can be used to control external bells or other external devices. Contact Bogen Application Engineering for assistance.

Power Supplies

The power supplies are used in both versions of the MC2K system. They are mounted to the MCMP mounting plate in wall-mounted systems, or to the MCRMP mounting plate in rack-mounted systems.

To 110VAC
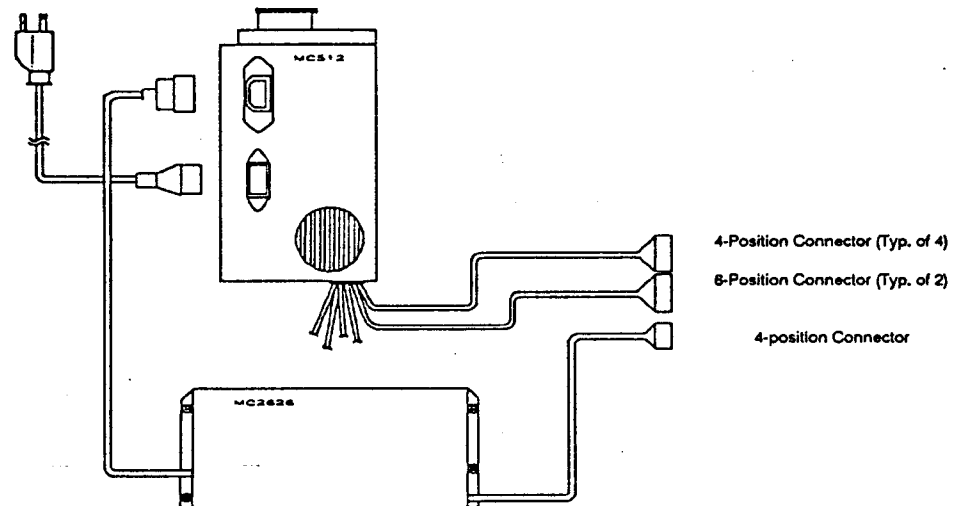
Model MC512

Type	Regulated, switching
Output Voltage:	+5V @ 15A, -5V @ 0.5A, +12V @ 5.5A, -12V @ 0.5A
Ripple:	Less than 20mV p-p on any output
Power Consumption:	75 watts maximum (under normal operating conditions with 120 station system. Power supply is capable of 150 watts total output).
Power Required:	110/120 VAC ±20%
Fuse:	1 x 3A (internal) Part No. 94-0001-08
Output Connectors:	2 x 6-position, polarized; 4 x 4-position, polarized

Model MC2626

Output Voltage:	±26V nominal, unregulated
Output Current:	4A
Power Consumption:	230 watts maximum
Power Required:	120 VAC ±10%
Fuses:	1 x 2A Part No. 94-0001-06
	2 x 4A Slo-Blo Part No. 94-0001-21
Output Connectors:	1 x 4-position, polarized

Audio Program Interface

The MCAPI Audio Program Interface is a card cage assembly which holds up to 3 Bogen D-Series Input modules. Available modules are described in Publication 54-9149. The MCAPI schematic diagram is shown below.
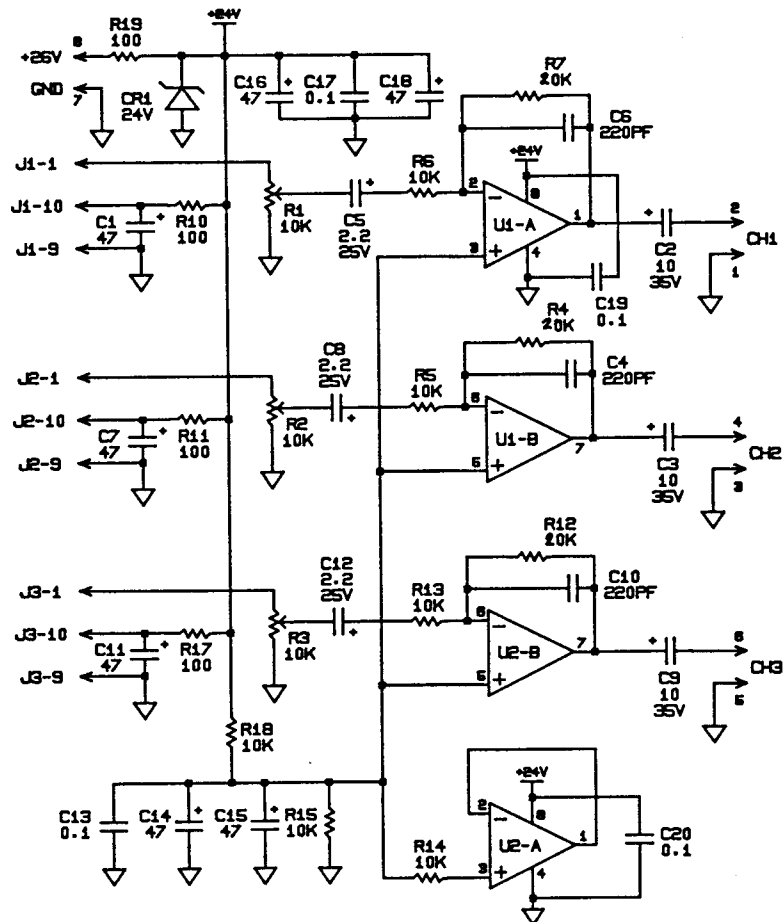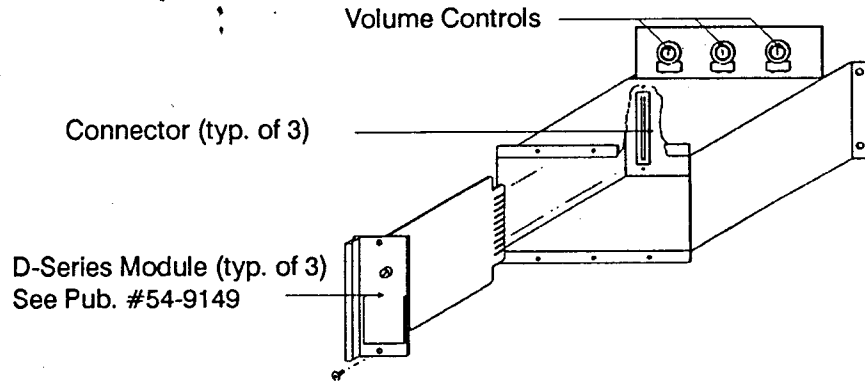
MCBBC Back Box/System Assembly/MCMF Mainframe

The illustrations below show the MCBBC Back Box Assembly, MCSA System Assembly and MCMF Mainframe. The illustration on the next page shows the interconnections of the wall-mounted system assembly.

MCBBC Back Box Assembly

MCMF Main Frame

MC512 Power Supply

MC2626 Power Supply

MCAPI Card Cage

MCRC Relay Cards (up to 5)

