MAGI-II

Console Automation System

Owners Manual
~~First~~ Edition June 1989
2nd

13478 Beach Avenue, Marina Del Rey, California 90292

JLCOOPER ELECTRONICS

Greetings

Welcome to the MAGI-II ("Maggie two") Console Automation System. MAGI-II (Mixer Automation Gain Interface) represents a major development in high quality, affordable dynamic console automation. Never before has an add-on automation system been so easy to use. Since MAGI-II is disk based, upgrading is as simple as swapping a disk. Many additional features are planned in the near future. Please fill out the enclosed warranty cards and mail them in soon, so we can notify you of software updates as they become available.

Contents

The MAGI-II System

The MAGI-II System consists of a MAGI-II **Controller** with a **MAGI Remote Fader** unit, some number of **MAGI VCA** units, MAGI-II **Software** and a computer (either an Atari ST or a Macintosh with a MIDI interface).

MAGI Remote Fader Unit

All fader and mute moves are performed on a MAGI Remote Fader Unit. There are three kinds of MAGI Remote Fader Units:

The **MR-1** has eight 60mm faders which double as eight group masters. The **MR-1** also has the ability to "bank switch" to control up to **64** audio channels.

The **MR-2** has twenty 60mm faders, four of which are group masters. The **MR-2** also has the ability to "bank switch" to control up to **32** audio channels.

The **MR-3** has twenty 100mm faders, four of which are group masters. The **MR-3** also has the ability to "bank switch" to control up to **64** audio channels.

MAGI-II Controller

The MAGI-II Controller reads all the fader and mute movements performed on the Remote Fader Unit, and converts these moves into messages that the computer can read. The Controller also reads and generates SMPTE time code, and produces control voltages to drive the VCAs, which control the audio level.

MAGI VCA

Each MAGI VCA unit contains sixteen dbx™ 2150A or 2151A Voltage Controlled Amplifiers. These amplifiers are designed for unity gain. (That is, when a MAGI fader is all the way up, the signal level coming out of the VCA is equal to the signal level going in.) Audio signals (originating from a multi-track tape recorder) are routed through these VCAs, which then act as attenuators. The audio outputs of the VCA are returned to the mixing console. The level of each audio channel can now be controlled by either the Remote Fader Unit (in real time), or by the computer while locked to SMPTE (that is, automated control). Each MAGI VCA unit also comes with a ribbon cable to carry the control voltages from the MAGI-II Controller.

Computer and Software Disk

MAGI-II software will run on an ATARI ST (1040, or Mega) or a Macintosh (Plus, SE, or Mac II) with a MIDI interface.

Setting up the hardware

Important!
Make sure that power is off before making any connections.

First rack mount the MAGI Controller and the MAGI VCA units, and then hook them up using the ribbon cables provided. Allow some access space behind your rack until all the required interconnections have been made.

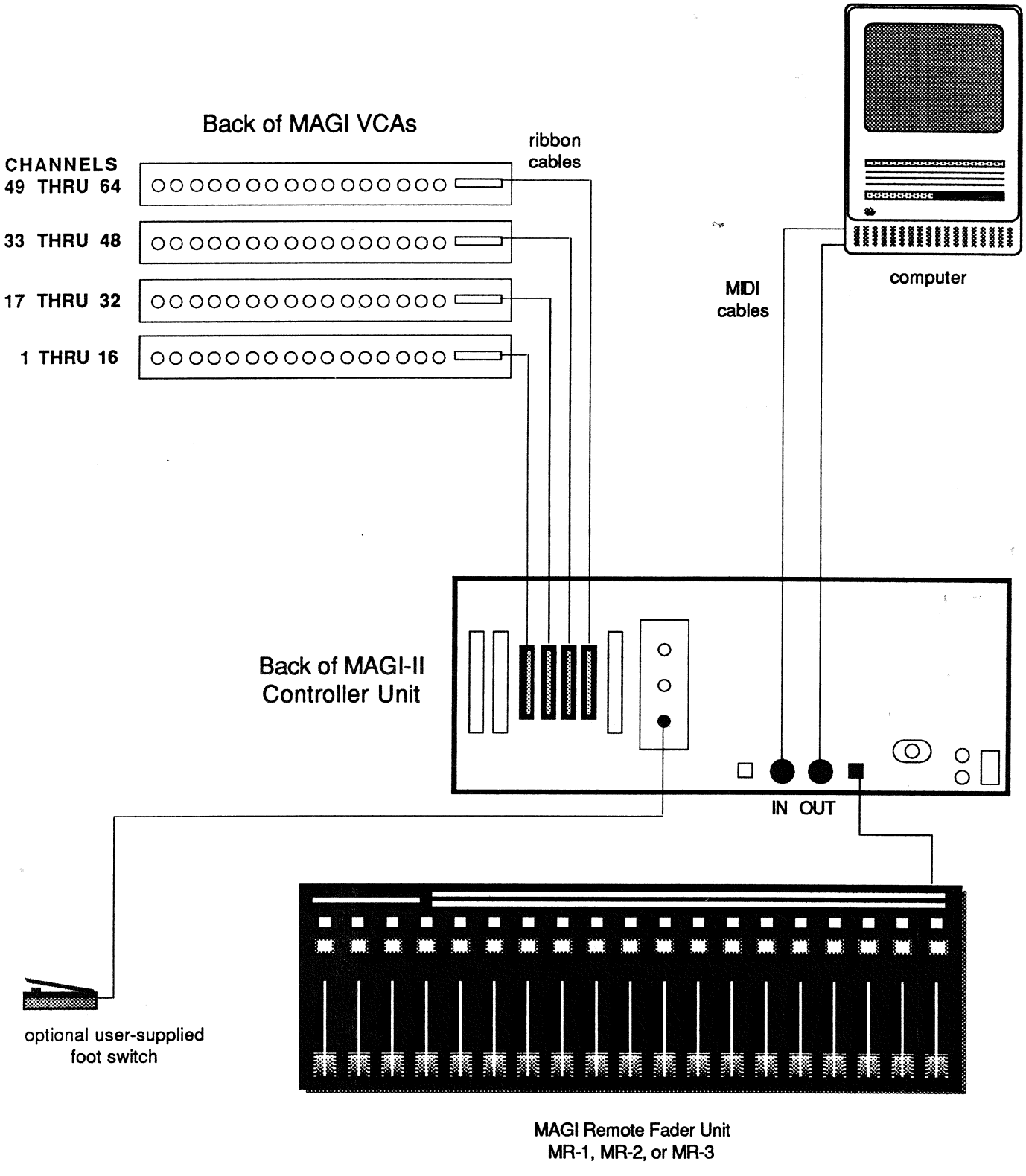
Position the computer so that the monitor is easily visible by the recording engineer while seated at the console. For many MAGI-II operations, you will not need to access the computer's keyboard. However, certain less-frequently performed operations (such as generating SMPTE to stripe tape, labeling faders, disk loading etc.) do require the use of the keyboard. Therefore, the computer's keyboard doesn't have to be right in front of the recording engineer, but it should at least be nearby.

Hookup the computer to the MAGI-II Controller using two MIDI cables. (These should be 5-pin DIN, not exceeding 50 feet in length). MIDI OUT of the computer goes to MIDI IN of MAGI. MIDI IN of the computer goes to MIDI OUT of MAGI.

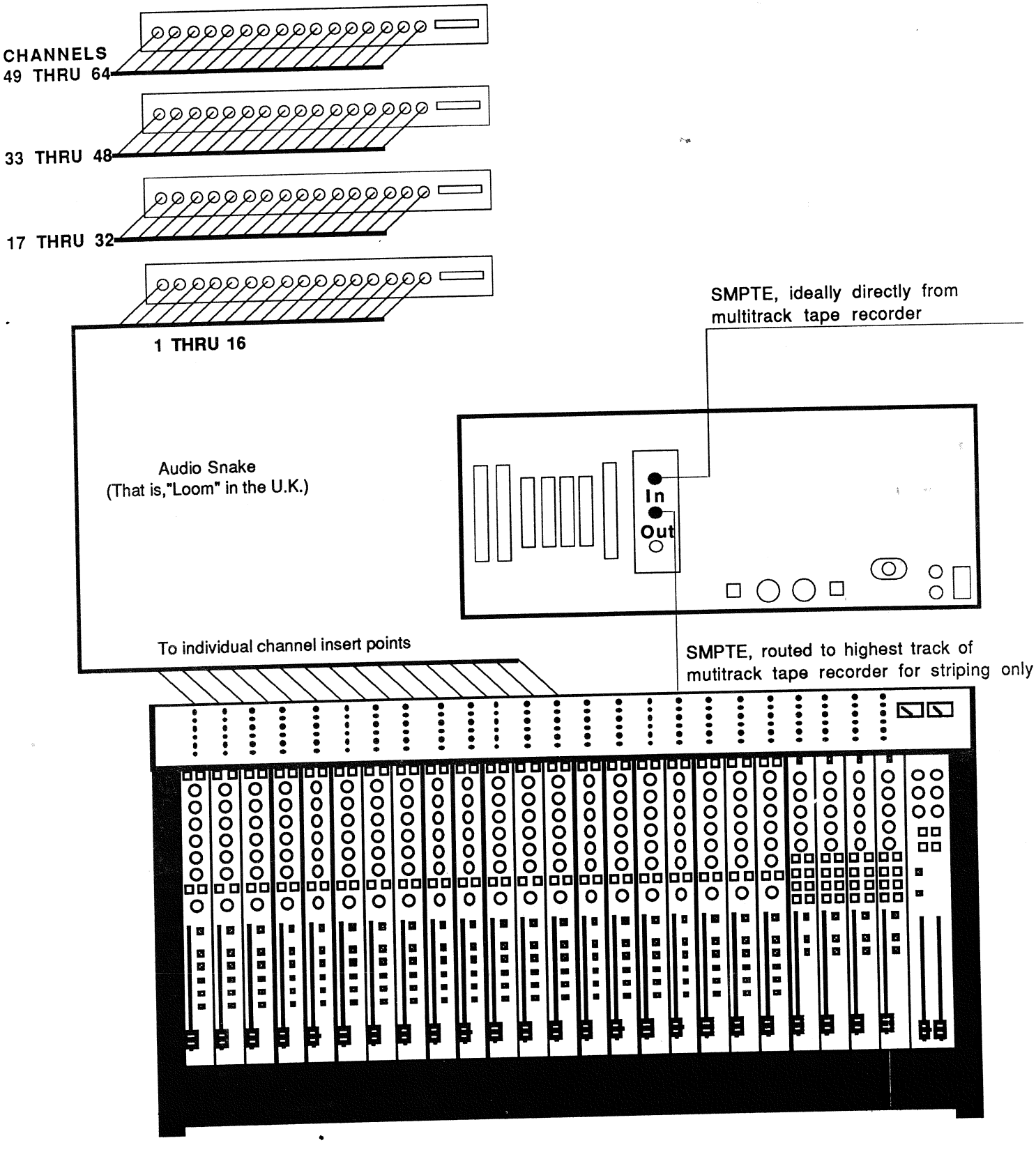
On the Macintosh, the MIDI interface can use either the Modem or Printer ports. However, it is recommended that you first try the Modem port. This is because MAGI "defaults" to the Modem port on boot up. If you must use the Printer port, be certain that you first use Chooser to make AppleTalk inactive.

Place the MAGI Remote Fader Unit so that the recording engineer has easy access to it. The **MR-1** is small enough to sit on your lap while in use, otherwise it can go on or next to the mixing console. If space permits, place the **MR-2** or **MR-3** on the mixing console if this can be done without creating an obstruction or scratching the console. There may be enough room created by sliding most of your mixing console's faders to the 0dB position, since that will likely be their position during mixdown anyway. Otherwise, place the **MR-2** or **MR-3** next to the console, or on a stand (a well-adjusted snare stand, for example).

Hookup the Fader Unit to the Magi-II Controller using the "telephone cord" provided (actually a **6**-conductor modular cable).



System Hookup: MAGI-II Controller Unit to
MAGI Remote Fader Unit
MAGI VCAs



System Hookup:
MAGI-II SMPTE In and Out and MAGI VCAs to
Mixing Console

Hookup the MAGI VCAs

You will need to provide a cable assembly for this purpose. The terminations on the MAGI VCA are sixteen 1/4" tip-ring-sleeve jacks. The tip is the VCA audio input, the ring is the VCA audio output, the sleeve is audio common. The object is to send each channel of audio from the mixing console into the audio input of the VCAs, and then return the audio output of the VCAs to the mixing console. One end of each cable must have the tip-ring-sleeve plug to go into the VCA. The other end of the cable depends on the terminations on your mixing console or patch bay.

Some consoles have tip-ring-sleeve jacks for each channel insert. In this case, each channel of audio needs a cable with 1/4" tip-ring-sleeve jacks at each end.

Others use two RCA connectors (one for send, one for return). In this case, each channel of audio needs a cable with two RCA connectors on one end (also called RCA "breakout").

The most flexible way to incorporate MAGI into your studio is to patch it in at the patch bay. This would give you the option of automating any send that is brought to the patch bay. In this case, each channel of audio needs a cable with two TT connectors on one end (also called TT "breakout").

Sync Hookup

To stripe a tape with SMPTE, hook up a cable from the **Sync Out** of the MAGI Controller to an input of your mixing console. Route that input to the highest available track on your multi track tape recorder.

Ideally, the SMPTE track output of the tape recorder should be sent directly to MAGI's **Sync In**. If this is very inconvenient, then find the channel on the mixing console where this tape track comes in. Use the Direct Out of that channel to drive MAGI.

Foot switch hookup

A user-supplied foot switch may be plugged into the **Foot Pedal** jack on the MAGI Controller. Although not necessary, a foot switch may slightly simplify certain editing operations by enabling the engineer to abort an automation pass or change edit modes without having to access the computer.

The computer inside the MAGI-II controller unit can automatically sense whether the switch is a "normally open" or "normally closed" type. So virtually any momentary contact switch will work. If a switch is to be used, it must be plugged in before power is turned on so that MAGI can "read" the switch to determine what type it is.

MAGI-II Software

The MAGI-II Software manages the automation memory for recording, editing, playback and saving of the automated mix. The screen provides a "moving fader" display of VCA levels, fader edit modes, mute status and SMPTE time. The screen also shows fader and mute subgroup assignments, and allows labeling of individual tracks and naming of the screens.

The disk is not copy protected. We encourage you to make a back-up copy right away and to put the original in a safe place. Turn on MAGI before starting up the program.

Macintosh Users

There is no system folder on the disk. If you are not using a hard disk drive, the system should reside on another disk in an external drive. If you do not have an external drive, be sure to boot up with a system disk before inserting the program disk.

This software runs on the Plus, SE, and Mac II series. MAGI-II uses the standard Mac fonts Monaco 9, Monaco 12, and Chicago 12.

MAGI-II is Multi Finder compatible, but it is recommended that you first get familiar with the software under Finder. For Multi Finder Notes, refer to the Appendix.

Double click on the MAGI 2 Fader Icon to launch the program.

If a mix has been previously saved, double clicking on the Mix File Icon will launch the application and load the file automatically.