MCMP Mounting Plate
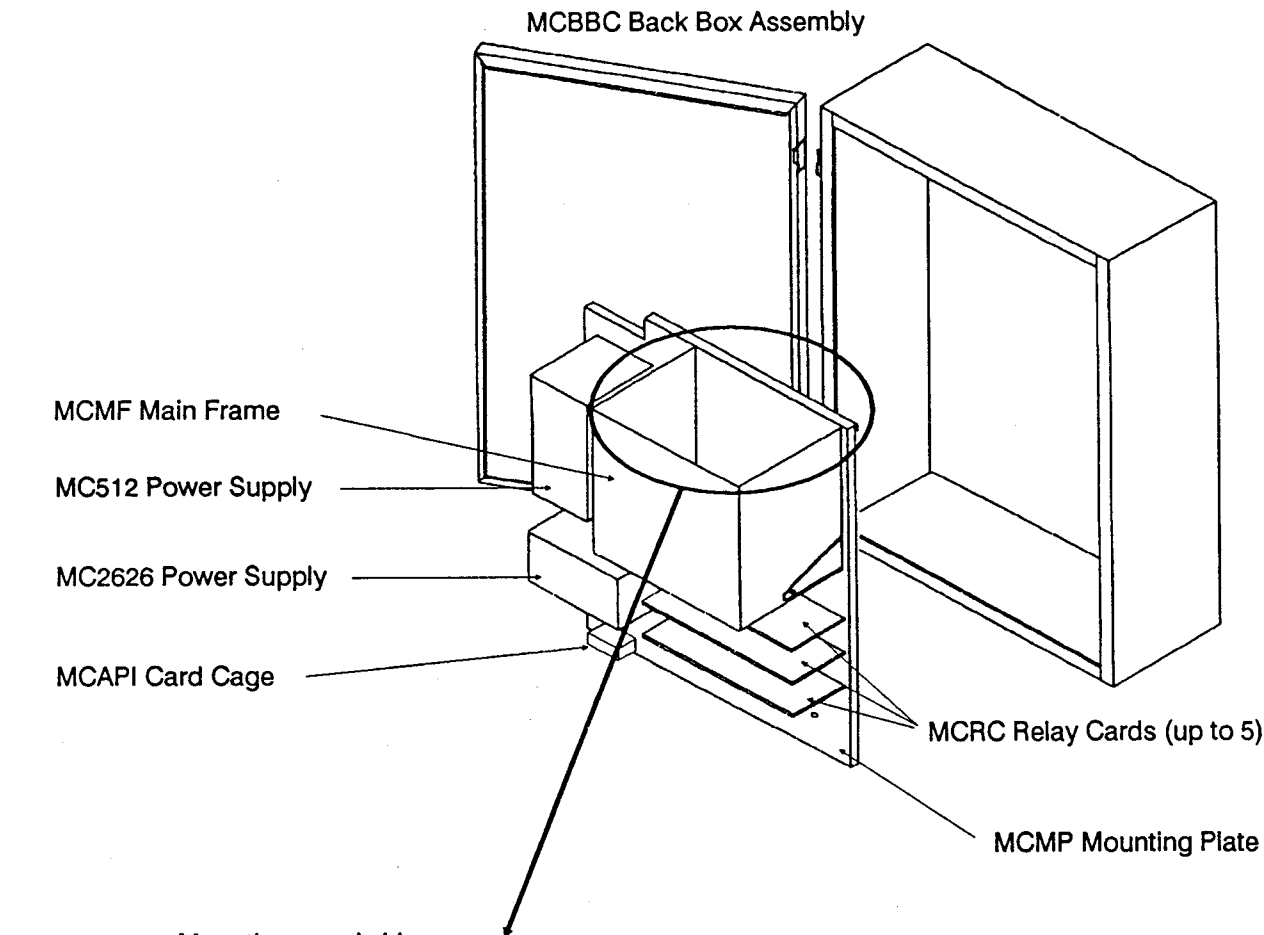
Mounting panel side

1 2 3 4 5 6 7 8 9 10 11
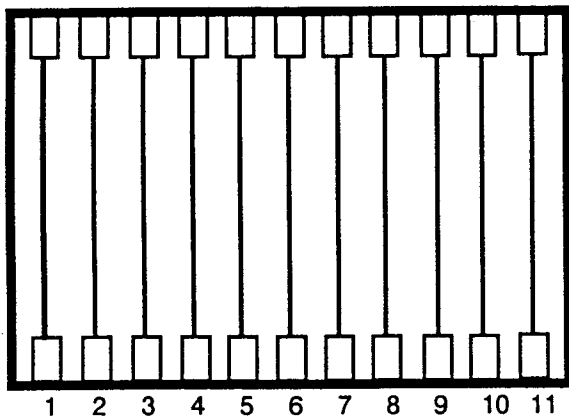
Position	Part No.	Type of Card	Station Nos.
1	MCPC	Processor Card	
2	MCAC	Analog Card	
3	MCSC	Station Card	1 - 24
4	MCAC	Analog Card	
5	MCSC	Station Card	25 -48
6	MCAC	Analog Card	
7	MCSC	Station Card	49 - 72
8	MCAC	Analog Card	
9	MCSC	Station Card	73 - 96
10	MCAC	Analog Card	
11	MCSC	Station Card	97 - 120
	or MCTC	Telephone Card	97 - 105

NOTE:
1. RIBBON CABLE CONNECTORS HAVE "DUMMY" HOLES AT EACH END. CONNECTOR MUST BE POSITIONED SUCH THAT DUMMY HOLES AT "TOP" ARE LEFT UNUSED. CABLE SHOULD EXIT FROM RIGHT SIDE OF CONNECTOR.

Rack-Mounting Mainframe

The MCRMF Mainframe is used in rack-mounting versions of the MC2K systems only. It has 12 card slots, accessible from the front of the rack (slot numbers run left to right, 1 - 12, as shown in the following illustration). Each mainframe will support up to 120 stations (5 station/analog card pairs) plus a telephone access card. Each circuit card plugs into the connectors on the mainframe and is connected to the associated relay module via the MCRCA ribbon cable assemblies.

Slot #	Part No.	Type of Card	Station Nos.
1	MCPC	Processor Card	
2	MCAC	Analog Card	
3	MCSC	Station Card	1 - 24
4	MCAC	Analog Card	
5	MCSC	Station Card	25 -48
6	MCAC	Analog Card	
7	MCSC	Station Card	49 - 72
8	MCAC	Analog Card	
9	MCSC	Station Card	73 - 96
10	MCAC	Analog Card	
11	MCSC	Station Card	97 - 120
12	MCTC (Optional)	Telephone Card	121 - 129
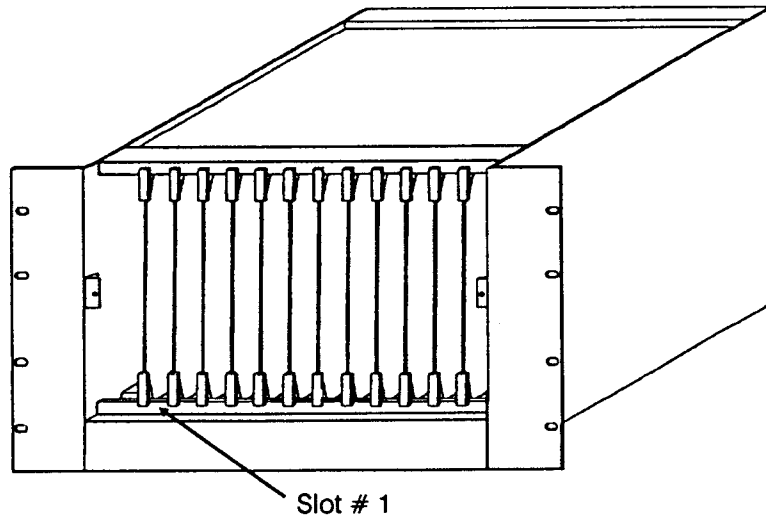
Slot # 1

A second mainframe is used in rack-mounting systems when capacity exceeds 120 stations; however, only one processor card is used per system.

The processor card is usually installed in slot # 1 of the upper mainframe. A jumper block on the backplane of each mainframe must be placed in the proper position, as shown in the diagram below.

UPPER   LOWER

The mainframes are interconnected by the MCJCA ribbon cable assemblies, as shown in the diagram below. Note that the upper ribbon cable connector on both mainframes must be installed so that the top four pins on each row of pins are left exposed. The lower ribbon cable connector on both mainframes must be installed so that the bottom four pins on each row of pins are exposed (disregard the schematic representation of the connector printed on the backplane when connecting the lower ribbon cable assembly).

MCJCA
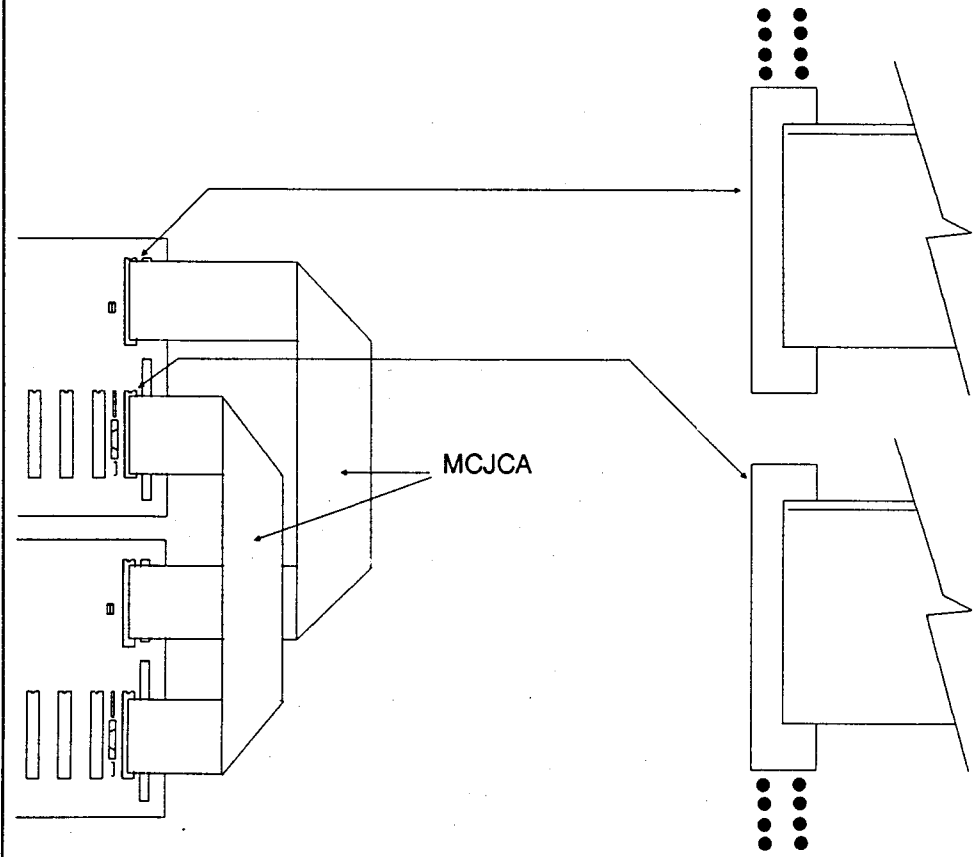
Multi-Graphic System Equipment

MCP35A Control Panel
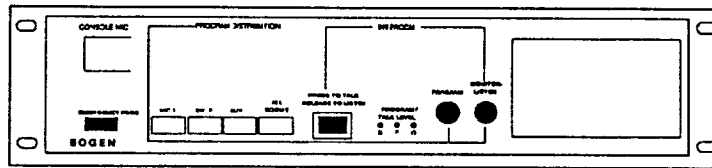
The MCP35A Master Control Panel is used in MULTICOM 2000/Multi-Graphic Series 2223 & 2233 Systems. It provides pushbutton selection of two microphones and one auxiliary program source, an additional ("A") program channel (with level control), an intercom channel, monitoring capability, and emergency call capability. For detailed information on the MCP35A, refer to Bogen Publication No. 54-5871.

MCP-B Control Panel

The MCP-B Control Panel is used with MULTICOM 2000/Multi-Graphic Series 2233 Systems. It provides pushbutton selection of two microphones and one auxiliary program source, a ("B") program channel (with level control), and a monitor capability which permits listening to the "A" or "B" program over the monitor speaker of the MCP35A. For detailed information on the MCP-B panel, refer to Bogen Publication No. 54-5875.

Switchbanks

SBA225

SBA325
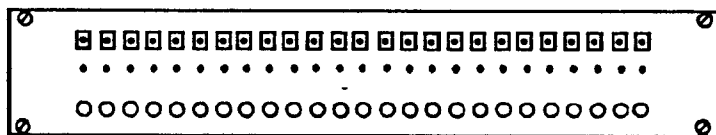
The SBA225 and SBA325 Switchbanks are used in MULTICOM 2000/Multi-Graphic 2223 & 2233 Systems, respectively. The switchbanks connect directly to the MCRM Relay Module and provide the interface between Multi-Graphic and the MULTICOM 2000 System. The SBA225 has 25 3-position lever-action switches to select the "A" program channel, Intercom channel or Off. The SBA325 has 25 3-position lever-action switches to select the "A" program channel, "B" program channel, or OFF, and 25 pushbutton switches to connect each station to the Multi-Graphic Intercom channel.

On each switchbank, the 25th switch is reserved for Multi-Graphic operation.