MIDI Port Configuration (Macintosh)

As with all MIDI-related software, you need to tell the Mac which serial ports your MIDI interface is using. Selecting **Midi Port** from the Setup menu opens a dialogue box to allow you to select either the Modem or Printer Port, and the clock rate for your interface. Remember that MAGI-II software defaults to the Modem port when launched.

ATARI Users

When you copy the program, be sure to copy both the **.PRG** and the **.RSC** files. Double click on MAGI2.PRG to start the program.

Please Note: When the program is launched, the computer will request the current status of the MR unit, that is, the screen will show where all the faders are set. If, however, the program is launched before MAGI's power has been turned on, you will get a "time out" error. If this happens, simply hit return. You may then manually request an update of the fader's current status. Hold the Command key and press "U" on the Mac. On the Atari, press F10.

You should now see the current position of the faders. Move a fader on the MR unit. You should see the fader on the screen move. If not, recheck your connections and verify port configuration.

The Screen

Unless specifically mentioned, all descriptions refer to both Atari and Macintosh.

From top to bottom, we have:

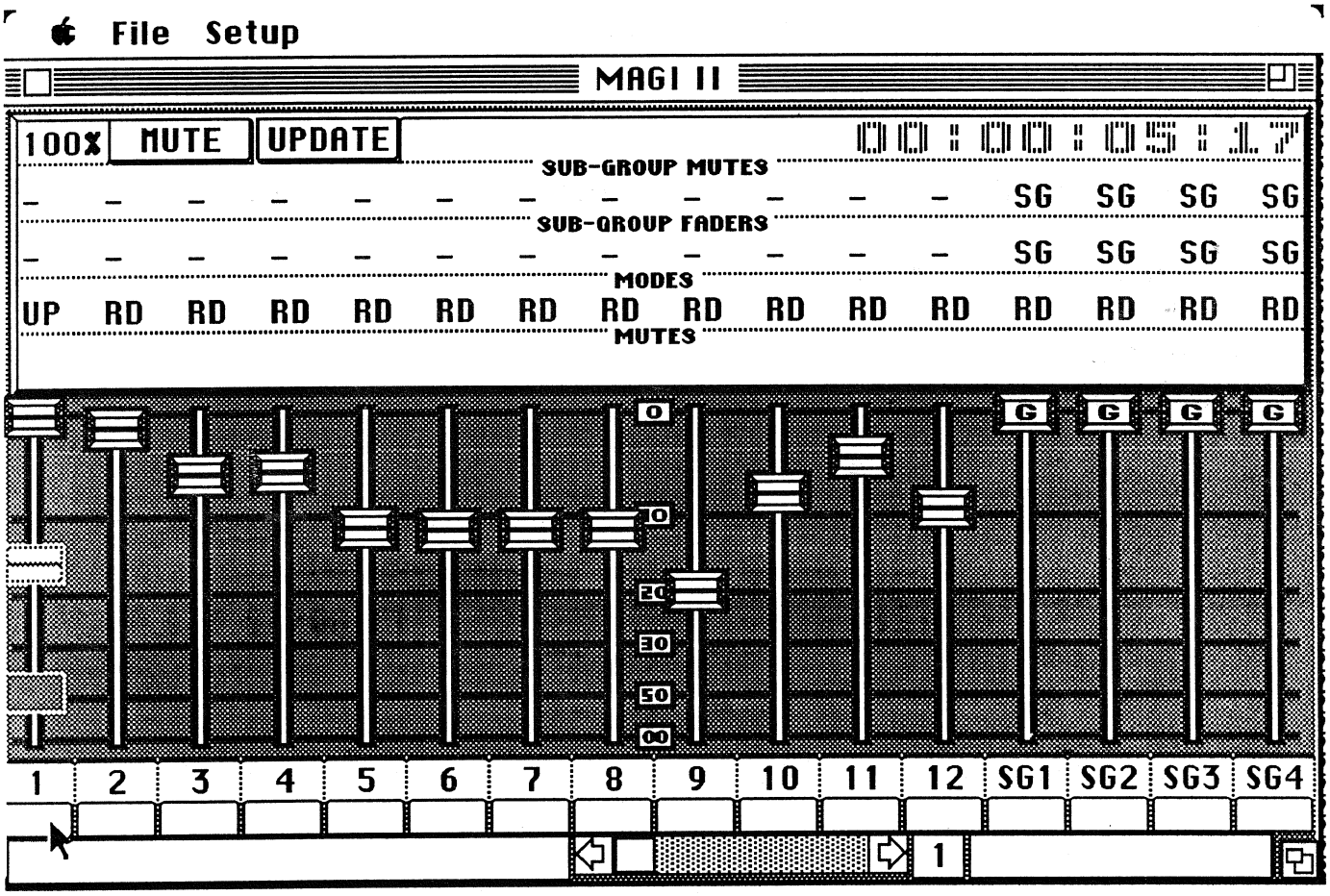
Menu Bar
This contains the File and Set Up Menus.

Memory Remaining Indicator
This shows the percentage of memory remaining. This number is shown at the bottom left of the Atari ST screen.

Mute Button
This has the same function as the Mute Button on the MR unit. Selecting Mute mode makes the switches on the MR unit behave as channel mutes. This mode is screen-selectable to facilitate the assignment of mute sub groups.

Mode Button
Selects Read, Write, Update or Manual Modes. These Modes will be covered in detail later, but for now suffice it to say that Read Mode allows playback of automation moves. Write Mode allows the movement of any enabled fader to be written into memory. Update Mode allows any previously written fader movements to be "rescaled" or "offset" without being overwritten. Manual Mode allows moving faders and mutes without committing any moves to memory. On the Atari, pressing **F3** has the same effect as clicking on this button. On the Mac, pressing **Command M** has the same effect as clicking on this button.

When in Auto Punch Mode, Write and Manual are indicated as "aWRITE" and "aMANU"



MAGI-II
Computer Screen

SMPTE Time
Displays Hours: Minutes: Seconds: Frames when MAGI-II is receiving SMPTE. When MAGI-II stops receiving SMPTE, the last time received is locked on the screen in shaded numbers.

Subgroup Mute Bar
Shows if a given channel has been assigned to a mute sub group by displaying the sub group number above the channel. A dash is displayed if no assignment has been made. An **SG** is displayed above a sub group master.

Subgroup Fader Bar
Shows if a given channel has been assigned to a fader subgroup by displaying the subgroup number above the channel. A dash is displayed if no assignment has been made. An **SG** is displayed above a sub group master.

Mode Bar
This shows the mode of each channel. **RD** means Read, **WR** means Write, **UP** means Update, and **MN** means Manual.

Mute Status Bar
The letter **M** appears above any muted channel or sub group.

Fader Area
There may be one, two or three elements on each channel.

VCA Level Fader
This shows exactly where the VCA is set at any moment. When the tape is stopped, this will be the only fader shown, since all the channels are "live" and directly controlled by the MR unit. This is the fader that automatically moves during playback.

Phantom Fader
This shaded fader shows the position of the real, "hardware" fader on the MR unit. The Phantom appears when the position of the fader on the MR is different than the VCA Level. When the two are in agreement, the Phantom is concealed and the fader is said to be "nulled".

Update Reference
When in Update mode, this box indicates the position of the hardware fader when first enabled. When the Phantom Fader is raised above this box, gain is added to the original fader moves. When the Phantom Fader is lowered below this box, gain is subtracted from the original fader moves. When the Phantom Fader lies on top of this box, there is no modification of original level.

Screen Number
This shows the number of the screen being displayed. The screen normally displays 16 channels at a time. (It is also possible to display 60 faders at one time, that is discussed later.) The channels can be arranged in any order on 15 different screens. The screen number can be advanced or decremented by using the up/down arrow keys on the computer, or the scroll bar.

Scroll bar and Arrow Keys
To change to the next higher or lower screen, click on the region in the scroll bar to the left or right of the scroll box. To rapidly get to a higher screen, click and drag the scroll box.