Station Equipment (Same for Wall-Mounted and Rack-Mounted Systems)

MCDS	Administrative Telephone (DTMF dialing with 4-line x 16-character LCD display panel)
MCESS	Enhanced (DTMF) Staff Telephone, Desk Top
MCWESS	Enhanced (DTMF) Staff Telephone, Wall-Mounting
HS201B	Staff Handset (single-gang plate)
HS202B	Staff Handset (double-gang plate)
CA15B	Call-In Switch (Press to Call)
CA21	Call-In Switch (Press to Call/Privacy)

Wall- or Ceiling-Mounted Loudspeakers or Horn Loudspeakers at each station as required and shown on the plans

Staff Station

The system may include staff stations in any number up to system capacity minus one (one station must be administrative). Staff stations consist of CA15B call-in or CA21 call-in/privacy switch and ceiling- or wall-mounted loudspeaker, or HS201B/2B handset, and ceiling- or wall-mounted loudspeaker. Staff stations are programmed to call one administrative phone during "day" hours and one during "night" hours at three levels:

Level 1 Can make Normal and Emergency calls

Level 2 Can make Urgent and Emergency calls

Level 3 Can make Emergency calls only

Enhanced Staff Station

Any number of enhanced staff stations may be included up to system capacity minus one (one station must be an administrative telephone). These stations consist of an MCESS desk- or wall-mounting telephone set and (optional) ceiling- or wall-mounted loudspeaker. Enhanced staff stations can make emergency calls and are programmed for any of three levels of system access:

Level 4 Can dial any administrative station and turn program material on/off at their location. The level 4 station can also be designated to receive outside line calls and have restricted access or unrestricted access to make outside line calls. The level 4 station can also call-forward to other enhanced staff phones or to administrative phones.

Level 5 Level 4 capabilities plus dial any enhanced staff or staff station, make conference calls and transfer calls

Level 6 Level 5 capabilities plus all-zone paging and single-zone paging

Administrative Station

Any number of administrative stations may be included up to the system capacity.(One station in the system must be an administrative phone with level 9 access. Administrative stations consist of the MCDS Administrative phone with power supply and (optional) ceiling- or wall-mounted loudspeaker. Administrative stations are programmed to one of three access levels:

Level 7   Can dial any station, turn program material on/off at their location, scroll/erase and auto-dial the call-waiting queue, make conference calls and transfer calls, call-forward to other administrative stations, and make all-zone pages and emergency all-call pages.
Level 7 stations can also be designated to receive outside calls and can be programmed for restricted or unrestricted access to make outside line calls.

Level 8   Has Level 7 capabilities plus ability to select program source, distribute and cancel programs, activate/reset alarms and external function relay drivers and make single-zone pages

Level 9   Has Level 8 capabilities plus ability to manually initiate time tones, bump or join a conversation in progress, access the system's setup menu display to program the system or make changes to the system configuration.

Telephone Station

The stations represented on the MCTC Telco card are assigned to **Level 10** during Station Initialization programming. During this programming, these stations are assigned a "day" station and a "night" station (which can be an administrative or enhanced staff station), and an architectural number. It is these "day" and "night" stations that ring when an outside call enters the system. In the case of an administrative station, the architectural number that was assigned will appear on the display panel.

It is important to note that the ability to receive incoming calls, and the ability to make outside calls, are two different programmable functions. A system can have as many receiving stations as are permitted by the Telco card(s) — 8 "day" stations and 8 "night" stations when one card is used — and the number of incoming lines available; however, any enhanced staff or administrative station can make outgoing calls. The ability to make outgoing calls can be restricted to three levels: no access, restricted access (local calls only), or unrestricted access (local and long distance calls).

Emergency Announce Station

The designated emergency station (assigned by user) receives emergency calls if the administrative phone programmed to receive calls does not answer within a preset time period. This station can consist of a loudspeaker only (for one-way link), or it can include a telephone (staff/enhanced/administrative) in addition to the loudspeaker (for two-way link). **Note:** an emergency call will ring the administrative station normally assigned to receive calls, even after the emergency link is activated, and until the call is answered at either the administrative telephone or the emergency station telephone (if so equipped).

Installation

Location Planning

The MC2K system's wall-mounted enclosure or rack should be located centrally to the rooms to be served, to minimize the length of cable runs. The location should be well ventilated with enough room to either open the front door of a wall-mounted enclosure, or to move the rack to gain access to the rear door. Where possible, do not locate the enclosure in a carpeted room, especially one where a lot of static is present. If this is not possible, the installation of an antistatic mat below the control center is required. Do not locate the system near heat-generating sources such as direct sunlight, radiators or warm air ducts.

Wiring Requirements

Class II wiring may be used for station wiring. Support wiring to prevent strain or sagging. Knockouts are provided on the wall-mounting enclosure or rack to admit wiring. All stations use the same type shielded-pair plus 1-conductor wiring. The shielded pair and unshielded conductor should be in a jacketed cable, such as West Penn #358 or Belden #8724. The cable from each station must be terminated to our 25-Series connectors, which are then connected to the interface pins on the relay card or module. **Failure to use the proper connectors, recommended wire type, or use of solder to terminate the cable to the relay card pins will void the warranty.**

Unpacking And Installation

The system is carefully checked before leaving the factory. Inspect the shipping containers and equipment carefully for indications of shipping damage. In case of damage, file a claim with the distributor or dealer from whom the equipment was purchased. If the equipment was shipped to you, notify the carrier without delay and file a claim.

Installation Precautions and Procedures

To ensure personal safety and the safety of the equipment, **the following precautions are mandatory when installing the MC2K system, or when making changes to the equipment and wiring after the initial installation.**

- Disconnect all 120VAC power sources before making any changes in system equipment or wiring.
- Wear a **properly grounded** conductive wrist strap when working at the control center or at any staff station where the wiring for the staff station is connected to equipment at the control center.
- Use care when running wire from the station equipment to the control center. Keep all wiring well isolated from 120 Volt (and higher) AC power lines.

Installing Wall-Mounted Back Box And System Assembly

Refer to the text below and the diagram on the next page to install the MC2K Back Box Assembly. **Follow all local electrical codes.**

Junction Box Wiring

Supply AC power to the unit through conduit, BX or Romex **in accordance with local electrical codes.**

Snap the AC receptacle into the junction box (GND down) and connect wires using wire nuts.

Install the junction box into the back box and secure with 4 #6-32 x 3/8 screws and keps nuts (surface-mount) or 4 #6 x 3/8 screws (recessed-mount).

Back Box Installation (Recessed-Mount)

Prepare mounting hole for back box. Hole size should be 24" wide x 32"H x 4"D minimum opening with studs or mounting surfaces on each side. The back box is designed to be recessed approximately 4-inches. Remove knockouts from bottom or rear panels, as desired, to admit station wiring.

Bring AC power to the upper left-hand corner of the box.

Install the back box into the wall making sure that it is squarely mounted. Secure the box to the mounting surfaces with screws through holes in side panels (2 per side, 2" from rear panel). Attach trim strips (MCTS) to outside panels and finished wall.

Back Box Installation (Surface-Mount)

Install the back box on the wall making sure that the box is squarely mounted. Allow access above box for AC wiring. Remove knockouts from bottom or rear panels, as desired, to admit station wiring.

Bring AC power to the upper left-hand corner of the box.

Secure the back box to wall with screws through keyhole slots and back holes (16" on center).

System Assembly Installation

Make sure Tinnerman clips are installed on tabs on the lower part of back panel of box.

Lift the system assembly panel (hold by power supply and main card cage) and insert into box.

Mount the panel to the box by engaging the lip on top of the panel with tabs in the upper part of back panel of box as shown in inset.

Secure the panel to the box with screws through Tinnerman clips, as shown.

Junction Box Wiring
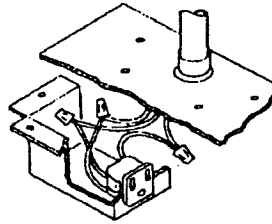
Back Box Installation (Surface Mount)

System Assembly Installation
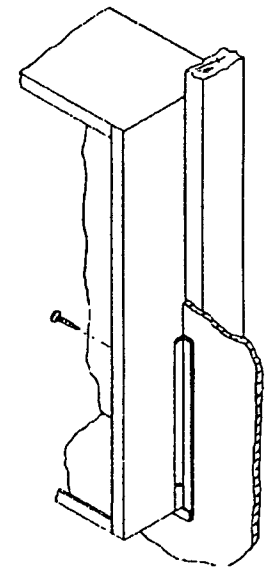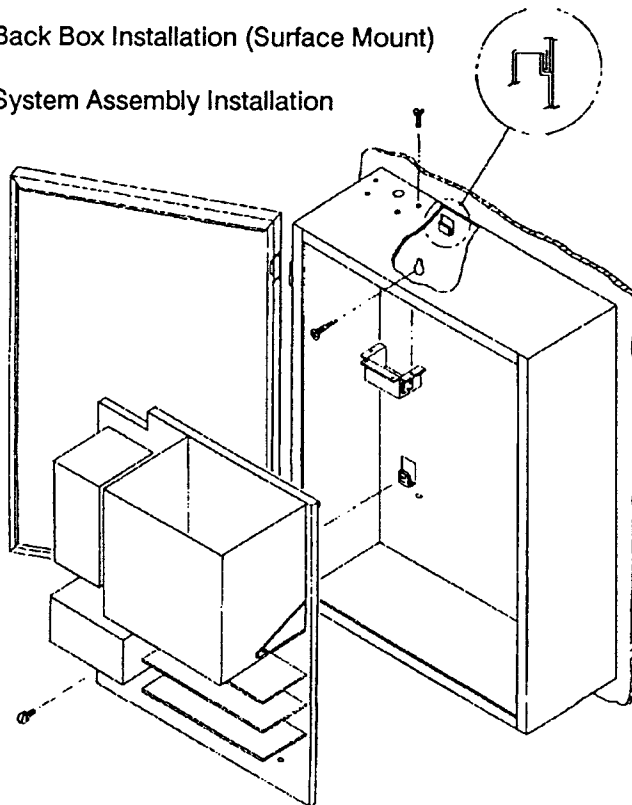
Back Box Installation
(Recessed Mount)

Station Wiring

All station wiring uses the same type of cable. The following illustrations show the proper wiring for each type of station.

Relay Card Note

Station loudspeakers include the Bogen Model T725 line-matching transformer. The following illustrations show this transformer tapped at 1/2-watt. The transformer may be tapped at any desired power level; however, 1/2-watt is the recommended load for each speaker. In any event, make sure that the total load to each MCRC relay card (group of 24 stations) **does not exceed** 20 watts. Contact our Applications Engineering Department if the load on a card must exceed 20 watts.

The illustration below shows the termination of one station's cable at the relay card or relay module.

Important: Termination of staff station wiring at the control center must be made via our 25-Series connector kits to maintain warranty coverage.

Attach the conductors to the connector as shown, using the TL156 tool. The connector is then placed on the corresponding pins on the relay card or relay module.

25-Series Connector
Shielded Pair (speaker wires)
Unshielded Conductor (annunciator)

Relay Card
Pins (24 sets
per card)

Jacketed cable to station

Cable Shield (ground). Used as a return wire for call-in/phone

Front edge of Relay Card
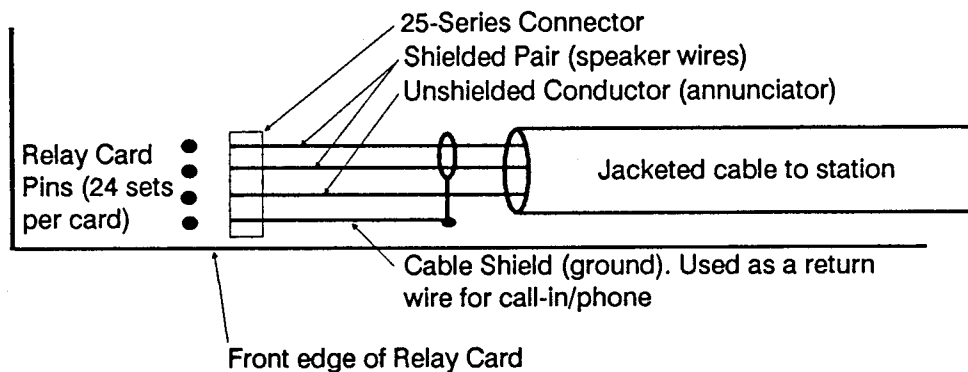
Administrative and Enhanced Staff Station Wiring

Administrative and enhanced staff stations are wired to the control center through a junction box as shown below. The administrative station is equipped with a PRS40C power supply which must be plugged into a 120V, 60Hz wall outlet.

BLU — 1/8 W
GRN — 1/4
YEL — 1/2
ORN — 1
RED — 2
BRN — 4
BLK — COM

8 OHMS SEC

ROOM
SPEAKER

BOGEN T725
LINE MATCHING XFMR
SHOWN WITH 25V LINE
CONNECTED FOR 1/2W

CLASSROOM WIRING

ORN

TO
CONSOLE

RED

TO
110V AC
(MCDS Only)

MCDS or MCESS
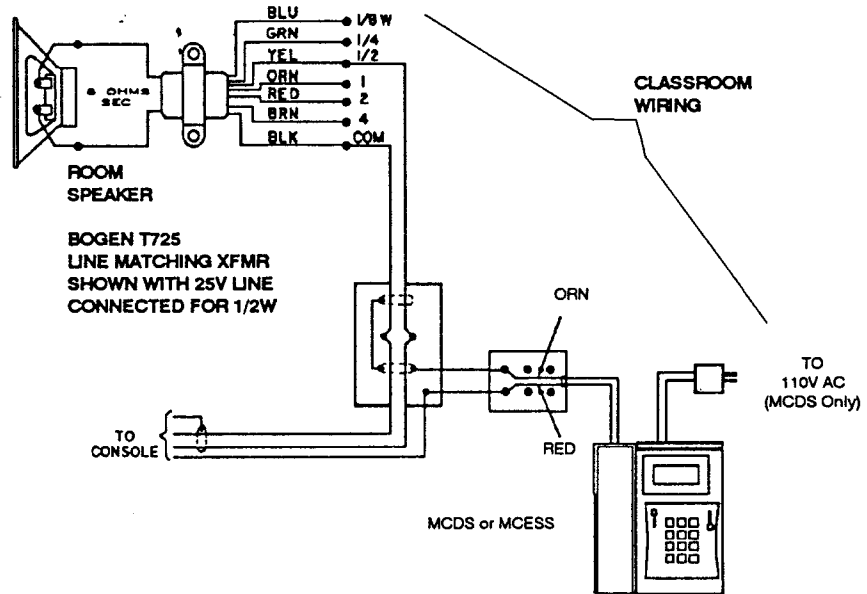
CA21 Call-In/Privacy Switch

When a station includes the CA21, the white wire from the CA21 must be connected to the center tap of the station speaker transformer. The center tap of the transformer depends upon the power tap chosen for the speaker. To determine the appropriate center tap, determine the power tap of the station speaker and use the illustration below to determine the color of the wire that is the center tap of the transformer. Connect the white wire of the CA21 to the center tap. Note the 4-watt power tap does not have a center tap; the privacy feature cannot be used in this case.

BLU — 1/8 W
GRN — 1/4
YEL — 1/2
ORN — 1
RED — 2
BRN — 4
BLK — COM

8 OHMS SEC

ROOM
SPEAKER

BOGEN T725
LINE MATCHING XFMR
SHOWN WITH 25V LINE
CONNECTED FOR 1/2W

CLASSROOM WIRING

PRIVACY   WHT
TALK   BLK
PRESS   RED
TO CALL

TO
CONSOLE

8 OHMS
SECONDARY

BLK BRN RED ORN YEL GRN BLU
COM 4 2 1 ½ ¼ ⅛ WATTS

25 VOLTS
PRIMARY

POWER TAP	CENTER TAP
1/8 W	YELLOW
1/4 W	ORANGE
1/2 W	RED
1 W	BROWN
2 W	BROWN
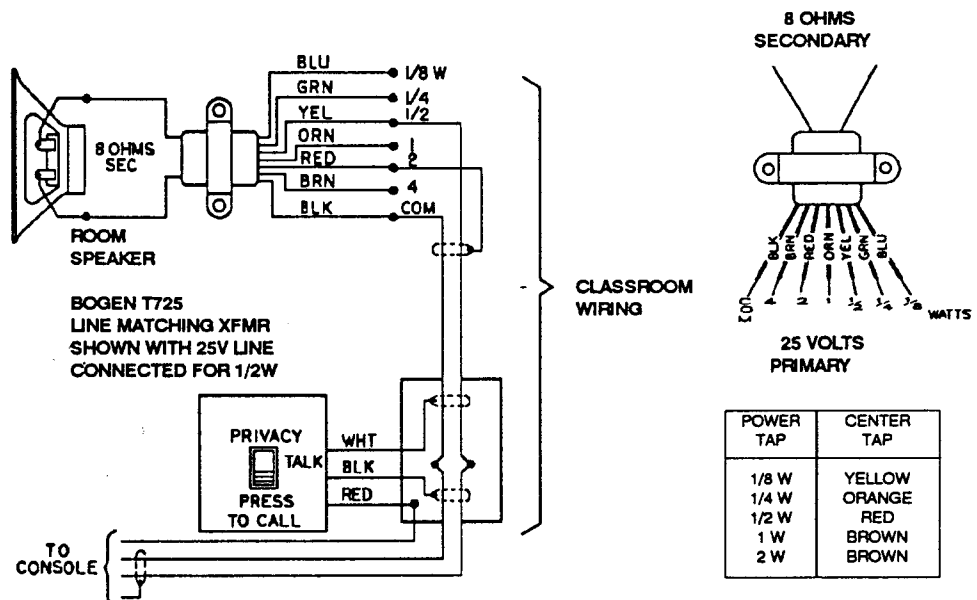
CA15B Call-In Switch Wiring

The CA15B Call-In switch is designed for use with Bogen MULTICOM and COM-MUNITEL 2A Systems. When using the switch with MULTICOM Systems, the orange wire connects to the unshielded conductor, as shown below. The red wire is unused in MULTICOM Systems.
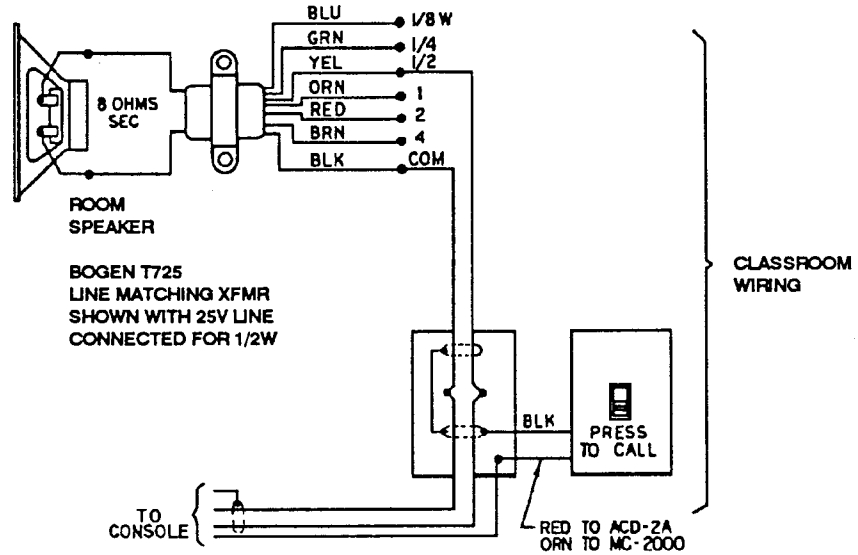
HS201B and HS202B Handset Wiring Diagram

The HS201B and HS202B handsets include a mounting plate which contains the switching mechanism and wiring. The wire jumper on the underside of the printed circuit board (next to the resistor) must be cut when the handset is used with COM systems. See instructions provided with HS201B/2 handset. Connect the red wire to the unshielded conductor and the black lead to the cable shield, as shown in the diagram below.
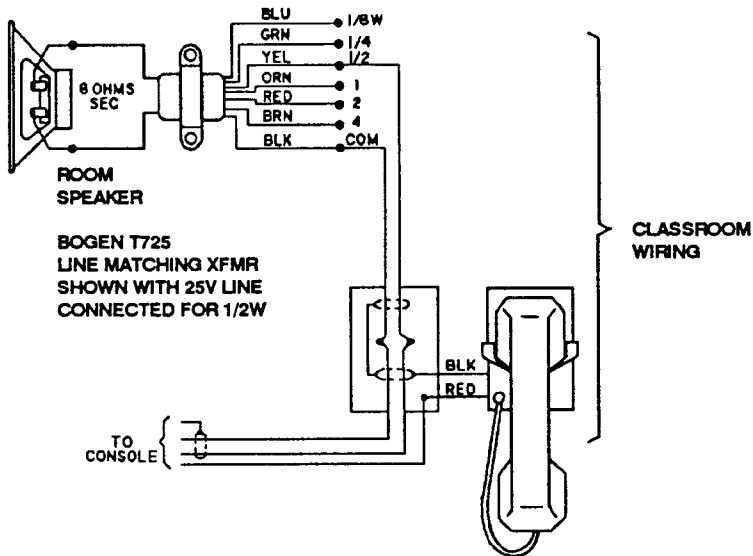
Additional Field Wiring (Relay Driver, External Master Clock)

The diagram on the next page shows the backplane of the mainframe assembly (typical of MCMF and MCRMF). It illustrates the location and designations of the connectors used to wire external function relay drivers, Master clock, and 911 control inputs, and communication ports (future addition).