To shift the whole display left or right one channel at a time, click on the scroll arrows. Or use the left/right arrow keys on the computer to shift the whole display.

Macintosh Size Box
Resizing the window may be convenient while running under MultiFinder.

Zoom box
Clicking on this box zooms the window open or returns the window to a previously re-sized state.

Menus
File is used for erasing memory and all disk operations.

Load will allow you to load selected files of previously saved mix data (and screen preferences).

Save is used to manually save mix data (and screen preferences) onto disk if you have not been using Auto-Archive.

Set Drive (Atari ST only) selects targeted disk drive for load and save operations (if you have more that one drive).

Erase Memory should be used before each session.

Auto-Archive When selected, MAGI-II automatically backs up your mix data to disk every time MAGI-II stops detecting incoming sync. This archiving is made to (appropriately) a file named **ARCHIVE** unless you specifically re-name it when first selecting this option. Each time a save is made, it is written to ARCHIVE.NEW, and the previous save re-named ARCHIVE.OLD

Set Up is used to to select the "dialogue boxes" for various options of MAGI-II.

Labels will be used to clear out all fader, screen, and production labels.

Stripe will be used to select a SMPTE format and start time for striping, and to initiate SMPTE generation.

Color (Atari ST only) is used to change the appearance of the screen. If you are using a monochrome monitor, this box will allow you to reverse the black and white fields. With a color monitor, the dialogue box allows you to precisely tailor the appearance of the screen to suit your personal preference. When you select Color, first move the mouse and click on one of the four field selection boxes. Then use the mouse to move the R G B "faders" to adjust the hue of the selected field.

Inverse (Macintosh only) is used to alternately make the Macintosh screen show white on black, or black on white.

Midi Port (Macintosh only) allows you to set the Mac port desired, and the clock rate of the Midi interface box.

Mode Sequence determines the order in which the fader edit modes will be selected when clicking on the Mode Button. This is a personal preference setting that you can adjust to suit your style of mixing and mix editing.

Remote Screen Select When selected, the computer screen number will automatically follow the MR Bank Number. Pressing the Bank switch on the MR will cause the screen number to change on the computer. For this function to be useful, the screen needs to be pre-configured. For more information see "Screen Configuration" below.

Auto Punch Selecting this feature permits rapid and seamless "punch in" of new fader moves. In Write or Manual modes, any selected channels will automatically switch from read to write status as soon as the engineer moves the fader across its "null" position.

Screen Configuration

The display may be set up to show any arrangement of 16 channels at one time. An arrangement of channels and associated labels is called a screen, and there are a total of 15 screens available. For example, you may set up screen one to show channels 1 through 16, and screen two to show channels 17 through 32. Screen three could be set up to show subgroups, and additional screens could be set to show a single subgroup along side the individual channels assigned to it.

Alternately, you may display 60 channels at one time by holding the Command key and pressing **X** on the Mac, or pressing **F9** on the Atari.

Arranging channels

To arrange channels on a screen, use the mouse to position the cursor on the fader number. Double click to highlight the region. Type in the new, desired channel number. Hit **Return** to lock it in. On the **Atari**, you may also use the **F1** and **F2** keys to speedily highlight each successive channel number.

If a space is typed instead of a channel number, that fader will disappear.

Please note that if you plan on using Remote Screen Select, you must configure the screen to agree with both the MR unit and the number of VCA channel in your system.

For example, say that your system has 32 VCA channels and the MR-3. On screen 1, you could replace **SG 1 SG 2 SG 3 SG 4** with **13 14 15 16.** On screen 2, channels 13 through 25 could be replaced with 17 through 32. With Remote Screen Select on, changing between banks 1 and 2 on the MR-3 will result in the computer changing between screens 1 and 2. To view the sub groups, use the mouse (scroll bar) or keyboard (arrow keys) to display screen 3.

Entering Screen and Production Labels

Each of the 15 screens may be named by typing in a label on the line on the lower, right side of the screen. Click on the line, type in the label, and hit **Return** to lock it in. For example, screen 1 could be labeled "basics", screen 2 could be labeled "Tuesday's overdubs", screen could be labeled "vocal subgroup" etc.

The long line at the bottom left of the screen stays the same for all 15 screens. This line is used to label the song or score in production. Click on the line, type in the label, and hit **Return** to lock it in.

Entering Track Labels

To name a track, use the mouse to position the cursor arrow on the line below the fader number. Click once to highlight the region. Type in the name. Hit **Return** to lock it in. On the **Atari**, you may also use the **F1** and **F2** keys to speedily highlight each successive fader label.

Now take some time to familiarize yourself with the screen. Label the tracks and the screen. If you desire to change the appearance of the screen, select from the **Setup** Menu **Inverse** or **Color**.

If you plan on using the Remote Screen Select option, arrange the channels on the screen to correspond to the MR unit.

Striping Tape with SMPTE

MAGI-II features a built-in SMPTE generator for striping tape. If you are using a pre-striped tape, or some other source of SMPTE, you may skip this section and turn to the next page.

The quality of the SMPTE stripe is important for successful automation, so be sure you are using fresh unspliced tape.

Connect the **Sync Out** jack on the back of the MAGI Controller to an input of your mixing console. Route that input the highest available track on your multitrack tape recorder.

You should in no way alter the SMPTE tone, lest the digital information it contains become corrupted. Ideally, noise reduction and equalization should be defeated during both record and playback of the SMPTE track. However, Dolby C™ and dbx™ noise reduction usually cause no problems.

Set the record level to somewhere between -10 and -3dB. The higher the level the less vulnerable you will be to "drop out". However, if your tape recorder's track separation is poor, you may opt for a lower level to avoid hearing the SMPTE tone spilling into adjacent tracks.

An adjacent tape track with a lot of high energy content (such as a high hat) could bleed into your SMPTE track and cause a drop out. In extreme cases, you may need to leave a blank "guard track" between the audio tracks and the SMPTE track.

Select **Stripe** from the **Setup** Menu to enter a **Start Time** and **Frame Rate**. To initiate SMPTE generation, click on **Stripe**. The SMPTE time being generated is displayed in the dialogue box. Always stripe the whole length of tape, as it will be impossible to go back later and add "a little extra" stripe.

To stop SMPTE generation, click on **Stop**.

MAGI Remote Fader Unit Operation

Fader moves, mutes, mode selection and sub group assignments are all entered on the MAGI Remote Fader Unit. There are three different kinds of remotes, designated **MR-1**, **MR-2**, and **MR-3**. Operation is similar on all three units, although the **MR-1** has more group masters and the **MR-2** is limited to 32 channels. There are also slight differences in mode selection and sub group assignments, as noted below.

Enable Keys and Mute Mode (Very Important)

The buttons and LEDs above each fader have two functions: Write Enable or Mute, depending on the status of the Mute Mode button.

When Mute Mode is enabled (Mute Mode LED on), the buttons act as channel mutes. The LEDs above the buttons will turn on when the channel is muted.

When Mute Mode is disabled (Mute Mode LED Off), the buttons are used to toggle a fader from Read Mode into either Write or Update Modes. The LEDs will also turn on when you Enable the channel.

For example, suppose that the MR unit is in Mute Mode. Pressing any of the buttons above the faders would mute those channels. The LEDs above the buttons will turn on, and an "M" is displayed on the computer above the muted channels. If you were to then exit Mute Mode (Mute Mode LED off), the individual channels would stay muted, but their Mute LEDs would turn off. These channels cannot be manually un-muted without re-entering Mute Mode.

Also, any faders that have been Enabled in Write or Update Modes will still be Enabled even when Mute Mode is turned on.