P5 Relay Driver Outputs

Each relay driver output is an open collector output that goes low towards ground when activated. The number of each output is the same as the telephone number used to activate the output from the administrative telephone. Connect the external relay and power supply (12VDC) between the desired output and one of the ground terminals.

P4 External Control Inputs

The terminal labelled **CLOCK** will reset the system time to 06:00 (6am) when shorted through a dry contact closure from an external (customer-supplied) master clock.

The terminal labelled **911** will give Audio Program Input #3 emergency priority when shorted to ground through a (customer-supplied) contact closure.

COM 1/COM 2

These connectors are for use with future software versions to permit external communication and external programming.

P1

	+26	
●	GND	
●	GND	To MC2626 Power Supply
●	-26	

P2

	+5	
●	+5	
●	+5	
●	-5	To MC512 Power Supply
●	GND	
●	GND	
●	GND	
●	GND	
●	-12	
●	+12	To MC512 Power Supply
●	NC	
●	ORN	

P3

This half of connector P4 and P5 is removable to simplify wiring.

P4

Pin	Function
10.	911
9.	Not Used
8.	Not Used
7.	Not Used
6.	Not Used
5.	Not Used
4.	Not Used
3.	CLOCK
2.	GND
1.	GND

This circuit gives Audio Program Input #3 priority (911) operation.

COM 1

COM 2

P5

Pin	Function
10.	911
9.	916
8.	917
7.	918
6.	919
5.	Not Used
4.	Not Used
3.	Not Used
2.	GND
1.	GND

Relay Coil

Power Supply 12VDC

(+)

(-)

Typical Relay Driver Wiring

MCMF & MCRMF Mainframe Backplane

System Setup (Administrative Phones with Access Level 9 Only)

Initial System Defaults

Station Numbers

Each station card in the system and its associated relay card (MCRC — wall-mount systems), or relay module (MCRM — rack-mount systems) has default station numbers which are recognized by the system software. These station numbers are determined by the position of the station card in the mainframe, as shown below:

Station Card	Mainframe Slot #	Station Numbers	Relay Card/Module
# 1	3	001 - 024	#1 (Top Card)
# 2	5	025 - 048	#2
# 3	7	049 - 072	#3
# 4	9	073 - 096	#4
# 5	11	097 - 120	#5 (Bottom card - Wall-mount)
Rack-mount systems with a second mainframe:			
# 6	3	121 - 144	#6
# 7	5	145 - 168	#7
# 8	7	169 - 192	#8
# 9	9	193 - 216	#9
# 10	11	217 - 240	#10 (Bottom card)

Each relay card/module has 24 sets of pins with 4 pins in each set. Each set of pins provides the terminations to one station. Station numbers are assigned to the MCRC in ascending order, from **left to right** (see page 13). Station numbers are assigned to the MCRM in ascending order from **right to left** (see page 14).

Outside Line Stations

The MCTC Telco Access card interfaces with (up to) 8 outside telephone lines (station ports from external telephone system). **In wall-mounting systems**, the card is installed in slot #11 and has default station numbers of 097 - 104 (reduces system capacity). **In rack-mounting systems with a single mainframe**, the card is installed in slot #12 and has default station numbers of 121 - 128. **In rack-mounting systems with two mainframes**, the card is installed in slot #12 of the top mainframe; however, it is recognized as having default station numbers of 241 - 248. A second card, installed in slot #12 of the second mainframe is recognized as having default station numbers of 249 - 255.

During station initialization programming, each outside line station is assigned an architectural number and a day and night phone (administrative or enhanced staff) which rings for incoming calls. (If an administrative station is used, the architectural number appears on the display and the phone sounds a special ring signal.)

The ability to **receive incoming calls** and the ability to **make outgoing calls** are different programmable functions. Incoming calls can ring only 8 (day or night) telephones. Outgoing calls can be made by any telephone, however, this ability can be designated for each station as "no-access" (default), "restricted access" (local calls) or "unrestricted access" (long-distance and local calls).

Architectural Numbers

The first station of each station/relay card (module) pair is initially recognized by the system software as having the following architectural numbers and access levels:

Relay Card #	Station Number	Architectural Number	Access Level
1	001	101	9
2	025	125	9
3	049	149	9
4	073	173	9
5	097	197	9
6	121	221	9
7	145	245	9
8	169	269	9
9	193	293	9
10	217	317	9

The architectural dialing option default is enabled; however only stations listed above have architectural numbers assigned. All other stations on the card are initially recognized by the system software as being out of service (access level 0).

Note: To change an administrative station to an enhanced staff or staff station, no station in the system can have that administrative station as their day or night administrator.

Other System Defaults

- The Emergency Announce Station is not initially assigned.
- Setup menu password is 1234 (provision is included to change the Setup password — see System Initialization).
- The Service password (provides access to Initialization menus) is 8324 (TECH) This password cannot be changed.
- Queue Timeout (deletes normal and urgent calls from the display) is 60 minutes.
- "Day" starts at 07:00 (7 am); "Night" starts at 17:00 (5 pm).
- Day/Night Administrator for each station is initially set to '999' (no administrator assigned).
- Architectural Dialing, Privacy Beep and Preannounce Tones are On.
- Time Tone Bell Duration for all 8 zones is set to 5 seconds.
- Schedule to day assignments: none.

Setup Procedure

The MC2K system utilizes an extensive menu display system to control operational and functional parameters from an administrative telephone. The "**Main**" menu, available by pressing ⑨ from an administrative phone, permits control of emergency, program, and other telephonic functions. Operation of the Main menu is covered in the MC2K Operating Instructions, Publication #54-5912.

The Main menu also provides access to the system "**Setup**" menu (requires entry of a password), for control of the following system parameters: Day & Time, Program Events, Time Signalling Zones, and Page Zones. The Setup menu also provides the

access to the "**Initialization Menu**" (requires entry of a "Service" password), which is used to set the basic System and Station Initialization parameters and run the diagnostic routines.

The **System Initialization** menu is used to program the Bell Duration, Queue Timeout, Day Start Time, Night Start Time, Emergency Announce Station, Password, Architectural Dialing, Preannounce Tone, and Privacy Beep.

The **Station Initialization** menu is used to assign Station Access Levels, Architectural Dialing Numbers, Day and Night Administrative Phones and Outside Line Access.

The *recommended* procedure for programming the system is as follows:

- Use the **Setup** menu to set system day and time.

- Use the **System Initialization** menu to set the Bell Duration, Queue Timeout, Day start/Night start time, Architectural Dialing option, Preannounce and Privacy tones *only if you desire to change the default settings*. Enable the Emergency Announce option, if desired, by assigning an architectural number (or station number if the architectural dialing feature is disabled).

- Use the **Station Initialization** menu to program the Access Level, Architectural number, Day/Night Administrator and Outside Line Access (if enabled) for each station.

- Use the **Setup** menu to program Time Zones and Page Zones and Time Signalling Schedules and assign schedules to days of the week. Copy and use the charts at the end of this manual to record this information.

Setup Menu

System setup is performed from an administrative telephone assigned to access level 9.

```
        - Main Menu -
     1 - Emergency
     2 - Select
     3 - Distribute
     4 - Cancel
     5 - Setup
     6 - Manual Tone
     7 - Call Forward
     8 - Outside Line
     9 - System Line
```

Press ⑤ to enter -Setup- menu.

```
        Please
        Enter
      Password

        - - - -
```

```
         - Setup -
     1 - Day/Time
     2 - Program Events
     3 - Time Zones
     4 - Page Zones
     6 - Init/Diagnost
     0 - Escape
```
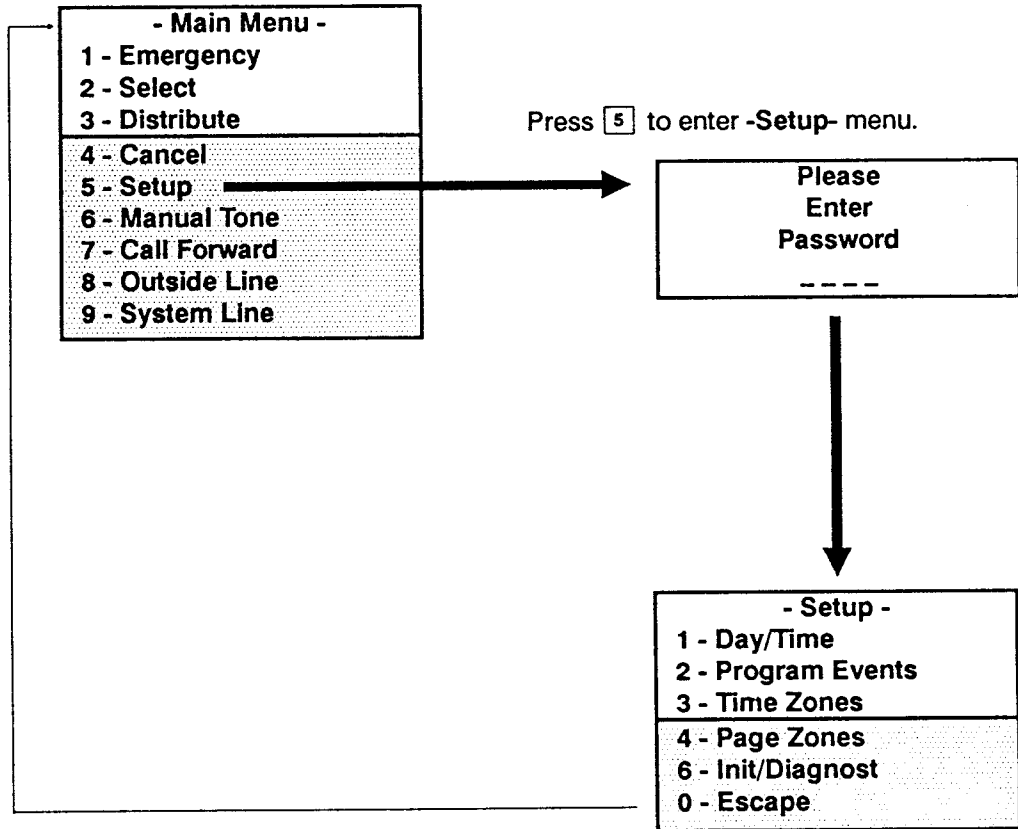
1) Lift the handset and dial ⑨ to display -**Main Menu**-.

2) Press ⑤ A display will prompt you to enter the password.

3) Key in the correct password. Each keypress advances the cursor by one position. When the 4th key is pressed, the password is sent to the system. If an incorrect password is keyed in, an error message will display briefly and the cursor will be repositioned at the 1st entry position. If the correct password is keyed in, the -**Setup**- menu will be displayed.

4) Follow the instructions which follow to program the MC2K system.

5) Press ⓪ to escape to the -**Main Menu**-. In the instructions which follow, the escape function of each menu returns you to the previous menu.

Set Day/Time

```
            - Setup -
1 - Day/Time
2 - Program Events
3 - Time Zones
4 - Page Zones
6 - Init/Diagnost
0 - Escape
```

Press [1] from the -Setup- menu to set the
day of week and time of day.

```
        - Day/Time -
1 - Day of Week
2 - Time Clock
0 - Escape
```

Press [1] from
-Day/Time- menu
to select day of the week.

Press [2] to display -Set Time-
menu. The current time in the sys-
tem will display and the cursor will
be positioned at the 1st position.

```
        Select Day
1 - Sunday
2 - Monday
3 - Tuesday
4 - Wednesday
5 - Thursday
6 - Friday
7 - Saturday
0 - Escape
```

```
          -Set Time-
         (24 Hr Format)

          _ _:_ _
   *-Enter      # - Exit
```

At the **Select Day** menu, press
number corresponding to the
current day of the week.

Key in the new time (24 Hr. format
only). Each valid digit advances the
cursor to the next position. When
the 4th digit is keyed in, the cursor
wraps around to the 1st position.

```
        Today is...
         Monday
        # - Exit
```

Press [*] to enter the information
into the system (will not work until
4th digit is dialed).

A message will display for a cor-
rect entry and [#] must be
pressed to exit to the -Day/Time-
menu.

Press [#] to exit to -Day/Time-
menu.

Program Time Signalling Events and Schedules

```
          - Setup -
      1 - Day/Time
      2 - Program Events
      3 - Time Zones
      4 - Page Zones
      6 - Init/Diagnost
      0 - Escape
```

```
          Schedules
      1 - Program Event
      2 - Assign Sch
      3 - Manual Select
      4 - Clear Sch
```

```
       Select Schedule
      1 - Schedule 1
      2 - Schedule 2
      3 - Schedule 3
      4 - Schedule 4
      5 - Schedule 5
      6 - Schedule 6
      7 - Schedule 7
      8 - Schedule 8
      0 - Escape
```

```
       Assign Schedule
       S  M  T  W  R  F  S
       _  _  _  _  _  _  _
      * - Enter      # - Exit
```

```
      Sch X        Program
      Time    Zones      Tone
      _ _:_ _  _ _ _ _ _ _ _ _
      * - Review      # - Funct
        -Enter
        -Exit
        Copy
        -Delete
```

1 - Program Event

```
        - Setup -
1 - Day/Time
2 - Program Events
3 - Time Zones
4 - Page Zones
6 - Init/Diagnost
0 - Escape
```

```
        Schedules
1 - Program Event
2 - Assign Schedule
3 - Manual Select
4 - Clear Schedule
0 - Escape
```

```
       Manual Select
1 - Schedule 1
2 - Schedule 2
3 - Schedule 3
4 - Schedule 4
5 - Schedule 5
6 - Schedule 6
7 - Schedule 7
8 - Schedule 8
9 - Cancel Sched
0 - Escape
```

```
   Clear All Events
   ARE YOU SURE?
   Yes = 1
   No = Other Keys
```

```
      Clearing. . .
```

[1] through [8]

```
     All Events
     Have Been
     Cleared
     # - Exit
```

```
                 TIME
   Current Sch   DAY
      Cancelled
      # - Exit
```

```
                  TIME
   Schedule X     DAY
      Activated
      # - Exit
```

3 - Manual Select

1) Press ⟦2⟧ at the -Setup- menu to display the **Schedules** menu.

2) Press ⟦3⟧ at the **Schedules** menu to display the **Manual Select** menu.

3) **To manually select a schedule**, press the corresponding key (1 - 8). The **Schedule Activated** display appears. Press ⟦#⟧ to exit, or hang up. The selected schedule immediately replaces the existing schedule.

4) **To cancel the current schedule**, press ⟦9⟧ . The current schedule will be cancelled (the schedule will not be replaced with a new schedule). Press ⟦#⟧ to exit, or hang up. **Note:** The active schedule is continuously displayed on the administrative phone, beneath the time display.

4 - Clear Schedule

1) Press ⟦2⟧ at the -Setup- menu to display the **Schedules** menu.

2) Press ⟦4⟧ at the Schedules menu to display the **Clear All Events** menu.

3) Press ⟦1⟧ to **clear (erase) ALL events from ALL schedules**. Press any other key to return to **Schedules** menu.

Note: The system will take a few minutes to clear the schedules. No other menu functions are possible during this time period.

Program Time Zones

```
          - Setup -
   1 - Day/Time
   2 - Program Events
   3 - Time Zones          ━━━━━━━━━▶
   4 - Page Zones
   6 - Init/Diagnost
   0 - Escape
```

```
        - Set Time Zones -
   Arch #            Zones

   _ _ _         _ _ _ _ _ _ _ _
   * - Enter              # - Funct
      -Copy
      -Exit
```
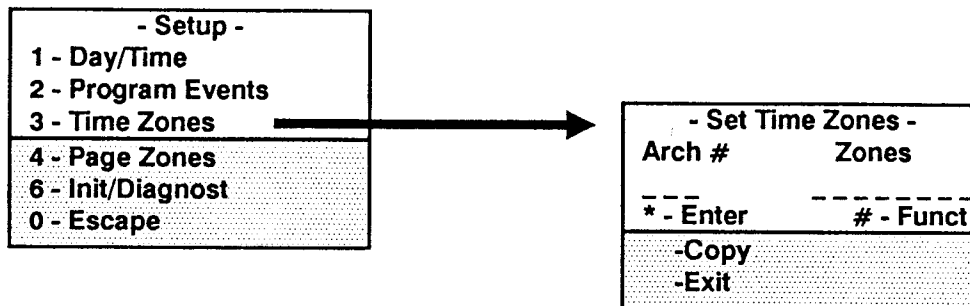
1) Press ③ at the -Setup- menu to display the -Set Time Zones- menu.

2) Key in a 3-digit architectural number. If the number is invalid, the cursor will reappear at the **Arch #** position. If the number is valid, the cursor will appear at the 1st zone position (any zone information already programmed for that station will appear on the display).

3) Key in the desired zone numbers (1 - 8) for that station (press the same number to keep a current zone, or press ⓪ to delete a zone at the current cursor position).

4) **To enter the zone information**, press ⌗ until the word **Enter** appears on the display next to the asterisk, and then press ✳ . The next numerically-higher architectural number will appear on the display (along with any zone information already programmed for that station). Repeat step 3 **or** copy the zone information from the previous station by pressing ⌗ until the word **Copy** appears on the display next to the asterisk, and then pressing ✳ .

5) To exit, hang up, **or** press ⌗ until the word **Exit** appears on the display next to the asterisk and then press ✳ . Note: If you hang up without entering the information, (Step 4), changes will not be saved.

Program Page Zones

```
        - Setup -
1 - Day/Time
2 - Program Events
3 - Time Zones
4 - Page Zones
6 - Init/Diagnost
0 - Escape
```

```
    - Set Page Zones -
Arch #              Zones

_ _ _           _ _ _ _ _ _ _ _
* - Enter         # - Funct
-Copy
-Exit
```
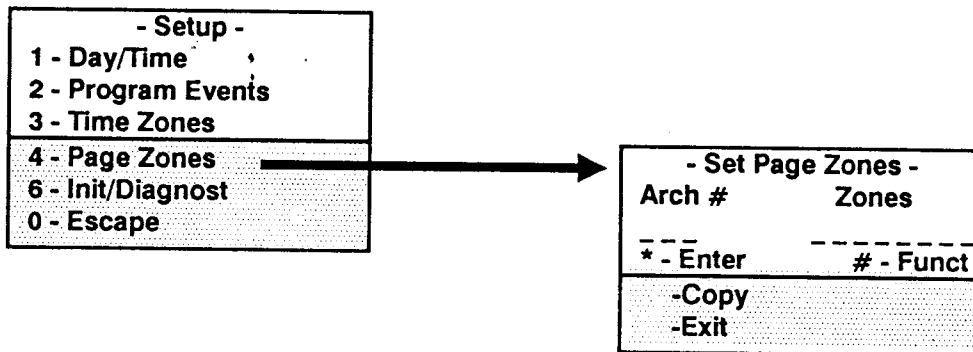
1) Press ④ at the -**Setup**- menu to display the -**Set Page Zones**- menu.

2) Key in a 3-digit architectural number. If the number is invalid, the cursor will reappear at the **Arch #** position. If the number is valid, the cursor will appear at the 1st zone position (any zone information already programmed for that station will appear on the display).

3) Key in the desired zone numbers (1 - 8) for that station (press the same number to keep a current zone, or press ⓪ to delete a zone at the current cursor position).

4) **To enter the zone information**, press ⌗ until the word **Enter** appears on the display next to the asterisk, and then press ✳. The next numerically-higher architectural number will appear on the display (along with any zone information already programmed for that station). Repeat step 3 **or** copy the zone information from the previous station by pressing ⌗ until the word **Copy** appears on the display next to the asterisk, and then pressing ✳.

5) To exit, hang up, **or** press ⌗ until the word **Exit** appears on the display next to the asterisk and then press ✳. Note: If you hang up without entering the information, (Step 4), changes will not be saved.