To summarize, you can see now that the Enable keys and associated LEDs have a dual function, relating to either fader or mute status. Try to stay conscious of the fact that the Mute Mode Button will determine just what all of the Enable Buttons and LEDs mean.

Enable All (MR-1 only)

Pressing the Enable All button simultaneously enables all faders into either Write or Update Modes. If more than half of the channels are already enabled, pressing this button will disable all faders, putting them back into Read Mode.

Bank Selection

MR-1

The MR-1 controls up to 64 audio channels. Pressing the Bank switch advances the Bank number. When the Bank display shows a "**1**", the eight faders control the first eight VCAs (channels 1 through 8). When the Bank display shows a "**2**", the eight faders control the next eight VCAs (channels 9-16), etc.

Bank **0** is the group master bank and is discussed later. (See Group Assignments, **MR-1**.)

MR-2

The MR-2 controls up to 32 audio channels. When the Bank toggle switch is in the up position, the first sixteen faders control channels 1 through 16. When the Bank toggle switch is in the down position, the sixteen faders control channels 17 through 32.

MR-3

The MR-3 controls up to 64 audio channels. Pressing the Bank switch advances the Bank LEDs.
When LED 1 is lit, the first sixteen faders control channels 1 through 16.
When LED 2 is lit, the sixteen faders control channels 17 through 32.
When LED 3 is lit, the sixteen faders control channels 33 through 48.
When LED 4 is lit, the sixteen faders control channels 49 through 64.

There is a small switch inside of the MAGI-II Controller that is set at the factory to limit the number of banks to correspond to the number of VCA channels in your system. Refer to the Appendix if you need to change this switch should you later decide to add additional MAGI VCA units.

Fader Mode Selection

The Mode Selection Switch has the same effect as clicking on the Mode Button on the computer screen. The status of this switch determines whether enabled faders will be in either Write or Update Mode. On the MR-1 this is a small toggle switch on the upper left-hand corner of the unit. On the MR-2, the toggle switch is on the right side. On the MR-3, Mode is selected by pushing a button on the right labeled MODE.

Null LEDs

The Null LEDs above each fader are used to supplement the computer graphics as an aid to mix editing. The purpose of these LEDs will be covered in detail later. Suffice it to say for now that these LEDs are used to permit seamless mix editing. The LED is lit whenever the real (hardware) fader is set to the exact same level as the VCA.

Sub Groups

It is possible to make group assignments so that moving one group master fader or selecting one mute will simultaneously affect the level of several channels. This will be covered in detail later. On the MR-1, assignments are made using the SUB GROUP button. When the MR-1 is set to Bank **0**, the eight faders and mute act as group masters. On the MR-2 and MR-3, the last four faders and mutes act as group masters.

Fader Edit Modes

Any fader may be in one of four modes: **Manual, Read, Write,** or **Update.** Mode selection can be made in any one of four different ways, depending on what you are most comfortable with. To change modes,

(1) Use the Mode Selection Switch on the MR, or
(2) Press **F3** on the Atari, **Command M** on the Mac, or
(3) Use a foot switch plugged into the back of the MAGI Controller.
(4) If the tape is not playing, you can also click on the Mode Button on the computer screen.

In **Manual Mode** no fader or mute moves are recorded into memory. Manual Mode is used to experiment with a mix, and also to establish what the initial fader and mute setup should be at the beginning of a session.

Read Mode is used for playing back fader and mute moves stored in MAGI-II's memory while locked to SMPTE. When the Mode Button on the computer screen says **READ**, all faders will be in Read Mode regardless of whether or not the enable buttons above any fader on the remote unit have been pressed. This behaves as sort of a "safety" mode used during mixdown so that no new moves are accidentally recorded to memory.

Write Mode is the mode in which fader and mute moves are "recorded" into memory while MAGI-II is locked to SMPTE. When a fader is put into Write Mode, fader and mute moves will replace (or "overwrite") any previously recorded moves on that audio channel. This overwriting can take place on any number of selected (Enabled) faders.

When the Mode Button on the computer screen says **WRITE**, all Enabled faders are in Write Mode while any un-enabled fader will be in READ mode.

Update Mode is a special editing mode. Fader moves that you have previously recorded will not be overwritten or replaced. The relative moves will be left intact but the overall gain will be "re-scaled" or "off-set".

For example, say that you have made some very complicated fader moves while riding a vocal track, on a fader enabled in Write Mode. You roll back tape to audit what you've done, and you like the results, but you just wish that the whole track were a bit softer. Update Mode would allow you to shift up or down the level by adding or subtracting from the fader moves already entered, without having to re-enter all the moves.

When the Mode Button on the computer screen says **UPDATE**, all Enabled faders are in Write Mode while any un-enabled fader will be in READ mode.

Update Mode is also used for editing Mute moves. When a mute button is pressed in Update Mode, the Mute is not written into memory. Rather, MAGI-II ignores any previously stored mute events on that channel until the tape is stopped. This will be covered in detail later.

Mixing: Operation Overview

First, SMPTE time code is laid down and the computer screen is configured. Then MAGI-II is put into Manual Mode and tape is started. The engineer begins to experiment at this point to decide how the faders and mutes should be setup for the beginning of the song or score.

If the mix is to be automatically saved to disk, Auto-Archive is turned on from the computer. Memory is cleared. MAGI-II is put into Write mode, and a "first pass" is made. Usually mutes are recorded into MAGI-II first (Mute Mode LED on). The tape is restarted, and some number of faders are "nulled" and then enabled (Mute Mode LED off). Then several passes are made in Write Mode. Sub group assignments may be made, if necessary.

Then the mix is edited using Write and Update Modes. Finally, MAGI-II is set to Read Mode and mixdown is performed.

Operation Procedure

On the mixing console, set the faders to 0 dB. On MAGI-II, select Manual Mode using either the Mode Selection Switch, the mouse, **F3** on an Atari, Command **M** on a Mac, or a foot switch.

Initial Settings, Clearing Memory, "Snapshot"

MAGI-II is a "dynamic" automation system, meaning that fader movements are recorded only when a fader is moved, and that these movements are recorded smoothly and continually with respect to time. However, MAGI-II also takes one "snapshot". On the first pass (after clearing memory) in Write Mode, MAGI-II scans all the faders and mutes to capture their initial setup into memory. That way, whenever you rewind the tape and restart it from the beginning, MAGI-II can quickly restore the correct initial settings before the song or score begins.

Play the tape and determine what the initial settings should be. For example, say that the tape begins with a few bars of an all-percussion intro on tracks 1 through 7. You may then want the mix to begin the remaining tracks (8 through 31, for example) muted. You might also decide to have the faders on those tracks set at, say -10.

In this case, move faders 1 through 7 on the MR to the -10 position. Put the MR into Mute Mode (Mute Mode LED on), and mute tracks 8 and up by pressing the buttons on the remote. Stay in Mute Mode for now, since the first pass written to memory usually consists only of mutes (though is doesn't have to). Rewind the tape to a place at least ten seconds before the beginning of the audio program. If you are in Manual Mode, no moves have been recorded into the computer yet.

Select Write Mode: Put MAGI-II into Write Mode using either the Mode Selection Switch, the mouse, **F3** on an Atari, Command **M** on the Mac or a foot switch.

Erase Memory: Select from the File Menu.

You may wish at this point to enable Auto-Archiving. When selected from the File Menu and turned on, your mix data will be saved to disk every time the tape is stopped. Be sure that the disk is not "write protected".

First Pass

You may enter fader moves or mute moves in any order, and in as many "passes" as you wish, but for sake of example we suggest laying down mutes first.

Check that the MR is in Mute Mode (Mute Mode LED on). Start the tape. For reasons explained below, **the first pass after clearing memory must start before the beginning** of the song or score. Any subsequent passes may start and end anywhere in the song or score.