Initialization

```
         - Setup -                          Enter
  1 - Day/Time                            Service
  2 - Program Events                      Password
  3 - Time Zones                          _ _ _ _
  4 - Page Zones
  6 - Init/Diagnost
  0 - Escape
```

```
                              - Initialization -
                            1 - System Init
                            2 - Station Init
                            3 - Diagnostics
                            0 - Escape
```
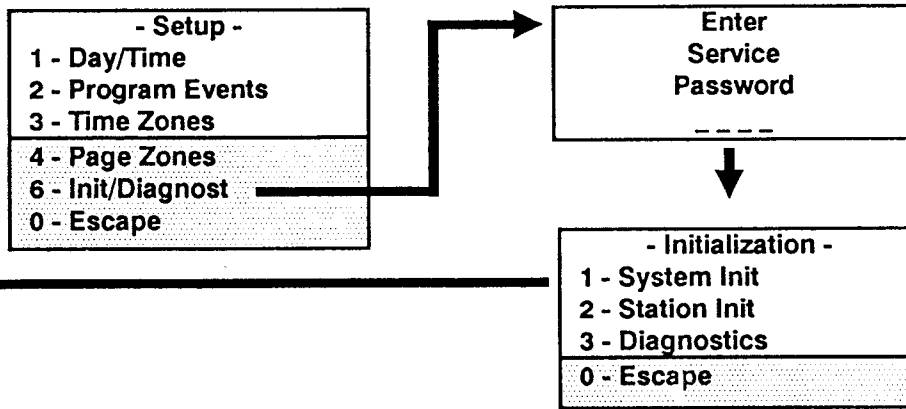
To access the **Initialization** menus, press [6] at the -Setup- menu and enter the correct **service password**. Each keypress advances the cursor by one position. When the 4th key is pressed, the password is sent to the system. If an incorrect password is keyed in, an error message will display briefly and the cursor will reposition at the 1st entry position. Once the correct password has been keyed in, the - **Initialization** - menu will display. Note: The system resets when you hang up or escape from any Initialization menu.

System Initialization

Press [1] from the -**Initialization** - menu to display the **System Init** menu. Press the corresponding number to program the desired selection, as shown:

```
    System Init            Bell Duration                Day Start
 1 - Bell Duration      Time Zone _                   Time 07:00
 2 - Queue Timeout      Duration __ sec.
 3 - Day Start          * - Enter      # - Exit        * - Enter      # - Exit
 4 - Night Start
 5 - Emergency Link                 [1]                        [3]
 6 - Prog Password                  [2]                        [4]
 7 - Arch Dial          Queue Timeout                Night Start
 8 - Preann Tone           060 minutes                 Time 17:00
 9 - Privacy Beep
 0 - Escape             * - Enter      # - Exit        * - Enter      # - Exit
```
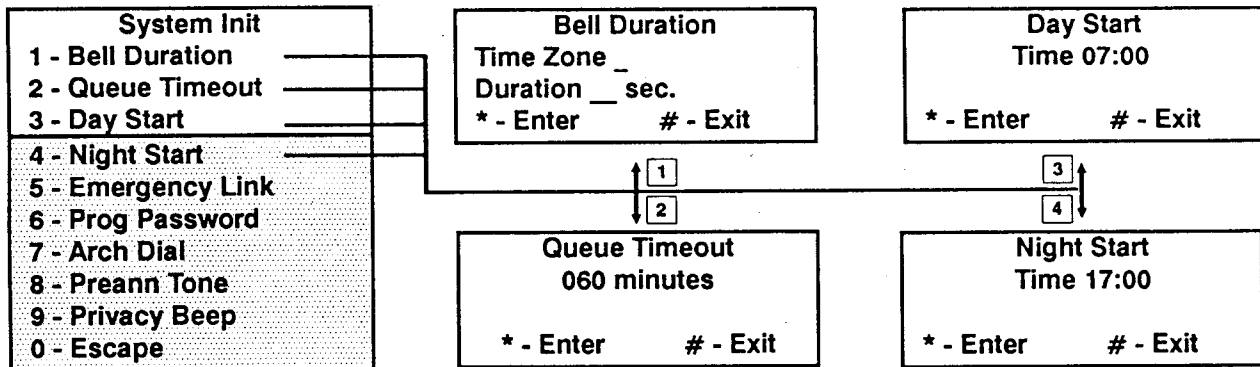
1 - Bell Duration: When you key in a time zone (1 - 8), the current bell duration is (in seconds) displayed. Enter the desired bell duration (1- 59 sec.) and press [*] to enter. Press [#] to exit. The default value is 5 seconds

2 - Queue Timeout: The display will show the current queue timeout. Key in the desired time period (001 - 999 min.) and press [*] to enter. Press [#] to exit. The default is 60 min.

3 - Day Start: The display will show the current day start time. Key in the desired new time (24 Hr format) and press [*] to enter. Press [#] to exit. Default is 07:00.

4 - Night Start: The display will show the current night start time. Key in the desired new time (24 Hr format; must be later than the Day Start time) and press [*] to enter. Press [#] to exit. The default is 17:00.

System Initialization (cont.)

```
        - Setup -                                    Enter
  1 - Day/Time                                     Service
  2 - Program Events                               Password
  3 - Time Zones                                   _ _ _ _
  4 - Page Zones
  6 - Init/Diagnost
  0 - Escape                                   - Initialization -
                                            1 - System Init
                                            2 - Station Init
                                            3 - Diagnostics
                                            0 - Escape
```
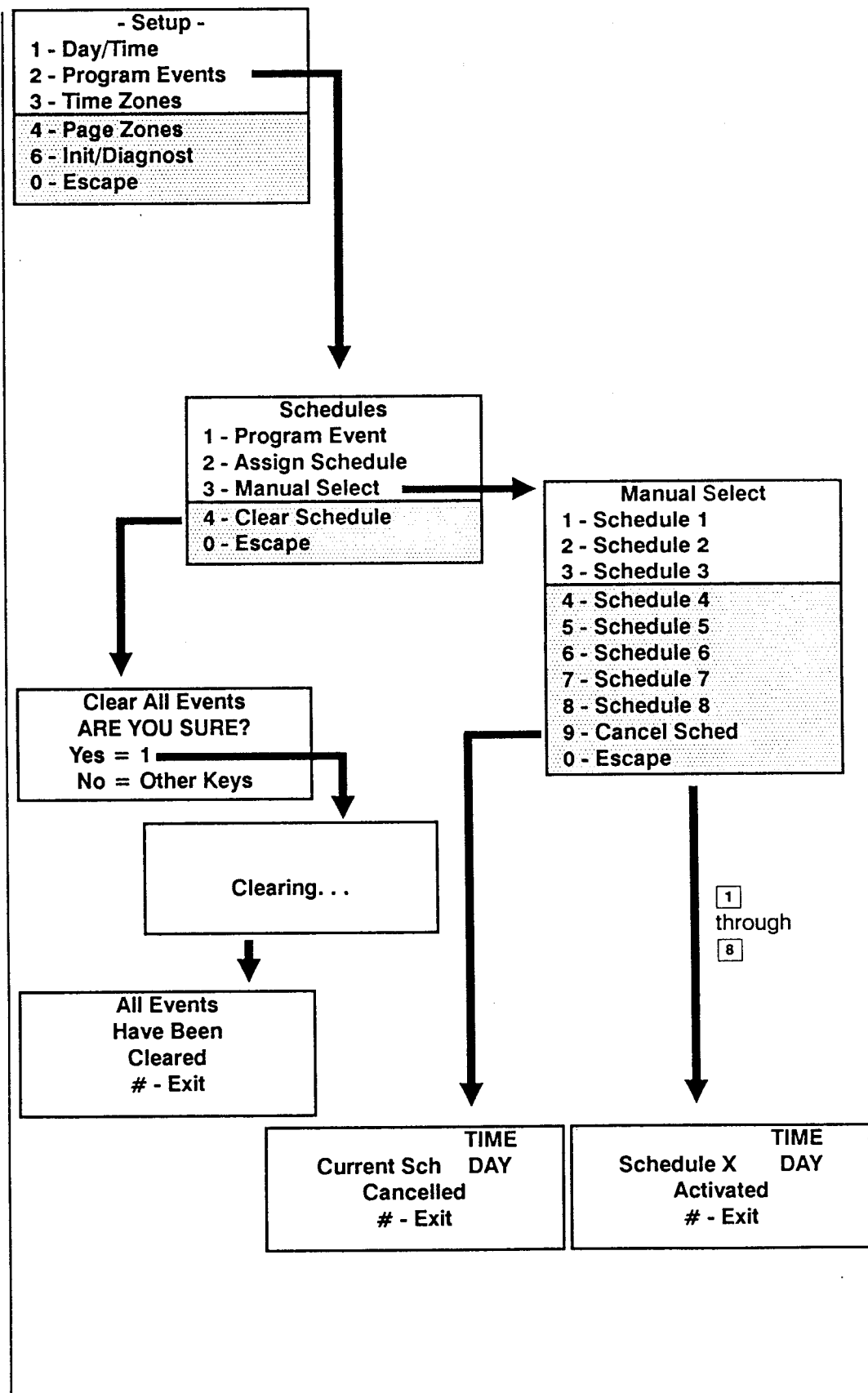
```
                                    5 →    Emergency Link
     System Init                             Arch # 9 9 9
  1 - Bell Duration
  2 - Queue Timeout                        * - Enter     # - Exit
  3 - Day Start
  4 - Night Start                    6 →    Prog Password
  5 - Emergency Link                           1 2 3 4
  6 - Prog Password
  7 - Arch Dial                             * - Enter     # - Exit
  8 - Preannounce Tone
  9 - Privacy Beep                    7 →     Arch Dial
  0 - Escape                                   Is Now
                                                 ON
                                           * - Off?       # - Exit

                                     8 →   Preannounce Tone
                                               Is Now
                                                 ON
                                           * - Off?       # - Exit

                                     9 →    Privacy Beep
                                               Is Now
                                                 ON
                                           * - Off?       # - Exit
```

5 - Emergency Link: The current emergency station (if any) will appear. Key in the architectural number of the desired station (or station number if architectural dialing is disabled). **Note:** an emergency station cannot be a "day" or "night" administrative station. Key in "999" to disable the emergency link. Press [*] to enter. Press [#] to exit.