Notice that SMPTE time is displayed on the computer while MAGI-II is receiving time code. Enter mute moves on the MR. The LEDs will indicated mute status, and the Mute Status Bar on the screen will indicate **M** above any muted channel.

You may change banks at any time. As you switch to a new bank the LEDs will continue to show the appropriate mute conditions.

Stop the tape at the end of the pass. If you have more mute moves to make, rewind and restart the tape to overlay new mute moves. It is not necessary to restart from the beginning again. As you lay in new mutes, the old moves will playback automatically.

Second Pass

Please Note: On your first pass after starting with a cleared memory, MAGI-II scans the faders and mutes as soon as sync comes in. MAGI-II stores the initial levels and mutes so that it will "know" how to set up the VCAs when you roll back to the very beginning of the tape. This set of starting conditions (the "snapshot") is associated in memory with a unique SMPTE time, representing the beginning program. For this reason, ***do not attempt to do a second pass or a mix edit starting at a SMPTE time before your initial starting time.*** *Until MAGI-II recognizes the starting SMPTE time, it will ignore any mute or fader moves.*

To record fader movements to memory, first exit Mute Mode (Mute Mode LED off). Be sure that you are in Write Mode. Any number of faders may be enabled using the MR. Notice that the LED turns on for all Enabled channels, and that the status bar changes from **RD** to **WR**.

Start the tape. Make your fader moves for a rough mix. At the end of the pass, stop the tape. The individual faders will automatically disable and return to Read Mode. But the Mode Button on the screen does not change, it stays in Write Mode. This scheme allows some selected channels to be in Write Mode (recording moves) while other channels are in Read mode (playing back).

Rewind and audit the results of your rough mix.

Mutes and fader moves may be recorded in the same pass, they were only done separately in the example above for the sake of clarity.

(Remember that if you enable a fader, and then go into Mute Mode, the fader stays enabled until you exit Mute Mode and disable the fader.)

Continue to construct your mix in as many passes as you wish. If MAGI-II's memory becomes full, MAGI-II will drop out of Write (or Update Mode), and return to Read Mode.

Mix Editing

Editing in Write Mode, Definitions of Null LEDs and Phantom Faders

Now that a rough mix has been committed to memory, you can take advantage of MAGI-II's powerful editing utilities for "fine tuning" your mix.

Before editing, here is a detailed explanation of the Phantom Faders and Null LEDs that you can skim if you already understand what they are used for.

When MAGI-II is locked to tape and automating the VCAs, every fader move that you made in Write Mode is being "played back". The faders themselves are not moving, but the audio levels are changing nonetheless. The faders are simply resting in the last position that you left them at. So, most of the time during playback, the physical position of a fader will have no relationship to the actual level of the VCA, which will continually vary just as you have programmed. This situation also occurs whenever you change to a new bank, since the fader settings reflect the level of the previously selected bank.

As an example, MAGI-II may turn the audio level to full attenuation, but the fader has been left "full on" from a previous pass. Suppose that you were to Enable the fader now to do a re-write of the channel. As soon as you moved the fader the gain of the VCA would jump up to meet the fader. Phantom Faders and Null LEDs have been provided to avoid this situation.

The Phantom Fader on the screen always indicates the position of the hardware fader.

The Null LED is lit when the physical position of the fader corresponds to the actual level of the VCA.

When MAGI is receiving time code, slide the fader down or up just until the Null LED comes on. This is the position where the Phantom Fader is superimposed with the actual VCA level fader on the screen. You can now Enable the fader to re-write the fader's moves, without any jump in level.

When no time code is coming into MAGI (the tape is stopped), the faders are always "live". The Null LEDs will turn on the moment that you move the fader.

Editing Procedure in Write Mode, Auto Punch Option

In Write Mode you may selectively rewrite (that is, replace) any fader moves in any section of the song or score. Simply fast wind the tape to a point a few seconds before the offending fader moves. Start the tape, and use the Phantom Faders (or the Null LEDs) to help you find what the actual VCA level is at that point in the song. Slide the fader down or up just until the two faders are superimposed and the Null LED comes on. Now the position of the fader accurately reflects the level of the VCA. Then Enable the fader(s) that you wish to rewrite, and enter the new moves.

The Auto Punch feature makes editing easier by automatically switching selected faders from Read into Write mode when the fader is moved across its null point.

Select **Auto Punch** (from Set up Menu). The Mode Button on the screen now indicates **aWRITE**. The individual channels still indicate **RD** in the Mode Status bar. Enable the channels that you intend to edit using the MR. Notice that the individual channel status is still **RD** on the screen. Start tape and slowly move an enabled fader. The channel status will automatically change from **RD** to **W R** as the fader is moved across its null point, and the Phantom will disappear.

Note that this is only effective when the fader is moved slowly into null position, since the computer must find the exact point of punch in to prevent a jump in level.

Editing in Update Mode, Update Reference Boxes

As mentioned earlier, Update Mode is useful for rescaling (or "off-setting") fader moves without actually replacing them. Any moves made in Update Mode will be "added to" or "subtracted from" previously written moves.

To Update a track, once again shuttle tape to some place in the song before the intended edit. Put MAGI-II into Update Mode by using either the Mode Selection Switch, or click the mode button on the screen, or press **F3** on an Atari, **Command M** on a Mac, or a foot switch. Do not null the faders.

Determine what the nature of the update will be, whether you intend to scale the track up or down in level. If you plan on boosting the level, you will want to start with the fader(s) below center position (say around -30). This will assure that you have enough "throw" to move the fader upward. Likewise, if you plan on scaling the track down, you will want to move the fader(s) above center position. If you are not sure, then just move the faders to approximately center position.

For the channels that you wish to update, use the Enable keys to toggle channels from Read into Update Mode. (Be sure that you are not in Mute Mode for now.)

Start the tape. An Update Reference Box will appear on the screen for each channel enabled in Update Mode. This will help you keep track of the starting position of the physical fader. The Phantom Fader will not go away as it did in Write Mode, rather it will still indicates the position of the physical fader. The VCA Level Fader will continue to move on the screen in response to previously recorded moves, and its moves will be modified when you begin to move the fader.

When the Phantom Fader is above the Update Reference Box, you are adding gain to the previously recorded moves. When the Phantom Fader is below the Update Reference Box, you are subtracting gain from the previously recorded moves.

When the update has been completed, be sure to return the Phantom to lie within the Update Reference Box. This will assure that there is no jump in level at the end of the update. The Null LED is lit when the physical fader is in agreement with the Update Reference Box.

Exit Update Mode by selecting Read Mode, or simply stop the tape.

Updates are generally used sparingly and are less "busy" than moves made in Write Mode.

Using Manual Mode during editing

You might find it useful to use Manual Mode during the editing process to experiment with a section of the mix without committing it to memory. Say for example, fader moves on channels 1 through 5 are fine, but you are not sure how to treat channels 6 through 12.

Select Manual Mode and the status bar indicates **MN**. Now press the enable buttons on channels 1 through 5 twice. This will toggle those channels into Read Mode **RD**. Now when you start the tape, channels 1 through 5 will playback, but no new moves on faders 6 through 12 will be recorded. But you will be able to hear the resultant mix as channels 1 through 5 playback and you manually make moves on channels 6 through 12.

Under certain circumstances, it may be useful to use Auto Punch while in Manual Mode. For example, if you have more than 16 channels, the Bank Switch must be used frequently. But changing Banks normally disables the faders to prevent jumps in level. In Auto Punch, the selected channels remain enabled after changing banks. No jump in level can occur because the faders do not become "live" until moved across the null points.

Setting Mode Sequence

As you begin to get more comfortable with mixing and mix editing, you may find that you tend to use some modes more than others, or that you need to rapidly toggle between two modes. A feature has been included in MAGI-II to adapt the Mode Selection process to your own personal style of mixing.