6 - Program Password: The current -Setup- password will appear. Key in a new 4-digit password and press [*] to enter. Press [#] to exit. The default is 1234.

7 - Architectural Dial: Press [*] to toggle between On and Off. Press [#] to exit. The default value is On.

8 - Preannounce Tone: Press [*] to toggle between On and Off. Press [#] to exit. The default value is On.

9 - Privacy Beep: Press [*] to toggle between On and Off. Press [#] to exit. The default value is On.

Station Initialization

```
┌─────────────────────────────┐          ┌─────────────────────────────┐
│         - Setup -           │          │          Enter              │
│  1 - Day/Time               │ ───────► │         Service             │
│  2 - Program Events         │          │        Password             │
│  3 - Time Zones             │          │         _ _ _ _             │
│ ▓4 - Page Zones▓            │          └─────────────────────────────┘
│ ▓6 - Init/Diagnost▓ ◄───────┤                      │
│ ▓0 - Escape▓                │                      ▼
└─────────────────────────────┘          ┌─────────────────────────────┐
                                         │     - Initialization -      │
                                         │  1 - System Init            │
            ┌────────────────────────────┤  2 - Station Init           │
            │                            │  3 - Diagnostics            │
            ▼                            │ ▓0 - Escape▓                │
┌─────────────────────────────┐          └─────────────────────────────┘
│        Station Init         │
│        Station _ _ _        │
│                             │
│  * - Enter      # - Exit    │◄──────────────────┐
└─────────────────────────────┘                   │
            │                                      │
            ▼                                      │
┌─────────────────────────────┐                   │
│        Input Level          │                   │
│        Station              │                   │
│          XXX = _ _          │                   │
│  * - Enter                  │                   │
└─────────────────────────────┘                   │
            │                                      │
            ▼                                      │
┌─────────────────────────────┐                   │
│       Input Arch #          │                   │
│        Station              │                   │
│          XXX = _ _ _        │                   │
│  * - Enter      |           │                   │
└─────────────────────────────┘                   │
            │                                      │
            ▼                                      │
┌─────────────────────────────┐                   │
│      Input Day Adm          │                   │
│        Station              │                   │
│          XXX = _ _ _        │                   │
│  * - Enter                  │                   │
└─────────────────────────────┘                   │
            │                                      │
            ▼                                      │
┌─────────────────────────────┐                   │
│     Input Night Adm         │                   │
│        Station              │                   │
│          XXX = _ _ _        │                   │
│  * - Enter                  │                   │
└─────────────────────────────┘                   │
            │                                      │
            ▼                                      │
┌─────────────────────────────┐                   │
│   Outside Line Access       │                   │
│        Station              │                   │
│          XXX = _ _ _        │                   │
│  * - Enter                  │───────────────────┘
└─────────────────────────────┘
```
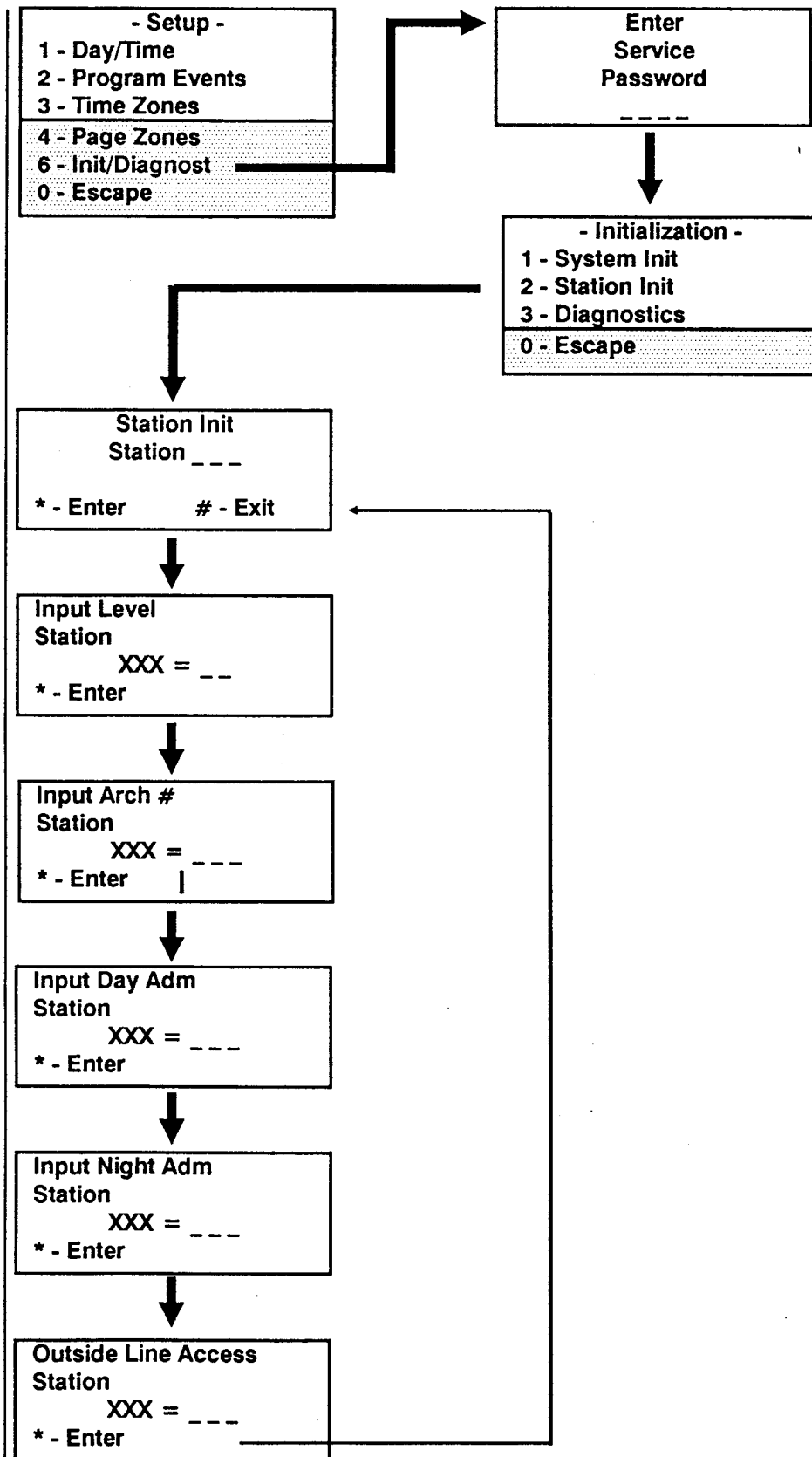
Press ☐2 at the **Initialization** menu to display the **Station Init** menu. Key in a 3-digit station number (the cursor wraps to allow correction) and press ☐* to enter. If the station number is recognized by the system, the **Input Level** menu will display along with any current access level assigned to that station.

Input Level: To accept the current access level (if any) press ☐* to proceed to the next menu. To assign or change a level, key in the 2-digit level code as shown:
00 — Out of Service '
01 — Staff station (can make normal/emergency calls only)
02 — Staff station (can make urgent/emergency calls only)
03 — Staff Station (can make emergency calls only)
04 - 06 — Enhanced Staff station (DTMF dialing telephone)
07 - 09 — Administrative station (DTMF dialing telephone with LCD display panel)
10 — Outside line station.

Input Arch #: The current architectural number (if any) assigned to the station number will appear. "999" will appear if no architectural number is assigned. To accept the current architectural number, press ☐* to proceed to the next menu. To assign or change a number, key in a new 3-digit number and press ☐* to enter and continue to the next menu (Note: if the number is already in use, it will not be accepted).

Input Day Administrator: The current day administrator (if any) will appear. Press ☐* to accept the current setting and proceed to the next menu. To assign or change the administrator, key in a new 3-digit number and press ☐* to proceed to the next menu. **Notes: 1)** If the station being programmed is an administrative station (or out of service), any day and night administrator information will be accepted if entered, but ignored by the system. **2)** In the case of an outside line station, the day administrator is the phone that will ring when an outside call enters the system during day hours. This station can be an administrative or enhanced staff station.

Input Night Administrator: Same as for day administrator. Press ☐* to enter the data and proceed to the next menu. (Same notes apply as above for Day Administrator.)

Outside Line Access: This menu controls the ability of a station to make outside telephone calls. The current setting (if any) will appear. Assign or change the outside line access by keying in the single-digit code as shown:
0 — No access (default setting)
1 — Restricted access (local calls)
2 — Unrestricted access (long distance and local calls)
Note: In the case of a staff station, outside line station, or out-of-service station, this information will be accepted by the system if it is entered, but will be ignored.
Press ☐* to proceed. The **Station Init** menu will again appear. At this point you can key in the next station number for initialization. or you can press ☐# to exit to the **Initialization** menu.

If you press ☐0 (escape) from any **Initialization** menu, or if you hang up, the system will reset.

Diagnostic Operation

Diagnostic Tests are not implemented in this software version. The diagnostic screen will show the current software revision for the system.

```
+----------------------+              +----------------------+
|      - Setup -        |  ------->    |       Enter          |
| 1 - Day/Time         |              |      Service          |
| 2 - Program Events   |              |      Password         |
| 3 - Time Zones       |              |                       |
| 4 - Page Zones       |              |       - - - -         |
| 6 - Init/Diagnost    | ---+         +----------------------+
| 0 - Escape           |              |
+----------------------+              |
                                      v
                            +----------------------+
                            |   - Initialization - |
                            | 1 - System Init      |
                            | 2 - Station Init     |
               +----------- | 3 - Diagnostics      |
               |            | 0 - Escape           |
               |            +----------------------+
               v
        +----------------------+
        |    Software Rev.      |
        |  MCDS         2.0     |
        |  MC2000      01.02    |
        |       # - Exit        |
        +----------------------+
```

Relay Card/Module Programming Chart

Relay Card # _____

Station Number	Access Level	Arch. No.	Day Admin.	Night Admin.	Assigned to Paging Zones (Circle zones assigned)	Assigned to Time Zones (Circle zones assigned)
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
					1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8

Copy this chart as required and use when programming the system.

Time Signalling Schedules Programming Chart

Schedule # __

Assigned To _____ (Day-of-Week)

Time of Event	Tone #	Zones (Circle)
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8
_____	_____	1 2 3 4 5 6 7 8

Copy this chart as required and use when programming the system