Selecting **Mode Sequence** from the Setup Menu permits you to establish the order in which the fader edit modes are selected. For example, if you find that you are not using Manual or Update Modes, you can restrict the Mode Select Button so that it only toggles between Write and Read Modes.

Mute Editing (Real Time)

Turn Mute Mode on (Mute LED on). To remove a mute, first cue up the tape to a point several seconds before the mute happens. Put MAGI-II in Update Mode and start the tape. Then tap the desired mute button. You will not see a change of the LED or screen, but you have informed MAGI-II that you want to erase any mute events on that channel until tape is stopped. Let the tape run until it is beyond the previously muted region and stop the tape. Then roll back and audit the results.

Group Assignments

It is possible to make group assignments so that moving one group master fader or selecting one mute will simultaneously affect the level of several channels. You may choose to skip over this section and not read it until you are already comfortable with basic mixing techniques.

Mutes and fader assignments are independent. That is to say, a group master fader could control channels 7 through 21 for example, while its mute button controls channels 1 through 4.

Group assignments may be made from the computer or from the MR unit, depending on your preference.

Assigning Groups from the Computer

First decide if the assignment is going to be a Mute or a Fader group master. If it is going to be a Mute master, go into Mute Mode by either clicking on the screen or pressing the button on the MR.

Group masters are indicated by a G on the fader "knob". Double-click on the fader on the screen. The fader's outline will flash.

Assign channels to that master by either single-clicking on the channel or by clicking and dragging the mouse across all channels to be assigned. If you drag to the extreme left or right, the screen will automatically shift. Hit **Return** to lock in the assignment.

To add or remove a channel from a sub group, double-click on the master (the fader with a G), and then single-click on the channel that you wish to add or delete. Hit **Return** to lock in the assignment.

To remove all assignments to a given master, double-click on the master (the fader with a G), and press **Delete** or **Backspace.**

Example
Suppose that you have percussion recorded on tracks 1, 2, 3, 4, and 7, with an overdub on track 15. Say that you want group master #2 to affect the level of all the percussion tracks.

(a) Be sure to turn Mute Mode off (Mute Mode LED Off), since you're assigning fader and not mute groups.
(b) Double-click on fader SG 2 on the screen.
(c) Single-click and drag the mouse across faders 1 through 4.
(d) Single-click on faders 7 and 15.
(e) Press **Return.**
Notice that on the computer screen there is a number 2 in the Sub Group Fader Bar above the assigned channels.

Example
Suppose that you have vocals recorded on tracks 8, 9, and 17. Say that you want to press the Mute button on SG 4, and have it mute all the vocal tracks.

(a) Be sure to turn Mute Mode on (Mute Mode LED on), since you're assigning mute and not fader groups.
(b) Double-click on fader SG 4 on the screen.
(c) Single-click on faders 8, 9, and 17.
(d) Press **Return.**
Notice that on the computer screen there is a number 4 in the Sub Group Mute Bar above the assigned channels.

Assigning Groups from the MR Unit

MR-1

When Bank **0** is selected the eight faders become group masters. The eight Mutes become independent Mute group masters. To assign a channel to be controlled by a group master:

(a) Select whether or not you want it to be a Mute group. If so, turn Mute Mode on (Mute Mode LED on). If not, turn Mute Mode off (Mute Mode LED Off).
(b) Step to the appropriate Bank for the channel that you want to assign.
(c) Press repeatedly the SUB GROUP button until the desired group master fader number is displayed, and keep the button held down.
(d) Press the Enable buttons above each channel that you wish to assign to that group master. Change Banks as necessary. Release the SUB GROUP button.

Example

Suppose that you have percussion recorded on tracks 1, 2, 3, 4, and 7, with an overdub on track 15. With the MR-1 set for Bank **0**, you want to move fader #2, and have it affect the level all the percussion tracks.

(a) Be sure to turn Mute Mode off (Mute Mode LED Off), since you're assigning fader and not mute groups.
(b) Step to Bank **1**.
(c) Press the SUB GROUP button until group #2 is displayed, and keep the button held down.
(d) Press the Enable buttons above channels 1, 2, 3, 4, and 7. Keeping the SUB GROUP held down, press the Bank button to step to Bank **2**. Press the Enable button above fader 7 (that is, channel 15). Release the SUB GROUP button. Now step to Bank **0**. Fader #2 is now the group master for channels 1, 2, 3, 4, 7, and 15. Notice that on the computer screen there is a number 2 in the Subgroup Fader Bar above those channels.

Note: Mute group are assigned independently. Though fader #2 in the example above will control channels 1, 2, 3, 4, 7, and 15, the Mute button #2 could have a different assignment altogether.

Example

Suppose that you have vocals recorded on tracks 8, 9, and 10.With the MR-1 set for Bank **0**, you want to press the Mute button above fader #2, and have it affect the level all the vocal tracks.

(a) Be sure to turn Mute Mode on (Mute Mode LED On), since you're assigning mute groups.
(b) Step to Bank **1**.
(c) Press the SUB GROUP button until group #2 is displayed, and keep the button held down.
(d) Press the Mute button above channel 8. Keeping the SUB GROUP held down, press the Bank button to step to Bank **2**. Press the Mute buttons above faders 1 and 2 (that is, channels 9 and 10). Release the SUB GROUP button. Now step to Bank **0**. In Mute Mode, Mute button #2 is now the group master for channels 8, 9, and 10. Notice that on the computer screen there is a number 2 in the Subgroup Mute Bar above those channels.

In a similar manner, you may continue to assign all eight fader and all eight mute subgroups.

You may at any time review the group assignments by holding the SUB GROUP button and noting which Enable LEDs turn on above the faders.

MR-2 and MR-3

The last four faders are group masters. When in Mute Mode, the four buttons above those faders are independent Mute group masters. To assign a channel to be controlled by a group master:

(a) Select whether or not you want it to be a Mute group. If so, turn Mute Mode on (Mute Mode LED on). If not, turn Mute Mode off (Mute Mode LED Off).
(b) Step to the appropriate Bank for the channel that you want to assign.
(c) Hold down the Enable button above the group master fader. Keep it held down and wait at least 2 seconds.
(d) Press the Enable buttons above each channel that you wish to assign to that group master. Change Banks as necessary. Release the the Enable button above the group master.

Example
Suppose that you have percussion recorded on tracks 1, 2, 3, 4, and 7, with an overdub on track 15. Say that you want to move group master fader #2, and have it affect the level all the percussion tracks.

(a) Be sure to turn Mute Mode off (Mute Mode LED Off), since you're assigning fader and not mute groups.
(b) Select Bank 1, channels 1-16.
(c) Press and hold down the Enable button above group master fader #2, wait at least 2 seconds.
(d) Press the Enable buttons above channels 1, 2, 3, 4, 7, and 15. Release the the Enable button above the group master fader #2. Notice that on the computer screen there is a number 2 in the Subgroup Fader Bar above those channels.

Note: Mute group are assigned independently. Though fader #2 in the example above will control channels 1, 2, 3, 4, 7, and 15, the Mute button #2 could have a different assignment altogether.

Example
Suppose that you have vocals recorded on tracks 8, 9, and 17. Say that you want to press the Mute button above group master fader #2, and have it affect the level all the vocal tracks.

(a) Be sure to turn Mute Mode on (Mute Mode LED On), since you're assigning mute groups.
(b) Step to Bank 1, channels 1-16.
(c) Press and hold down the Enable button above group master fader #2, wait at least 2 seconds.
(d) Press the Mute buttons above channels 8 and 9. Keeping the Enable button above fader #2 held down, switch to Bank 2, channels 17-32. Press the Mute button above fader #1 (that is, channel 17). Release the the Enable button above the group master fader #2. Notice that on the computer screen there is a number 2 in the Subgroup Fader Bar above those above those channels.

In a similar manner, you may continue to assign all four fader and all four mute subgroups.

You may at any time review the group assignments by holding the Enable buttons above the group masters, waiting 2 seconds, and noting which Enable LEDs turn on above the faders.

Sub Group Fader and Mute Moves

Moves made on the sub group faders and mutes do not erase any moves made on the individual channels. Rather, the level of the channel fader becomes a maximum level, which can then be brought down by the operation of the subgroup.

For this reason, channels assigned to subgroups should probably be set a little higher than desired, so that the sub group has some room to move upward. That is, with the master full on, the level for each channel will be equal to that channel's fader level . As the master is brought down, all the channels will come down proportionally.

Alternately, group assignments could be made before the first pass. Leave the group master fader down around -10 as an initial setting.

Keep in mind that when using sub group masters, having either the individual channel fader or the sub group master full off will result in the channel volume being off.

Sub group mute masters will always override any individual channel mutes. However, it is possible to change an individual channel mute status after a change of the sub group master has taken place. This new status will stay in effect until the next change of the mute master, at which time the mute master will once again override. That is, the *latest* event affecting a given mute always takes precedent, whether it is caused by the individual mute or the sub group mute.

Aborting a Pass

It is possible to abort a pass in Write or Update Modes so that none of the moves will be recorded into memory. This function would be used, for example, if a mistake is made while mixing and you want MAGI-II's memory to revert back to the last pass.

To Abort, hold down the space bar on the computer a little before stopping the tape, and continue holding it down until the tape stops.

If you are using a foot switch for mode selection, it can also affect an Abort. Hold down the foot switch a little before stopping the tape, and continue holding it down until the tape stops.

If Auto-Archive had been enabled, Aborting a pass will also prevent MAGI-II from automatically saving the mix data to disk.

Disk Operations

MAGI-II's Auto-Archive function (when selected) automatically backs up your mix data to disk every time MAGI-II stops detecting incoming sync. This archiving is made to (appropriately) a file named **Archive** unless you specifically re-name it when first selecting this option. Thus you always have access to the last two passes made.

You may also rename the archive file at any time to save new versions of the mix. For example, say that after doing several passes you now have a good working version of the mix. But you want to experiment with it a little to see if it can be improved, while retaining the option of "retreating" to the known good mix. Simply select Auto-Archive from the File Menu, and rename the Archive file. (Call it "Revised", for example.) Now do several more passes.

Select **Load** from the File Menu. You see that you now have four mixes to choose from. You can load in **Archive.OLD**, **Archive.NEW** (the known good mix), **Revised.OLD** or **Revised.NEW**.

The ability to load in previously saved mixes provides the means of quickly comparing mixes before committing to two-track.

You may of course manually save your mixes under any file name by selecting Save from the File Menu. In general, you would want to do this at the end of each session.

Snapshot Loading

Every mix file contains a "snapshot" of the fader and mute settings at the beginning of the mix before any moves are made. When you load a mix file from disk, the snapshot for that file is displayed.

In other words, as soon as a file is loaded, MAGI behaves as if the beginning time code has been received. The faders and mutes on the screen snap into position, and the VCA levels respond in agreement with the display.

This enables you to instantly see the initial settings for a mix without rolling tape. The Snapshot Loading feature also allows you to simultaneously set up all VCAs to fixed levels without moving a single fader.

Mix File Icon

MAGI-II mix files have their own Macintosh icon. It is also possible to simultaneously launch the application and load a mix file by double clicking on the mix file icon.

Mix down

When you are ready to commit your mix down, first put MAGI-II into Read Mode using either the Mode Selection Switch, the mouse, or a foot switch.

If you have just completed a mix (so that it is still in the computer's memory), simply start the multitrack tape recorder and let MAGI-II do all the work.

If you are going to mix down a previously saved mix, first load in the file from disk. Then start the multitrack tape recorder and let MAGI-II do all the work.

Appendix

VCA Specifications:

Type:	dbx™ 2150A or 2151A optional
Input Level:	+4 dB or -10dB, factory configured
Input Impedance:	22K Ohms
Output Impedance:	10 Ohms
S/N:	98dB
THD+N:	0.010% (2150A) 0.007% (2151A) typical unweighted 1KHz at nominal input level.
Resolution:	0.4 dB increments from 0 to -10dB.
Control Voltage Range:	0VDC equals unity gain, 10VDC equals maximum attenuation.

Internal Trimmers: There are three factory-adjusted trimmers inside of the MAGI Controller Unit. One calibrates the full-scale of the Fader Remote Unit. The other two change the Control Voltage output range. Field re-adjustment is not recommended.

The **Out Offset** trimmer is factory set so that when a fader is at 0dB, the output Control Voltage is equal to 0VDC.

The **Out Gain** trimmer is factory set so that when the fader is at maximum attenuation, the output Control Voltage is 5VDC.

The Internal DIP Switch informs MAGI as to which Fader Remote Unit is being used, and how many VCA channels are being driven.

Switch #5 must be in the ON position for MR-2 and MR-3.
Switch #5 must be in the OFF position for MR-1.

Switches #1 and #2 set the maximum number of VCA channels.

#1	#2	Channels
OFF	OFF	16
ON	OFF	32
OFF	ON	48
ON	ON	64

CV-16 Pin-out

The 25-pin connector on the internal "CV-16" circuit board provides the Control Voltages for the MAGI VCA unit. The pin-out is given here to permit a custom cable assembly to be made if MAGI is to drive something other than MAGI VCAs.

PIN	CV	PIN	CV	PIN	CV	PIN	CV
1	1	6	10	11-13	NC	18	9
2	3	7	12	14	2	19	11
3	5	8	14	15	4	20	13
4	7	9	16	16	6	21	15
5	ground	10	ground	17	8	22-23	ground

Appendix

MultiFinder Notes

On the Macintosh, MAGI-II can operate under Finder or MultiFinder. In MultiFinder, MAGI-II can "background". That is, it is possible to have MAGI-II receiving SMPTE and controlling a mix while another application is "active". If the other application is a MIDI sequencer, it is recommended that this only be attempted on a Mac II due to the processing speed limitations of the Plus and SE. When MAGI-II is in the background (not the active window) you will notice that the faders will not be drawn.

If you are attempting to run another MIDI application concurrently, be certain that it is not configured to the same MIDI ports as MAGI-II.

Certain sequencers will always attempt to address both ports. So it is possible to lose communication with MAGI-II after selecting a sequencer, for example. To restore communication, you may need to re-configure MAGI-II by selecting **Midi Port...** (Command P) and clicking OK.

Here is how to establish whether or not bi-directional MIDI communication is working. Moving a fader on the mixing console causes the fader on the screen to move. This indicates data communication from the MAGI Controller's MIDI Out to the computer's MIDI In. The VCA for that fader must also be affected if tape is not rolling. This indicates data communication from the computer's MIDI Out to the MAGI Controller's MIDI In. If the fader on the screen moves but the audio level does not change, there is no communication from the computer to MAGI.

Shortcuts: Command and Function Keys

Mac Command Keys

Command E: Erase

Command A: Auto-Archive

Command Q: Quit

Command L: Erase Labels

Command S: Stripe Tape

Command I: Inverse Screen (white on black)

Command P: Configure MIDI Port

Command U: Request Update of Fader Positions

Command X: Display 60 Channels

Command M: Change Mode

Atari Function Keys

F1	**Moves highlighted region left**	For entering fader labels or
F2	**Moves highlighted region right**	arranging channel numbers
F3	**Mode Select**	
F9	**Display 60 Channels**	
F10	**Request Update of Fader Positions**	